Increasing College-Readiness: Accelerated Learning Programs for High-School Students

By Christine Harrington and Donna M. Rogalski

ABSTRACT: ***Many high school students enter college without the necessary reading, writing, and math skills and therefore must enroll in developmental courses (Barnett, 2018). To increase college readiness among entering students, one state encouraged community colleges to partner with local high schools to bring the Accelerated Learning Program (ALP), which has been successful at the community college level, to the high school population. In this approach, high school students who are not yet college-ready take a college-level English and/or math class while also receiving support, often in the form of supplemental instruction. Results are promising with a 66% overall success rate.***

Assisting students with developing academic skills before graduating from high school is essential.

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Developmental education and college readiness are topics being discussed by community college leaders across the nation. Too many students are graduating high school not yet prepared for the academic expectations of college courses (Barnett, 2018; Chen & Simone, 2016). To address this issue, Peter Adams and colleagues at the Community College of Baltimore County developed Accelerated Learning Programs (ALP). ALPs offer not-yet college-ready students the opportunity to take credit-bearing courses in English and/or math while also receiving high levels of academic supplemental support ("What is ALP?", n.d.). Researchers investigating the effectiveness of this approach have found that ALP works well for students who initially placed into the highest level of developmental courses (Atkins & Beggs, 2017; Cho, Kopko, Jenkins, & Smith-Jaggars, 2012; Mireles, Acee, & Gerber, 2014).

The ALP model has led to significant developmental education reform efforts across the nation (Coleman, 2014). Despite success at the college-level, there is no evidence in the literature that this innovative approach has been implemented with high school students. Assisting students with developing academic skills before graduating from high school is essential. If students enter college without these academic skills, they will need to take courses that do not count toward graduation and this will increase debt and time toward graduation (Bailey, 2009). The rationale for implementing the ALP approach with high school students and promising data from a statewide grant-funded initiative will be shared.

Review of the Literature

The College Readiness Problem

Inadequate preparation for college-level coursework is a major challenge for postsecondary institutions across the U.S. The numbers are staggering as "nearly two-thirds of those entering community colleges and 40% of those entering four-year institutions are assigned to one or more remedial courses when they enter college, often delaying their enrollment in college-level courses" (Barnett, 2018, pp. 1-2). In a report from the National Center for Education Statistics, 26% of community college students needed developmental courses in multiple subjects (Chen & Simone, 2016). Community colleges have addressed the lack of academic preparation by designing developmental education courses to assist students with improving reading, writing, and math skills. Although well-intentioned, research has shown that traditional approaches to developmental education have not been effective (Ganga, Mazzariello, & Edgecombe, 2018).

Students taking developmental education courses often do not complete the required developmental course and, as result, never enroll in credit-bearing coursework. Ganga et al. (2018) have noted that only 33% of students needing developmental math and 46% of students needing developmental reading completed the developmental course requirements. They also found that students who needed developmental education were less likely to earn a degree or certificate within 6 years as compared to their peers who did not need to take developmental courses. More specifically, students who needed at least one developmental education course had degree or certificate completion rates of 34% at community colleges. At both public and private colleges and universities, the completion rate was 55% for students needing at least one developmental education course. The completion rates for students who did not need developmental coursework were 40% at community colleges, 71% at public institutions, and 77% at private institutions (Ganga et al., 2018).

Traditional developmental education has had limited success in reducing equity gaps. Ganga et al. (2018) note "Black and Hispanic students are disproportionately assigned to developmental education, and black and Hispanic students who take

developmental courses graduate at lower rates than white and Asian students who take developmental courses—compounding attainment gaps" (p. 3). Research has shown that supplemental instruction, an essential component of ALPs, can help reduce equity gaps because, although all students benefitted, students who were most disadvantaged benefitted the most (Yue, Rico, Vang, & Giuffrida, 2018).

Bailey, Smith-Jaggars, and Jenkins (2015) argued that community colleges need to transform developmental education so that students can more quickly begin taking credit-bearing courses required in their program. In a longitudinal study, Bailey, Jeong, and Cho (2008) found that approximately half of the students who placed into a developmental course did not complete the required course. In most cases, students opted to not enroll in the course and therefore did not attend college. Thus, the placement into the developmental course deterred students from even starting college. When students did enroll in developmental coursework, students who needed more levels of developmental coursework were less likely to complete the developmental education requirements. More specifically, only 16% of students who needed three or more levels of developmental math courses and 22% of students who needed three or more levels of English/reading completed the developmental sequence. For students needing two courses, the developmental course sequence completion rate was 29% for math and 36% for English/reading, and for students needing only one developmental course, it was 44% for math and 46% for English/reading (Bailey et al., 2008). Students are quickly discouraged, especially if required to take multiple developmental education courses before being able to enroll in credit-bearing courses. Despite these unacceptably low completion rates, Rutschow, Cormier, Dukes, and Zamaor (2019) found that the multisemester approach to developmental education is still widely used. Specifically, 86% of 2-year colleges offered the multisemester approach to developmental math, and 67% of 2-year colleges offered the multisemester approach to developmental reading and writing.

The importance of increasing college readiness cannot be overstated. Students who are required to take traditional developmental courses are spending significant amounts of time and money yet not making much, if any, progress toward successfully completing their goals. As a result, discouraged students walk away without any credential but often saddled with debt. In a study by Luna-Torres, McKinney, Horn, and Jones (2018), it was found that many student loan borrowers were taking developmental coursework and the degree completion rates for these noncollege-ready students were lower than the completion rates of their college-ready peers. Student loan debt combined with lower success rates is particularly problematic for students coming from lower socioeconomic backgrounds.

The ALP or Corequisite Model

Fortunately, in 2007, Peter Adams and colleagues from The Community College of Baltimore County ("What is ALP?", n.d.) developed the innovative approach to developmental education called ALP. In the original model for this approach, 10 not yet college-ready students were enrolled in a college-level English course with 10 college-ready peers. After the class was over, the not-yet college-ready students stayed for supplemental instruction provided by the same instructor. During the supplemental instruction, not yet college-ready students had the opportunity to ask questions, work on their essays, practice grammar and other writing skills, discuss how to be successful in college, and address challenges that could interfere with success. In this approach, not yet college-ready students who placed into the highest level of developmental English were given the opportunity to take college-level courses while receiving a high level of support (Adams, Gearhart, Miller, & Roberts, 2009).

Students in an ALP were more likely to pass developmental courses and were twice as likely to pass their first college-level courses.

In ALP's first year of inception, the Community College of Baltimore County did a comparison of students in traditional developmental English and those in the ALP. The pass rate for English I was higher for students taking English I concurrently with support (ALP) as compared to students who completed the developmental education course prior to taking English I. More specifically, 78 students out of the 104 in ALP passed the credit-bearing English course. This represents a 75% success rate. Students who took English I after completing the developmental course had a 40% pass rate, with 296 of the 828 students passing (Adams, 2012).

Cho et al. (2012) analyzed data from 592 students taking ALP and 5,545 students who enrolled in a traditional non-ALP developmental education English course at the Community College of Baltimore County. They found that students who participated in an ALP performed significantly better in English I and English II classes, had higher persistence rates, and completed more courses and credits than students who did not participate in ALP programs. It is important to note that ALP students had higher placement test scores as compared to their non-ALP peers. Cho et al. (2012) therefore used a propensity score matching strategy and controlled for covariates, cohort, and fixed effects. Completion rates for students participating in the ALP program were 75% for English I and 38% for English II, compared to 39% and 17% for students who took traditional developmental education courses prior to enrolling in English I. The next term persistence rate was 82% for ALP versus 70% for non-ALP students and the next year persistence rate was 64% for ALP versus 48% for non-ALP students. The average number of courses completed after the developmental English course was four for ALP students and three for non-ALP students and the average number of credits accumulated was 13 for ALP students and 10 for non-ALP students. In a study that examined the effectiveness of ALP at seven colleges, Coleman (2014) also found that students in an ALP were more likely to pass developmental courses and were twice as likely to pass their first college-level courses.

Northwest-Shoals Community College also found positive outcomes when they implemented the ALP program (Sides, 2016). Similar to the Community College of Baltimore County, only students who placed into the highest level of developmental English were given the option to participate in the ALP program. Instead of requiring students to participate in 3 hours of supplemental instruction, not yet college-ready students only participated in 1 hour of supplemental instruction. Findings indicated that students who completed the ALP course as compared to students who were eligible to take ALP but opted to stay in developmental English had higher retention rates. In Fall 2014, 89% of ALP students persisted to the next semester whereas only 58% of ALP eligible students who participated in the traditional developmental English class persisted to the next semester.

ALP has also been successful for students with developmental math needs. Atkins and Beggs (2017) investigated the effectiveness of a corequisite model in mathematics by comparing the following three groups of students who had taken a gateway math course: students who did not need any developmental support, students who successfully completed the traditional developmental course in Algebra, and students who received developmental math support through the corequisite approach. Results revealed that 79% of the students in the corequisite course passed the gateway math course, 75% of the students who had previously completed a developmental course in math passed the gateway math course, and 90% of the students without developmental math needs passed the gateway math course. There was no statistically significant difference in final exam grades between students in the corequisite course and students who had previously completed the developmental education course in mathematics, suggesting that ALP is an effective alternative to traditional developmental education. The success

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of a corequisite approach in mathematics was also demonstrated by Mireles et al. (2014). Students in the corequisite course as compared to students who completed traditional developmental coursework first were more likely to pass the college-level course and were less likely to withdraw.

Requiring students to take a corequisite support class or participate in mandatory tutoring were themes that emerged from a national survey of faculty teaching developmental courses (Barhoum, 2018). In this study, faculty reported higher levels of student engagement and success when a corequisite versus prerequisite model was used to help students develop their writing skills. Likewise, faculty also reported that students were more successful when required to see a tutor versus having the option to see a tutor.

Community colleges across the nation have been implementing various models of ALPs, giving students who are not yet college ready the opportunity to take college-level English or math courses while also receiving supplemental support. In a recent survey of developmental math instructors, 18% of the 137 respondents indicated that the corequisite ALP model was offered at their institution (Saxon & Martirosyan, 2017). In a national study on developmental education reform practices, Rutschow et al. (2019) found that 56% of 2-year colleges have offered ALP in reading and writing and 28% have offered ALP in math. However, Rutschow et al. (2019) noted that traditional developmental sequences still comprised over half of the overall developmental course offerings at public institutions. Thus, many colleges have begun offering alternative options but not at scale.

Although the original model is still the most widely used, several different approaches to ALP have been identified (Adams, Gabriel, & Kiefner, 2017). For example, the triangle model expands on the original model. In the triangle model, there are two original ALP classes with college-ready and not yet college-ready peers. The not yet college-ready peers from both classes participate in the mandatory supplemental instruction. There are therefore twice as many not yet college-ready students in the supplemental instruction class in the triangle model as compared to the original approach. In a compressed model, students first take the developmental course for 7 weeks and then subsequently enroll in a 7-week credit-bearing course with the same instructor. Merged courses have only not yet college-ready students enrolled. In this approach, the developmental and credit-bearing courses are combined, taking place during the same semester often for 6 hours a week. Another option is to have the corequisite component of ALP be required tutoring or virtual assistance which may be provided by the instructor of the college-level course or a different instructor (Adams et al., 2017).

Regardless of the model chosen, the experts at the Community College of Baltimore County (2013) stress the importance of adapting, not adopting. Many schools incorporating ALP have modified the program to meet their needs and have been successful. According to the Community College of Baltimore County's (2013) *Accelerated Learning Program (ALP) Start Up Manual*, the following six features of ALP are recommended to produce the highest success rates. Students take the developmental course concurrently with the college-level course, rather than as a prerequisite. At least half the students in the college-level course are college-ready. There should be not more than 12 not yet college-ready students in a single class. Instructors should attend to noncognitive student issues. The same instructor teaches the corequisite and credit-bearing course. Backward design, an approach where learning outcomes guide assessment and teaching practices, is used with a strong emphasis on active learning, reasoning, engaged reading, and effective editing skills (Community College of Baltimore County, 2013). Faculty recommendations for accelerated instruction include increased time for problem-solving and cooperative learning during class, focusing on essential content, and regularly using formative assessment (Saxon & Martirosyan, 2017).

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Goudas (2018) has cautioned colleges against replacing traditional developmental education sequences with the ALP approach. Specifically, he noted that there is no evidence of improved graduation rates as a result of student participation in ALP programs and that implementing an ALP program costs twice as much as the cost of traditional developmental education programs. However, Adams et al. (2009) noted that "ALP doubles the success rate, halves the attrition rate, does it in half the time (one semester instead of two), and costs slightly less per successful student" (p. 64). Long (2019) noted that although there is evidence that ALP is successful in some cases, developmental education reform requires a comprehensive approach beyond ALP.

College Readiness and the High School Student

Although community college faculty have been transforming developmental education at the college level, there has also been significant national attention on college readiness programs at the high schools. Through community college and high school partnerships, programming such as summer bridges, boot camps, and semester- or year-long college readiness programs have been designed and implemented. The high school classroom continues to be the most common setting for college readiness programming; however, many schools are also offering computer-based academic curricula and support (Fay, Barnett, & Chavarin, 2017). These efforts are aimed at increasing the number of high school graduates who enter college ready to begin college-level coursework.

In a national scan conducted by the Community College Research Center, an increase in the number of states offering courses or other supports to high school students at risk of being placed in developmental education was found. Ten more states were offering this type of curricula in 2017 as compared to in the 2012-2013 academic year. A total of 39 states are now offering college-readiness curricula (Griffin, 2018).

Unfortunately, the evidence of the effectiveness of college-readiness programs in both English and math is limited and mixed (Barnett, Chavarin, & Griffin, 2018; Griffin, 2018). Some success was demonstrated by Bir and Myrick (2015) who found that despite entering with lower test scores and high school grades, African American summer bridge participants had higher grade point averages (2.65) than their peers who did not participate in the summer bridge program (2.48). Participants also had higher persistence rates to the second year of college as compared to students who did not participate in the summer bridge program. However, Johnson-Weeks and Superville (2016) did not find any statistical difference in retention between students participating in a summer bridge and those who did not. In an experimental study conducted in Texas, Barnett et al. (2012) found there were no significant differences between students who participated in summer bridge programs and those who did not in terms of credits attempted, credits earned or persistence. However, students who completed the summer bridge were more likely to pass their first college-level math and writing courses. The limited and mixed results for traditional approaches to developmental education suggest the need for more innovative college-readiness programs.

Recognizing the importance of increasing the number of high school students who are entering college with the needed reading, writing, and math skills, the State of New Jersey provided generous funding to support these efforts. In 2013, the State of New Jersey initiated a College Readiness Now (CRN) program via a federal College Access Challenge Grant (United States Department of Education, 2014). The CRN program was managed by the New Jersey Office

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of the Secretary of Higher Education and the Center for Student Success at the New Jersey Council of County Colleges. In 2016, the CRN program was funded by the State of New Jersey. During the first 3 years of the grant, community colleges were encouraged to develop innovative college readiness programs in collaboration with their local high school partners. Although the nature of the college readiness programs varied, participating community colleges primarily implemented summer bridge and boot camp programs. There was some evidence of success with these short, intensive options for students needing developmental math and English coursework. During this time, the success rate ranged from 40-48%, indicating that these students successfully completed the summer bridge or boot camp program and were deemed college-ready in math and/or English. In 3 years, a total of 2,220 New Jersey participants were deemed college-ready in math and/or English and many more students were able to reduce their need for developmental education courses.

Bringing ALPs to High School Students

To further support college readiness, during the fourth year of the College Readiness Now grant, the Center for Student Success at the New Jersey Council of County Colleges encouraged community colleges to consider a new approach. Because the success rates of the ALP at community colleges across the state and nation were so impressive, the Center for Student Success suggested colleges consider ways in which ALP could be used with high school students. In this approach, not yet college-ready students registered for a dual enrollment course in English and/or math while concurrently receiving supplemental instruction. Prior to this initiative, dual enrollment opportunities were only available to students deemed college-ready.

Karp and Hughes (2008) identified numerous benefits for students who participated in dual enrollment programs such as preventing dropouts, encouraging academic achievement, promoting college acclimation, and reducing costs for students and families. A recent study investigating the benefits for low-income students enrolled in dual enrollment, it was found that all students benefitted from dual enrollment and low-income students in the program were just as likely to persist in college (An, 2013). In addition, An (2013) found first-generation students and students who earned at least six college credits while still in high school were more likely to earn a degree.

Purpose of Current Study

The purpose of the current study was to investigate whether ALP programs in English and math implemented with high school students would be successful. The following research questions were explored:

1. Is ALP effective when implemented with high school students?
2. How do the success rates of ALP with high school students compare to the success rates for traditional college-ready programs such as summer bridges?
3. Is ALP with high school students equally effective in English and math?
4. How do results differ when ALP is implemented at the high school versus college setting?
5. How do results differ when ALP is implemented with and without college-ready peers in the class?

Method

Participating Colleges, High Schools, and Students

Of the 19 New Jersey community colleges, 18 participated in the CRN grant and provided college-ready programming to high school students. A total of 2,700 not yet college-ready high school students from 156 high schools participated. The number of high school partners for each community college varied, with the range being 3 to 25. The median number of high school partners in the entire sample was six high schools. The total number of not yet college-ready participants who enrolled in traditional developmental education programs was 2,447, with 1,675 students in English and 772 students in math. Twelve colleges offered intensive, brief college readiness programs and seven offered semester- or year-long programs. Four colleges offered more than one type of traditional college readiness program.

Overall, 11 of the 18 participating New Jersey community colleges worked collaboratively with local high school partners to pilot the ALP during the 2017-2018 academic year. These eleven colleges represent two urban, six suburban, and three rural communities (American Association of Community Colleges, n.d.). All of these colleges offered an ALP in English; three of them also provided ALPs in math. The total number of not yet college-ready students participating in ALP was 253 with 204 in English and 49 in Math. This represented approximately 10% of the total enrollment for the college readiness grant. Program class size for ALP ranged from 14 to 43 students.

Because the grant only required colleges to report on aggregate information, it is not possible to provide demographic data on the student population. However, the grant required that students be in 11th or 12th grade and that colleges first support low-income students. High school seniors represented 80% of the participants, and 20% were juniors. Almost half of the participants were from low-income households. More specifically, within the total sample from the CRN grant, 47%, or 1,281 participants, were deemed living in poverty.

Professional Development: Identifying Models

To assist college readiness leaders with determining how to best develop and implement an ALP in the high school, professional development was provided. National experts Peter Adams, Susan Gabriel, and Jesse Kiefner from the Community College of Baltimore County presented on how the ALP has been implemented at the college level. At this professional development event, college readiness leaders at community colleges from across New Jersey engaged in dialogue about how this innovative approach could be implemented with high school students. Recognizing the complex logistical and scheduling issues with the high school population, the New Jersey Center for Student Success encouraged community colleges to be creative in the implementation.

One path identified was leveraging dual enrollment courses that already existed. Dual enrollment, which enables high school students to earn credit for college courses while also meeting high school graduation requirements, were already being offered by every community college in New Jersey. However, students who were not yet college-ready were unable to enroll in dual enrollment courses because the prerequisite was college-readiness. Community colleges and high school partners also explored various approaches to providing support such as offering classes during study hall or after school hours, using online programs, and providing in-person or online tutoring.

Determining Eligibility and Defining College Readiness

As New Jersey is a decentralized state and community colleges operate independently, each college was able to determine eligibility for traditional college-readiness programs and ALP. Six colleges used Accuplacer test scores as the only option to determine eligibility. Twelve schools used various measures such as high school grade point averages, New Jersey Partnership for the Assessment of Readiness for College and Careers (PARCC), SAT/ACT, or high school staff recommendations. For example, five colleges used the PARCC scores and seven colleges used recommendations from high school staff. Community colleges and their high school partners who utilized the dual enrollment courses as part of the ALP implementation modified entrance criteria, giving students who were almost college-ready an opportunity to enroll and participate. Thus, students who would have been previously excluded from the

dual enrollment opportunity were permitted to participate if they agreed to also receive supplemental instruction.

Each college also independently determined criteria for defining college-readiness. In all cases, college-readiness was being eligible to register for college-level courses without needing developmental education. In traditional college-readiness programs, college-readiness was often defined as passing the developmental course. Passing the course was determined in several ways. Eleven colleges required students to pass the Accuplacer test after they completed the college readiness program in order to be deemed college-ready. Four colleges required a final exam or essay to be deemed college-ready, and five colleges defined college-readiness as passing the course. In ALP, success was defined as passing a college-level English or math course.

it was often difficult to find an ideal time to provide the supplemental instruction. Community colleges and high school partners identified several creative solutions such as using a student's study hall time, adding an additional course to the schedule, providing an after-school supplemental instruction-based class, relying on online tools, or using individual or small-group tutoring. Although tutoring is not the typical approach in ALPs, there has been evidence that required tutoring is linked to increased student success outcomes (Barhoum, 2018).

Results

Success of ALP with High School Students

The first research question focused on whether ALP with high school students would be successful.

Table 1

Success Rates of Traditional College Readiness Programs and ALP

Students	Traditional Math	ALP Math	All Math	Traditional English	ALP English	All English	Total
Enrolled	1675	49	1724	772	204	976	2700
Completed	563	36	599	346	131	477	1076
Success Rate	34.60%	73.47%	34.74%	44.82%	64.22%	48.87%	39.85%

Logistics and Implementation

After the concept of ALPs for high school students was embraced by the community colleges and high schools in New Jersey, the college readiness team tackled the logistical issues related to implementation. For starters, colleges needed to decide if the program would be offered in the high school or community college setting. Another consideration was how the supplemental instruction would be provided and what it would entail. Some community colleges opted to offer the ALP at the college campus. Because the grant required the program to be offered at no cost to the student, colleges needed to provide transportation.

In many cases, the ALP mirrored the current program already being offered to community college students, with not yet college-ready students enrolled in a course with college-ready peers. The not yet college-ready peers then received supplemental instruction focused on helping them succeed in the college-level course either before or after class. The courses consisted primarily of high school students; however, in some cases, the high school students were in classes with community college student peers.

Determining how to provide the supplemental instruction for dual enrollment students taking courses at the high school proved challenging. Given high school schedules and teacher contracts,

Descriptive data on the number and percentage of ALP students who were deemed college-ready across all community colleges were reviewed to answer this question. In the grant, success in ALP was defined as the number of students who passed the class and earned college credit by the community college. Results from the 11 New Jersey community colleges showed that 167 of the 253 high school students who participated in ALPs were considered college-ready at the conclusion of the program by earning college credit and would therefore not require developmental coursework in the subject matter of the program upon entering college. This represents a 66% overall success rate. See Table 1 for a comparison of success rates of traditional college readiness programs and ALP.

Comparing ALPs with Traditional College Readiness Programs

To determine whether there was a significant difference between the success rates of ALP students and students in traditional college-readiness programs, a 2-proportion *z* test was used. Findings indicated that 167 of 253 high school students who participated in ALP were deemed college-ready at the end of the program. This is a success rate of 66%. For the traditional college-ready programs, 909 of 2,447 high school students were deemed college-ready at the end of the program. This represents a success rate of 37%. A 2-proportion *z* test was used to determine if the difference between success rates in the two approaches to college-readiness was significant. Results indicated that there was a significant difference between ALP and traditional college-ready program success rates. The successful completion rate for high school students in ALP was higher than it was for high school students participating in traditional college readiness programs such as boot camps, summer bridges, and semester- or year-long programs. The value of z is 8.93, $p < .00001$. The result is significant at the $p < .05$ level.

The difference between students participating in ALP and traditional college-readiness programs was also explored for math and English separately. A total of 49 students participated in a math ALP and 36 of these students passed the college-level math course, indicating successful completion of the program. This represents a 73% success rate. A total of 1,675 students participated in traditional college-readiness in math and 563 students successfully completed the developmental education program requirements and were deemed college-ready. This represents a 34% success rate. A 2-proportion *z* test was used to determine if the difference between success rates in the two approaches to college-readiness in math was significant. The value of z is 5.78, $p < .00001$. The result is significant at the $p < .05$ level, indicating that math ALP was more successful than traditional college-readiness programs in math.

In English, a total of 204 students took ALP and 131 passed the college-level English course and were deemed successful. This represents a 64% success rate. A total of 772 students participated in traditional college-ready programming and 346 completed the program and were deemed college-ready. This represents a 45% success rate. A 2-proportion *z* test was used to determine if the difference between success rates in the two approaches to college-readiness in English was significant. The value of z is 4.93, $p < .00001$. The result is significant at the $p < .05$ level, indicating that English ALP was more successful than traditional college-readiness programs in English.

Comparing English and Math Success Rates

The third research question focused on whether there was a significant difference between the ALP English and ALP math success rates. Of the 204 high school students who participated in English ALPs, 131 were deemed college-ready at the end of the program. This is a success rate of 64%. Of the 49 high school students who participated in math ALPs, 36 were deemed college-ready at the end of the program. This represents a success rate of 73.5%. A 2-proportion *z* test was used to determine if the difference between success rates in the two disciplines was significant. Results indicated that there was no

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significant difference between ALP English and math success rates. The value of z is -1.228, $p = .2187$. The result is not significant at the $p < .05$ level.

High School Versus College Setting

The fourth research question focused on whether there were significant differences between students participating in ALP at the high school versus community college setting. In this statewide initiative, a total of 144 high school students from six New Jersey community colleges participated in ALP at the high school. A total of 109 students from eight New Jersey community colleges participated in ALP at the community college.

For those students who participated in the high school setting, 101 out of the 144 were successful and deemed college-ready at the conclusion of the program. This represents a 70% success rate for students participating in ALP at the high school. For those students who participated at the community college, 66 out of 109 were successful and deemed college-ready at the conclusion of the ALP program. Thus, the success rate for students participating in the ALP at the community college was 61%. A 2-proportion z test was used to determine if the difference between success rates in the two settings was significant. Results indicated that there was no significant difference between the success rates of students who took ALP at the high school and students who took ALP at the community college. The value of z is 1.59, $p = .11$. The result is not significant at the $p < .05$ level.

College-Ready Peers

The fifth and final research question focused on whether success rates were significantly different for students who took ALP with college-ready peers in the class and students who took ALP without college-ready peers in the class. A total of 173 students from 10 New Jersey community colleges participated in an English or math ALP with college-ready peers. It is important to note that the college-ready to not-yet college-ready ratio varied but it was close to the 50% ratio suggested by the Community College of Baltimore County (2013). Findings indicated that 129 out of the 173 students who took ALP with college-ready peers were deemed college-ready at the conclusion of the program. This represents a 75% success rate. A total of 80 students from four colleges participated in an ALP that only consisted of not yet college-ready peers. Out of the 80 students who participated in ALP without college-ready peers, 38 were successfully deemed college-ready at the conclusion of the program. This represents a 48% success rate. A 2-proportion z test was used to determine if the difference between success rates in the two peer conditions was significant. Results indicated that there was a significant difference, with students who took ALP with college peers outperforming students who took ALP without college-ready peers. The value of z is 4.23, $p < .00001$. The result is significant at the $p < .05$ level.

Discussion

Based on these findings, ALP with high school students is a promising practice. The overall success rate of high school students who took ALP was 66%. This finding adds to the current literature demonstrating the success of ALP with college students and extends to the high school population. This is particularly important because using this approach with high school students can increase the number of high school graduates who are ready to begin college-level coursework. Eliminating the need for developmental education can save students substantial time and money (Karp & Hughes, 2008).

The added benefit of the ALP approach with high school students is that the students can also earn college credits. Researchers have found that students who earned college credits while in high school were more likely to complete high school and earn a college degree (U.S. Department of Education, 2017). Specifically, Fink, Jenkins, and Yanagiura (2017) have found that 46% of community college students who entered college with dual enrollment credits earned a certificate, associate degree, or bachelor's degree within 5 years as compared to only 39% of community college students entering college without dual enrollment credits earning a credential within 6 years. After evaluating course syllabi and conducting interviews with teachers and faculty, Ferguson, Baker, and Burnett (2015) have concluded that the rigor of dual enrollment matches or exceeds the rigor of general education courses in college. Thus, it is not surprising that students who are successful with rigorous coursework in high school would be successful in college. Although this study has not investigated the long-term impact of participating in ALP as a high school student, there are potential long-term benefits of entering college ready with college credits.

Findings indicate that ALP (66%) is more effective than traditional college-ready programs (37%) including intensive programs such as summer bridge and semester- or year-long college-readiness programs. Although student motivation was not assessed in this study, it is possible that student motivation played a role in these differences. In ALP, students are likely motivated by the more challenging and varied coursework. Receiving an extrinsic reward such as college-credits could have been another motivator. It can be challenging to motivate students to fully engage in college readiness programs that look very similar to high school curriculum, especially because students identified for college readiness programs already struggle in this curriculum. Another possible explanation for the difference is that the students in ALP demonstrate higher levels of academic skills than students in the traditional college readiness programs prior to participating. Because student data on academic levels were not provided as part of this grant-funded project, it is not possible to determine if the two groups were significantly different prior to starting the program.

These promising results provide an innovative approach to college readiness reform efforts in both English and math. Findings show no significant difference in the success rates for ALP English (64%) and math (73%). These findings are consistent with research conducted with college populations. For example, Adams (2012) and Sides (2016) reported successful outcomes for college students taking ALP English. Atkins and Beggs (2017) and Mireles et al. (2014) reported successful outcomes for college students taking ALP math.

Given national conversations about the success rate in math, the success rate from this study suggests that ALP with high school students may be a path for students to increase their success in college. College math courses have been identified as an obstacle to success in college. According to Barnett et al. (2018), "Research shows that passing required college math courses is a particularly difficult barrier to earning a college degree; many students never finish college as a result of failing college math courses" (p. 8). This may be in part be due to high school students not taking challenging course work; Students who take math courses above the Algebra II level in high school are less likely to place into developmental math (Whiton, Rethinam, & Preuss (2018).

In addition to evaluating the overall success rates of ALP, assessing specific elements of the program can shed light on what program factors are most critical to success. With the significant growth of dual enrollment courses, there has been much discussion about where these courses are offered. In some cases, the course is offered in the high school setting. The primary advantage of this approach is convenience and access since high school students are taking their other courses in the high school. A disadvantage of this approach is that the course schedule aligns to a high school schedule and does not typically mirror the experiences students have when taking courses on a college campus. In addition, the peer group will consist of other high school students rather than college students. The other approach is for high school students to take the dual enrollment course on the college campus. Some professionals may believe this educational experience is more representative of other college experiences, with a schedule and workflow that is consistent with other college courses.

Study findings reveal no significant difference between the success rates of students taking ALP at the high school setting as compared to the community college setting. The overall success rate for students who took ALP in the high school in the study is 70% and 61% for students who took

ALP in the community college setting. Regardless of location, programs have followed the same rigorous curriculum. These findings suggest that community colleges and high school partners can offer ALP in either setting.

A key feature of the original model of ALP in the community college setting ("What is ALP?", n.d) is that half of the students were college-ready. This has provided students struggling academically with strong peer models. Due to scheduling and other logistical challenges, some community colleges using an ALP approach have not been able to offer the program with college-ready peers. At these institutions students can take a college-level course with supplemental instruction with other not yet college-ready peers.

Results indicate having college-ready peers in ALP is beneficial. They show a significant difference in the success rates for students taking ALP with college-ready peers (75%) and students taking ALP without college-ready peers (48%). Thus, having a heterogeneous group seems to play an important role in student success. The benefit of heterogeneous learning environments, especially for lower functioning students, has long been established (Boaler, Wiliam, & Brown, 2000; Kerckhoff, 1986). A previous review of research cautions against tracking students by ability, noting that lower functioning students benefit greatly from watching and interacting with higher functioning peer models (Good & Marshall, 1982). These findings are consistent with the recommendation that having college-ready peer role models in the class is an essential component of the program (Community College of Baltimore County, 2013).

Limitations

Despite the positive findings, it is important for these results to be interpreted cautiously. This was not a randomized study and, as a result, it is not possible to draw causal relationships. The sample size of participating students was relatively small, and participants were not randomly selected. Additional research with larger sample sizes is needed. In addition, the assessment data presented is not from one uniformly delivered ALP model. Since participating institutions determined eligibility requirements, the program design, and the implementation method, the findings are based on the aggregate findings of varied modifications of ALP. As a result, the findings may not be generalizable to other settings. In addition, the success of the participating students in future coursework such as the second English or math requirement has not been assessed. The long-term benefits of this approach are therefore unknown at this time.

Future Directions

Longitudinal research investigating the effectiveness of ALP is needed. Future research can investigate the success rates of ALP high school participants in other college-level courses, such as English Composition II and the second college-level math course. Research on ALP in the college setting suggests that students who participate in this type of program perform on par with or better than students who were initially deemed college-ready and participated in a traditional English or math 100-level course (Cho et al., 2012; Coleman, 2014). It would be valuable to know if this is also true for high school students participating in ALPs.

Researchers may also wish to investigate which factors of the ALP contribute to success. For example, researchers could study whether having the same instructor or different instructors for the credit course and support course impacts success. It would also be interesting to know if the type of support provided is connected to success rates. Researchers could compare online supports, in-person support classes, and individualized or small-group tutoring to determine if one approach is more effective than another. The amount of time students spend in supplemental instruction is another variable that could be investigated.

Implications for Educators

Results from a statewide, grant-funded initiative that includes data from 18 New Jersey community

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colleges, 11 of which offered ALP, have provided evidence that the ALP is successful with high school students. Success, defined as being deemed college-ready and earning college credit, was evident in both English and math ALP and for programs taking place at the high school and college settings. Programs were most successful when high school students took ALP with college-ready peers in the class.

Community colleges are encouraged to partner with local high schools to increase the number of students who are entering college academically prepared to handle rigorous college-level coursework. High school teachers are eager to partner with colleges to increase the number of high school students graduating college-ready (Williams, Tompkins, & Rogers, 2018). Given the findings from this study, educators wishing to increase the number of high school graduates who are college-ready would be well-served to consider implementing ALP to augment or replace traditional college readiness programs. This approach provides high school students with an added benefit of earning college credits while still in high school. Research shows that students entering college with college credits are more likely to earn a credential or degree (Fink et al., 2017). This approach can be particularly advantageous to students from low-income households because colleges often offer dual enrollment courses at a reduced rate, and eliminating the need for developmental education also reduces college costs.

As community college faculty work collaboratively with high school partners to develop ALP for high school students, it is recommended that not-yet college-ready peers be placed into classrooms with their college-ready peers as this approach had higher success rates. A practical or convenient way to implement this practice is to include not-yet college-ready peers in dual enrollment courses that have traditionally only included the high-performing students who are college-ready. The not-yet college-ready peers can then take the additional support class as an elective or after school if necessary. Another approach could be to require not-yet college-ready students to participate in individualized or small-group tutoring during study hall or before or after school. High success rates for programs in which students participated in ALP either in the high school or the community college setting indicate the location of the program may not be a critical factor.

Finally, stablishing strong communication and working relationships between secondary and postsecondary administrators and instructors is critical to successful implementation of ALP in high schools. Multiple considerations regarding facility use, transportation, course placement and registration, and program curriculum and implementation must be determined across campuses. Teams of representatives across the board should work together to develop the most efficient and effective programs for individual settings. As ALP programs are implemented, it is recommended that programs are assessed and that assessment results are shared with the developmental education community.

Conclusion

Findings from this study illustrate that the ALP approach can be successful with the high school student population. Through community college and high school partnerships, high school students can be challenged and supported to develop academic skills, become college-ready, and earn college credits. Incorporating ALP in high school settings is one way to increase collaboration between high school and college-level educators and increase college readiness among high school graduates. An important benefit with this approach is that it can provide students who would not typically be eligible to participate in dual enrollment courses the opportunity to earn college credits in high school while receiving support. As a result, students from this study are entering college with the academic skills they need and also with college credits. Because the success rates were higher for students participating in ALP as compared to traditional college readiness programs, community colleges may want to focus resources on developing such programs. With student preparedness and college success as the ultimate goal, findings from the study support high school/college partnerships to implement ALP with high school students as a promising means to advance the common goal.

Incorporating ALP in high school settings is one way to increase collaboration between high school and college-level educators.

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