JOURNAL OF COLLEGE ACADEMIC SUPPORT PROGRAMS

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FEATURED ARTICLES

PROMISING PRACTICES

JOURNAL OF COLLEGE ACADEMIC SUPPORT PROGRAMS

EDITORIAL BOARD

The J-CASP is an academic journal for developmental education and learning assistance. The editorial staff will give preference to authors, institutions, and/or topics relevant to the context of developmental education and learning assistance in Texas. Please review our submission guidelines at https://journals.tdl.org/jcasp/index.php/jcasp/about/submissions#onlineSubmissions. Please address any questions to JCASP_Editor@txstate.edu.

CONTENT

El Paso Community College

Welcomes CASP 2018 to EL PASO, TEXAS!

Hosted at the beautiful Hotel Paso Del Norte Marriott Autograph

Save the Date: Oct. 14-16

From festive foods to cultural and intellectual experiences, our beautiful border town, sunny El Paso, Texas has something for everyone!

Take a tour of our historic district in beautiful Downtown. Go on a ghost tour. Get lost in our libraries, or take advantage of our plenteous shopping excursions. And don't miss out on family escapades like the La Union Corn Maze and The Fountains at Farah!

El Paso, Texas is the safest city with a population over 500,000 in the United States, and the world's largest binational metropolitan area.

Bienvenidos! We look forward to hosting CASP 2018!

@EPCC CASP2018

2018 CASP Conference

Respecting Foundations

WELCOME FROM TxCRLA

Flowers blooming. Freshly fallen snow. Newly planted trees. Freshly brewed cup of coffee. Sunrise. New seasons, organic growth, and daily renewal signal the beginning of positive changes in the world. The beginning of an academic journal, the Journal of College Academic Support Programs (J-CASP), signals that optimistic growth is occurring in classrooms and administrative offices. These changes in people and programs will open new horizons for students who are taking developmental education (DE) courses.

Beginning a new venture demonstrates how a healthy organism is developing, which is similar to DE's evolution. By sharing our practices, research, and discoveries with one another through the J-CASP, we will be able to nurture the new changes taking place.

The partnership of this journal began with the germination of an idea from Texas State University's Graduate Program in Developmental Education. Once this university's team had explored the venture, they extended the collaborative opportunity to College Academic Support Programs in Texas (CASP). Thus, the synergy within the combined team efforts is increasing. Now, the opportunity to collaborate includes all professions in this field. As such, please be an active participant by sharing your scholarly research and practices as well as reading this new journal, the J-CASP.

It is with great pride that the Texas chapter of the College Reading and Learning Association (TxCRLA) and CASP share in the collaboration with Texas State University to launch our new journal, the J-CASP.

Pamela Sawyer, President
Texas Chapter of the College Reading and Learning Association

WELCOME FROM TADE

On behalf of the Texas Association of Developmental Education (TADE) executive board, I send you greetings filled with hope, joy, and peace. TADE's mission is to improve the theory and practice of developmental education (DE) at all levels and provide professional development for DE educators.

First of all, I would like to thank the Journal of College Academic Support Programs (J-CASP) for this amazing journal and professional development opportunity for DE practitioners to stay current in the field as well as to submit manuscripts and share experience and expertise. Thank you for reading this journal.

TADE is active and on the move. In October 2017, we had our annual conference, College Academic Support Programs (CASP), in Galveston, Texas. It was an amazing experience. CASP is an annual conference jointly sponsored by the Texas chapter of the College Reading and Learning Association (TxCRLA), the Texas Association for Developmental Education (TADE), and the Texas Higher Education Coordinating Board (THECB). The 2018 CASP Conference will be on October 14–16, 2018, at the Hotel Paso Del Norte Marriott Autograph in El Paso, Texas. El Paso Community College is the site sponsor for *CASP 2018: Respecting Foundations.* I encourage you to mark your calendars for 2018 and join us in El Paso, Texas.

Upcoming and in the near feature, I invite you to join us in National Harbor, MD, for our 42nd Annual Conference. Make plans now to join us February 21–24, 2018, at the Gaylord National Resort and Convention Center with a beautiful view of Washington, DC, and Old Town Alexandria. The conference theme this year is *Believe!*, a perfect word of encouragement and fuel for teaching in our field.

Membership in TADE is always open, so join us by visiting CASP-Texas.com. We hope you will be a part of the celebrating and sharing of great work being done by DE practitioners across the state of Texas and nation.

Tammy Donaldson, President
Texas Association for Developmental Education

tccta | texas community college teachers association

BUDGET CONSCIOUS PROFESSIONAL DEVELOPMENT

71ST ANNUAL CONVENTION

WHAT TO EXPECT

Three days of professional development seminars specifically for community college faculty.

Over 150 programs educating faculty on emerging trends and pedegogy directly realted to the classroom.

83 community and technical college campuses in Texas, representing virtually all academic and workforce fields will be in attendence.

More than 40 general and specialty areas of higher education targeted for professional development.

Thursday evening Banquet and Friday evening Raffle.

Plenty of networking opportunities throughout the event!

DALLAS-FRISCO CONVENTION CENTER & EMBASSY SUITES HOTEL MARCH 1-3, 2018

Bridging the Gaps: Overcoming Obstacles and Stengthening Unity

Convention-At-A-Glance

THURSDAY—MARCH 1, 2018

8:00 a.m.–5:00 p.m.	Special Meetings and Pre-Conference Events
12:00–6:00 p.m.	**Convention Registration**
2:00–4:00 p.m.	TCCTA Professional Development, Legislative, Membership Services, Convention, and Publication Committees
4:30–6:30 p.m.	Exhibits Open
3:00–4:00 p.m.	TCCTA Resolutions and Auditing Committees
4:00–5:00 p.m.	TCCTA Executive Committee and All Chairs
5:00–6:00 p.m.	TCCTA Election Committee
5:30–6:30 p.m.	Exhibits Opening Reception
6:30 p.m.	BANQUET (Tickets required)
7:15 p.m.	GENERAL SESSION

FRIDAY—MARCH 2, 2018

8:00 a.m.–5:00 p.m.	**Convention Registration**
8:00 a.m.–5:00 p.m.	Election of Officers
8:00 a.m.–6:00 p.m.	Exhibits Open
8:00–9:15 a.m.	Financial Planning Seminar
8:00–9:15 a.m.	Great Ideas for Teaching Students (GIFTS)
9:30–12:45 p.m.	Section Meetings
1:00–3:45 p.m.	Student Success Workshops
4:00–5:15 p.m.	Section Meetings and Receptions
4:00–5:15 p.m.	Legislative Update
5:45 p.m.	Raffle, Music, and Refreshments

SATURDAY—MARCH 3, 2018

7:45–9:00 a.m.	Financial Planning Seminar
8:00–11:30 a.m.	**Convention Registration**
9:00–11:45 a.m.	Section Meetings
11:45 a.m.	Adjournment
12:00–3:00 p.m.	Special Meetings

FOREWORD

On behalf of the editorial staff at the Journal of College Academic Support Programs (J-CASP), thank you for your interest in this inaugural issue. The J-CASP highlights practitioner research, implementation of theory and practice, and reflection on developmental education (DE) and college-readiness in Texas through the support and endorsement of the Texas chapter of the College Reading and Learning Association (TxCRLA), the Texas Association for Developmental Education (TADE), and the Graduate Program in Developmental Education at Texas State University (TXST).

This first issue features double-masked peer-reviewed articles on such relevant topics in DE as summer-bridge, course-redesign in accelerated math, supplemental instruction, learning styles, and perspectives pertaining to DE from community-college presidents. In addition to scholarly-reviewed academic articles, the J-CASP also features promising practices highlighting practitioner perspectives. In this issue, you will find non-peer-reviewed articles involving corequisite models, effective group-work strategies, rhetoric and literacy, and the stigma that students associate with being in DE classes.

Through the journal's editorial review board, sponsorship, and authors, this project involves members of both colleague DE doctoral programs in Texas—Sam Houston State University and TXST; the College Academic Support Programs in Texas (CASP) partnership, whose name this journal proudly boasts; the Texas Higher Education Coordinating Board; and a diverse array of institutions of higher education across the state.

The J-CASP grew out of a publishing momentum under the THECB grant-funded Texas Success Initiative Professional Development (TSI PD) Project—managed by The Education Institute at TXST. The practitioner-based, social-media-supported blog—the Texas Developmental Education Professional Community Online (TX DEPCO)—responded to the agency's request for dissemination of promising practices with an online publishing cycle of bi-monthly critical reflections from practitioners for practitioners. This free medium of professional development for developmental educators culminated into a peer-reviewed monograph. Thank you to Emily Miller Payne, Russ Hodges, and Ysabel Ramirez for lending wings to the idea and trajectory of promising practices as publishing solutions and stepping-stones for further critical examination and research in this field.

Michael C. McConnell, Editor
Journal of College Academic Support Programs

FEATURE ARTICLE

Effectiveness of a Summer Bridge Program at McLennan Community College

Samantha Dove, *Sam Houston State University*

ABSTRACT

In this quantitative research study, student performance data were collected from 2014–2016 summer bridge program participants to examine the relationship between participation in the MCC summer bridge program and selected student outcomes by comparison to a matched group of students who did not participate in the program. The research questions addressed in this study were as follows: To what extent did participation in a summer bridge program improve participants' TSI scores? To what extent was participation in a summer bridge program related to DE placement results? To what extent did the average number of credit hours accumulated differ between students who participated in a summer bridge program and those in a comparison group that did not? The results from the three research questions revealed that students who participated in the MCC summer bridge program experienced some success in select outcomes, although other outcomes still need to be improved to increase student achievement in all objectives.

After graduation, high school seniors face difficult decisions concerning their postsecondary education. Postsecondary education occurs after high school, including enrollment in four-year universities, two-year higher-education institutions, or trade schools. The importance of obtaining a college education is evident in the projected difference in income between individuals who hold a high school diploma and those who hold a postsecondary degree (Baum & Payea, 2013). However, being underprepared for the rigors of college-level work is a barrier that many students must overcome before they even begin college courses. Students considered underprepared typically do not have the academic and affective skills needed to succeed in college-level courses. Affective skills are those needed for students to control their emotions during the learning process (Vermunt, 1996). The gap in preparedness between secondary and postsecondary education causes approximately 40% of graduating seniors who enter college to require DE courses before starting college-level courses (Adams, 2012), and the number of students who enter postsecondary education requiring DE is a challenge for both two- and four-year institutions of higher education (Pretlow & Wathington, 2012). According to ACT (2015), students not considered college ready at the beginning of their freshman year are less likely to succeed in reaching their educational goals by comparison to those who are. Researchers at a California institute found that approximately 72% of students identified as college ready graduated, while only approximately 39% of students deemed underprepared did so (Allen & Bir, 2012). The attrition rate among students deemed as underprepared is a driving force that has led two- and four-year universities to create summer bridge programs to increase the academic and affective skills students need to be successful in college. These programs focus on decreasing the length of students' DE course sequences and increasing academic preparedness and the affective skills needed to be successful at the college level. The components of summer bridge programs vary across institutions in length, focus, and structure; however, one commonality is that all are designed to help underprepared students achieve their postsecondary goals.

Statement of Purpose and Research Questions

In this non-experimental, secondary data analysis, descriptive study, the researchers sought to examine the relationship between participation in the McLennan Community College (MCC) summer bridge program and participants' TSI (Texas Success Initiative) test scores, DE placement, and the average number of accumulated MCC college-level credit hours received. The independent variable was participation in the eight-day summer program offered at the campus. The dependent variables included the students' TSI scores, DE placement, and the number of college-level credit hours accumulated at MCC. The TSI test is an instrument legislated in Texas to measure college readiness. The research questions for this study were as follows:

1. To what extent did participation in a summer bridge program improve participants' TSI scores?
2. To what extent was participation in a summer bridge program related to DE placement results?

3. To what extent did the average number of credit hours accumulated differ between students who participated in a summer bridge program and those in a comparison group that did not?

Description of MCC's Summer Bridge Program

MCC redesigned its DE program and added a summer bridge program. In 2014, MCC implemented the redesigned eight-day DE summer bridge program as an option for students whose TSI test scores indicated that they needed DE courses. Students were recruited through the MCC test center and local school counselors, both of which identify potential student participants based on TSI scores and student interest. The goal of the summer bridge program was to enable students to acquire the academic and affective skills needed to increase their TSI scores, and the academic skills essential to complete college-level coursework successfully. During the summer bridge program, students completed academic tutorials in math, reading, and writing; discussed emotional intelligence; learned test preparation and testing strategies; and received advising and college preparation. The summer bridge program contained a one-hour orientation, three hours of assessments in PLATO Version 1.0.41, a one-hour emotional intelligence session, seven hours of test-taking strategies and test preparation, a one-hour college preparation seminar, fifteen hours of academic tutorials, three hours to retake the TSI, and one hour of academic advising. PLATO is a computer-based instructional program that creates an individualized curriculum based upon students' performance on an initial placement test. The individualized learning program created by PLATO breaks math, reading, and writing into units and sub-units that the student needs to master to reach college-level readiness. The program includes pretests, lessons, practice problems, and unit tests. On the last day of the summer bridge program, students took the TSI again to see whether their scores increased or decreased, and the effect their new scores had on course placement. If students achieved a college-ready TSI score, they were able to begin their freshman year in college-level courses. Although academic sessions were tailored to meet each student's individualized needs, several components were designed to allow administrators to take a broad approach and offered generalized support where needed.

"The creation of a holistic DE summer bridge program that improves select student outcomes can be challenging for higher education institutions."

Theoretical Framework

The theoretical framework for this study was Tinto's (1988) Model of Student Departure, which was based on Van Gennep and Caffee's (1960) "rite of passage" model that addressed the process individuals undergo when they move from one community or group into a new one. According to Tinto (2006), Van Gennep and Caffee's study suggested that individuals go through three stages during this period: separation, transition, and incorporation (Tinto, 1988). Tinto applied these three stages of Van Gennep and Caffee's model to those stages that students experience when moving from secondary to postsecondary education, and used them to help explain why students leave college before completing their degrees. Each stage poses unique challenges to students' retention, and the strategies to increase retention at each stage have led to the creation of different program interventions. Tinto's model reflects the three stages above. He discussed each stage separately and offered postsecondary institutions programming ideas that could help decrease student departure during each stage.

Summer bridge programs take place during a short time in a student's life and normally are unable to help students through all three stages in Tinto's model. However, several summer bridge programs indicate that they use Tinto's model of student departure to determine the structure of the program and which components they will offer to help students negotiate the separation and transition stages that occur prior to incorporation in the educational institution (Castleman, Arnold, & Wartman, 2012; Maggio, White, Molstad, & Kher, 2005; Slade, Eatmon, Staley, & Dixon, 2015).

Review of Literature

The growing number of students in DE entering postsecondary education has made it essential for institutions to implement programs designed to decrease the number of such students. Several studies have indicated that low retention and graduation rates for students in DE or high-risk student populations are important reasons to implement such programs (Buck, 1985; Meyers & Drevlow, 1982; Slade et al., 2015). Because of the dismal numbers of students in DE who graduate, two and four-year colleges around the country have implemented summer bridge programs as a potential solution to the rising attrition and low graduation rates.

The study of summer bridge programs can be traced back to Myers and Drevlow's (1982) and Buck's (1985) studies, in which low-income and minority students received an intensive four-week residential summer program designed to increase their academic and affective skills. The results of these studies showed that students who participated in the program had increased retention rates by comparison to four other student populations with similar demographics (Meyers

& Drevlow, 1982). These two studies helped create the foundational body of research on the effects summer bridge programs have on students' academic and affective skills. Since then, the number of studies of summer bridge programs has grown, and the variability in the format of such programs has increased.

Several researchers have presented data on multiple summer bridge programs to determine their influence on retention and other measures of student success (Kallison & Stader, 2012; Maggio et al., 2005). Maggio et al. (2005) collected data from six institutions that followed 397 bridge participants for three years. The program components varied from one institution to another and allowed the researchers to compare them to determine the effect that each had on student retention and college grade point average (GPA). The optimal length of a successful summer bridge program is one factor that institutions must consider when establishing such a program. Maggio et al. (2005) compared the retention rates and GPAs of six summer bridge programs that varied in length from 4–7 weeks. Results from their study indicated that the longer the program, the lower the students' GPAs (Maggio et al., 2005). The authors also found that class size had a negative effect on GPA, although peer tutoring had a positive effect. The negative relationship between the length of the program and students' GPAs is counterintuitive and requires additional data to determine the cause of these results. However, the results that showed the positive effects of peer tutoring are consistent with Tinto's (1988) Model of Student Departure, which highlights the importance of students building a relationship with the institution to foster a sense of belonging.

In 2007, Kallison and Stader (2012) conducted a study on 14 pre-freshman summer bridge programs in Texas institutions. Community colleges implemented seven of the programs while a four-year university implemented the other seven; 12 summer bridge programs were located on college campuses and the other two were housed at high school campuses. All programs included classroom instruction, but several used computers for most of the instruction or utilized supplementary computer-based instruction. Kallison and Stader (2012) found that all 14 summer bridge programs took a holistic approach by providing both academic and affective skills components. The study lacked the key information necessary to determine student growth, but the researchers did find that students at two of the community colleges increased their placement test scores by the end of the program. The researchers could not determine which components affected students' increased test scores directly, but the researchers compared program components between the two institutions that experienced growth to determine the ways in which a holistic approach to a summer bridge program that includes advising, tutoring outside of the class, and other support services may have affected student success.

The work of Tinto and other theorists guided North Carolina A&T State University officials during the development of their summer bridge program. Institution administrators wanted to address three specific areas of student growth: academic engagement, affective skills, and exposure to what it is like to be a college student (Slade et al., 2015). Grant funding for this program also affected its components and structure. The six-week residential program was required to offer credit-bearing courses to continue to receive federal funding (Slade et al., 2015). They offered students who participated in the program college-level math and English, and participants received college credit for their coursework. The institution administrators placed heavy emphasis on classroom instruction and lab tutoring. Tinto (2006) discussed the importance of innovative classroom techniques as a strategy to increase student engagement. The institution administrators implemented a flipped-classroom approach in which students were required to read outside of the classroom and complete activities in class based on those readings (Slade et al., 2015). The program administrators strived to implement such innovative teaching techniques to increase student engagement and accountability (Slade et al., 2015). The program increased retention among first-year, high-risk students, and 93% of participants in the 2011 summer bridge cohort, and 94% in the 2014 summer bridge cohort achieved good academic standing at the college (Slade et al., 2015).

The creation of a holistic DE summer bridge program that improves select student outcomes can be challenging for higher education institutions. For example, Strayhorn (2011) set out to determine if participation in a summer bridge program affected students' level of academic self-efficacy and their sense of belonging. Strayhorn (2011) found that students' academic skills and self-efficacy improved, but their social skills and sense of belonging did not, although these were two main competencies the institution was trying to increase based upon the components they implemented in the program (Strayhorn, 2011). These results indicate the challenges associated with fostering students' integration into campus life, even when an institution attempts explicitly to implement a holistic summer bridge program.

Although some studies failed to yield statistically significant effects in certain areas of interest, such as GPA, math and English grades, social skills, or the students' sense of belonging (Barnett, Bork, Mayer, Pretlow, Wathington, & Weiss, 2012; Johnson-Weeks & Superville, 2014; Wathington, Pretlow, & Mitchell, 2011), others supported the effectiveness of summer bridge programs by yielding higher GPA and retention rates (Bir & Myrick, 2015; Walpole, Simmerman, Mack, Mills, Scales, & Albino, 2008). The way in which data are interpreted can affect whether the study appears to support the use of summer bridge programs. For example, in Johnson-Weeks and Superville's (2014) study, there were no statistically significant differences in GPAs

or math and English grades between the control group and those who participated in the summer bridge program. However, the GPAs of students in the bridge program were comparable to those of students who were not required to take DE courses (Johnson-Weeks & Superville, 2014); this suggests that the program may have increased bridge students' abilities to be as successful as those who were not required to take such courses. Some researchers have focused on retention rates, and several studies demonstrated that students who participated in summer bridge programs had higher retention rates than those who did not (Bir & Myrick, 2015; Slade et al., 2015; Walpole et al., 2008).

The study of summer bridge programs has increased in the past decade and has created a body of research that can help institutions understand the successes and failures experienced by previous institutions that have implemented such programs. Because each program contains components and has a structure designed to serve the institution's target student population, researchers should consider the differences in these populations, as they may influence the results obtained. Although the literature revealed mixed results among the studies analyzed, available research has still demonstrated clear evidence that summer bridge programs do increase the skills that students in DE need to succeed in college courses.

"The growing number of students in DE entering postsecondary education has made it essential for institutions to implement programs designed to decrease the number of such students."

Research Design

This study adopted a quantitative, non-experimental, retrospective, descriptive research design. As described by Johnson and Christensen (2010), a non-experimental study is one in which the researcher does not manipulate the independent variable. The independent variable in this study that was applied to all three research questions was participation in the summer bridge program. This study qualified as a secondary data analysis because the researcher used archived data from summer bridge students who participated in the program from 2014 through 2016. Because the data were derived from several periods in the past, the study qualified as a retrospective study. Lastly, the study was considered descriptive because such a study is one that depicts a situation or phenomenon (Johnson & Christensen, 2010). In this study, the situation described included students' participation in the summer bridge program and an examination of the relationship between participation in the MCC summer bridge program and elected student outcomes. A comparison group with student characteristics—including demographics and TSI scores similar to those of the summer bridge program participants—was selected to determine to what extent there was a statistically significant difference in the average number of college-level credit hours the two groups received.

Participants and Sampling Procedures

This non-probabilistic study used criterion-based sampling to select the participants. Johnson and Christensen (2010) indicated that criterion-based sampling is most appropriate when a researcher selects a sample based on specific characteristics desired. The researcher then selects participants in the population that match the characteristics desired (Johnson & Christensen, 2010). The criterion-based sample in this study consisted of all students who participated in and completed the MCC summer bridge program between the 2014 and 2016 timef rame. The reason that only students who participated in and completed the summer bridge program were included was because if they did not complete the program, the researchers could not examine the relationship between participation in the MCC summer bridge program and outcomes of interest. Participants chose to enroll in the MCC summer bridge program after being invited to participate by MCC advisors who identified them based on interest and TSI scores. The 2014–2016 period was chosen because it included all summer bridge program sessions completed up to the time of this study, and data from programs that were offered after 2016 were not yet available for analysis. The 2014–2016 time frame was analyzed aggregately because the sample size was too small to analyze each year individually. Approximately 30 students participated in the summer bridge program across all years. Demographic data were collected, including the participants' gender, ethnicity, first-generation status, and socioeconomic status.

Out of the 30 participants, 21 were female (70%), and nine were male (30%). In terms of students' ethnicity, 12 were White, 17 Hispanic, and one classified as two or more races. No African American students completed this program. Several students enrolled but did not finish the program. The African American population is likely to be over represented in DE, but did not have any participants in this study. In terms of age, 23 participants were under the age of 21 and seven participants were over 21 years old. Eighteen of the 30 students qualified for Pell Grants (60%), which suggests these students had a low socioeconomic status. Nineteen were first-time students in college (63%).

The comparison group includes nine males (30%) and 21 females (70%). Twelve students (40%) were over the age of 21, and 18 (60%) were under 21. The researcher grouped students as under 21 or over 21 because the National Center for Education Statistics

made a point that any student older than 21 who was considered either a freshman or sophomore in college could be considered non-traditional because they are older than the age of someone who entered college fresh out of high school (Aud, et al., 2012). All students were first-time in college and 19 (63%) Pell Grant eligible. The demographic characteristics of both groups were then compared on demographic characteristics to ensure no systematic differences existed prior to the intervention. Chi-square tests were used to compare categorical variables including gender, age, and Pell Grant status. Minimum expected frequencies for all levels of the categorical variable were examined and determined to be sufficient prior to conducting all chi-square tests. An independent samples t-test was used to compare groups on the interval level variable of TSI scores. The results indicated no statistically significant differences in gender ($\chi 2 = 0.000$, $p < 1.00$), age ($\chi 2 = 1.93$, $p < 0.17$), or Pell Grant status ($\chi 2 = 0.71$, $p < 0.79$). There were also no statistical differences between the groups on TSI scores ($t(44) = -0.20$, $p = 0.84$). Overall, this suggested that both groups were similar prior to the intervention.

Data Collection Procedures

This non-experimental study utilized archived data stored at MCC. Student level data that were requested included ethnicity, gender, first-generation status, and TSI scores, which were used to determine the student population that attended the summer bridge program. The demographic information was requested for all summer bridge program participants from 2014–2016. The researcher also requested selection of the comparison group comprised of 30 students that attended MCC during the same time frame and had characteristics similar to that of the summer bridge participants. The vice president of institutional research collected the summer bridge participants' demographics, TSI scores, grades in DE courses, and the number of credits earned. The student demographic characteristics of gender, ethnicity, and first-generation status were used to determine what student population used the summer bridge program. The same student characteristics also were used to select the comparison group to analyze the outcome of credit hours accumulated. The vice president of institutional research selected a comparison group comprised of 30 students with similar demographics, gender, ethnicity, and first-generation status, and TSI scores to those of the summer bridge participants. The vice president of institutional research created the comparison group by inputting selected conditions and then randomly selecting 30 students who enrolled in the same semester as the participants.

Data Analysis

The statistical analysis test chosen for this study overall was correlation; Lomax and Li (2008) described a correlation study as one that determines the relationship between variables. Statistical correlation techniques include the bivariate, extensions of the bivariate, and the regression model. Correlational research is an important quantitative method in the field of education and was the analysis of choice for this study because it allowed evaluation of several variables simultaneously to determine the effect each had on the other. This study qualified as a correlation study, specifically of the bivariate relationship, because its purpose was to evaluate the magnitude and degree of the relationship present among the variables, including summer bridge participants' TSI scores, DE requirements, and average credit hours as well as the same criteria from a comparison group. The analysis used to address research question one was the paired t-test; research question two was evaluated with the chi-square and odds-to-ratio test, and research question three was tested with an independent t-test. Examining the relationship between participation in the MCC summer bridge program and the variables associated with each research question increased the understanding of the relationship between participation in the MCC summer bridge program and the student outcomes selected.

Results

Research Question One

The first research question addressed the extent to which students' TSI scores improved after they participated in the summer bridge program. All participants entered the program with TSI scores in math, reading, and/or writing that were below college ready, and the goal of the program was to increase their scores to a college-ready level. The term *college ready* is based on the prescribed measures of the TSI test. The TSI test is an instrument legislated in Texas to measure college readiness. Therefore, students' ability to achieve a college ready score on the TSI is the premise for the term *college ready* in this study. The researcher used the paired *t*-test to determine the extent to which participants' scores improved. This assessed the significance of the mean difference between students' TSI scores before and after participation in the summer bridge program. Groups were compared on math, reading, and writing separately because it was possible for a student to be college ready in one subject area while not college ready in another. The researcher then ran data through SPSS, Version 20, and examined boxplots to determine the presence of any outliers. The researcher then performed the Shapiro-Wilk test to determine whether the assumption of a normal distribution was met. If the data violated this assumption, the Wilcoxon signed-rank test was used instead.

Students' math TSI scores were extracted from the Excel worksheet to determine if assumptions of the test were met and to conduct the analysis. Out of the 30 total participants, 15 had both pre- and post-TSI math scores. Any students who were deemed college ready (351 or higher) or were missing either a pre- or post-TSI score were excluded from analysis. One outlier was detected that was more than 1.5 box-lengths from the edge of the box in a

boxplot. Inspection revealed that the value was not extreme, and it was retained in the analysis. The assumption of normality was not violated, as assessed by Shapiro-Wilk's test (p = 0.32). Results indicated that TSI scores for participants in the summer bridge program increased from the pre- to post-test ($t_{(14)}$ = 5. 02, p < 0.01). Students who participated in the summer bridge program scored approximately one standard deviation higher on their TSI math exam than those who did not participate in the summer bridge program. The effect size was considered to be large (d = 1. 29). See Table 1 for the results of the math paired t-test.

Table 1
T-Test for TSI Pre- to Post-Math Scores

	Mean Diff.	SD	SEM	Lower	Upper	t	df	p	d
Pre TSI–Post TSI	10.4	8.03	2.07	5.96	14.84	5.02	14	<.001	1.29

Next, students' reading TSI scores were extracted from the Excel worksheet to determine if statistical assumptions of the test were met prior to conducting the analysis. Out of the 30 total participants, nine were analyzed that had both pre- and post-TSI reading scores. Any students who were deemed college ready (350 or higher) or were missing either a pre- or post-TSI score were excluded from analysis. Three outliers were detected that were more than 1.5 box-lengths from the edge of the box in a boxplot. Inspection of the values revealed two were not extreme and one was extreme. After investigation, all three outliers were retained. The case identified to be an extreme outlier based on TSI score still matched the other participants in terms of ethnicity, gender, age, and socioeconomic status. The assumption of normality was not violated, as assessed by the Shapiro-Wilk's test (p = .074). Results indicated that participants' scores increased from the pre-to post-test (M = 3.33, SD = 5.634). Results indicated that the magnitude of the difference between the two groups was very large (d = 1.77) but this difference was not found to be statistically significant. Note that the sample size used for this comparison was small. These statistical results should be interpreted with caution to avoid type 2 error. Therefore, the researcher failed to reject the null hypothesis. See Table 2 for the results of the reading paired t-test.

Table 2
T-Test for TSI Pre- to Post-Reading Scores

	Mean Diff.	SD	SEM	Lower	Upper	t	df	p	d
Pre TSI–Post TSI	3.33	5.63	1.88	-9.998	7.665	1.775	8	.114	1.77

Finally, the researcher pulled students' writing TSI scores from the Excel worksheet to determine if assumptions of the test were met and to conduct the analysis. Out of the 30 total participants, 11 were analyzed that had both pre- and post-TSI reading scores. Any students who had a score deemed college ready (363 or higher) or were missing either a pre- or post-TSI score were excluded from analysis. After inspection of the boxplot, the researcher determined that the sample did not contain any outliers. The assumption of normality was not violated, as assessed by Shapiro-Wilk's test (p = 0.24). Results indicated that participants' scores increased from the pre- to post-test (M = 5.18, SD = 5.231), a statistically significant increase of 5.18, ((SE = 1.577), t(10) = 3.285, p < .008). The mean difference was statistically significantly different from zero. The effect size was considered to be large (d = .990). Therefore, the researcher rejected the null hypothesis and accepted the alternative hypothesis. See Table 3 for the results of the reading paired t-test.

Table 3
T-Test for TSI Pre- to Post-Writing Scores

	Mean Diff.	SD	SEM	Lower	Upper	t	df	p	d
Pre TSI–Post TSI	5.18	5.23	1.58	1.668	8.696	3.29	10	.008	.990

Research Question Two

The second research question examined the relationship between participation in the MCC summer bridge program and the number of DE courses participants were required to complete. The participants' test results indicated that they were below college ready and needed one or two levels of DE courses. The researcher chose the chi-square for this research question to determine the independence between the two variables, students' placement in their DE course sequence, and their participation in the summer bridge program. The students were first grouped according to how many levels of DE they were required to take based on their entering TSI scores. To assess progress, these same students were then classified by how many levels of change they had based upon the final TSI score. Students were placed into three categories: no change, improved one level of DE, and improved two levels of DE. After running the chi-square test with the 35 participants' pre- and post-TSI scores, the researcher determined that the assumptions of the chi-square were violated. To run the chi-square, the assumption of each cell having a minimum of 5 entries must be met. In this study, one cell only contained 3 occurrences which violated this assumption. Consequently, the data were changed to a 2x2 format in which students were grouped according to those who changed in their DE

course placement and students who did not change in their DE course placement. However, this transformation of the data continued to result in violations to assumptions of the analysis. Therefore, a Fisher's exact test was used to compare groups on changes in course placement. The results of this test indicated that 17 (48.6%) changed at least one DE course level and 18 (51.4%) did not change the number of DE courses. The researcher found no statistically significant association between participation in the MCC summer bridge program and change in participants' DE placement as assessed by Fisher's exact test, (p = 0.47). However, the odds ratio of changing the number of DE courses revealed that students who participated in the summer bridge program were twice as likely to improve their level of DE course placement (0.524; 95% CI, 0. 12 to 2.34). See Table 4 for the odds to ratio test results.

Table 4
Odds Ratio Test for Changing DE Placement

	Odds Ratio	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Placement Change	0.52	0.12	2.33
Participants with no change in placement	0.71	031	1.65
Participants who changed placement	1.36	0.70	2.67
N	35		

Research Question Three

The third research question asked to what extent the average number of accumulated MCC college-level credit hours differed between students who participated in the summer bridge program and the comparison group of students who did not. The number of accumulated credit hours was within two years of completing the program. There were 30 participants in each group. The independent *t*-test was chosen to determine whether there was a statistically significant difference between the mean number of accumulated MCC college-level credit hours earned by summer bridge students and the comparison group. After examining the data, it was determined that the assumption of a normal distribution was violated as assessed by the Shapiro-Wilk test. Thus, the Mann-Whitney U test was used to compare groups. A Mann-Whitney U test was run to determine if there were differences in the median number of accumulated MCC college-level credit hours between participants and the comparison group. The median number of accumulated MCC college-level credit hours was not statistically significantly different between the summer bridge program (*Mdn* = 14.00) and the comparison group (*Mdn* = 12.00), *U* = 321. 5, *z* = -1.91, *p* = 0.06, *r* = 0.35, using an exact sampling distribution for *U* (Dineen & Blakesley, 1973). See Table 5 for the results of the Mann-Whitney U test and other results.

Table 5
Accumulated MCC College-Level Credit Hours Between Participants and the Comparison Group

	Accumulated Credit Hours
Mann-Whitney U	321.50
Wilcoxon W	786.50
Z	-1.91
P	0.06

Discussion

The college administrators created the MCC summer bridge program as a holistic program that includes components to build academic skills with the ultimate goal of increasing students' post-TSI scores in reading, writing, and math to be at a college-ready level. The results from research question one revealed that the MCC summer bridge program demonstrated a statistically significant increase in students' math and writing scores. In terms of reading, the magnitude of the difference between groups was large (d = 1.77) but this finding was not statistically significant. Statistical significance is affected by the power to detect such differences, and the sample size in this study was small. These results could have been a type 2 error because the effect size was almost two standard deviations. The results were positive in that several students increased their TSI scores and thus benefited from attending the summer bridge program. Through investigation of the program's structure, the researcher found that each area of the TSI is given the same amount of preparation time. The results from the TSI reading results should be interpreted with caution, and administrators should not assume that because the results were not statistically significant that the program did not have a positive impact on reading scores.

The focus of research question two was the number of DE courses a student was required to complete. Students who participated in the MCC summer bridge program placed either one or two levels below college ready. The Fisher's exact test revealed no statistically significant difference in the number of students who decreased the DE courses they were required to take. The large difference is not statistically significant but could be due to the size of the sample size. In this small of a sample, the type 2 error (false negative) could have caused the statistical conclusions to be incorrect. However, although the results were not statistically significant, the odds-to-ratio test revealed that students who participated in the summer bridge program were twice as likely to improve their level of DE course placement. Decreasing the number of DE courses required by almost 50% would have a positive effect on the MCC campus by reducing the number of students who are required

to enroll in DE courses and increasing those who can take college-level courses. Of the 17 students who decreased their number of DE courses, three began with pre-TSI scores two levels below college ready and ended with college-ready TSI scores. These results were promising in that they showed that several students made gains that allowed them to become college ready by the end of the MCC summer bridge program. However, no evidence from this study suggests that students who reduced their number of DE courses were more prepared or more successful in the college-level courses. Therefore, the possibility remains that despite the score-raising that the summer bridge program afforded, students may still have struggled in the end with the college-level courses. A recommendation for the program is to continue to operate as it has been since 2014, continue to collect more data, and see if the same results persist.

The results showed that 17 students succeeded in reaching the goals of the summer bridge program by either reducing or completing DE course requirements before entering their freshman year. This allowed these students the chance to eliminate or reduce one barrier with which they presented originally. If MCC can implement strategies to increase enrollment in the summer bridge program, it may be possible for the institution to reduce further the number of DE students who enter the institution as freshmen. The reduction of DE course requirements could save students hundreds of dollars per class and save the institution thousands by reducing the number of DE course sections.

Limitations

Although these results were promising, scholars should interpret them with caution because of the limitations of this study, which included only a small number of students at one location. This small sample size limited the ability to determine whether the results reflect a real difference or random fluctuations in the data. Further, the study was strictly quantitative, which limits the ability to determine whether other factors, such as the students' motivation or other personal differences, influenced their performance in the program. Allen and Bir (2012) conducted a study focused on the link between academic confidence, student GPA, and persistence. The researchers found a connection between students' level of academic confidence and increased persistence and GPAs. In another study, Strayhorn (2011) set out to determine if participation in a summer bridge program affected students' level of academic self-efficacy and their sense of belonging. Strayhorn (2011) found positive results with increased self-efficacy and certain academic skills. This study conducted at MCC should be replicated with a larger population and would be strengthened by using a mixed methods design like the one used in the Strayhorn (2011) study.

Research question three addressed the number of college-level credit hours accumulated, which was used to determine whether the program had any longitudinal effects. The results obtained showed no statistically significant difference between the comparison group and summer bridge program participants. During the first analysis, research on the MCC summer bridge program appeared to have no longitudinal effect on students' success in earning college credits; however, the participants in the summer bridge program did accumulate more college credit hours, which may be attributable to the fact that almost half of the participants reduced their DE requirements. The participants in the summer bridge program group accumulated 14 college credit hours, and the comparison group accumulated twelve. Although not statistically significant, the fact that the participants in the summer bridge program group accumulated more college credit hours than did the comparison group is promising, as one of the program's goals is to give DE students the opportunity to complete their course requirements, enroll in college-level courses sooner, and ensure success in college-level courses.

Conclusion

MCC designed its summer bridge program to support students who enter college in need of DE coursework by creating a holistic summer bridge program intended to increase participants' TSI scores to make them college ready. The literature review revealed mixed results of previous studies, and the results of this study were similar. The same caution discussed in the literature review should be applied to this study in that the way in which the data are interpreted can affect whether the study appears to support the MCC summer bridge program as an effective program for DE students. Johnson-Weeks and Superville's (2014) study found no statistically significant differences in GPAs or grades between the control group and those who participated in their summer bridge program; however, they did find results of practical significance in that participants had GPAs and grades comparable to students who entered their postsecondary education college ready. The same type of reasoning can be applied to the results of this study in that there were no statistically significant differences in several participant outcomes, but that does not mean their practical significance is any less important.

The results of this study add to a growing body of research over the past decade as more institutions have implemented summer bridge programs and are trying to determine the reasons for their successes and failures. The MCC summer bridge program has a unique structure and components, which can make it challenging to apply the results obtained here to any other institutions or populations. The purpose of this study was to provide the administrators at MCC guidance in identifying the strengths of the program and areas that require improvement. The mixed results

provide MCC with some evidence that they are influencing DE students' lives in a positive way and directions for ways in which to increase the success of future students.

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FEATURE ARTICLE

The Role and Impact of Supplemental Instruction in Accelerated Developmental Math Courses

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ABSTRACT

A difficult issue for tutoring programs is low participation, especially at commuter campuses. At the University of Houston-Downtown, this problem seems particularly acute for developmental education (DE) courses. This paper describes the Supplemental Instruction (SI) program at the University of Houston-Downtown (UHD) with focus on the role of the SI Leader in accelerated DE math courses. A study was conducted between Fall 2015 and Spring 2017 to evaluate differences in student performance in two courses between sections that were staffed with an SI Leader and those that had no assistance from the SI program. The study found statistically significant differences in grade performance between SI session participants and non-SI participants. The study also found that students passed at a higher rate in accelerated Intermediate Algebra as compared to traditional biweekly sections. Finally, students passed at a higher rate in accelerated sections that were staffed with an SI Leader compared to accelerated sections without an SI Leader.

Supplemental Instruction (SI) is an internationally recognized postsecondary academic support program that aims to improve student performance in high-attrition courses through the use of collaborative learning techniques (Hodges & White, 2001). In the SI model, SI Leaders attend their assigned section and serve as model students; they take notes, ask questions, and are attentive during lecture. Outside of class, the SI Leaders facilitate weekly, informal study sessions that focus on course-content mastery through group learning. These SI study sessions begin the first week of class and end when students take their final exams. SI Leaders assist students with organizing content and developing effective study techniques with the goal of driving students to become independent, confident learners. The SI method is designed to reduce the remedial stigma that students associate with seeking academic assistance (Arendale, 1994).

The University of Houston-Downtown (UHD) has had an active SI program since 2001. UHD, located in Houston, Texas, is a minority-serving commuter institution with an approximate student population of 14,000. The average student age at UHD is 27 years and the average faculty-student ratio in classrooms is 20:1. As of Fall 2016, 51% of students were designated as part-time (UHD, 2017).

The SI Leader serves as an extension of the students and aims to "bridge the gap" between lecture content and student comprehension. The primary role of any SI Leader in the classroom is to serve as a model student, which includes arriving to class on time, actively participating in activities, and asking questions during class. In addition, the SI Leader conducts study sessions outside of class that address difficult topics and help students learn effective study techniques.

Although research has shown the value of tutoring and other support services to students at-risk to succeed (Laskey & Hetzel, 2011), this effect is minimized when students have low or inconsistent attendance to tutoring or when they start seeking academic support late in the semester (Hodges & White, 2001). At UHD, the SI program aimed to address this issue by providing more active academic support in the classroom. We hypothesized that providing academic support during class time would positively impact student grade performance, regardless of whether students attend out-of-class tutoring sessions. The objective of this study was to determine the impact on math student grade performance in two accelerated developmental education (DE) courses using a modified version of the traditional Supplemental Instruction model.

Methods

The UHD SI program offers assistance for five subjects (mathematics, history, chemistry, biology, and physics) and currently supports 57 sections. Priority is given to DE and other gateway courses based on low passing rates and departmental goals. UHD SI Leaders are current undergraduate students who have at least a 3.0 cumulative GPA and have made a B or higher in the class they are assigned.

Study Population

This study was conducted between Fall 2015 and Spring 2017. SI Leaders assisted with two accelerated DE math courses: Beginning Algebra and Intermediate Algebra. There are two combinations of corequisite sequences offered at UHD: students register for Beginning Algebra in the first eight weeks and move into either Intermediate Algebra or Contemporary Math (a college-level course) for the second eight weeks; or students register for Intermediate Algebra in the first eight weeks and move into College Algebra in the second half of the semester (Figure 1). For the duration of this study, the probability that a student would enroll in an SI-assisted section was randomized. Students and advisors were not aware prior to the first day of class which sections had SI support. Additionally, SI-assisted sections and non-SI sections were priced the same.

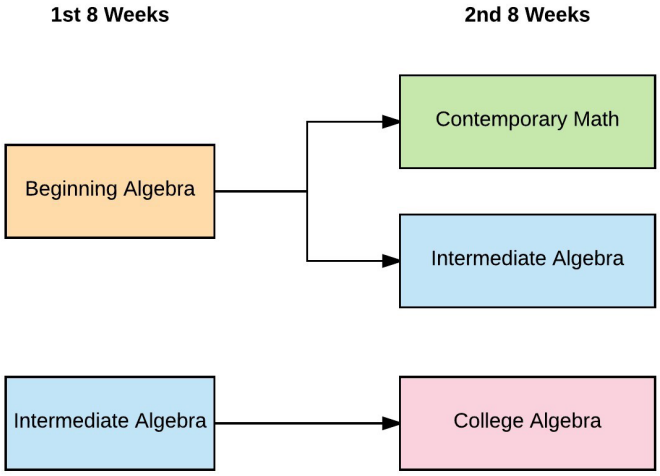

Figure 1. Two sequences of DE corequisite courses offered at UHD. Top sequence represents course flow for students placed in Beginning Algebra. Bottom sequence represents course flow for students placed in Intermediate Algebra. Diagram created in Lucidchart (www.lucidchart.com).

Format

In these DE course sequences, both classes and SI sessions were held four days a week (Monday–Thursday). Lectures were one hour and fifteen minutes in length, and SI sessions were sixty minutes in length. SI sessions occurred immediately before class, immediately after class, or later in the afternoon. Sessions were scheduled based on the majority availability of the students, determined via paper or oral survey on the first day of class. In class, the teaching approach was structured around problem-based learning. Most lectures involved problem sets, which students attempted individually, in pairs, or in groups. During this time, the SI Leader assisted by moving around to different groups and facilitating discussion. SI Leaders also met with students one-on-one during class time to offer individual feedback and assistance.

Results

Results were obtained using student grade data from Banner® by Ellucian and SI attendance-data collected through TutorTrac by Redrock Software. The student pass rates for Beginning Algebra and Intermediate Algebra between SI participants and non-SI participants are summarized in Tables 1 and 2. SI participants are defined as students who attended at least one SI session during the target semester. Pass rate includes grades of A, B, or C.

Baseline pass rates for students in Beginning and Intermediate Algebra were reported for Fall 2013 as 54% and 49%, respectively. Table 3 summarizes the pass rate for students in Beginning Algebra in sections that were assisted by an SI Leader versus students in accelerated sections without an SI Leader. In Fall 2015, 37% of Beginning Algebra students who were assigned an SI Leader attended at least one out-of-class SI sessions during the semester. Of this percentage, 86% of students received a C-or-higher final grade after the 8-week course. The pass rate for the section that received SI assistance was 82%, compared to a 55% pass rate for students in an accelerated Beginning Algebra course that did not have an assigned SI Leader (Table 3).

For Intermediate Algebra, UHD offered traditional biweekly sections in conjunction with accelerated corequisite sections for the duration of the study. The pass rates for students in SI-assisted accelerated sections, accelerated sections without an SI Leader, and traditional biweekly sections (control group) are summarized in Table 4. In Spring 2016 and Spring 2017, all accelerated sections of Intermediate Algebra received assistance from an SI Leader.

In Spring 2016, 58% of Beginning Algebra students who were assigned an SI Leader attended at least one out-of-class SI sessions during the semester. The pass rate for these students was 91%, compared to a 25% pass rate for non-attendees. In Fall 2016 and Spring 2017, the attendance rate to SI sessions for Beginning Algebra students was 29% and 17%, respectively, and the pass rate for these participants was 94% and 67%, respectively (Table 1). A chi-square analysis of the aggregate data across four semesters yielded a statistically significant difference in pass rates between SI participants and non-participants in Beginning Algebra (p=0.012).

Data for Intermediate Algebra students includes students in the second eight weeks of sequence A and the first eight weeks of sequence B (Figure 1). In Fall 2015, 29% of students in an SI-assisted accelerated section attended at least one out-of-class SI session. These students passed at a rate of 94%, compared to 64% pass rate for non-attendees. In Spring 2016, 35% of Intermediate Algebra students who were assigned an SI Leader attended at least one out-of-class SI sessions during the semester. The pass rate for these students was 100%, compared to a 64%

pass rate for non-attendees. In Fall 2016 and Spring 2017, the attendance rate to SI sessions for Intermediate Algebra students was 32% and 25%, respectively, and the pass rate for these participants was 89% and 100%, respectively (Table 2). A chi-square analysis of the aggregate data across four semesters yielded a statistically significant difference in pass rates between SI participants and non-participants in Intermediate Algebra (p=0.009).

In all semesters included in this study, UHD offered traditional biweekly sections of Intermediate Algebra in conjunction with accelerated sections. These sections met twice a week for 16 weeks. Table 4 compares the pass rates for students who were enrolled in accelerated sections that had SI Leader assistance, accelerated sections without SI Leader assistance, and traditional biweekly sections (control sections). In Spring 2016 and 2017, all accelerated Intermediate Algebra sections received SI assistance. In all cases, the accelerated sections with SI assistance outperformed accelerated sections without assistance, and students from accelerated sections outperformed students enrolled in traditional biweekly sections (Table 4).

Table 1

Number and Percentage of Students who Passed With an A, B, or C in Beginning Algebra Between Fall 2015 and Spring 2017 Categorized by SI Participation

	Total Number of SI Participants	Number of SI Participants With Passing Grade (%)	Number of Non-SI Participants	Number of Non-SI Participants With Passing Grade (%)
Fall 2015	14	12 (86%)	24	19 (79%)
Spring 2016	11	10 (91%)	8	2 (25%)
Fall 2016	17	16 (94%)	41	31 (76%)
Spring 2017	3	2 (67%)	15	9 (60%)
Total	45	40 (89%)	88	61 (69%)

Note: Baseline pass rate for baseline semester (Fall 2013) was 54%. An SI participant label was given to a student who attended at least one session for Beginning Algebra during the course of the semester.

Chi-square value: $\chi = 6.2415$ ($\rho = 0.012$)

Table 2

Number and Percentage of Students who Passed With an A, B, or C in Intermediate Algebra Between Fall 2015 and Spring 2017 Categorized by SI Participation

	N Value of SI Participants	Number of SI Participants With Passing Grade (%)	N Value of non-SI Participants	Number of Non-SI Participants With Passing Grade (%)
Fall 2015	16	15 (94%)	41	36 (88%)
Spring 2016	6	6 (100%)	11	7 (64%)
Fall 2016	18	16 (89%)	39	24 (62%)
Spring 2017	2	2 (100%)	6	4 (67%)
Total	42	39 (93%)	97	71 (73%)

Note: Baseline pass rate for baseline semester (Fall 2013) was 49%. An SI participant label was given to a student who attended at least one session for Intermediate Algebra during the course of the semester. Participants are included from both sequences.

Chi-square value: $\chi = 6.8623$ ($\rho = 0.009$)

Table 3

Percentage of Students who Passed With an A, B, or C in Beginning Algebra Between Fall 2015 and Spring 2017 Categorized by SI Designation

	SI Accelerated Section (N)	Number (%) Passed from SI Section	Non-SI Accelerated Section (N)	Number (%) Passed from non-SI Section
Fall 2015	38	31 (82%)	22	12 (55%)
Spring 2016	NA	NA	NA	NA
Fall 2016	NA	NA	NA	NA
Spring 2017	NA	NA	NA	NA

Note: NA = All accelerated sections received SI assistance in this semester. SI section is defined as the section that received consistent assistance from an SI Leader.

Table 4

Percentage of Students who Passed With an A, B, or C in Intermediate Algebra Between Fall 2015 and Spring 2017 Categorized by SI Designation

	SI Accelerated Section (N)	Number (%) Passed From SI Accelerated Section	Non-SI Accelerated Section (N)	Number (%) Passed from Non-SI Accelerated Section	Control Sections (N)	Number (%) Passed From Control Sections
Fall 2015	57	51 (89%)	27	21 (78%)	127	76 (60%)
Spring 2016	17	13 (76%)	NA	NA	38	22 (58%)
Fall 2016	57	40 (70%)	40	25 (63%)	100	64 (64%)
Spring 2017	8	6 (75%)	NA	NA	40	20 (50%)

Note: NA = All accelerated sections received SI assistance in this semester. Control group was defined as all full term 16-week sections that did not receive any assistance by an SI Leader.

Discussion

While studies have found SI to benefit students—especially students deemed at-risk—motivating students to participate in academic support has been an ongoing issue at many institutions (Hodges & White, 2001). In this study, students who tested below college-ready in math were placed in accelerated Beginning Algebra or Intermediate Algebra for the first eight weeks of the semester. An SI Leader was staffed in at least one section for the four semesters of the study period. During this study period, students were encouraged by the SI Leader and faculty instructor to attend SI sessions, but did not receive extra incentive to attend sessions. Additionally, the SI Leader regularly interacted and assisted students during daily problem-solving exercises.

After Fall 2015, the number of incoming students testing at Beginning Algebra level significantly declined; as a result, only one accelerated section of this course was offered for subsequent semesters. Due to the substantial difference in pass rates between the SI-assisted section and non-SI section, funding prioritized SI assistance for this course. All subsequent accelerated Beginning Algebra sections after Fall 2015 received assistance from an SI Leader.

Overall, the results of this study demonstrated significant improvements in grade performance for students that took advantage of out-of-class SI sessions, as well as for students who only had in-class interaction with an SI Leader. In all semesters included in this study, students in SI-assisted sections performed better than students without an SI Leader. Furthermore, students who participated in out-of-class SI study sessions passed at a higher rate compared to non-attendees. Comparisons in Table 4 between two accelerated sections and between accelerated and non-accelerated sections show that, overall, acceleration is a useful course-design model to improve student performance at UHD; however, grade improvement can be augmented further with in-class peer academic support.

The success of SI is highly dependent on the interaction and rapport the students build with the SI Leader inside the classroom. In an accelerated classroom, the SI Leader can meet with the students four days a week and interact with them regularly during the problem-solving segments of the lecture. This constant exposure allows the SI Leader to build rapport with the students earlier than a traditional biweekly course. The results of this study suggest that classroom interaction is key in building a strong "near-peer" relationship between the SI Leader and the student. In courses where the SI Leader has active interaction with students, we have observed higher attendance rates to SI study sessions and a wider gap in overall pass rate between participants and non-participants. This trend is present not only in DE courses, but also in college-level courses at UHD.

Student attendance and participation in SI sessions can vary significantly by semester. For Beginning Algebra, attendance ranged from 17–58%, with an average of 35% attendance. For Intermediate Algebra, attendance ranged from 25–35%, with an average of 30% attendance. This is considered low if compared to other SI-assisted courses, where student attendance ranges from 40–60%. To counteract low attendance to out-of-class sessions, SI Leaders facilitated student learning in the classroom itself. Thus, any possible issues related to lack of motivation in seeking out academic support was minimized. This embedded model might be especially useful at institutions with limited academic support budgets. It is cost-effective to bring the assistance to where the students are; in addition, the students may be more likely to be open to receiving support if it is provided concurrently with their learning experience.

"The success of SI is highly dependent on the interaction and rapport the students build with the SI Leader inside the classroom."

Study Limitations and Recommendations for Practice

The populations included in the scope of this study were relatively small. The size of the population studied can affect statistical power, which may have reduced our ability to identify differences that can exist between these two groups. In addition, there was not a traditional biweekly Beginning Algebra section to use as a control for comparison. Without a comparison group, the impact of SI on student performance can be difficult to determine. For future studies, we will focus on comparisons in Intermediate Algebra, for which there are traditional biweekly sections, in order to better understand the impact of SI and acceleration as separate variables.

Faculty instruction also plays a role in student performance; research has shown an increase in student performance in conjunction with more faculty-student interaction (Kuh, 2003). Accelerated courses at UHD met four times a week in this study and performed better in comparison to the traditional biweekly sections (Table 4). Therefore, some limitations regarding faculty/student relationships can be eliminated. Studies have also shown that student performance improves when students are content with their faculty member (Lundberg & Schreiner, 2004).

While the students may be interacting with their faculty member four times a week, the differences in pedagogical methods also play a role in student performance and were not taken into account for this study. For example, instructors in biweekly sections may have chosen a traditional lecture-based teaching model to relay course content to students versus the student-centered model used in the accelerated, SI-assisted sections in this study. Faculty who foster a supported learning environment by integrating collaborative learning and higher order type activities into their classroom dramatically increase student engagement (Umbach & Wawrzynski, 2005). Differences in teaching models may have contributed to the differences seen in student grade performance. These factors were not addressed in this study; however, they are currently being investigated by other departments. Universities should seek to find the best practices that foster quality student-faculty relationships and engagement for their unique populations.

Self-selection in SI can occur in two ways. Highly motivated students may be more likely to enroll in a section if they know they will receive in-class SI assistance (Kahan, Rehal, & Cro, 2015). At UHD, sections that will be staffed with an SI Leader are not revealed to the students or their advisors during enrollment; moreover, all courses are priced at the same rate, regardless of SI presence. The probability that a student will enroll in an SI-assisted section was randomized for the duration of this study, which largely eliminated self-selection bias for this case.

The second form of self-selection bias can occur if SI sessions are predominantly attended by highly-motivated students. Multiple studies have shown that students placed in DE courses may display lower levels of self-regulated learning behaviors. (Ley & Young, 1998) and may perceive themselves to have significantly lower levels of self-efficacy compared to college-ready students (Koch, Slate, & Moore, 2012). This perception seems to be especially prevalent in freshman math students (Hall & Ponton, 2005). This study was limited to students in two DE math courses. We concluded that the percentage of highly motivated students in our study cohort was not significantly large enough to cause bias in the data.

Conclusion

New modes of instruction for DE postsecondary education are ongoing topics at many institutions. Fast track courses, such as the accelerated model in this study, as well as other frameworks, have been introduced as methods to help students move through remedial courses faster in order to increase the likelihood of retention and completion (Rutschow & Schneider, 2011). Adding SI as an enhancement to course acceleration may yield better improvements in student performance and completion than using the model on its own. However, these improvements are best achieved when the SI Leader can interact with students in the classroom.

For future studies, we would like to evaluate data on grade performance in college-level math courses for students enrolled in an accelerated sequence versus students enrolled in a 16-week biweekly section. We also aim to follow the students who participated in this study to assess any long-term effects on retention and graduation as a result of SI assistance. Lastly, we would like to address the possible impact of faculty instruction on the performance of DE students at UHD.

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FEATURE ARTICLE

Internal Conflict: Community College Presidents and Developmental Education

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ABSTRACT

The purpose of this qualitative study was to investigate the perceptions of community college presidents regarding developmental education. A mixed method sampling technique combining convenience and purposeful sampling was used to identify five presidents in North Carolina and three presidents in Virginia to participate in the study. Results of the study could prove significant for community college leaders in terms of supporting academically underprepared students from the president's perspective and understanding methods to improve developmental education. The primary source of data was from semi-structured interviews lasting approximately one hour conducted with each president.

Developmental education (DE) courses and programs strive to assist students who are academically underprepared, but the success rates and outcomes of these students have received criticism from researchers and legislators. Consequently, some politicians, educational leaders, and researchers now recognize DE outcomes as a major barrier in higher education (Brothen & Wambach, 2004; Complete College America, 2012). The chief criticisms of DE have been that too many students need remediation, most students do not progress to college-level gateway courses, and most remedial students never graduate (Complete College America, 2012). Tierney and Garcia (2008) wrote, "The topic of remediation is of public policy concern on national, state, and institutional levels, but a solution has proven elusive" (p. 3). Indeed, a simple solution for assisting DE students does not exist.

The criticism associated with negative outcomes in DE has spurred reform in several community college systems across the nation. For instance, in Florida, DE is now optional for students (Fain, 2013). The California Basic Skills Initiative provided supplemental funding for colleges to redesign developmental instruction, track learning outcomes through a statewide accountability report, and implement ongoing professional development (PD) for instructors (Basic Skills Initiative, 2009). North Carolina and Virginia redesigned both the content and delivery in similar ways to reduce the time students needed to spend in DE (Venezia & Hughes, 2013). Recommendations abound for improvements in assessment and placement, addressing non-cognitive skills, accelerating curriculum, and more accurately, aligning DE and college-level coursework (Bailey, Jaggars, & Clayton, 2013). Other recommendations for program reform include refining literary skills development courses, integrating alternative teaching and learning approaches, using theory to inform practice, integrating students into curriculum courses, and adjusting program delivery according to the institution (Brothen & Wambach, 2012).

As a service for students, DE plays an important function in the community college landscape while simultaneously receiving a great deal of both scrutiny and support. Reform efforts in states such as North Carolina and Virginia have led to curriculum and placement changes in an effort to move students beyond DE in an efficient way. In order for such critical alterations to take place at the state and institutional levels, community college presidents, who are chiefly responsible for the quality and strategic direction of their institutions, had to be invested and committed. Historically, leadership and administrative support have been critical in order for DE to provide students paths to success and for programs to thrive (Boylan, 2002; McCabe, 2003).

During a period when DE receives a great deal of criticism from policymakers and other stakeholders, it is worthwhile to consider the work of community college presidents who arguably possess the greatest level of influence at their respective institutions. The purpose of this study was to investigate the perceptions of community college presidents related to DE and determine the extent to which these presidents considered DE an institutional priority.

Literature Review

Due to limited research concerning community college presidents' perceptions of DE, a notable gap exists in existing literature. The former Community College of Denver (CCD) president, Byron McClenney cited serving students who are underprepared as an institutional priority (Boylan, 2008). According to McClenney, annual planning at the Community College of Denver included procuring resources to support the college's mission of enabling students who are underprepared to be successful. These resources typically included a "focus on student success, diversity, professional development, and the appropriate uses of technology" (Boylan, 2008, p. 16). Aside from engaging the entire campus community in DE efforts, McClenney believed maintaining an open dialogue between exit standards for DE coursework and entry standards of college-level coursework was essential.

Christine McPhail, a former president at Cypress College, refuted any notions of fixing DE with a single solution (Saxon, 2013). Instead, McPhail focused on the following three features of leadership support: scalability, capacity, and culture. According to McPhail, an institution should consider specific DE course offerings based on the population of students served and offer more classes if needed. McPhail mentioned the importance of the instructor's role in the DE classroom (Saxon, 2013). She suggested that instructors write a teaching philosophy and consider creating rules of engagement to promote collaboration between the teacher and students. From a culture standpoint, there must be a commitment from the board of trustees and the president for DE to excel (McCabe, 2003).

"DE plays an important function in the community college landscape while simultaneously receiving a great deal of both scrutiny and support."

Method

Research Design

For this study, a phenomenological research design explored the lived experiences of community college presidents regarding their perceptions of DE. Moustakas (1994) highlighted *intentionality* and *intuition* as two defining features of transcendental phenomenology. The research design and method served as an intentional effort to investigate community college presidents' perceptions of DE. The researcher's intuition was critical for identifying relevant themes related to the central research question. Data were primarily collected using semi-structured interviews in person that lasted approximately an hour.

Site and Participant Selection

Eight presidents who currently lead community colleges in either North Carolina or Virginia were selected for the interview process. Five of the participants were presidents at a community college in North Carolina, and three of the participants were presidents at a community college in Virginia. After the participants' responses resulted in saturation of data, additional presidents did not need to be recruited to participate in the research process. A mixed method sampling approach was used in an effort to recruit a variety of individuals (Creswell, 2013). To recruit participants for the study, emails were sent to each participant explaining the research project, why their participation was particularly valuable, and if they would be willing to participate. Pseudonyms were used for both participants and the names of their institutions in an effort to protect identities and the colleges studied.

Data Analysis

Moustakas's (1994) modified van Kaam's methodology involving a systematic, researcher-based approach was utilized to analyze data. Transcribed interviews identified thematic clusters and connections. All of the participants' responses related to the core research questions in this study were identified and listed; erroneous responses were discounted. After themes related to the primary research questions were recognized, the researcher checked for direct responses from the participants related to the themes. Next, individual textual descriptions that include direct quotations from the participants' responses were identified. To accompany the textual descriptions, individual structural descriptions were constructed for each participant. Finally, both the textual and structural descriptions were combined to illuminate the study's themes.

Findings

Based on the data collected, the presidents viewed DE through the lens of an internal conflict. On the one hand, DE is valuable and necessary because all the community colleges in this study enroll students through open-door admissions policies, and there is a great need to help underprepared students. On the other hand, the presidents recognize difficult issues with DE in terms of student progression and student success. The relevant themes that emerged from the presidents' responses were viewing DE as an obstacle to student success, rethinking developmental education, and placing a greater emphasis on

student services. In addition, three additional themes were identified for supporting DE from a presidential standpoint. These themes were integrating DE into the student-success agenda, recognizing institutional benefits inherent within developmental education, and providing faculty support to DE instructors.

Perspectives of Community College Presidents

Viewing developmental education as an obstacle to student success. Many of the presidents in this study viewed DE as an obstacle due to a lack of student progression and low levels of student success. The presidents cited various reasons to support this view. One of the primary concerns pertained to how students progressed through DE coursework and whether or not they were successful in future college-level courses. According to the presidents, the level at which students are placed into a DE sequence affected their progression. Dr. Nelson stated, "If [students] started out in the lowest level developmental math or reading, [they] never went to a curriculum course." President Smith focused on the challenges that developmental math students face at ETCC. He mentioned, "It was impossible for anyone who was three levels of math down to ever graduate. If a student started that low, they would never graduate." Dr. Martin added that the lack of success for students in DE was "one of the biggest travesties that we are facing today."

A sense of frustration emerged from the presidents' responses based on the lack of student success in DE coursework. This unrest surrounding DE and its efficacy has had a profound impact on the political climate at the local, state, and national levels. Dr. Nelson revealed, "In this political climate right now, I believe [DE is] on its way out. I believe the whole idea is [to] eliminate the need for an individual to have developmental education." According to Dr. West, an alternative way to consider the rhetoric for eliminating the need for DE is by focusing on college readiness for students. However, a majority of the presidents did not use that phrasing. For instance, President Martin stated, "I take great pride in keeping as many people out of developmental education as we can. If they have the capacity to go on and succeed, then that's where they need to be." No matter the verbiage, most presidents believe that fewer students should place into DE.

Another reason the presidents consider DE a barrier to student success is the curriculum. In North Carolina and Virginia, presidents expressed dissatisfaction with the redesigned DE curriculum. President Holmes reflected on the lockstep arrangement of courses and noted the curriculum does not respond to individual students effectively. Both states altered course structures to modularize math and integrate reading and writing in English. The design of both course structures was to accelerate students through DE, but Dr. Richardson shared that the actual content of the courses and instructional methods remained unclear.

The heightened focus on student success in higher education and community colleges particularly has led to greater scrutiny of DE programs. President Richardson remarked, "With the emphasis on student success, DE has really been under the microscope because nationwide, the success rates of students who start in developmental ed [sic] are just appalling." The presidents expressed concern not only regarding students progressing through their DE prerequisites but also based on how the students who did complete DE performed in subsequent college-level courses. President Holmes stated, "[DE] becomes a bureaucratic quagmire for students, and it becomes almost an obstacle more than a springboard for success and completion." Dr. Holmes's comment encapsulates the feelings of most presidents in this study that DE, in its current and former configurations, impedes student success at least to some degree.

Rethinking developmental education. Although the presidents view DE as a barrier, they all feel it is important for community colleges. They shared many thoughts regarding reimagining DE in hopes of improving outcomes for students. Specifically, the presidents focused on the placement process, advising, course structures, and the overall organizational structure of DE.

The placement-testing process was a common concern for presidents. Dr. Smith expressed frustration with the placement test: "I've been disappointed with the people who wanted to cling to the old placement tests that we had even when it was proven that they didn't measure what they were supposed to measure." In Virginia, there is ongoing discussion at the presidential level about creating a multiple-measures-of-placement framework while in North Carolina, as of Fall of 2015, all 58 community colleges have implemented a state-mandated multiple-measures-for-placement framework.

Several of the presidents preferred DE to utilize different course models and structures on their campuses and statewide. At ETCC, President Smith remarked, "One of the things that we're doing is trying to get the students to be co-enrolled in something in their field of study, intro type courses, so they can see the connection between the developmental classes they're taking." Presidents Williams, Carter, and Nelson thought that DE courses, regardless of the structure, should individualize and personalize the experience for the students. More specifically, Dr. Nelson favored a course structure that gives students options and is either self-paced or taught within a learning community. At VCC, President Richardson supported implementing a co-requisite model pairing college-level and developmental courses simultaneously. Dr. Shaw indicated that a

contextualized learning-model for developmental studies at MCC would be ideal because that model could focus on experiential learning. At MCC, experiential learning entailed real-world application of content material for students in their classes. Lastly, Dr. Holmes mentioned, "I also think that a part of me feels that DE should be more optional. Students should have some self-selection on where they go." The presidents feel that the aforementioned course structures could provide students a more engaged, accessible, and flexible learning atmosphere.

Placing a greater emphasis on student services. For these presidents, a byproduct of focusing on student success and improving DE led to an increased awareness of the importance of student services. All colleges in this study offered students some type of academic support, usually in the form of peer or professional tutoring. When President West began his tenure at NGCC, one of his priorities was to enhance tutorial efforts. He revealed, "My goal was to elevate it, and make sure it was comprehensive so that students in a variety of areas could receive tutoring and that we promote it." Presidents Richardson and Carter both mentioned the desire to provide comprehensive academic support services including tutoring, a math center, a writing center, counseling, academic advising, and career advising. Other colleges have focused on making support more accessible. A defining feature of academic support at VCC is Structured Learning Assistance (SLA). The SLA courses at VCC focused on high-risk courses with substantial withdrawal and failure rates. These courses included additional academic support.

From a philosophical standpoint, Dr. Martin stated, "I think that our student services and student support necessary to succeed probably have to be a little more dramatic for DE students, and [we need to] hold those students accountable for taking advantage of it." At another college, NWCC hired professional tutors to work in the Learning Assistance Center according to President Nelson. She also created the Special Needs Advising Program (SNAP) designed to provide specialized assistance to students who placed into two or more DE courses. At MCC, President Shaw oversaw the addition of career coaches in the local high schools who specialized in career exploration and college readiness. She also recognized a growing need for advisors within the college to be equipped to work with students who may have mental or emotional issues. Again, the revamping of these various support services typically coincided with a rejuvenated effort and focus on improving DE and student success in general.

"Although the presidents view DE as a barrier, they all feel it is important for community colleges."

Supporting Developmental Education From a Presidential Standpoint

Integrating developmental education into the student success agenda. The presidents in this study routinely referred to DE as a key factor in the overall student success agenda; however, the presidents also did not indicate that DE be singled out as an institutional priority. In most cases, each president did feel that DE was closely connected to or an integral part of the student-success mission. In fact, the first goal in the strategic plan of every college in this study was in one way or another directly related to student success.

Community colleges encounter a number of institutional priorities such as community relations and workforce development according to the presidents. However, President Richardson noted, "If we look at academic priorities, student success is clearly number one… Within that, I guess I would say developmental ed is either number one or right near the top." Other presidents described a similar viewpoint. Dr. Holmes said, "It's (developmental education) very much a part of the student success completion agenda which is number one of our strategic goals." President Carter added, "We exist because of our students and ensuring that they are successful is our number one priority." Both presidents of ETCC and UCC asserted that DE was important for the success of their students no matter the number of students involved.

All presidents interviewed in the study loosely defined student success as the completion of his or her goal, including a student's attainment of a degree, certificate, or successful transfer to a university. Most presidents acknowledged the inherent challenge of balancing this student success agenda with open enrollment policies. President Shaw commented:

> We'll take you all in, but then we don't promise them that we will exit them with success. The whole shift has occurred in community colleges not only to embrace this access mission but also now the comprehensive success mission, and I think that's where the tension is.

Due to the seemingly contradictory and bilateral missions that community colleges encounter, many presidents have implemented a variety of student success initiatives focused on not only the success of DE students but also all students served by their respective institutions. At ETCC, there is a

focus on using Completion by Design principles to guide the work of faculty and staff as conveyed by Dr. Smith. President Richardson created and led a Student Success Task Force focused on the mission of improving success for students, and consequently, DE is a focal point. At MCC, there is an emphasis on creating streamlined degree pathways for students: "As we are building these degree pathways, the developmental studies courses are embedded as the first foundation to move students up," according to President Shaw. Students in the MCC pathway are told exactly which courses to take in order to graduate or transfer, and any student who is required to take a developmental studies course must do so in the first semester.

President West described his opinion of DE as a cornerstone for student success and as a way to fulfill the community college mission:

> I think as an open-door institution we have to have DE. To be successful, we are going to admit students who are not yet ready for the totality of the college experience. And that goes right along with our mission, and if we are to succeed and hold them to high levels of achievement and high standards, then we have to have major support structures in place. So, developmental education is an integral part in my mind of what we do as a community college.

Every president in this study clearly emphasized DE as a potential and vital contributor to the overall mission of student success.

Recognizing institutional benefits. The presidents also described institutional benefits relative to giving priority to DE. According to President Holmes, the success of DE affects all areas of a campus environment including academic affairs and student services. In this way, DE can bridge gaps between programs, services, and individuals at the institutional level. President Nelson reflected, "I learned it's not in isolation that you can teach developmental education." According to the presidents, there is a necessary interconnectedness for DE to thrive and support student learning and progression.

President Shaw discussed an organizational mapping project at MCC that incorporated developmental studies and a revised assessment process for incoming students. She stated, "The premise behind the mapping is that it's our responsibility as the college to remove the bureaucratic barriers and the business barriers for our students so that they can focus on their college success." The college identified three cohorts of students. The first cohort was the pipeline student who recently graduated high school, is college ready, and possibly completed dual-enrollment courses while in high school. The second cohort was the adult learner who returned to college after entering the workforce for an extended period. The third cohort was the career switcher who decided to change careers. Regarding these cohorts, Dr. Shaw stated, "All are affected in some way by developmental studies, and assessment for all of these cohorts has to be different." At MCC, the adult learners and career switchers are typically required to take at least one DE course to build a foundation for future success.

Providing faculty support. The presidents supported DE by supporting faculty in a variety of ways. The presidents expressed concern regarding the high number of adjunct instructors used to teach developmental studies. To remedy that dilemma at CCC, Dr. Holmes declared, "I have supported a large number of instructors and replacement of those people when there has been change. Also trying to acknowledge that we have a challenge here in terms of our student population, and we need qualified instructors." Presidents Carter, Martin, and Nelson all mentioned the need for instructors to receive ongoing and high-quality PD focused on the stressors of teaching and techniques to overcome those challenges in the classroom to ensure a high level of competency and professionalism.

At ETCC, President Smith realized the value of his DE faculty: "As a general rule, I will tell you that developmental faculty tend to be very, very student-oriented. Very patient with students. That's not necessarily the trait of all your transfer faculty." At the same time, he anticipated that the need for DE instructors was going to decline at ETCC's campus due to placement-test changes. Therefore, Dr. Smith decided to support faculty through his actions. He used college funds to pay for any DE faculty member who did not have a Master's degree or a Master's degree and 18 graduate hours to return to school and earn that credential. The result of this PD was that high-quality faculty were retained and able to teach both DE and credit-bearing courses.

Discussion

This study provided participants an opportunity to reflect on their views regarding DE and best methods to support developmental studies both in principle and in practice. A discussion of the previously mentioned six themes along with supporting literature is provided.

Viewing Developmental Education as an Obstacle to Student Success

The findings suggesting that DE is an obstacle to student success is consistent with rhetoric from previous publications such as Complete College America (2012). Six of the eight presidents referred to DE as an obstacle. Consider the precarious political position that community college presidents find themselves in relation to DE and student success. To maintain financial support for their institutions, the presidents communicate regularly with state legislators and policymakers as well as various associations and state community-college boards. Multiple

politically-charged controversies surround DE, including the sole responsibility of community colleges to remediate students, the depletion of resources for other academic programs, and the concerns from legislators of state funds used to pay twice, essentially, for a student to learn the same academic skills. Therefore, community college presidents find themselves in a unique and precarious position. They must represent their campus externally and interact with political constituents who may not support or understand DE. At the same time, the institutions these presidents lead must continually accept academically underprepared students due to open-door admission standards.

Rethinking Developmental Education

Every president in this study indicated different approaches that institutions could take involving DE. These suggestions included changes to the placement and assessment process, a decentralized DE approach, different course models, and a redirection of students who were having trouble to more attainable goals. Emerging research supports the opinions of the presidents to rethink DE. For example, the Center for Community College Student Engagement (2016) suggested a number of innovative practices for working with underprepared students. First, academic and career goals should be the focus of advising, and every entering student should meet with an advisor during initial stages of enrollment. Multiple measures of placement that gauge a student's academic history by considering high-school grade point average and performance on standardized tests may be more indicative of a student's capabilities than a placement test alone. The Center for Community College Student Engagement (2016) also recommended identifying the types of support students might need to progress, especially through college-level gateway courses.

"Several of the presidents preferred DE to utilize different course models and structures on their campuses and statewide."

Placing a Greater Emphasis on Student Services

Six of the presidents in this study mentioned a renewed emphasis on student services coinciding with the redesign of DE and the greater emphasis nationally on the student-completion agenda. The primary form of academic support at the colleges reviewed included tutoring, counseling, and advising although some presidents highlighted other services such as career exploration for beginning students and case management for students with mental health issues. These findings are consistent with the literature that highlights a need for comprehensive support-services for DE (Boroch et al., 2010; Boylan, 2002; Boylan & Saxon, 2012; Vick, Robles-Pina, Martiroysan, & Kite, 2015). The presidents who mentioned student services considered such means of support as being an integral component in developmental and college-level coursework.

Integrating Developmental Education Into the Student Success Agenda

Community-college presidents have a wide array of institutional priorities, including being involved in the community, creating a vision, representing the institution, and ensuring the effective operation of programs and services (Eddy, 2005). In terms of academic priorities, the first priority listed was student success in the strategic goals at every institution researched. Other collected documents, such as presidents' messages and updates to the campus, focused on student success but with a large-scale focus. Additionally, every president in this study verbalized during the interview process that DE was an important part of the overall student success agenda. Viewing DE as part of the student-success agenda gives the program a certain sense of priority, but this view contrasts the researched best practice that DE be a clearly stated institutional priority (Boroch et al., 2010; Boylan, 2002; Boylan & Saxon, 2012).

Recognizing Institutional Benefits

Five of the eight presidents believed there were institutional benefits associated with DE. At SPCC, several areas of the college were upgraded due to a more intense focus on helping DE students be successful. These services included advising, counseling, early alert, access to tutoring, and financial aid. Other presidents focused on the need for connectivity in DE for multiple programs to thrive. The six-step cyclical approach of the Community College Achievement Gap Model outlines a framework for identifying challenges, developing and implementing programs, and evaluating the effectiveness of those new initiatives (Nevarez & Wood, 2010). Even though the presidents did not specifically mention the use of the Community College Achievement Gap Model, they clearly instituted a similar process in hopes of improving DE and benefitting other components of their institutions. Certainly, there are many campus-wide benefits for presidents who recognize the value of DE and seek to connect it throughout an institution.

Faculty Support

One way that the presidents gave priority to DE was through faculty support. Six of the eight presidents specifically mentioned supporting the developmental studies faculty on their campuses. Typically,

this support was in the form of providing PD, rehiring full-time instructor positions, and making resources available. The president might also support faculty by offering specific suggestions for connecting with students by suggesting that faculty provide students clear expectations and timely feedback (Saxon, 2013). Research also supports the need of hiring DE instructors who are passionate about teaching diverse populations (Boroch et al., 2010).

Implications for Practice

The community college presidents in this study viewed DE as both a barrier and a necessity. Such a contradiction leads to a number of implications for community college presidents. As a field, DE is scrutinized and often blamed for students' lack of progression through coursework. Therefore, it is important for administrators and faculty to monitor the progression of students in DE and college-level courses very carefully.

One practical recommendation is for DE personnel to communicate with their college president. The presidents in this study were open and willing to discuss DE challenges, potential improvements, and the important role of DE in fulfilling the community college mission to enroll diverse student populations. The presidents who mentioned their DE faculty spoke very highly of their abilities as instructors, and all of the presidents had a clear understanding of the foundational purpose of DE in preparing students for future success. Some faculty members may be hesitant to communicate with their presidents due to the organizational structure and the nature of their institutions, but the presidents in this study were supportive of their faculty and understood their value to the college. Ongoing communication between developmental studies faculty and the president should be encouraged.

The president can also make a concerted effort to connect with DE faculty. Actions as simple as visiting the faculty in their offices or occasionally stopping by their classes would signal that DE is a priority and that faculty are supported. Based on feedback from the presidents in this study, other forms of faculty support are to provide PD and rehire faculty for full-time positions as needed. In addition, the president could specifically publicize the success of DE instructors in a college report or communicate the need for DE both internally and externally.

Although most presidents in this study consider DE to be an important part of the overall student success agenda on their campuses, it may be more advantageous to clearly state that DE is an institutional priority. Clearly stating DE as a priority is a research-based best practice (Boylan, 2002; Boylan & Saxon, 2012). The exact language could be tailored to each individual institution and may mention assisting academically underprepared students or transforming the abilities of students. Doing so would not show favoritism to DE. On the contrary, focusing on DE would strengthen the overall student-success goal of a college by making the point that students, regardless of their current skill-level, could achieve their goals. After all, the presidents in this study revealed many institutional benefits when DE is given a high priority.

Community-college leaders should continue to be involved in discussions for ways to improve DE, college readiness efforts, and placement procedures. For DE especially, it may be useful for the president to consider student demographics and institutional culture. On an institutional level, presidents can emphasize the important role of student services by making the services comprehensible, visible, and accessible. Presidents should also evaluate the positives and negatives of having a decentralized developmental studies program versus a centralized department. A centralized department houses all DE programs and services and is led by a department chair in most cases. A decentralized program has DE faculty integrated into other departments on campus such as math and English. Research and opinions vary regarding which format is most beneficial, so it will be important for presidents to have a thorough understanding of the institutional culture, student demographics, and available resources. To make this decision, the presidents will also need to consider the strengths and limitations of their DE faculty and support personnel. A similar framework can assist the presidents and executive staffs in determining the ongoing effectiveness of the DE redesign and any additional changes.

Suggestions for Future Research

There are several suggestions for future research related to this study. For instance, future research could recreate this study focused on the perceptions of DE based on other individuals within a community college setting. Depending on the institution, the organization of DE varies, so there are number of possible positions to investigate such as vice presidents, deans, department chairs, and developmental studies instructors. These faculty, staff, and administrators would likely have interesting opinions that could contribute to the conversation surrounding DE. With the faculty, in particular, those individuals who teach developmental math, developmental English, and study skills could discuss the challenges of teaching regarding redesigned curriculum and reflect on how leadership supported the change on their campus. A similar study might also investigate community college presidents outside of North Carolina and Virginia.

The presidents or chancellors of state systems may also provide a compelling perspective regarding DE. Although policymakers might have limited knowledge and experience with DE, it would be interesting to hear their thoughts as to why they think

DE is ineffective or beneficial. Another way to recreate this study with any of the previously mentioned positions and community college presidents is to use quantitative measures. A Likert-scale survey could assess similar topics of interest for a large number of individuals at regional, state, or even national levels.

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Learning Styles: Academic Fact or Urban Myth? A Recent Review of the Literature

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ABSTRACT

While advocates of learning styles have suggested postsecondary educators and learning support programs match instruction to students' learning styles to enhance learning, past decades of research criticize educator's co-option of and disprove researchers' efforts to prove learning styles' existence and worth as a valid construct. The author examines numerous research articles that have challenged the efficacy of learning styles based on empirically provable evidence. The author also cites how the learning styles paradigm continues to be used in the field of postsecondary learning assistance. The author concludes that instead of promoting learning styles, educators should instruct learners on the intentional use of learning strategies.

The attempt to classify people by types is a pervasive human behavior. Early manifestations include the ancient yin and yang system of the Chinese, Hindu ideas of personality types that are reflective, emotional, active, or experimental, and the early Greco-Roman idea of the four humors—phlegmatic, choleric, melancholic, and sanguine. The twentieth century has seen its own attempts at classifications. These include the Stanford-Binet intelligence test, which classifies people according to their performance on five categories of thinking. Also, Jung's ideas about personality (influenced by Hindu ideas), and their more recent realization in the Myers-Brigg Type indicator (Garner, 2000) remain popular.

Two perspectives of personality emerged during the mid- to latter-half of the twentieth century. The cognitive perspective found its roots in psychoanalytic study and is based on the belief that thought, while not observable, is a valid construct because it can be rationally understood (Schunk, 2016). Along other theoretical lines, empiricism, centered in observable phenomenon, led to behaviorism, which found its start in the theory of Watson and continued most famously through Skinner. The behavioral perspective of learning operated under the theory that only observable behavior was verifiable (Schunk, 2016). From the convergence of these two lines of theory came the controversial classification system of learning styles. This system spawned a great number of classification systems that found their use in multiple fields.

In looking at personalities and learning modalities and understanding them, one sees that two important areas are cognitive and learning style classifications. In psychology, cognitive style refers to the way people think and process information about others and the world. These styles are intrinsic to personalities and are shaped through interactions with other personalities. Generally, psychologists and educators have seen these cognitive styles as stable traits (Jonassen & Grabowski, 1993; Kozhevnikov, 2007). However, learning styles have been viewed as either trait or state, while elements like cognitive style and personality remain constant over time (and are structural, as with trait). The implication powering the learning style movement is that learners and teachers can change from using a learning style purposively, as with a state, to using these styles without thinking about them, as with a trait (Cassidy, 2004). The important part of this distinction, however, is that states are, unlike traits, more malleable. Therefore, states are open to being modified and expanded.

While cognitive style describes how learners process and think and is viewed as a valid construct, *learning styles*, which rely upon learners' perceptions about how they best learn, have come to be seen as nebulous and frequently inaccurate. Researchers based their conclusions on a lack of credible, well-designed, or replicated studies.

Learning Styles in the Recent History of Education

Cassidy (2004) listed and described 23 learning style models with the purpose of showing similarities between those with overlapping qualities and hinting at ones that needed further empirical research into their claims and worth as instruments that could gauge both traits and states. Of these, the ones cited most were Gregorc' s (2017) Style Delineator; Kolb's (1984) Experiential Learning Model (ELM) and Kolb's (1985) Learning Styles Inventory (LSI); Honey and

Mumford's (1992) Learning Style Questionnaire (LSQ) in The Manual of Learning Styles: Revised Version; Entwistle and Tait's (1995) Approaches to Study Inventory (ASI); and Dunn, Dunn, and Price's (1989) Learning Styles Inventory (LSI).

Cassidy (2004) noted that the connection between ability (again, more of a trait) and performance was directly observable, while the effects of learning style upon performance were contingent upon the task being done. For example, those good at gathering meaning auditorily would do well in a lecture-based class (as cited by in Cassidy, 2004). He theorized that characteristics, rather than ability, had led to the formation of learning styles. As a result, Cassidy examined learning styles used in specific fields where learning styles' effect on performance again would be contingent on tasks, here academia, medical school, career development, and police training. He then concluded that, because of their limitations and the lack of evidence on the reliability and validity of each model, learning styles needed to be carefully matched with the tasks their teaching would aid. He also cautioned that much more empirical research needed to be done regarding the reliability of current learning style measures, and advised those interested less in research and more in practice do more rationalization and integration of their reasons for using particular style measurements.

In major literature published at the same time in the U.K., Coffield, Moseley, Hall, and Eccleston (2004) listed 13 primary forms of learning styles based on a total of 71 types and identified three reasons for the complexity of examining the field: the loose links between its theory, pedagogy (including that of psychology, sociology, business, and education), and commercialism. He first divided these 13 styles amongst five main types of learning styles. The first deals with styles described as based upon one's intrinsic make-up, which he then tied to the four modalities found in the Visual, Auditory, Kinesthetic, and Tactile Learning Style Inventory (VAKT). Among these styles he highlighted Dunn, Dunn, & Price's (1989) and Gregorc's (1982) models of learning styles. The second group of learning styles he tied to deep-rooted cognitive structures such as patterns of ability. Within this group he identified as most important Riding's (1991) model, Cognitive Styles Analysis (CSA). The third group of styles were one part of what he defined as a stable type of personality. Here, he located Myers's (2018) Myers-Briggs (1962) type indicator. He linked flexibly stable preferences for learning to styles in the fourth group: the Allinson and Hayes (1996), Honey and Mumford (1992), and Kolb (1985) tests of learning styles preferences. Finally, in the fifth group, Coffield et al. (2004) placed types that move from styles to approaches, orientations, strategies, and conceptions. In this body, he located learning styles indicators from Entwistle (1995) and Vermunt (1994).

After analyzing each of the 13 major types of learning theories, Coffield et al. (2004) concluded by dissenting with Cassidy's (2004) call that learning styles be organized and conjoined into more carefully reasoned and fewer groups by saying that study of learning styles stood against this because of their development within pedagogically independent fields such as business, law, psychology, and education. Coffield et al. (2004) also pointed to the lack of a governing body to oversee this reorganization and to develop independent instruments for gauging learning preferences and propensities. Coffield et al. also addressed the problem caused by the commercialization of style testing instruments, their marketing, and the resultant defensiveness and territorialism this has reinforced within their makers. Also, because of the ease technology has given to such tests' administration by professors and members of different industries and the fact that they can give these tests for so many reasons, often the desire to prove some random hypothesis not grounded in an overall body of empirical investigation, Coffield et al. called for external monitoring of the tests. But this is monitoring which, no doubt, will not come. Finally, Coffield et al. called for more ethically driven use of these tests and, in this way, sounded, unfortunately, like wishful thinkers rather than practical scholars.

> "Gardner (2013) advocated that lessons need not be designed in different ways as per learners' intelligences, but that different experiences offered students access to learning at points across a topic."

Pashler, McDaniel, Rohrer, and Bjork, (2009) distinguished their work from Coffield et al.'s (2004) by claiming that the work of Coffield et al. was more of literature review (and an exhaustive one at that) than that of Pashler et al. (2009). Indeed, Pashler et al. took pains to point out that theirs was a study commissioned by the respected, peer-reviewed journal *Psychological Science in the Public Interest* to examine what sort of experimental requirements should be required for a learning style to be identified as valid and useful. But before proposing their experimental requirements, Pashler et al. pointed to two respected organizations that validated the commercial industry behind learning styles. First identified was a study commissioned by the National Association of Secondary Schools by Keefe (1988), which

was distributed widely. Then they called attention to Yale's explicit propagation of learning style theory through a website maintained by the Yale Graduate School of Arts and Sciences in 2009. Since 2009, it is worth noting that Yale still offers a link under their Center for Teaching and Learning (2017), titled in its left column, "Teaching Students with Different Learning Styles and Levels of Preparation" (https://ctl.yale.edu/teaching/ideas-teaching/teaching-students-different-levels-preparation). However, when followed, this link now leads to an article titled, "Teaching Students with Different Levels of Preparation" (2017).

Pashler et al. (2009) then discussed the widespread use of learning style theory in general education teacher preparation textbooks and noted it was not much covered in educational psychology textbooks. As exemplars of the trend toward marketing learning styles, Pashler et al. also discussed Dunn and Dunn's learning-styles model (Dunn & Dunn, 1994), Kolb's (1984, 1985) Learning Styles Inventory (LSI), and Honey and Mumford's (1992) Learning Styles Questionnaire (LSQ). In particular, Pashler et al. (2009) examined the extensive marketing of Dunn and Dunn's work (still available under International Styles Network) and Kolb's LSI as distributed by the Hay Group. Both were revealed to be tremendous money makers and educational "empires," in effect.

Pashler et al. (2009) then isolated experimentation needed to prove learning styles theory worked. Learners divided into groups would have to be randomly assigned learning methods and take the same achievement test at the experiment's end. Results would have to show that a learning method that increased the test scores of one type of learner was different than the style that helped learners from another style. Pashler et al. stressed that such a result was evidence of a crossover interaction only if the learning styles and methods crossed on a horizontal axis when the styles were plotted there. To provide criterion for learning styles' existence and usefulness, the hypothesis only required the crossover interaction, not just the meshing hypothesis, which required that each group's performance be matched to instruction within that group's style. Only one study satisfied their requirements for a crossover reaction, and that study, the *Sternberg Triarchic Abilities Test* by Sternberg, Grigorenko, Ferrarri, and Clinkenbeard (1999) was still not stringent enough.

Cuevas (2015) took Pashler et al.'s (2009) call for more research and a credible research model and investigated what has happened since. Cuevas (2015) took a dim view of the way general teacher education textbooks presented learning styles and ignored their lack of proof, sharing the conclusion Pashler et al. (2009) reached earlier and other scholars have confirmed since. Cuevas (2015) clearly consolidated the matching hypothesis and interaction effect of Pashler et al. (2009) and used them as a formula for evaluating research. But first, like Pashler et al., Cuevas (2015) linked the need for more research to a strangely unchanged educational landscape considering Pashler et al.'s (2009) findings and their prominence. Cuevas (2015) found more growth of learning styles' industry not only in education but also in business, medicine, and technology. Like Pashler et al. (2009), Cuevas (2015) discussed the Myers-Briggs in relation to business' selection of employees by typing them. Cuevas also cited Allcock and Hulme (2010) and Fridley and Fridley (2010), who advanced the idea that Gardner's multiple intelligences theory (1983) had contributed egregiously to learning styles theory.

The problem with both articles' claims is that they did not pay enough attention to Gardner's own claims, which he reasserted in 2013, that his theory was about permanent traits, not states, which are more malleable and less easily corroborated (Strauss 2013). At least Allcock and Hulme (2010) allowed that Gardner (1983) meant his theory to be applied to individuals, not classrooms. In an article he did with Moran and Kornhaber (as cited in Allcock and Hulme, 2010), Gardner (2013) advocated that lessons need not be designed in different ways as per learners' intelligences, but that different experiences offered students access to learning at points across a topic. In this way, the intervention that Gardner himself suggested sounds more like advocacy for the use of multiple learning strategies—not styles.

Cuevas (2015), like Pashler et al. (2009), looked for reasons for learning styles' continued proliferation in general education textbooks and in business and educational technology. Mainly, Cuevas (2015) criticized business people, educational administrators, and teachers for not having enough familiarity with psychometric means and thus the tools to recognize that learning styles have been discredited. Like Pasher et al. (2009), Cuevas (2015) blamed also the commercialization of learning styles and their growth into self-sustaining empires determined to ignore criticism. He pointed out empires that have huge financial investment in them, singling out Dunn, of St. John's University, and her successors.

Most important in this work, Cuevas (2015) clarified the template that Pashler et al. (2009) gave for ascertaining that a learning style and its implementation were valid. He also showed that learners' own designations of their learning styles were usually inaccurate, rarely matching with the way they actually learned according to studies of metacognition.

Cuevas (2015) concluded that the research, sparse as it was, provided empirical evidence that showed weaker support for learning styles in recent years. In his attempt to weaken if not conflate learning style theory with Gardner's (1996) multiple intelligences, Cuevas also discussed Bishka's (2010) article on how recent research based on neuroimaging shows that during any given activity, widely different parts of

the brain light up, suggesting that even during a task that was presumed to be operated by one part of the brain, the whole brain is involved—a fact that Gardner (2013) does not reject.

Cuevas (2015) also discussed the hope of those like Sankey et al., (as cited in Cuevas, 2015) whose own research from 2011 refuted the existence and worth of learning styles, that if nothing else, learning styles theory could garner feedback from learners that at the least increased their self-awareness and their motivation to learn and this way aid achievement. Regrettably for Sankey, Cuevas reiterated that the field of metacognition was finding that learners were often wrong in judging their learning needs and academic progress.

Though Cuevas's criticism of research in the learning styles field was fierce, perhaps the strongest critic of learning styles theory was Willingham (Reiner and Willingham, 2010; Willingham, Hughes, & Dobolyi, 2015). In an article from 2010, Reiner and Willingham both asserted bluntly that there was no proof of learning styles' existence and expressed their feeling that lack of knowledge of this could damage students and their educators. Though they acknowledged the worth of learning styles theory for stressing that individuals learn in different ways, Reiner and Willingham quickly qualified this observation by attributing these differences to ability and genetic background, in keeping with Cassidy's (2004) assertion that intelligence is a trait not a state. Reiner and Willingham (2010) also stated that learners are deeply affected by their backgrounds, subsequent prior knowledge, and learning disabilities.

Next, Reiner and Willingham (2010) argued against those who claim that learners' self-asserted learning styles need to be considered by showing that, when tested, these preferred styles have no effect on students' ability to learn different subjects. They also underscored the idea Cuevas (2015) and Pashler et al. (2009) supported that learning styles have not been successfully matched to teaching styles in terms of producing higher achievement in students.

Willingham et al. (2015) examined Pashler et al.'s (2009) requirements for judging whether or not a learning style was provable, including examining the matching or crossover effect. Willingham et al. (2015) reaffirmed the basically unsupported nature of learning styles after, again, discussing the differences between styles and abilities. They also examined the reasons for learning styles' continued popularity, finding their sources in confirmation bias wherein something becomes so rooted in cultural common knowledge that it predisposes teachers to see its proof in situations that could be unproven. A teacher could be unsuccessful at helping a student understand a problem until using a graph to help that student and having success, then conclude that the student is visually oriented when, instead, the student might be understanding the material as result of the number of times it has been presented. They also broached Gardner's (2013) claims that researchers misunderstood him, once again evidencing researchers' confusing intelligence with style and trait with state.

In a different approach, Griffiths and İnceçay (2016) introduced learning style stretching, a concept that sounds close to simple strategic teaching. Even though their study did not adequately address evidence in the ways that Pashler et al. (2009) and Cuevas (2015) claimed were necessary for proving a learning styles' existence, Griffiths and İnceçay's (2016) work was of value simply because it supported the idea that learners can increase their learning and achievement when they step out of their style comfort zone and try to employ different styles with which to learn material. This idea was congruent with Gardner's (2013) and Willingham et al.'s (2015) belief that learning different material requires the use of different learning methods and strategies that can be nourished and grown. Though Griffiths and İnceçay (2016) termed this style stretching, with only slight semantic alteration this could apply to abilities and traits. Also, Griffiths and İnceçay saw an increase in learning as per learners' willingness to style stretch as well as noted that more successful learners employed this method more often, thus giving educators more incentive to support the growth of style (or abilities) stretching in learners.

"What Cuevas (2015) as many researchers have done was forget Gardner's (2013) own beliefs that many parts of the brain are involved in any activity. "

What Cuevas (2015) as many researchers have done was forget Gardner's (2013) own beliefs that many parts of the brain are involved in any activity. In his discussion on Good Works, linked to Harvard's Graduate Teaching College in 2017 in their still extant Ground Zero Project, Gardner (2013) described intelligences as abilities, not styles, and was careful to elaborate that each individual possesses many abilities in different areas that, combined, make an intellectual toolkit. Gardner's (2013) assertion underscores that many parts of the brain are involved in learning, including parts that he was not privy to in the 1980s when he conceived of multiple intelligences. Even Willingham et al. (2015), amongst the strongest critics of learning styles, supported this understanding of learning

abilities when they addressed the ongoing confusion of ability with style and countered those who looked at Gardner's multiple intelligences as a support for learning styles, claiming that Gardner himself found this confusion inaccurate (as cited in Willingham, et al., 2015). Gardner claimed that his multiple intelligences theory, which is truly an ability theory, could not be used as support for learning styles' existence and use because one cannot use one intelligence to understand another. To do math problems, for example, one must use math, not got through another form of cognition such as kinesthetic or musical ability. Or in another example, one could not use Microsoft Word to perform Excel functions (as cited in Willingham, et al., 2015).

Learning Styles Still Promoted

As an educational tool, learning styles are still promoted in numerous venues. For example, Stahl (1999) questioned learning styles as a valid construct and the general acceptance of it by educators in the K-12 setting in teaching reading, citing multiple studies ranging from 1978-1992 disproving the usefulness of teaching to learners' preferred learning styles, the validity of the construct, and interventions based on learning style's existence. In the field of postsecondary learning assistance, Dembo and Howard (2007) discouraged student success textbooks authors from their continued promotion of this construct, claiming no research-based benefit existed. Yet, learning styles topics are still pervasive within many of these textbooks and publisher-sponsored Internet support sites and learning labs.

The organization that certifies postsecondary tutoring training programs, the College Reading and Learning Association (CRLA), still includes training in learning styles and how to accommodate learners by using their learning styles when working with them. For the CRLA's International Tutor Training Program Certification (ITTPC), the fourth certification element on the first level is "Adult learners, learning theory, and/or learning styles" (Schotka, Bennet-Bealer, Sheets, Stedje-Larsen, & Van Loon, 2014). Specifically, tutors are required to be familiar with different learning styles, especially those based in the visual, tactile/concrete, auditory learning domains and with tutoring strategies that are appropriate to use with students with different learning styles or preferences (Schotka, Bennet-Bealer, Sheets, Stedje-Larsen, & Van Loon, 2014). This requirement is still held though the effectiveness of tailoring tutoring and teaching to learning style preferences has been disproven (Pashler, 2009).

While the University of Missouri at Kansas City (UMKC), which officially grants International Certification of Supplemental Instruction (SI) programs, no longer stipulates that learning styles must be covered as part of certification, some certified SI programs still provide access to learning styles materials. Louisiana State University, whose SI program is UMKC certified, offers links to several learning styles tests at its School of Nursing in New Orleans (https://nursing.lsuhsc.edu/AcademicSuccessProgram/LearningStyles.html). In another SI program certified by UMKC, Purdue University, Swartzendruber (2014) discussed reaching students' learning styles in a PowerPoint still housed at UMKC's website. Finally, in the *Journal of Supplemental Instruction* of UMKC, Carlsen-Landy, Falley, Wheeler, and Edwards (2014) explained the importance SI leaders found in discovering students' learning styles, also on UMKC's website. Some SI programs which may not be currently certified with UMKC, such as Fayetteville State University, still require that the SI accommodate the students' different learning styles (https://www.uncfsu.edu/documents/learning-center/si/Leader-Handbook.pdf).

Last, universities themselves offer and promote links to learning styles inventories. Duquesne University provides direct access to Fleming's (2018) Visual, Auditory, Read/write, and Kinesthetic (VARK) through its Center for Teaching Excellence (http://www.duq.edu/about/centers-and-institutes/center-for-teaching-excellence/teaching-and-learning/discover-your-learning-style). North Carolina State University hosts Felder and Solomon's (n.d.) Index of Learning Styles Questionnaire (http://www4.ncsu.edu/unity/lockers/users/f/felder/public/ILSpage.html), and Texas Tech's Teaching, Learning, and Professional Development Center includes a well-developed page and link on using learning styles, including the Myers-Briggs, Kolb and McCarthy—now the Kolb Learning Style Inventory (2013)—and provides online links to other styles (https://www.depts.ttu.edu/tlpdc/Resources/Teaching_resources/TLPDC_teaching_resources/LearningStyles.php) prepared by Forrest (n.d.). These are only few examples out of many. From these and others, it is clear that the propagation of learning styles in higher education is a continuing issue.

Conclusion

My hope at the onset of this review was that somehow the knowledge gained from understanding one's preferred way of learning could be used to make learners more self-aware and thus self-efficacious. Yet, the literature continues to disclaim learning styles as a valuable educational construct. There continues to be a lack of evidence to any benefit in matching instruction to learners' preferred learning style or that understanding one's learning style improves learning. Researches also continue to question the reliability and validity of learning style assessments.

However, as educators continue to seek ways to improve academic achievement of their students, they should not completely discredit the power of helping students understand their own strategies and abilities to add to their sense of power as learners.

Teaching students the cognitive processes and skills involved in learning—those strategies that help learners think, solve problems, and create meaning—can similarly empower students, not with a false sense that one can learn only one or two ways, but with an understanding that learning is multifaceted, reflecting different combinations of learning abilities that make us effective in different ways.

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FEATURE ARTICLE

The Effect of Acceleration on Subsequent Course Success Rates Based on the North Carolina Developmental Mathematics Redesign

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ABSTRACT

Recent trends in developmental education (DE) include the reduction of time spent in DE courses, which includes the acceleration of the course content. In 2011, the North Carolina Community College System redesigned all DE mathematics courses using this trend of acceleration. This study looks at the subsequent gateway mathematics course success rates for students who took the course in the traditional 16-week semester format and in the new 4-week accelerated modular format. The results of this study showed that there was no difference in the success rates of the two formats. The researchers concluded that acceleration of courses does not affect the subsequent course success rates.

In 2011, the North Carolina Community College System (NCCCS) redesigned the DE mathematics curriculum from three 16-week courses (48 weeks) into eight 4-week courses (32 weeks), based on mastery (NCCCS, 2013). This reduction was done so that the entire sequence could be completed in one year (NCCCS, 2011b). Different time frames for accelerated courses were evaluated and it was determined that the 4-week model worked best in designing accelerated courses (Austin & Gustafson, 2006). Overlap of redundant course material was eliminated and multiple points of successfully exiting DE were established, based upon the credit-bearing, college-level course that was needed for a program of study (NCCCS, 2011b). Each 4-week course was graded on a mastery system of 80%. Students that did not meet the 80% mastery requirement were immediately re-enrolled in the same module for the next four weeks. Hence, students were not getting slowed down in repeating long courses, but instead immediately repeating the 4-week course they did not master. The shortened class lengths allowed students to repeat courses in the same semester, rather than waiting 16-weeks to repeat a course. Students needing three 4-week mathematics modules could repeat one module and still finish in one semester. Consequently, students were able to move on to college-level, credit-bearing courses more quickly.

The acceleration of the sequence leads to discussions of the effect of acceleration on the retention of material. Jaggars and Hodara (2011) questioned whether acceleration of DE mathematics courses hinders student progression and learning. Edgecombe (2011) discussed the benefits of accelerating the sequence, which included less time, greater persistence, increased retention of knowledge, and the creation of an environment of rigor needed in the subsequent courses. The shortened course length allowed students to study and master one topic at a time, shortening the time for forgetting mathematics concepts in between courses (Edgecombe, 2011).

One purpose of the NCCCS redesign of DE coursework was to increase the subsequent course pass-rate for DE students completing a credit-bearing gateway course. It is essential to evaluate the success of students in subsequent courses in order to determine the effectiveness of the new structure and acceleration, which may have value for other institutions exploring accelerated course-design options. Therefore, the purpose of this study was to evaluate the effectiveness of the NCCCS redesign in improving subsequent gateway course success rates among students who took the accelerated 4-week DE mathematics courses versus the prior 16-week courses. Twelve community colleges from the North Carolina system were chosen to participate in this study.

Literature Review

The NCCCS redesign reduced the calendar time needed to complete a DE mathematics sequence (NCCCS, 2013). Edgecombe (2011) defines acceleration "as the reorganization of instruction and curricula in ways that facilitate the completion of educational requirements in an expedited manner" (p. 4). North

Carolina's design incorporated principles of curricular redesign used in the California Acceleration Project (CAP) to reduce the amount of time students spent in the classroom, sometimes referred to as seat-time (Haywood & Willett, 2014). In addition to shortening the amount of time to complete DE mathematics courses, this curricular redesign also refined the curriculum to include only material needed to be successful in the gateway course (Edgecombe, 2011). Accelerated courses are intentionally more demanding than a traditional semester course, not only because of increased workload, but because the expectations of the course are more in line with the outcomes of the gateway course (Baragan & Cormier, 2013; CCRC, 2012; Edgecombe, 2011; Haywood & Willett, 2014; Jaggars, Edgecombe, & Stacey, 2014; Nodine, Dadgar, Venezia, & Bracco, 2013). Due to this increased demand in the new course design, deeper understanding of a concept is possible in an accelerated course because of the expectation to think through solutions and situations (Stigler, Givvin, & Thompson, 2010).

Modularization of content accelerated the DE sequence in the NCCCS redesign. Concepts were broken into individual units of study (NCCCS, 2011a), requiring 80% mastery to be obtained for all topics needed to succeed in the subsequent gateway course (McTiernan, Palmer, & Fulton, 2013). Prerequisites for gateway courses were customized (Edgecombe, 2011), and students exited the sequence once they had mastered the topics required for their program of study.

Mastery of content to 80% or higher was integral to the NCCCS redesign (NCCCS, 2011b). Benjamin Bloom first introduced mastery learning in 1968 as instructional units taught in a time of approximately one to two weeks, followed by an initial assessment, a review of the weak topics, and a final assessment (Guskey, 2001). Since acceleration increased rigor in the classroom, requiring mastery facilitated the possibility that students would understand the material required and remember it in the subsequent course once they moved on (Guskey, 2001). Mastery promoted a deeper level of understanding of the material and provided a deeper foundation for future courses as students progressed through the mathematics sequence (Ariovich & Walker, 2014). Since, mathematics is a subject that builds upon prior knowledge, subsequent mathematics success is almost impossible without initial success and mastery of foundational content (Boylan, 2011).

"It is essential to evaluate the success of students in subsequent courses in order to determine the effectiveness of the new structure and acceleration ..."

Related Research

Two colleges using acceleration were studied for their effect on student success. The first one featured The Community College of Denver, where the FastStart program was designed and implemented for lower-scoring students by accelerating the sequence using compression (Jaggars, Hodara, Cho & Xu, 2014). In the spring of 2006, the Community College of Denver compressed its three-semester mathematics sequence (three 16-week courses) into two semesters (Jaggars, Hodara et al., 2014). Students had the choice of taking the two lowest levels in an 8-week format and the highest level the next semester in 16 weeks or vice versa. Seat-time was not reduced, just longer blocks of time were required, which provided the opportunity for instructors to "implement a wider variety of instructional activities" (Jaggars, Hodara et al., 2014, p. 6). The study investigated the likelihood of accelerated students completing the college-level gateway course and their success. The sample was taken from courses between spring 2006 and spring 2008 and resulted in a sample size of 133 in the program group and 1,222 in the comparison group. The results of propensity score matching showed that FastStart students were 11% more likely to complete gateway courses than those in the traditional sequence, and once enrolled in the gateway course, those students performed just as well as those who did not take the accelerated courses (Jaggers, Hodara et al., 2014). Researchers concluded that accelerated courses provide "students with a strong positive boost in terms of their probability of enrolling in and completing college-level math" (Jaggers, Hodara et al., 2014, p. 18).

In fall 2009, Queensborough Community College (QCC) in Bayside, New York, tried an accelerated DE arithmetic class, but unlike The Community College of Denver, they used curricular redesign, which reduced the seat-time required (Guy, Cornick, Holt, & Russell, 2015). The college also left all the other courses in the DE mathematics sequence the same. The original course was not eliminated, so students had a choice between the new accelerated 4-week, 20-hour student-centered Arithmetic course, or the original 16-week teacher-centered course. The traditional lecture format was replaced with active engagement in problem solving activities to encourage cooperative learning (Guy et al., 2015). Guy et al. (2015) limited their participants based on four pre-determined criteria (i.e., COMPASS taken before taking a mathematics course, COMPASS score greater than or equal to 25 and less than 30, if an arithmetic course was

the first mathematics course taken, and if a student's first attempt at the course was Fall 2009 – Fall 2012), resulting in a sample size of 1,001 students.

Using Fisher's exact (an association's test), statistically significant results in favor of the accelerated courses were obtained in the following categories: passing the course the first time, passing the course any time during the semester, enrolling in the subsequent course, and completing the sequence (Guy et al., 2015). The results of this study were both positive and negative. Out of the 1,001 students taking arithmetic through fall 2012, 233 chose the traditional 16-week format and 768 chose the accelerated 4-week format. Of those students, 618 (80%) passed the accelerated course sometime between fall 2009 and 2012, while only 159 (68%) passed the traditional course in the same amount of time. A total of 676 (68%) students enrolled in the next course, Elementary Algebra; 144 (62%) were from the traditional course and 532 (69%) were from the accelerated course. Results for completing the next course in the sequence the next semester, however, were weak. In fall 2011, 959 students enrolled in the accelerated arithmetic course, but only 107 (11%) of those successfully completed the Elementary Algebra course spring 2012. Guy et al. (2015) noted that there were several flaws in the study (e.g., did not begin as a research study, students self-selected courses, significant differences in sample size), and that "generalizability of these results may be limited" (p. 8), so it is difficult to determine what part of the redesign was most effective. Guy et al. (2015) also stated that "the entire sequence should be viewed as the redesign target" (p. 9) and the accelerated format gave "students a lower cost, less time-consuming option to persist" (p. 9).

As accelerations becomes more and more common as a redesign strategy for DE courses, additional research could add to the body of literature that exists. Acceleration design is still in its infancy of implementation; so much of the research is limited to a few programs with only a couple of years of implementation. Comparative research over a longer time frame will help establish the long-term effects of acceleration and success.

Method

A non-experimental, descriptive research design (Johnson & Christensen, 2012) answered the following research question: What is the difference in subsequent-course pass rates (students making a C or better) in gateway mathematics courses for former DE mathematics students based on the type of DE mathematics course completed (4-week versus 16-week)? This research describes the subsequent-course success rates of the present 4-week DE mathematics courses compared to the subsequent course-success rates of the past 16-week courses. Data were gathered from a year prior to the redesign (2010-11) and a year immediately after the implementation of the redesign (2013-14). The dependent variable for the research question pertained to success rates in the subsequent gateway mathematics course (i.e., pass with a C or better). The independent variable pertained to the type of DE course completed (i.e., 16-weeks or 4-weeks).

The participants were students at 12 community colleges in the NCCCS, with multiple colleges represented. Small, large, rural, urban, eastern, central, and western North Carolina colleges were all represented in this study, and permission was obtained from the appropriate Institutional Review Board (IRB) and the 12 participating colleges as well as the NCCCS Office. This study used archival data from the NCCCS data warehouse. Computation of the data calculated the subsequent course success rates for students prior to and after the redesign. Subsequent gateway credit-bearing course success rates were computed for all DE mathematics students (at each institution) who completed a DE mathematics course and then enrolled in a gateway credit-bearing course within the same or next academic year at the same institution. A C or higher in the gateway course is considered success. Data from 2010–11 established the subsequent course success rate for former DE mathematics students in the 16-week course format who attempted their gateway course during the same or next academic year at the same college. Data from 2013-14 established the subsequent course success rate for former DE mathematics students in the 4-week DE mathematics course format who attempted their gateway course during the same or next academic year at the same college.

A weighted chi-square test with contingency tables analyzed the data (Field, 2013; Johnson & Christensen, 2012). An excel file from the system office contained the total number of A, B, C, D, F, OW (official withdraw), and W (withdraw) grades. Each college had different guidelines for the use of each of those withdraws. Passing grades were the total of A, B, and C grades, and failing grades were the total of D, F, OW, and W grades. These totals, the weighted cases (Field, 2013), were analyzed in SPSS version 24.

Descriptive statistics addressed the research question. A 2x2 contingency table answered the research question. The rows represented the number of students in 16-week and 4-week DE mathematics courses, and the columns represented the number of students who passed or failed the subsequent gateway mathematics course. The chi-square associations test determined if any statistically significant relationships occurred in all comparisons (Johnson & Christensen, 2012). The level of significance for the test was set at $p < 0.05$.

Results

A total of 4,616 DE mathematics students from the predesign courses in 2010-11 took a gateway course during the designated parameters of the study at the 12 participating colleges. 2,905 of the students passed the gateway course, resulting in a 62.93% course success rate. During the redesign year of 2013-14, a total of 3,486 students took the DE and gateway courses in the designated time frame, and 2,192 of them passed the gateway course, resulting in a 62.88% success rate (see Table 1). The comparison of these two course-sequence structures did not result in a statistically significant relationship (X2(1) = 0.002, p = 0.961) (see Table 2). Therefore, no difference exists between subsequent success rates for students who took the 16-week course sequence versus the accelerated 4-week course sequence. Acceleration of the material and less time allotted for each course did not affect students who completed their DE mathematics courses and then took the corresponding gateway credit-bearing mathematics course in the same or subsequent academic school year.

Table 1
Pre- and Post-Redesign Comparison

		Pass		
		No	Yes	Total
Course	Post-Redesign	1294_a (37.12%)	2192_a (62.88%)	3486
	Pre-Redesign	1711_a (37.07%)	2905_a (62.93%)	4616
Total		3005 (37.09%)	5097 (62.91%)	8102

Note: [a]Subset of pass categories whose column proportions do not differ significantly from each other at the .05 level.

Table 2
Chi-Square Test for Pre- and Post-Redesign

	Value	*df*	Asymptotic *p* (2-sided)	Exact *p* (2-sided)	Exact *p* (1-sided)
Pearson Chi-Square[a]	.002	1	.961		
Continuity Correction[b]	.001	1	.979		
Likelihood Ratio	.002	1	.961		
Fisher's Exact Test				.963	.490
N of Valid Cases	8102				

Note:a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 1292.94.

b. Computed only for a 2x2 table

Discussion

The results from this study suggest that accelerating the curriculum did not affect the subsequent course success rates but rather shortened the amount of time for many students to complete the DE mathematics sequence. The FastStart Program at the Community College of Denver completed complementary research showing that acceleration did not negatively affect subsequent course success (Edgecombe, Jaggars, Baker, & Bailey, 2013; Jaggars, Hodara, et al., 2014). Similar to this study, a study of four accelerated models by the Community College Research Center addressed concerns that accelerated courses would result in a lower success rate reported similar findings (Jaggars, Edgecombe et al., 2014). Results of studies presented by Edgecombe (2011) show that a change of structure alone resulted in increased student success "even when teaching practice remains unchanged" (p. 25). However, Edgecombe (2011) did suggest that most structural changes are accompanied by a pedagogical change, but more research on the outcomes using different instructional designs is needed.

One strategy that can help facilitate the success of acceleration is teaching mathematics conceptually so that students can use reason to solve problems rather than trying to memorize multiple procedures (Stigler et al., 2010). Stigler et al. evaluated placement-test scores and analyzed the worked solutions of mathematics questions that were solved by 748 community college DE mathematics students so that the researchers could evaluate the reasoning skills used by students when solving problems. After administering the mathematics questions to students, Stigler et al. (2010) identified the most difficult placement-test questions. In review of the errors, Stigler et al. (2010) began to draw the conclusion "that rather than using number sense, students rely on memorized procedure, only to carry out the procedure incorrectly or inappropriately" (p. 9), and that the errors "may provide evidence that students have a disposition to treat the goal of mathematical problems as getting answers quickly rather than correctly and with understanding" (p. 9). The focus of solving a problem was on a procedure rather than on numerical logic and reasoning, and with any reasoning, many of the errors could have been avoided. Stigler et al. (2010) also suggested that the difference in the level of conceptual understanding between students who tested into basic arithmetic versus elementary algebra may not be that different. Opportunities need to be presented that give students the skills to conceptually understand mathematics and the time to practice it (Stigler et al., 2010). Without reasoning, students rely on multiple procedures that they have memorized and often confuse when using the procedures together.

Limitations

Because of the relative new implementation of the redesigned DE mathematics courses, this study had some limitations. At the time of the study, clean data was only available for one year of implementation. As stated earlier, studies with longer time frames are needed. Conducting this study again with multiple years of data would be helpful in supporting the effect of the acceleration. Also, this study was conducted with only 12 of the 58 community colleges in North Carolina Community College System, and a study using all 58 may result in different statistics. Finally, this study was specific to North Carolina and it is possible that the results could not be generalizable to other colleges and states outside of North Carolina.

Conclusion

The conclusion of no statistically significant difference between the subsequent gateway course success rates in relation to the length of the course implies that length does not make a difference. Therefore, instructors should not fear acceleration of content into smaller units of time. Students were able to learn and remember the material at about the same rate whether they were in class for 16weeks, learning multiple concepts during the semester, or four weeks, learning one concept at a time. There was no definitive answer to the common argument of whether more or less time is better in this study. Based on the findings of this study, if acceleration will help students complete faster, then it should be considered when redesigning DE mathematics sequence options.

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Teaching the Rhetorical Situation to Improve Disciplinary Literacy

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Research supports instruction of the rhetorical situation—the confluence of a writer, a topic, a medium, and an audience—for teaching reading and writing processes (Bunn; 2015; Downs & Wardle, 2007; Lockhart & Soliday, 2016; Sanchez, 2009). Flower and Hayes (1981) conceptualized the thinking process needed to successfully address a topic within a rhetorical situation as considering the task, engaging in knowledge about the topic and the audience, and setting goals and monitoring progress. Elements of the task might include the assignment, purpose, context, discipline, or forum. These elements might dictate audience expectations. And knowledge about the tendencies and processes of readers and writers might further shed light on the rhetorical situation. Making the rhetorical situation more transparent improves the likelihood that a reader's goals or a writer's goals align with the needs of the task and the audience. Putting these approaches to the test, Downs and Wardle (2007) designed a course that focuses on the rhetorical situation, answering questions such as, "How does writing work? How do people use writing? What are problems related to writing and reading and how can they be solved?" (Downs & Wardle, 2007, p. 558). In directly engaging students with rhetorical reading and writing, they found students had (a) an increased self-awareness about writing, (b) improved reading abilities and confidence, and (c) raised awareness of research writing as conversation (Downs & Wardle, 2007).

In addition to providing a vehicle for teaching reading and writing processes, we suggest that a focus on the rhetorical situation provides a means for improving disciplinary literacy, the understanding that "reading and writing tasks and processes differ based upon the demands, foci, and epistemology of the discipline" (Holschuh & Paulson, 2013, p. 13). In this Promising Practices article, we will describe several assignments and activities that engage students with the rhetorical situation toward the aim of improving disciplinary literacy: (a) rhetorical reading/writing questions, (b) a rhetorical analysis essay, and (c) workshops that teach students to read like a writer.

Rhetorical reading/writing questions (e.g. Hairston, 1986) can provide useful guidelines for informal assignments, such as reading responses. For example, Sanchez (2009) asked students to keep a journal for each text they read in which they respond to questions about the rhetorical situation, focusing on (a) the author's purpose, (b) what needs the article is addressing, (c) who the audience is and what the audience is bringing to the text, (d) how the author is influencing readers, and (e) how the article is functioning. found that students engaging in this process showed improvement in reading scores and writing performance. Importantly, we have noted that these rhetorical reading/writing questions are not beneficial when students do not have an opportunity to discuss their responses. However, when students do discuss their responses, these rhetorical reading/writing questions have demonstrated potential for starting conversations about discipline-specific expectations for reading and writing. For example, in writing a reflection on how an example of journalism functions, students might note that most of the important information in the article is in the beginning. But, it is through discussion that students start to speculate about the attention spans of readers and about the print origins of journalism in which an editor might cut out the end of an article for issues of fit on the page. So, it is through discussion that we can encourage students to arrive at the "why?" and to think about issues related to the demands and epistemology of a discipline.

A useful formal assignment for instruction of the rhetorical situation is the rhetorical analysis essay. In a rhetorical analysis essay, students analyze how well an article or essay is written, using criteria such as forum, structure, use of evidence, target audience, and use of rhetorical appeals (logos, pathos, and ethos). So that students improve their awareness of discipline-specific values and conventions, we recommend asking students to write rhetorical analyses of texts in different disciplines. In doing so, our students have identified different types of evidence

that are valuable to specific disciplines, for example, first-hand accounts in journalism and primary sources from minority voices in history. As another example, students also note structural and style differences in APA versus MLA texts. Accordingly, Wardle (2007) suggests that providing an opportunity for students to conduct rhetorical analyses of texts in a variety of fields improves transfer of knowledge from writing classes to classes in other disciplines.

Reading-focused workshops provide another method for introducing the rhetorical situation to informal or formal reading and writing activities. Using a workshop to integrate reading and writing instruction is not a new concept. In fact, it is a key discussion in Bartholomae and Petrosky's (1986) seminal text for integrating reading and writing. However, Bunn (2015) reimagined the role of the traditional workshop model (in which students respond as a class verbally and in writing to peer writing) to be more inclusive of conscious reading instruction. Bunn (2015) suggested teaching students the Reading Like a Writer (RLW) method. In the RLW method, students are considering choices writers make to determine strategies that writers use that would work best in students' own writing. To improve disciplinary literacy, we recommend practicing this method with texts in different disciplines. Lockhart and Soliday (2016) found that as students learn to read the way a writer does, they are more able to use texts in different disciplines as models for their own writing in those disciplines.

In this article, we have presented an approach to improving the disciplinary literacy practices of college writers that focuses on teaching the rhetorical situation. When instructors include the structured, deliberate asking of rhetorical reading/writing questions with their students, include rhetorical analysis essays as part of their core writing assignments, and utilize workshops that emphasize students reading like a writer, the rhetorical situation becomes part of the context of the educational experience. And when the rhetorical situation is addressed across varied content areas, students' ability to navigate a varied set of disciplinary literacies can be positively impacted.

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Goffman and Spoiled Identity: Helping Developmental Students Shed the Label

Jack Trammell

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Students who are in developmental education (DE), like students with disabilities and other students receiving learning supports, are often identified as such a priori, which means the students have already lost control over a certain amount of information about their identities. This is done in any number of ways, ranging from the quantitative criteria used to place students into DE tracks to the actual label that some programs use to signify and formalize inclusion. Sometimes the consequences for carrying such a label are minor—perhaps students have a coded number on a transcript that generally will not be seen as a negative factor—although sometimes the consequences are more serious: a student may feel marginalized by the attitudes that others have on campus in relationship to the label.

In the Goffman identity management paradigm, these students are already at risk simply by the loss of control over this personal information (Goffman, 1963). In his own words, the students find that their role has already been created for them: "a particular front has already been established" (Goffman, 2013, p. 27). By its very definition, the label brings with it stigma, social consequences, and most importantly perhaps for this conversation, educational consequences over which the student may have little control and which may significantly and adversely impact their success (Trammell, 2009).

On the surface, this assumption seems to be partially irrelevant—if learning support cannot occur until students are identified, then why bother conversing about the label? The label is often a necessary step. For this perfectly justifiable reason, learning assistance programs and DE have generally focused primarily on academic interventions, like tutoring, and not as much on the significant impact of the at-risk label (Bremer et al., 2013). But if Goffman is correct in his global assumption that "stigma management is a general feature" anywhere there is deviation from the norm, then perhaps educators in DE and learning assistance professionals have not spent enough time designing programs and helping students avoid some of the more serious and potentially harmful consequences of being forced to wear the at-risk student "mask" (Goffman, 1963, p. 130). In other words, they are not empowered with information management techniques that position them to limit stigma and educational consequences.

Three-Fold Intervention

Goffman's (1963) work, along with many others directly involved in educating students who are at-risk, suggested three areas where administrators as well as educators in DE can focus interventions. First, at the macro level, an intensive examination of the program—its forms and protocols, its position of normalcy within the entire school, and how the label (in the data management sense) is positioned in recordkeeping—can readily be assessed for impact as a positive or negative reinforcement of the label. The power of semantics in designing and implementing programs should never be underestimated. Although arguably no permanent language is correct for all politics and circumstances, a general sensitivity to language can reveal subtle opportunities to reverse negative representations and grow more positive ones.

At the micro level, students should be taught and then encouraged to cultivate their own information-management skills (Trammell, 2010). Students should be aided in having an accurate understanding of their own abilities and potentialities, and in some cases, direct information about what the label means at their school. Students should be taught how to communicate with others about their learning situation: Who do I tell? When do I tell? How much do I tell? Why do I tell? How do I process my own perspective about the "mask?" Ideally, this variation on the theme of self-advocacy should begin much earlier than the postsecondary experience.

Between the micro and the macro, the training of staff is an effective level to address the power of the label. From peer tutors to classroom instructors, most have not fully thought through the full implications of the labels that the students have as part of their at-risk identity at school. Training and awareness of labeling theory for faculty and staff can bear immediate fruits, including discovery of their own forms of information management (since they handle student's information, and faculty and staff have their own diversity to balance).

Conclusion

Perhaps, as Goffman suggests, there is no way to escape the necessity of the label. Whether that is true or not, DE programs and other learning assistance initiatives should use the power of identity and information management to ensure positive experiences and academic success for students. All three of these areas are important but by themselves still cannot change the initial effect of the label completely. By definition, the students are at risk. And the definition reifies that risk. But we, as learning assistance professionals, are also in powerful positions of authority where we can challenge the labels and train accordingly.

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Implementing Change and Planning English Corequisite Classes

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Texarkana College (TC) was first introduced to corequisite English classes in 2011 at the Achieving the Dream Conference through the Community College of Baltimore County's Accelerated Learning Program (ALP) (Venezia & Hughes, 2013). Acceleration reduces the time and/or course sequence in developmental education (DE), allowing students to enroll in gateway courses more quickly and/or co-enroll in the first college-level English course while taking the remedial course (Venezia & Hughes, 2013). TC faculty piloted the ALP with a 12:1 student-teacher ratio and then increased to 15:1 and took the plunge to scale up to full implementation to make it cost-effective for the college. Fifteen students enroll in the Integrated Reading and Writing II course and in the Composition I course with the same instructor. Ten additional students who qualify for Composition I join the fifteen students who are co-enrolled in Composition I. The English faculty have been included throughout the process, including the piloting phase and in creating common syllabi for both courses. Other important factors for consideration include logistics such as course loads, room availability, scheduling, course criteria, registration coding, and collaboration with enrollment management and advising (Adams & McKusick, 2014).

One challenge has been the ability to code the courses on the schedule to determine enrollment in both courses so that it is clearly understood by students and enrollment services. With the assistance of division and enrollment management personnel, corequisite courses are listed by section with a P for paired for each section: ENGL 0042.P1—Cap of 15 students; ENGL 1301.P1—Cap of 15 students (same 15 enrolled in ENGL 0042.P1), and ENGL 1301.01—Cap of 10 regular Composition I students. To streamline communication of placement for students, the testing center, enrollment services, and faculty advisors color coded testing sheets and placement charts. A portion of lab time was also incorporated into the schedule during instructional time rather than expecting students to navigate lab assignments independently. Another challenge has included difficulties with student passcodes and technical problems associated with English labs manufactured and packaged by textbook companies. Therefore, faculty created a departmental English lab in the college's Learning Management System. Students no longer have to purchase lab access, and the lab instruction, quizzes, and assignments can be adjusted and modified to meet the needs of the students. A common course syllabus is also used by all instructors for each course, complementing the curriculum in each course and building and reinforcing reading and writing skills in the Integrated Reading and Writing course.

Teaching methods in the course rely heavily on active and collaborative learning techniques such as peer groups, peer editing, think-pair-share, and group projects and presentations. Innovative teaching methods include writing a comparison and contrast essay based on an in-depth peer interview. Also, students write an argumentative group research paper that requires collaboration on choosing a topic, researching the topic, writing and correctly using MLA documentation.

The course's success has been demonstrated through data as well as student and faculty reaction. In fall 2015, 78% of students enrolled in the corequisite model were successful in English 0042 and seventy-four percent were successful in English 1301. In fall 2016, 83% of students were successful in English 0042 and 82% were successful in English 1301. Students are appreciative of the ability to accelerate their completion of DE English while also completing the gateway course. Professors find value in the extended class time with students because of the rapport established with the students. Faculty and staff at TC have realized the benefits of students taking a DE course for skills improvement.

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Bringing Collaboration and Differentiation Into the College Classroom

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The classroom buzzes with student chatter. A small group in one corner laughs over a hand-scribbled picture. Groups of students sit clustered around tables as they pass slips of paper. To an outsider, it may appear that the students have taken over the class; to the teacher, it is obvious that they are fully engaged in their own learning. This engagement is the key reason I use review stations in my classroom.

Review stations are an easy way to begin incorporating small group instruction into the college classroom. The use of review stations allows for collaboration, physical participation, and critical thinking (Hennessy & Evans, 2006; Tinto, 1997). Recent research also suggests small-group activities can build student self-awareness and comfort in the classroom (Leisey, Mulcare, Comeford, & Kudrimoti, 2014; Yamauchi, Taira, & Trevorrow, 2016). During a typical review station day, my students participate in three to four stations for 10–15 minutes each. In these stations, students explore the content they have been learning in new and engaging ways.

Though these stations can be used to review a variety of topics and skill—from equations and formulas to psychological theories and musical notation—one of the easiest places to start is with vocabulary review. On review station days, my students know to expect at least one station containing vocabulary terms we have been learning. Almost any workbook-style practice can be turned into a station. For example, many textbooks have students correctly identify which word is missing from a sentence. I write these sentences on sentence strips and give the words to be used on smaller pieces of paper. Students then work in groups to place each word in the correct sentence. By taking this activity out of the textbook and putting into the students' hands, the activities become more engaging and require students to discuss and debate what they know in order to all agree on the answers. Playing Pictionary, creating test questions of their own to quiz their group members, and debating the merits of an argumentative piece of writing are a few other stations I use regularly.

Review station days give my students a chance to practice and determine for themselves where they need to spend more time studying. I remind my students to take note of stations they struggle with in order to help guide their independent study time. As the facilitator of these stations, I am able to tailor my instruction as students move from activity to activity. Walking around the groups, I overhear misconceptions or confusion and can quickly give one-on-one support to correct these issues. The time spent in stations allows everyone in class the opportunity to get into deeper conversations regarding the concepts and skills we practice. Review stations have become an essential piece of my classroom and an important part of my students' active learning.

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Journal of College Academic Support Programs

Call for Submissions

Summer Issue 2018 (Due March 1)

Corequisite Topics Encouraged

Supported by the Texas Association for Developmental Education (TADE), the Texas chapter of the College and Reading Learning Association (TxCRLA), and the Texas State University's Graduate Program in Developmental Education, the Journal of College Academic Support Programs (J-CASP)—a double-masked, peer-reviewed scholarly journal relevant to developmental education (DE) and learning assistance professionals in Texas—is now accepting submissions for the second issue, slated for publication in early Summer 2018. Please note that while all manuscripts will be considered for publication in this or future issues of the J-CASP, preference for this issue will be given for feature articles and promising practices based on corequisite models of DE as the state of Texas prepares for implementation of HB 2223 by Fall 2018.

The J-CASP seeks articles on such topics as pre-assessment, assessment, and interventions for college readiness; college placement, academic advising, and counseling and completion pathways; and developmental education course models and innovations for developmental mathematics, postsecondary literacy, and student success literacy (e.g. co-requisite, contextualized, accelerated, emporiums, integrated, paired, learning communities, academic bridge programs, and boot camps). Additional topics include but are not limited to non-course based options (NBCOs) and learning support models such as tutoring, mentoring, coaching, computer-based instruction, content-based learning labs, and various types of peer-educator support programs.

The J-CASP will accept scholarly, research-based articles with emphasis on empirical research approaches such as experimental research, teacher research, action research, ethnography, case studies, and analytical methods including quantitative, qualitative, and mixed method approaches. In addition to empirical write-ups, we are also seeking research-to-practice, theory-to-practice articles, and reviews of literature that include recommendations and implications. Appropriate articles that are not write-ups of empirical research studies will be considered for double-masked peer review based on scholarly rigor—more reflective, practitioner-based articles will be considered for publication as a non-peer-reviewed *promising practices* article.

Appropriate manuscripts will undergo a double-masked peer-review process by members of the J-CASP editorial board. The review process will take approximately six weeks, including two weeks for authors to address reviewer comments.

Submit your manuscript as a Microsoft Word (.doc, .docx, etc.) file, double-spaced with 12-point Calibri font. Your manuscript should not exceed 6,000 words and must adhere to the APA Publication Manual (6th edition) guidelines for writing, citation, and documentation style. Please include an abstract not exceeding 250 words. The J-CASP will not consider previously published articles or manuscripts under consideration elsewhere. Authors are responsible for the accuracy of all statements in their manuscript. Authors are responsible for obtaining permission for reprinting figures or quotations exceeding fair use regulations. Please submit manuscripts through our online system: https://journals.tdl.org/jcasp/index.php/jcasp/user/register.

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