REMEDIATION TO SUCCESS: MARTIN METHODIST COLLEGE

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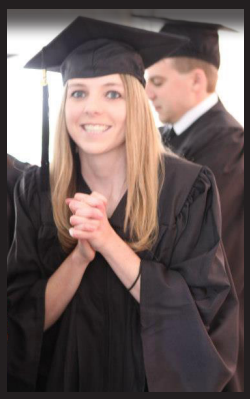
Peabody College of Education, Vanderbilt University · May, 2014



Executive Summary

Martin Methodist College asked us to examine ways to improve retention rates for its students enrolled in two or more developmental courses. After examining best practices noted in the literature, interviewing professionals in the field, surveying currently enrolled freshmen at MMC, and interviewing faculty and staff at the institution, we have come to the conclusion that MMC should implement changes to its developmental education program to improve its retention rates and to comply with best practices in the field of developmental education.

Best Practices

MMC asked us to identify best practices and model institutions in the areas of cost, structure, and placement for developmental education. We have identified seven model institutions in these areas and interviewed individuals who work at these institutions. Additionally, we reviewed the literature on best practices in developmental education and spoke with a scholar in the field. As a result of this inquiry, we developed a best practice framework for developmental education programs in the designated areas. We used information gained during faculty and staff interviews with MMC employees, as well as documents provided by MMC, to assess the institution's performance using that framework. While MMC exceeded the best practices in terms of cost savings for developmental education, we noted areas for improvement in program coordination, integration of adjunct faculty, provision of professional development activities for developmental faculty, use of multiple measures for student placement in developmental courses, mapping placement test questions to course competencies, inclusion of supplemental supports for students near the cutoff score for placement exams, and provision of placement test preparation materials.

Students in Developmental Courses

MMC also asked us to study how students enrolled in two or more developmental classes fare at the institution. We conducted a survey of freshmen enrolled in the fall 2013 semester to assess differences in academic self-concept, academic self-efficacy, student engagement, and intent to persist between students enrolled in two or more developmental courses and students enrolled in one or fewer developmental courses. We performed a difference in differences analysis using linear regression analysis to determine that there are significant differences between the two groups for academic self-concept and intent to persist, but that there are no changes from the beginning of the semester to the end of the semester in any of the measured concepts as a result of enrollment in two or more developmental courses. We supplemented our quantitative findings in this area with information gleaned from interviews with faculty and staff members.

We attempted to examine the association between the First-Year Experience 100 course and students' persistence and grade point averages. Additionally, we intended to examine the performance of students enrolled in two or more developmental

courses in subsequent, credit-bearing courses. However, MMC ultimately was unable to provide us with the data we requested to answer these questions quantitatively. Therefore, we have provided MMC with instructions on how they could answer these questions quantitatively in the future, if they are still interested in them. We also used qualitative data from our interviews with faculty and staff to provide additional information on these items.

Recommendations

Based on these analyses, we have developed the following recommendations for MMC:

- Devote more funds to developmental education.
- Restructure or terminate FYE 100.
- Adopt a written mission statement.
- Better define the role of the Chair of the Developmental Studies Committee.
- Provide training and professional development related to developmental education.
- Offer more accelerated course options.
- Require multiple measures, including non-cognitive assessments, for course placement.
- Provide test prep materials & in-person review session.

While implementing these changes will have some costs associated, the College currently under-invests in its developmental education program in comparison to best practice institutions, a finding that is surprising since such a large proportion of its student body is enrolled in developmental courses and the institution's stated desire to see these students succeed. Therefore, we are hopeful that MMC will consider investing additional funds into its developmental education program to implement some of the recommendations indicated by this research.

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Definition of the Problem and Project Questions

Located in Pulaski, Tennessee, Martin Methodist College (MMC) is the only baccalaureate-granting institution in a 13-county region (D. Haskins, personal communication, May 31, 2013). Founded in 1870, MMC functioned as a private junior college that provided higher education to students and communities where attending college was not the norm. The school transitioned to a four-year, liberal arts institution beginning in the 1993-94 academic year (Martin Methodist College, "College History," n. d.). It is accredited by the Southern Association of Colleges and Schools and by the University Senate of the United Methodist Church (Martin Methodist College, "About MMC," n. d.).

MMC admits a large number of students each year who require remedial coursework prior to entering college-level classes. Unfortunately, the College has found that those students who are required to take two or more developmental courses persist at much lower rates than students who meet the criteria to enter directly into college-level coursework (D. Haskins, personal communication, May 31, 2013). MMC has asked us to examine this phenomenon, specifically in regard to students who are required to take two or more remedial courses, and to make recommendations for improving the persistence of these students. Based on the College's initial request and subsequent conversations with administrators to gain details about the College's needs, we have developed the following project questions and sub-questions:

Project Question 1

How does MMC's developmental education compare to programs at other schools and to model programs, best practices, or programs that have been identified as effective in the research literature?

- Is there a more cost-effective way to offer developmental courses?
- Is the developmental coursework appropriately structured?
- Are the course placement procedures appropriate?

Project Question 2

How do MMC students enrolled in two or more developmental courses fare?

- What is the association between developmental course-taking and students' academic self-concept, academic self-efficacy, engagement, and persistence?
- What is the association between the First-Year Experience course and developmental students' persistence?
- What is the association between the First-Year Experience course for developmental students and their grade point averages?
- Do students in developmental courses acquire the skills they need to be successful in subsequent, credit-bearing courses?

Contextual Analysis

The problem of inadequate college-readiness is acute in Tennessee. In the state, "70 percent of students entering college after high school graduation require remediation in math, according to the Tennessee board of regents. The three-year graduation rate for students placed in remedial math upon entering community college is 5 percent" (Adams, 2014). Students enrolling in Martin Methodist fit this profile.

MMC Student Demographics

Enrollment at MMC is just over 1,000 students. Three-quarters of students are white and ten percent are African-American; 88 percent of students are in-state residents and approximately two-thirds are female (The College Board, 2013). The MMC Admissions Office admits 88 percent of applicants, and 45 percent of admitted students enroll (The College Board, 2013). According to the College Board (2013), 36 percent of students graduate in six years.

Over half (57 percent) of MMC students are first-generation college students (D. Haskins, personal communication, June 5, 2013), and over 70 percent are eligible for federal Pell grants (D. Haskins, personal communication, June 5, 2013). University administrators recognize that many MMC students lack the social, financial, and cultural capital necessary to be successful in college. Vice President Haskins notes that because of the lack of selectivity in MMC's admissions, many of the College's students are "underprepared to be successful without significant assistance" (D. Haskins, personal communication, June 5, 2013).

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-- Dennis Haskins

Developmental Studies

In order to assist students who need academic support, the College offers developmental (remedial, non-credit-bearing) courses and First-Year Experience seminars. MMC offers one developmental reading course, two developmental English composition courses, and two developmental math courses. All developmental reading and writing courses are taught by adjunct faculty under the supervision of the coordinator of the English program. Both full-time and adjunct professors teach the developmental math courses; all math courses are under the supervision of the math program coordinator (D. Haskins, personal communication, June 5, 2013). Every developmental course is a three-hour class, with an average class size of 20 students (D. Haskins, personal communication, June 5, 2013).

Students who score below a 20 on the ACT must take the COMPASS test to determine placement levels in developmental courses. Those who enroll in two or more such courses are classified by the college as "developmental students" and constitute the population of interest for our study. During the fall 2012 semester, 90 first-time freshmen enrolled in at least two developmental courses. Less than 30 percent of

these students matriculated into credit-bearing courses, while the remainder dropped out from MMC.

The First-Year Experience (FYE) 101 course, taken by all first-year MMC students, is designed "to assist new students in their successful transition to the academic and social aspects of college life" (Martin Methodist College, "First-Year Experience," n. d.).The FYE 101 course was started at MMC five years ago as part of an effort to increase retention rates. The FYE 101 course is a seminar-style course worth one hour of credit. College administrators designed the course to be taken during the first fall semester of enrollment at the institution. The FYE 101 course was successful for improving overall retention rates at the institution. The retention rate, measured from first fall to second fall, for students in fewer than two developmental courses rose to 67 percent, an increase of approximately ten percentage points over the past five years (D. Haskins, personal communication, June 5, 2013).

However, administrators were unhappy with the lack of progress in improving retention rates for students in developmental courses. Because of this, three years after the inception of FYE 101, the College developed a second First-Year Experience course, FYE 100, for students enrolled in two or more developmental classes. This three-hour course is designed to teach study skills and to orient students to academic life. Those enrolled in at least two developmental courses take this three-hour FYE 100 learning strategies course in the fall and the one-hour FYE 101 seminar in the spring, further segregating them from the remainder of the freshman class. Despite the inception of the FYE 100 course, the retention rate for students enrolled in two or more developmental classes remains below 30 percent (D. Haskins, personal communication, June 5, 2013). According to Haskins, "There is something we are not doing right….It is not all the fault of the student" (D. Haskins, personal communication, June 5, 2013).

Program Theory

When asked what program theory undergirds the developmental and FYE coursework at MMC, Haskins paused, then said, "Perhaps a part of our problem is there is no real theory undergirding what we do" (D. Haskins, personal communication, June 5, 2013). Although the College does not have an explicit program theory, it operates under an implicit theory that can be explicated by explaining the program impact theory, service utilization plan, and organizational plan. The implied program impact theory (see Appendix I) presumes that through exposure to discipline-specific remedial coursework and instruction, as well as study skills instruction, students with academic deficiencies will become prepared for college-level coursework, will subsequently succeed in completing their college-level work, and will persist at and eventually graduate from the College. Under MMC's service utilization plan (see Appendix II), students are placed in developmental courses based on their ACT and COMPASS placement test scores and progress from lower- to higher-level courses until they have successfully completed all the necessary developmental coursework. Upon successful completion, students enroll in credit-bearing courses. Lastly, under the program's organizational plan (see Appendix III), developmental courses are housed in the departments representing their respective disciplines and are taught exclusively by adjunct faculty for reading and writing courses, and predominantly by adjunct faculty for math courses. These faculty members provide instruction and coursework aimed at preparing developmental students for success in college-level courses. Additionally, for assessment purposes, the program includes an assessment coordinator for developmental studies, who has administrative responsibilities but does not control program content.

Methods, Data Analysis, and Findings for Project Question One

Our first project question was "How does MMC's developmental education compare to programs at other schools and to model programs, best practices, or programs that have been identified as effective in the research literature?" Specifically, MMC asked us to examine best practices related to cost, structure, and placement procedures. To answer this question, we began by reviewing literature in the field of developmental education to identify best practices and institutions that model these best practices. Next, with the assistance of Professor Angela Boatman, Vanderbilt University, a leading scholar in the field of developmental education, we identified individuals at seven best practice institutions (see Appendix XI for a rationale for the selection of each best practice institution). We contacted these individuals by email to request their participation in an interview, either by email or by phone for institutions that were far away, or in person for institutions that were nearby, so that we could gain greater insight into the developmental education programs at their institutions. Individuals at all but one of the institutions selected the option of answering our interview questions by email. The other interview was conducted in person. We conducted the interviews using a semi-structured interview process by asking an initial set of questions, receiving the interviewee's responses, and asking additional questions based on those responses, as needed (see Appendix XIII). Recording and transcription of the email interviews was not necessary, as these interviews were already in written format; however, we did transcribe the interview that was conducted in person. Then we mined the interview data for relevant themes and salient quotes, which were used, in part, to develop the framework described below.

Best Practices Framework for Developmental Education

After our review of the literature in developmental education in the areas of cost, structure, and placement procedures and analysis of our interview data related to each topic, we consolidated our research into a single framework of best practices for developmental education (see Appendix X). Institutions may use this framework as a rating mechanism to compare their current practices in developmental education to the best practices identified. (We discuss this rating system more fully in the section titled "Findings of the comparison between MMC and the best practices framework.") The framework identifies six best practices related to cost for developmental education, nine best practices related to structure for developmental education, and five best practices related to placement procedures for developmental education. We describe each of these categories of best practices in the following paragraphs.

I. Best practices in costs related to developmental education

Martin Methodist College administrators asked us to examine best practices related to costs for developmental education. This is a common area of concern for developmental education, as critics of developmental education argue that it costs tax payers twice (Saxon & Boylan, 2001), once when paying for the instruction in the public K-12 system, and again when paying for

remediation, either via subsidies to public colleges and universities or via federal financial aid. Many critics also question the use of federal and state financial aid for remedial courses (Saxon & Boylan, 2001).

Unfortunately, despite the criticisms of the cost of providing developmental education, little research exists comparing the costs of such programs (Saxon & Boylan, 2001). The research that does exist contains various problems that make the data provided difficult to use for comparisons, such as differences in methodologies, lack of consistent definition of what constitutes developmental education, discrepancies in whether or not costs of additional services (tutoring, advising, testing) are included, and variations in definitions of what constitutes academic deficiency (Saxon & Boylan, 2001).

Through our examination of the literature and our interviews with best practice institutions, we identified six best practices related to costs.

1. Keep costs of developmental education less than 1.2 percent of total budget. In spite of the criticisms of the cost of developmental education, "the available research … effectively shows that remediation is a relatively small expense in higher education, especially given the size of the population that benefits from it"(Saxon & Boylan, 2001, p. 2). Only 1.2 percent of the Maryland higher education budget goes to developmental education, compared with 2.25 percent of the Texas higher education budget (Breneman, 1998), three percent in Arkansas (The Institute for Higher Education Policy, 1998), and eight percent for the City Universities of New York (City of New York, Mayor's Advisory Task Force on the City University of New York, 1999). Some states, such as Arkansas (The Institute for Higher Education Policy, 1998) and New York (City of New York, Mayor's Advisory Task Force on the City University of New York, 1999) reported that these percentages were even lower when considering the cost of developmental education at only four-year institutions.

2. Keep costs of developmental education below those of college-level courses. The cost per full-time equivalent (FTE) student in Arkansas was lower for developmental education ($6,709) than for all other academic programs, with the exception of General Studies ($6,163) (The Institute for Higher Education Policy, 1998). Cost per FTE was significantly higher in programs such as Business ($7,730) and Nursing ($8,235) (The Institute for Higher Education Policy, 1998).

3. Keep cost per FTE less than $6360. Similarly, in the City Universities of New York, developmental coursework at four-year institutions costs $6,360 per FTE compared with $9,754 overall (City of New York, Mayor's Advisory Task Force on the City University of New York, 1999). Costs for developmental education are typically higher at four-year institutions than at community colleges (The Charles A Dana Center, 2007).

Larry Abraham, Associate Dean of the School of Undergraduate Studies at the University of Texas at Austin, indicated that per student expenditures for developmental education are much lower at his institution than those reported above. He said, "The average annual cost per student of our program, including administrative personnel and operation, instructional salaries, and advising, is about $1,600 (not including employee benefits, which are borne at the institutional level)."

4. Do not operate at a loss. According to Saxon and Boylan (2001), there are no reports of developmental education programs that operate at a loss. For every developmental education program that has publicly reported its cost data, the revenues exceed the expenditures. However, numerous suggestions have been made for reducing the cost of developmental education. These include radical shifts in the current developmental education model like privatizing remedial education services or passing remediation costs back to high school districts (Saxon & Boylan, 2001), as well as changes to the mechanisms for provision of developmental education within colleges and universities.

5. Integrate technology to reduce costs. Jackson State Community College has increased both

retention and mastery of competencies while reducing costs using a program called SMART Math in its remedial math courses (Jackson State Community College, 2011). The computer-based program, which allows students to work at their own pace, helped the institution reduce cost per student by over 30 percent and improved retention rates by over 46 percent (Jackson State Community College, 2011). These cost savings were the result of increasing the maximum class size from 24 students to 30 students, reducing the number of sections taught by full-time faculty from 78 percent to 58 percent, and utilizing tutors at a lower cost per hour than faculty (Bassett & Frost, 2011).

In 2012, Tennessee began a partnership between community college faculty and high school teachers to develop an online math course for students with low ACT scores (Adams, 2014). The purpose of this course is to help students achieve college readiness prior to entering college so that they will not be required to enroll in developmental courses at the college level (Adams, 2014). Such practices are becoming more common, with more than 21 states having some similar programs (Adams, 2014). In Tennessee, the program combines high school math standards with college-level math competencies (Adams, 2014). Students complete the coursework in high school computer labs with assistance from both high school and community college faculty (Adams, 2014). Other states, such as West Virginia, also offer similar programs in English (Adams, 2014).

6. Seek grant funding to offset costs. While developmental education programs tend to earn a profit for their institutions, those profits are often not represented in the budgets of developmental education programs (Boylan, 2002). Programs that are the most successful seek grant funding to supplement development of new ideas and teaching mechanisms for developmental education (Boylan, 2002). The most common grant sources for developmental education are Title III, Title IV, and Title V funds from the U.S. Department of Education; however, additional funding sources, such as private endowments, the U.S. Department of Labor, and the Fund for Improvement of Post-Secondary Education, are also available for proposals related to developmental education (Boylan, 2002).

II. Best practices in structure related to developmental education

The next best practice area we examined was structure. For this area, we examined program components, such as organization, management, faculty, and support services, that are not related to costs, assessment or placement, or instructional methods. After reviewing the literature related to these components, nine elements emerged as best practices.

1. Stated institutional commitment & clearly defined mission statement. Studies have frequently associated successful developmental studies programs with the presence of a stated institutional commitment to developmental education (Boylan, 2002; Center for Student Success, 2007; McCabe & Day, 1998; Schwartz & Jenkins, 2007; Sperling, 2009). In a study involving colleges in Texas, for example, Boylan and Saxon (1998) found the highest retention rates at schools that considered developmental education an institutional priority. Meanwhile, a study by the Continuous Quality Improvement Network and the American Productivity and Quality Center found that developmental education was viewed as "completely" or "extensively" important at 27 of 28 institutions surveyed (Boylan, 2002). In addition to a stated institutional commitment, a clearly defined mission statement also has been identified as a key program component (Boylan, 2002; Center for Student Success, 2007; Schwartz & Jenkins, 2007; Sperling, 2009). Boylan and Saxon (1998), for example, found that students in programs with written missions, objectives, and goals had higher pass rates on a state-mandated exam. Additionally, students in such programs had higher year-to-year retention rates than students at programs without written mission statements (Boylan & Saxon, 1998).

At Middle Tennessee State University (MTSU), one of the best practice institutions we interviewed,

helping underprepared students succeed is viewed as an institutional priority. As described by Dr. Marva Lucas, chair of the University Studies Department, which houses most of the university's courses for underprepared students, "Our president, a long time ago, said, and it resonated with me, 'If we admit students, we're going to serve them,' which is the ethical thing to do. If you open the door and you allow them to come in, then you serve them." Additionally, of the institutions we interviewed about their programs' structure, two had written mission statements while the other had a communicated, but unwritten, mission.

2. Centralized or highly coordinated program. Numerous studies have linked centralization to developmental program success (Arendale, 2010; Boylan, 2002; Boylan, Bliss, & Bonham, 1997; McCabe & Day, 1998; Roueche & Baker, 1987). Boylan (2002) describes centralization as "an organizational arrangement in which developmental courses and services are highly coordinated, housed in a single department or program, and headed by a chair or director" (p. 8). Studies have tied centralized programs to several measures of student success, including higher first-semester and cumulative GPAs; higher retention rates; higher pass rates in developmental courses; and higher course grades (Boylan, Bliss, & Bonham, 1997; Boylan & Saxon, 1998; McCabe & Day, 1998; Roueche & Baker, 1987).

While Boylan (2002) found that centralization is key to program success, he also found that "a highly coordinated although decentralized developmental education organizational structure may be nearly as effective as a centralized structure" (p. 11). He identified two important features of successful decentralized programs: "a high level of integration and communication among courses and services" and "an administrator who [is] either officially or unofficially responsible for the campus-wide coordination of developmental education activities" (Boylan, 2002, p. 11). Other studies have linked decentralized programs to better alignment between developmental and college-level courses and greater communication among faculty responsible for those courses as well as reduced stigma for students enrolled developmental classes (Perin, 2002a, 2002b). Of the institutions we interviewed about their programs' structure, most had centralized or mostly centralized programs that housed their courses for underprepared students, while one institution had a decentralized program with courses housed in their respective disciplines.

3. Collaboration among faculty & between support services personnel & instructors. Researchers have associated frequent communication and collaboration among developmental faculty with successful programs (Boylan, 2002; Center for Student Success, 2007; Schwartz & Jenkins, 2007; Sperling, 2009). Effective practices identified within the literature include sharing syllabi and instructional strategies; discussing problems, solutions, and experiences; and coordinating course content (Boylan, 2002; Center for Student Success, 2007; Schwartz &Jenkins, 2007). Studies have also suggested that collaboration between developmental and non-developmental faculty could aid program success (Boylan, 2002; Center for Student Success, 2007; Schwartz & Jenkins, 2007). Describing the best practice programs in his study, Boylan (2002) said, "Rather than being isolated from the institutional mainstream, the programs and their staff were actively involved in consulting, collaborating, and problem solving with other departments and academic units" (p. 16). Researchers have also identified collaboration between support services personnel and developmental instructors as important (Boylan, 2002; Center for Student Success, 2007; McCabe & Day, 1998; Sperling, 2009). According to Arendale (2010),"Collaborating helps learning assistance programs that have sometimes operated at the margins of the college to become more nested in the campus learning environment. In addition, collaboration creates powerful allies for support, resources, and team building to increase desired student outcomes" (p. 95).

4. Alignment between & among developmental & non-developmental courses. Several studies identify alignment between and among remedial and

subsequent college-level courses as crucial to student, and, in turn, program, success (Arendale, 2010; Boylan, 2002; Boylan & Saxon, 1998; Center for Student Success, 2007; McCabe & Day, 1998; Sperling, 2009). According to Boylan (2002), "Failure to insure that there is a match between the exit requirements of developmental education and the entry requirements for the college curriculum is one of the biggest mistakes a developmental program can make" (p. 89). Boylan and Saxon (1998) found that programs that insured alignment between exit-entry requirements had higher retention rates than programs that did not insure such alignment.

5. Ongoing, systematic program evaluation. Utilizing ongoing and systematic evaluation is among the most recommended practices in the literature (Arendale, 2010; Boylan, 2002; Boylan & Saxon, 1998; Center for Student Success, 2007; McCabe & Day, 1998; Schwartz & Jenkins, 2007; Sperling, 2009). As Arendale (2010) explains, "Best practices become ineffectual without sustained and comprehensive evaluation" (p. 101). Boylan, Bliss, and Bonham (1997) found that systematic evaluation was positively associated with higher retention and pass rates in developmental courses at both two-year and four-year institutions. Boylan (2002) defines "systematic evaluation" as evaluation that is "done at regular intervals," "part of a systematic plan," "both formative and summative," "use[s] a variety of measures," and "is shared with a variety of audiences" (pp. 39-40). Such evaluation is a key requirement for programs seeking certification from the National Association for Developmental Education (NADE).

6. Adjunct faculty integrated within the program & college community. Developmental programs that use adjunct instructors have been found to be the most successful when adjuncts are well integrated within the program as well as the overall college community (Boylan, 2002; McCabe & Day, 1998; Schwartz & Jenkins, 2007; Sperling, 2009). Boylan (2002) reports that adjuncts at the best practice programs in his study were regarded as valued resources, included in departmental meetings, and encouraged to take part as "full members" of the program. In short, Boylan (2002) says, "the most effective programs provided adjunct faculty with the same opportunities as full-time faculty" (p. 56).

7. Professional development & other training offered to faculty. Studies also recommend providing professional development opportunities and other training to both full-time and adjunct faculty (Arendale, 2010; Boylan, 2002; Center for Student Success, 2007; Schwartz & Jenkins, 2007; Sperling, 2009). At the best practice institutions in Boylan's (2002) study, for example, adjunct faculty were provided orientation programs and manuals and were mentored by full-time faculty. According to Boylan (2002), "professional development… insures [that] those who work with developmental students are aware of the best of current research, theory, and practice," which, in turn, "increases the likelihood that those who work with developmental students utilize the best available theories, models, and techniques in teaching courses and providing services" (p. 46). Research has linked professional development to positive program outcomes. Boylan and Saxon (1998), for example, found that students in programs that emphasized professional development had higher pass rates on a state competency exam. Boylan, Bliss, and Bonham (1997), meanwhile, found that students in tutoring programs that incorporated tutor training had higher first-term and cumulative GPAs, retention rates, and higher pass rates in developmental English courses.

8. Comprehensive support services provided. Offering comprehensive learning support services such as academic advising and personal counseling is often cited as an essential practice for developmental programs (Arendale, 2010; Boylan, 2002; Center for Student Success, 2007; McCabe & Day, 1998; Schwartz & Jenkins, 2007; Sperling, 2009). Such services have also been found to have a positive influence on student outcomes. Kulik, Kulik, and Shwalb (1983) found that the presence of comprehensive support services was associated with higher rates of student persistence and

higher GPAs. Meanwhile, Boylan and Saxon (1998) reported that the more comprehensive the services provided, the more likely underprepared students in Texas were to pass a state-mandated exam. According to Boylan (2002), support services must be not only comprehensive but also coordinated. Among the services Boylan (2002) recommends are skills assessment, learning assistance centers (LACs), tutoring, individualized instruction, study skills courses, and advising.

9. Students offered accelerated options for completing developmental coursework. One of the practices gaining prominence more recently in the literature is offering students accelerated options for completing developmental coursework. According to the Community College Research Center (CCRC) (2013), "Mounting evidence suggests … that accelerated developmental models—such as shortening developmental sequences and mainstreaming upper level developmental students into college-level courses with mandatory supports—lead to improved outcomes for these students" (p. 11). The CCRC (2013) studied the Community College of Baltimore County's Accelerated Learning Program (ALP), which mainstreams students into college-level writing courses and enrolls them a mandatory support course. The CCRC (2013) found that ALP students were more likely to complete the first and second college-level writing courses than similar students who took the traditional upper-level remedial writing course. A separate CCRC study of the Community College of Denver's FastStart program, which compresses multiple developmental courses into one semester, found that math students were more likely than similar students to successfully complete the highest developmental math class and subsequent required college-level math courses (Edgecombe, Jaggars, Baker, & Bailey, 2013).

Several of the best practice institutions we interviewed employ accelerated models of remediation. MTSU, for example, no longer offers traditional developmental courses. Instead, since fall 2006, the university has mainstreamed underprepared students into "prescribed courses," which are special sections of college-level courses that include additional content and academic supports. Assuming successful completion of the courses, underprepared students can satisfy their general education math requirement in as little as one semester and as much as two semesters and their English writing requirement in two semesters. There is also a prescribed reading course for students whose test scores are below a certain level and a study skills course for students enrolled in two or more prescribed courses. According to Lucas, students who take the prescribed college algebra course are passing at a higher rate than did students who enrolled in the traditional college algebra course after completing the highest developmental math course previously offered. For English, Lucas said, students in the highest prescribed writing course are passing at a higher rate than are students in the corresponding traditional writing course.

III. Best practices in placement related to developmental education

Martin Methodist College administrators also asked us to examine best practices related to placement in developmental courses. This is a common area of concern with developmental education, as incorrect initial placement can impact student learning outcomes and retention (Brothen & Wambach, 2004). While the majority of the research regarding placement procedures is rooted in community college literature, four-year and research institutions have implemented many of the research-recommended practices with success (Brothen & Wambach, 2004). The inconsistent definitions of readiness for college-level work across institutions are an issue for placement policies (Safran & Visher, 2010). As a result, each institution needs to examine its own policies and procedures to best fit the organizational culture and resources available at that specific institution.

Our research produced five best practices related to placement.

1. Use of multiple measures to determine placement. Students should be given uniform, weight-

ed, multiple measures to include in their overall placement portfolio, including both subject test scores and non-cognitive questions to determine student placement (Colorado Community College System, 2013; Safran & Visher, 2010). Particularly at private colleges, the use of subjective measures in addition to standardized exams positively impacts students' readiness for advancement and exit from remedial education (Colorado Community College System, 2013; Safran & Visher, 2010). Esau Tovar, Assessment Center Faculty Leader at Santa Monica College, notes that the non-placement test score items in their students' placement portfolio can adjust their students' net placement score by as much as 9% (E. Tovar, personal communication, 11 Feb 2014).

2. Creation and dissemination of placement exam prep materials. Another common issue with placement in developmental courses is that students often take the placement exams without a full understanding of the purpose or significance of the assessments (Safran & Visher, 2010). Each college should develop materials that emphasize the importance of the placement exams and recommend that students prepare for the placement exams prior to their completion (Colorado Community College System, 2013). Says Tovar about advising students to prepare for placement exams:

This has been our focus for the past three years. We continue to expand resources available through our Prep2Test program (www.smc.edu/prep2test), as well as through individual webpages describing the content and format of each of our placement tests. On each of these pages we provide links to prep resources or sample tests developed internally.

The use of specific test preparation curricula to augment student placement scores is not unique to Santa Monica College. Harper College in Chicago sends students YouTube videos about the significance of the placement exams to watch prior to their completion of the assessment (A. Boatman, personal communication, 11 Jan 2014). The Community College of Denver sends each student a workbook with practice test questions and testing strategies in advance of administering placement assessments (A. Boatman, personal communication, 11 Jan 2014).

3. Mandatory assessment for placement. While Florida's community college system, among others, is currently field-testing students' self-placement in developmental courses, most research suggests that placement assessments should be mandatory, especially at four-year institutions (Gerlaugh et al, 2007; Boylan, Bliss & Bonham, 1997). Karen Yerby, Associate Director of Student Development Services at the North Carolina Community College System, notes students in the NC Community College System are required to take placement exams unless their multiple-measure portfolio indicates the student does not need to enroll in developmental coursework (K. Yerby, personal communication, 19 Feb 2014). At Santa Monica College, all first-time students enrolling in more than six academic units during their first semester are required to complete both an English/ESL and a mathematics assessment test prior to enrollment (E. Tovar, personal communication, 11 Feb 2014).

4. Alignment of placement assessments and curricula. Placement exam questions on the required assessments should match competencies identified in developmental coursework (Colorado Community College System, 2013). Unfortunately, placement assessments often fail to align with course content. The NC Community College System contracted with College Board to develop placement and diagnostic tests that are designed to assess the competencies taught in the developmental modules and courses (K. Yerby, personal communication, 19 Feb 2014). At Santa Monica College, discipline faculty conducted placement test content reviews and determined that the placement tests adequately assess entry and exit skills for courses in which the students are placed—both college-level and developmental (E. Tovar, personal communication, 11 Feb 2014).

5. Offering co-requisite and supplemental

learning opportunities. Another best practice in developmental education placement is to offer a co-requisite learning support class for students who are close to the placement score threshold and would like to enroll in the next course (Colorado Community College System, 2013). Last summer Santa Monica piloted a Summer Jams program to expedite students' course trajectory. While few students decided to retest at the end of the summer acceleration/co-requisite learning program, the College looks to expand the program this summer and in the summer of 2015 and will further emphasize the opportunity to retest (E. Tovar, personal communication, 11 Feb 2014). The University of Texas-Austin employs a two-pronged approach. Says Larry Abraham, Associate Dean of the School of Undergraduate Studies:

Students are placed into developmental courses according to state mandated rules. Students who do not achieve the minimum state-determined score on the SAT, ACT, or high school exit exams must take the Texas TSI Assessment (a standardized assessment of math, reading, and writing designed to determine college readiness). Students who do not meet the state-determined minimum score on the assessment are then either placed into the developmental course in the appropriate area (UT only has one level of developmental course work for each subject area; we do not have multiple levels of developmental coursework), or are placed into an accelerated remediation plan, which includes co-enrollment in an entry-level credit bearing course and a 1.5 hour/week supplemental class that supports their efforts in the credit bearing course. The latter option is mandated by state rules and is only available for "bubble" students who are higher performing students in need of developmental courses. The state of Texas designates this supplemental help, conducted by an instructor of record, as a Non-course Competency Based Option, or NCBO.

The local colleges in the NC Community College System are allowed to retest according to local college policy. Many colleges require students to complete study/prep materials before they can retest to place into a higher course (K. Yerby, personal communication, 19 Feb 2014).

Findings of the Comparison Between MMC and the Best Practices Framework

Next, we used the best practices framework to examine MMC's current practices and fully address Project Question 1: "How does MMC's developmental education compare to programs at other schools and to model programs, best practices, or programs that have been identified as effective in the research literature?" We did this through qualitative interviews with faculty and staff associated with the program (n=15), as well as through analysis of documents provided by MMC. We conducted the faculty and staff interviews in person on the MMC campus, typically in the offices of the faculty and staff members being interviewed, using semi-structured interview protocols (see Appendix IV). We recorded and transcribed the interviews, and we used the interview data to determine current practices in developmental education at MMC. We initially hoped to include interviews of students enrolled in developmental courses in this portion of the study; however, we were unable to obtain sufficient student participation (n=6), despite repeated requests and use of incentives, to include student interviews in our analysis. Pseudonyms are used for individuals quoted in this and subsequent sections. When necessary to identify individual MMC administrators or faculty, we identify them by position, not by name.

We requested the following documents and data from MMC: budget information regarding the developmental program; course mapping, syllabi, and learning outcomes for developmental courses and subsequent credit-bearing courses; and course grades, ACT scores, and COMPASS scores (when available) for all MMC students for the past five years. MMC provided course syllabi for some developmental courses, course placement policies, and the College catalog for our review. We used these documents to provide additional background information about the develop-

mental education program at the institution. The College also provided us with an estimated average cost of $2,000 per course for developmental courses taught at the institution (Haskins, 2013).

Based on the qualitative data we collected through interviews and the documents and cost information provided by MMC, we compared MMC's developmental education program to the best practices framework we developed, noting the areas where MMC practices were aligned with best practices in the field and areas where there is not alignment between MMC's practices and the best practices from the literature. Using the framework, we also developed a rating scale to assess MMC's performance in each best practice area. The rating scale is as follows: a score of "one" indicates "no evidence of this practice;" a score of "two" indicates "minimal evidence of this practice;" a score of "three" indicates "some evidence of this practice;" a score of "four" indicates "satisfactory evidence of this practice;" and a score of "five" indicates "consistent and exemplary evidence of this practice." A copy of the framework as applied to MMC may be found in Appendix X.

Based on the development of the best practice framework and the comparison of MMC's current practices in developmental education to that framework, we developed several findings in each area of our study: costs, structure, and placement. These findings and our ratings of MMC for each of the previously described best practices are as follows.

I. Costs

In terms of costs associated with developmental education, MMC is spending less on its developmental courses than the majority of institutions identified as modeling best practices. However, as the literature reminds us (Saxon & Boylan, 2001), costs are difficult to compare because schools calculate total costs differently.

Costs less than 1.2% of total budget. The only cost information provided by MMC was that the cost of its developmental education program could be determined by using the cost per class of an adjunct instructor, $2,000. MMC offered 14 course sections of developmental courses during the fall 2013 semester, which results in a total cost of $28,000. If we assume that MMC offers a similar number of developmental courses in the spring semester, the total annual cost of the developmental program is $56,000. Based on these calculations, the cost of MMC's developmental program is only 0.36 percent of the institution's total expenses of $15,502,349, as reported to Integrated Postsecondary Educational Data System (for FY 2012) (National Center for Education Statistics, 2013). This demonstrates that MMC is spending a smaller percentage of its total budget on developmental education than the best practice schools. Given this low cost, we rated MMC a five in this area.

Cost per FTE lower than that for other academic programs. Additionally, the estimated total revenue of the developmental education program exceeds the estimated total cost generated from enrollment in developmental classes. We calculated the total revenue to be $726,200 using the tuition rate of $865 per credit hour for 14 three-hour developmental course sections offered in the fall 2013 semester with an average of 20 students enrolled in each course section, while cost, as calculated above, was $28,000. However, MMC did not provide cost per FTE data for other academic programs. Accordingly, we were unable to rate MMC in this area.

Cost per FTE is less than $6,360. As stated above, MMC offered 14 course sections of developmental courses during the fall 2013 semester at a cost of $2,000 per section. With an average per course enrollment of 20 students, this allows us to estimate a cost of $100 per student enrolled in developmental courses, which is far below any of the costs reported by the best practice institutions. Accordingly, we rated MMC a five for this best practice area.

Program does not operate at a loss. MMC did not provide the budget data that we requested, which would be required to adequately address this item and to rate MMC in this area.

Cost reduction efforts in place. Due to its already low operating costs, we are unsure of whether or not implementing programs such as computerized developmental courses will provide the cost-savings that MMC seeks. However, the institution may still desire to seek grant funding, particularly to defray set-up costs of implementing new computerized programs if that route is chosen, or may partner with local K-12 institutions in offering dual enrollment developmental courses to garner additional revenues from these courses. Because we found no evidence of cost reduction efforts, we rated MMC a one in this area.

Use of grant funding to offset costs. We found no evidence of MMC's pursuit of grants to offset costs of its developmental education program in general, or of improvements in its developmental education program. Accordingly, we rated MMC a one for this practice.

Average rating score for costs. Calculating the average of the ratings for the areas described above provides a general rating score for how MMC compares overall to the best practices for costs. Not considering the two areas where we lacked sufficient information to rate the College ("Cost per FTE lower than that for other academic programs" and "Program does not operate at a loss"), our average rating for MMC in terms of costs was 3.00, which means, using our rating descriptions, that there is "some evidence" at MMC of the best practices for costs.

II. Structure

Martin Methodist currently employs many of the best practices for structure to varying degrees. We discuss each practice in detail below.

Stated institutional commitment & clearly defined mission statement. Although we could find no evidence of an explicit mission statement for developmental education at Martin Methodist, there is ample evidence of an implicit institutional commitment to developmental education. First, the College promotes itself as a "college of opportunity," meaning it opens its doors to students who might likely be turned away elsewhere. According to the Chair of the Developmental Studies Committee, developmental education at Martin Methodist is "tied to our overall philosophy, really, of this college that we … [are a] 'college of opportunity,' … that we want everyone to have an opportunity." Additionally, the fact that the Vice President for Academic Affairs spearheaded the creation of the school's developmental program provides further evidence of the institutional commitment to educating underprepared students. As he described:

When I came here… [in] 2002, we essentially had no developmental studies. They were putting all these kids with ACTs of 14 and 15 and 16 and 17 into English composition, into college-level math, and promptly flunking all of them, which made no sense to me. So I started pushing for the idea, and there were some very sympathetic faculty members who were in agreement with me that we needed to do something for them.

Developmental education, then, has demonstrated support from upper administration at the College.

Additionally, despite the lack of a mission statement, most faculty and students interviewed expressed a similar purpose for developmental education at MMC. In general, informants said the purpose of developmental courses was to help underprepared students become prepared for college-level courses. Among the purposes provided:

- "To provide the students with the skills they need to go into college-level work"
- "To help students who didn't get the education they needed in high school or public education or what ever their previous education was, to make sure that they're able and competent to pass college courses"
- "To bridge that gap from high school to college and to get them more prepared for what to expect"
- To help students "catch up and… go on to… higher standards"
- "To help [students] to understand it a lot better and

get [them] ready for the college classes"

- "To prepare the students for their first core classes [and] to be successful in the core"

Despite the commonality expressed in these purposes, there is room for disagreement, especially in terms of what it means precisely for students to be prepared and to be successful. As the FYE Director explains, "prepared" could mean different things for different people, which could lead to campus misunderstandings:

I think there are some people at Martin who think that … a student who starts out at a developmental level should perform the same as a student who doesn't, and I don't think that that's very reasonable or realistic, particularly in their first two years. … When you talk about creating a transition from high school preparation to college preparation, that student has so much farther to go.

A clearly defined mission statement for developmental education that is shared campus-wide could decrease the opportunity for misinterpretations or multiple interpretations.

Because MMC does have a stated, though implicit, institutional commitment to developmental education but lacks a clearly defined mission statement, we rated MMC a three in this area.

Centralized or highly coordinated program. Developmental courses at Martin Methodist are not centralized but are moderately coordinated, with each course housed in its respective discipline. In addition, there is a Developmental Studies Committee (DSC) that coordinates oversight and assessment of the courses and whose members include, among others, the coordinators of the English and math programs, the FYE Director, and the Director of the Intensive English Program, who chairs the committee.

To some degree, Martin Methodist incorporates both of the features Boylan (2002) identifies as essential for successful decentralized programs: "a high level of integration and communication among courses and services" and "an administrator who [is] either officially or unofficially responsible for the campus-wide coordination of developmental education activities" (p. 11). Most faculty members with administrative responsibility for any developmental course serve on the DSC, which allows for periodic communication about the courses and college services. Through our interviews, we learned that faculty members also communicate periodically with the Director and/or Assistant Director of the Student Resource Center (SRC), although this communication seems to center mostly on the faculty members' individual classes and class needs. The interviews also revealed that communication between the math and English programs appears to occur often but primarily within the context of DSC meetings or communication between the DSC Chair, who is an English professor, and the full-time math faculty. The level of communication also varies within each department, with full-time faculty in the math program appearing to communicate frequently about the developmental math courses and faculty in the English program appearing to communicate less frequently. This difference in the level of communication, however, could be a result of the math program's concerted effort over the last few years to make changes to its developmental offerings. The courses within the English program, however, have remained fairly constant during the same time frame.

Meanwhile, the DSC Chair has responsibility for coordinating developmental education at the College, both officially and unofficially. Officially, he coordinates assessment of the courses. His other, possibly unofficial, duties, according to interviews, include being responsible for textbook selection and syllabi content for the English classes and training and meeting during the semester with the developmental English instructors. Although most faculty and administrators identify the Chair as the person responsible for developmental education on campus, confusion exists about the extent of his role. As one faculty member said, "I don't know if there's a director of developmental studies other than the chair of the committee…. If there is,

I never come into contact with [him or her]." Several faculty members and administrators also identified the Chair specifically as the "coordinator" of developmental education. However, in his interview with us, the Chair himself stressed that his role is limited:

I'm the Chair of the Developmental Studies Committee. "Coordinator's" a bit strong of a word, I would say. I'm considered to be the coordinator, but it's not an official title.… I'm not a director. … I am the director, for example, of the Intensive English Program. And that's different, you know. I really do manage that program.… But with this, it really is a committee. It is committee work, and I'm coordinating the various assessments but not directly administering those programs.

Such confusion indicates a need to define the Chair's official role more clearly and to ensure that the campus is informed of his responsibilities.

Given this confusion and the DSC Chair's limited coordination of developmental education as well as the fact that the developmental courses are not centralized and are only moderately coordinated, we rated MMC a two in this area.

Collaboration among faculty & between support services personnel & instructors. Collaboration among faculty at Martin Methodist is primarily informal and varies by discipline. The full-time math faculty we interviewed, all of whom have taught at least one developmental course within the last four years but none in fall 2013, communicate often and collaborate on the overall organization of the developmental and other math courses. There is less collaboration, however, on an individual course level. In fall 2013, two adjunct instructors taught the developmental courses offered (one of whom participated in our interviews). The adjunct instructor we interviewed reported never collaborating with other faculty, developmental or otherwise. The instructor, however, did report meeting periodically with the Chair of the Math and Science Division. One of the full-time faculty members, who taught a developmental course his first semester at MMC, also said he did not coordinate course content with other faculty, although he did meet with the DSC, where he was able to discuss non-content issues with other developmental instructors.

In the English department, all of the developmental courses were taught by adjuncts in fall 2013 (all of whom participated in our interviews). Two of the three developmental instructors said they frequently met informally to discuss, but not necessarily coordinate, course content and other issues. One of the instructors, for example, said she had talked with one of the other instructors that day about whether each starts the semester with narrative or descriptive paragraphs. The other instructor shared the same story during her interview. This type of interaction was corroborated by Calvin, a full-time English professor who used to teach developmental courses: "We did it on our own outside—instead of just coordinating… the developmental core there together.… We talked collegially." Additionally, one of the instructors said that all the developmental English instructors meet twice a semester "to discuss the assessments mostly and to discuss whether or not the program is effective, [and] any changes that we need to make in textbooks [or] in methodology." However, none of the other instructors reported meeting this often. Two of the instructors also said they occasionally talked to non-developmental English faculty about issues related to students but not course content. One instructor, however, said she would like to see more collaboration between faculty members in the department. Additionally, two of the instructors reported meeting periodically with the DSC Chair or the English program coordinator, and one reported receiving other professors' syllabi for guidance when she first began teaching developmental courses.

Most faculty members reported at least limited interaction with the Director and/or Assistant Director of the SRC. The majority said they advised their students to go to the SRC for tutoring or other academic help. Many faculty members also communicate directly with the Director or Assistant Director about

the needs of specific students or their classes in general. As the Director explained: "I work with the faculty on making sure… [that] when they require a visit for tutoring… we have tutors available… so that the students can get the help that they need." The Assistant Director also reported interacting directly with faculty members: "Everybody's constantly sending us students. And, you know, because I've been here since the inception of the SRC, they will specifically call me and say, 'Hey, I want you to help this student.'"

Because of the generally moderate, but varying, levels of collaboration among developmental faculty and the at least limited interaction instructors have with SRC personnel, we rated MMC a three for this best practice.

Alignment between & among developmental & non-developmental courses. The DSC Chair and the English and math program coordinators, as well as faculty within both departments, attest that the courses are aligned and are designed to prepare students for the next level. Our review of the descriptions of each developmental course and the courses students typically take after successfully completing each one also indicated that the courses were designed to build upon one another. However, although the courses are aligned in theory, they are not always aligned in practice. Developmental Writing I and II (ENG 099 and 100), for example, are presented in the course catalog as a single course that spans two semesters. Ideally, the content and skills covered in ENG 099 would flow smoothly into the content and skills covered the following semester in ENG 100. Instructors, however, are not always certain how to distinguish the courses from one another, a concern expressed by Carrie Anne, who has taught both courses: "To me, the classes are very similar. I have a hard time, even teaching both of them, kind of differentiating between … what should be taught in 099 and what should be taught in 100. What's the difference between those two?" Carrie Anne also expressed concern that she did not know enough about the content of the college-level composition course to tailor her instruction to complement it: "I don't feel like I have enough knowledge of what they do in [ENG] 101 to know … an arc of like where they're headed."

> *"To me, the classes are very similar. I have a hard time, even teaching both of them, kind of differentiating between ... what should be taught in 099 and what should be taught in 100.*
> *-- MMC English Instructor*

Carrie Anne's comments raise the concern that students will not be as prepared upon completing the developmental courses as the College intends. In the case of ENG 099 and 100, students would have a greater likelihood of being exposed to all the material that should be covered in both courses if they have the same instructor for both. However, as Carrie Anne's comments indicate, having the same instructor would not necessarily guarantee that the content would be covered as intended by the department. Having different instructors for each course would further decrease the likelihood that students would receive the full instruction intended, which could pose problems later when students take the college-level writing courses.

One cause for this potential for misalignment is a lack of sufficient communication of specific college and departmental goals for the courses. We will discuss this problem in greater detail below in the section on professional development and other training.

Because the developmental and subsequent courses are aligned formally but potentially could be misaligned in practice, we rated MMC a three in this area.

Ongoing, systematic program evaluation. Several administrators and faculty members reported that the College routinely evaluates its developmental courses. As stated earlier, the DSC Chair is responsible for coordinating assessment of the College's develop-

mental offerings. According to the Chair, assessment is ongoing, with reports produced yearly. He also said that as part of the assessment process, he and others examine the degree to which students are meeting key outcomes and look for ways to improve if students are not meeting those outcomes. He added that he presents the assessment results to the campus each fall and that the results are "incorporated into practice" both officially and unofficially. Based on this evidence, we rated MMC a two for this practice area. However, because the College did not provide copies of its assessment reports (despite repeated requests), we were not able to fully evaluate the College's assessment efforts.

Adjunct faculty integrated within the program & college community. In some ways adjunct faculty members at MMC are integrated within the developmental program and the college community; however, in many ways they are not. According to Boylan (2002), adjuncts are better integrated when encouraged to take part as "full members" of the community. Some of the adjuncts reported feeling well integrated within the College. "When you're an adjunct here, you're not an unknown, whereas [at] a lot of larger schools, you are," said Meredith, an English instructor. "Here, they know you. They know who you are. They know what you teach. They treat you like you're part of the faculty, like you're part of the staff." Most of the developmental adjuncts have long-term connections to the College. All of the adjuncts who taught developmental English courses in fall 2013 have bachelor's degrees from MMC while one of the math adjuncts has been teaching at the College for around 15 years. Most also provide multiple means for their students to contact them, either providing their personal phone numbers, holding office hours (even though adjuncts are not assigned offices), or arriving early and/or staying late after their classes. At least one instructor also mentioned attending campus events and participating in campus performance groups. Additionally, as mentioned above, the adjunct English instructors also often interact collegially with one another.

However, also as mentioned above, the adjunct instructors have limited interaction with full-time faculty members. According to the FYE Director, over the past five years, the number of adjuncts teaching developmental courses has increased to the point where now the courses are taught almost entirely by adjuncts. With the increase have come concerns from some that adjuncts are not integrated enough within the developmental program. "With adjunct faculty teaching a lot of developmental classes, I feel like I've lost a bit of touch with what they're doing [in the classes]," said the FYE Director. "I knew more about what they were doing when more full-time faculty were involved." The Vice President for Academic Affairs raised similar concerns and described another institution where he felt the developmental faculty were better integrated:

I was at another school before I came here that had a person with a bachelor's degree in math and that's all she did was teach developmental math. [She] did a great job with it. She knew where the students were [and] she kept very close contact with the people who were teaching the regular college-level math.

This disconnect between full-time and adjunct faculty is yet another extension of the limited communication and collaboration mentioned earlier. In light of this disconnect, despite the fall 2013 adjuncts' long-term connections to the College, we rated MMC a two in this area.

Professional development & other training offered to faculty. In our interviews training emerged as one of the most underdeveloped areas at the College. Most of those interviewed reported receiving little to no training when first joining the College. One instructor said that in preparation for his first developmental course, he was told, in essence, "Here's the class you're teaching. This is what you need to cover. Here's the book. Have fun." Another instructor said she and other new adjuncts met with the DSC Chair at the start of her first semester teaching. However, despite receiving sample syllabi and discussing learning outcomes, she said, "I didn't feel like we got a lot of specifics in

that particular meeting about, you know, well, this is what you need to do here." Referring specifically to adjuncts, one full-time faculty member said there is no time to train them: "How do you train them? I mean, you don't really have time, because, you know, they're starting when we're starting. … There isn't like a developmental studies … prep school for adjuncts. Although that might be nice."

> *"I wasn't really prepared in the first semester.... I mean, it was a bit of a surprise."*
> *-- MMC English Instructor*

Possibly an indication of a lack of initial training, almost all of the faculty members who have taught developmental courses at MMC said they felt unprepared for their first developmental course — not in terms of the subject matter but in terms of specifics about the particular course or population of students they would be teaching. Lawrence, an English instructor who taught primarily developmental courses when he first joined the faculty, said he was not prepared for the degree to which his students were not acclimated to academic culture:

I've encountered the most I guess you'd say social issues in the developmental [courses].... I wasn't really prepared in the first semester.... I mean, it was a bit of a surprise, just something as simple as this is how you address your professor. This is how you talk to one another.

Others said they were surprised by the level of remediation in the courses themselves. "I felt maybe prepared to teach them. I don't think I was prepared for the level that we started at," said math faculty member David. And yet others said they felt unprepared because they were unsure of the College's expectations for the course. Carrie Anne, an English instructor, said:

> *"In terms of the specific courses here, I kind of felt like the outcomes or the goals for the courses were kind of vagure..."*
> *-- MMC English Instructor*

In terms of the specific courses here, I kind of felt like the outcomes or the goals for the courses were kind of vague, and … I didn't feel like I had much to go on in terms of specifically from Martin what they wanted out of these courses.

In Carrie Anne's case in particular, as described above, insufficient communication of the College's goals for the developmental courses has led to confusion over course content and course alignment.

Additionally, few faculty members reported participating in professional development related to developmental education. The DSC Chair, who has belonged to and attended the conferences of the National Association for Developmental Education and its Tennessee affiliate, is the only faculty member who has been involved with an organization that focuses directly on developmental education. Other faculty members have belonged to organizations or attended conferences that sometimes cover developmental-related issues, such as those pertaining to English as a Second Language, disability services, or FYE programs. Because of the little to no training received by developmental faculty and their equally limited involvement in professional development related to developmental education, we rated MMC a two for this practice.

Comprehensive support services provided. With a mission "to provide services that promote the success of students academically, personally, and professionally," the College's Student Resource Center operates as a comprehensive learning assistance center for the entire campus (Martin Methodist College, "Student Resource Center," n.d.). The SRC provides an array of

services, including "basic academic support…, academic and career counseling, time management and study skills training, testing services, and a variety of personal and academic development activities designed to maximize student success" (Martin Methodist College, "Student Resource Center," n.d.). Providing such services is essential as the College seeks to increase student retention. As Boylan (2002) explains, "colleges cannot expect to attain high rates of student success and retention unless they provide a diversified range of academic and personal support services" (p. 26).

Tutoring is one of the primary services provided by the SRC. Tutors are trained through an SRC course based on College Reading & Learning Association specifications. According to an SRC effectiveness report (see Appendix XII), among the goals for the tutoring services is that "65% of students taking developmental courses in writing, mathematics, and reading who use the SRC's tutoring services will obtain a grade of 'C' or better." Although the report did not provide information on the total number of students who use the tutoring services, it did state that in 2010-11, 71% of tutored students passed their developmental courses with at least a C and in 2012-13, 80% did so. Additionally, in 2012-13, 100% of students who received tutoring for any English course received a C or higher, while 70% of students who received math tutoring did so. For developmental math courses specifically in 2012-13, 67% of tutored students earned at least a C in Developmental Mathematics (MAT 099) and 46% did so in Elementary Algebra (MAT 100).

Beyond providing tutoring services, the SRC's Director and Assistant Director are committed to helping students succeed. The Director describes himself as "a fixer." As he said during our interview, "really that's what I do day in and day out is a student has an issue and either I fix it, or I find somebody to fix it." The Assistant Director shared a similar description, saying the developmental faculty members in particular contact her when there is a student issue, such as plagiarism, that needs to be addressed: "A lot of it is… how do we fix this problem? Now that we know that it's there, how do we fix it? And they call on me to help fix it." Given the comprehensive services provided by the SRC, we rated MMC a five in regard to this best practice.

Students offered accelerated options for completing developmental coursework. MMC faculty members have been pursuing ways to speed students' completion of developmental requirements. Although the developmental English offerings have remained constant (one semester of reading; two semesters of writing), faculty in the math program have been working to reduce the number of classes developmental students must take to satisfy the general education core math requirement. Currently, students who start at the lowest level must successfully complete Developmental Mathematics (MAT 099), Elementary Algebra (MAT 100), Introductory College Mathematics (MAT 111/112), and a course meeting the core math requirement. Traditionally, students have taken College Algebra (MAT 131) to satisfy the core requirement. Recent additions, however, have allowed students to satisfy the core requirement through Introduction to Modern Mathematics (MAT 171), Math Concepts (MAT 211), or Statistics (MAT 231). Depending on their major, students also could have additional math requirements. This sequencing of courses has drawn criticism from some outside the department:

If you take two or three … semesters of remedial math … you ought to be ready to go into College Algebra when you get out of it. And yet they're putting them in this course called 111 and then 112 and then College Algebra. So they're taking two to three semesters of developmental, two semesters of pre-College Algebra and then finally College Algebra. That seems like a waste of time to me.

Faculty members within the math department share some of these concerns and have been working to simplify developmental students' progression through required math courses. In fall 2013, the department launched a redesigned version of MAT 099

that allows students to work at their own pace in class on computer-based lessons. After successfully completing a lesson, students move to the next higher level, which could allow them to complete all the material for the course before the semester ends. At that point, they could complete higher lessons and earn credit for the next course. In fall 2012, the department added MAT 115, a companion course for College Algebra, which allows students to bypass the second semester of Introductory College Mathematics (MAT 112) and enroll directly in College Algebra. The course provides supplemental support and practice to help students successfully complete College Algebra. Additionally, in fall 2013, the department added the Introduction to Modern Mathematics and Statistics courses as options to satisfy the core requirement for students whose majors do not require College Algebra. The department also plans to refine the developmental course sequencing further, as the math program coordinator, who spearheaded most of the recent changes, explained:

My hope is to make 100 a companion course for 111. To get rid of 100 as a standalone course, so make it only for institutional credit, but make it a supplemental course to the lowest level of credit towards graduation, and then… get rid of 112 and make 111 essentially the gateway course to the Gen Ed [core courses].

Such efforts to shorten the developmental sequencing are promising in light of the findings outlined in recent studies, such as those by the CCRC. Because of the Math department's continuing efforts to shorten the developmental sequencing but the lack of similar efforts by the English department, we rated MMC a two in this area.

Average rating score for structure. As with costs, calculating the average of the ratings for the best practices described above provides a general rating score for how MMC performs overall in terms of structure. Using our ratings for all nine best practice areas, our average rating score for MMC for structure was 2.67, which means, using our rating descriptions, that there is more than "minimal" but less than "some evidence" at MMC of the best practices for structure.

III. Placement

Martin Methodist currently employs some of the best practices related to placement in developmental courses.

Use of multiple measures to determine course placement. The College does use more than one measure —both ACT score and COMPASS score — to determine placement. The institution could improve upon the status quo by using non-cognitive measures in addition to solely relying on standardized exams. Accordingly, we rated MMC a one for this best practice area.

Materials describing importance of placement and suggesting test prep. Students at MMC noted they both were unaware of the placement procedures and failed to prepare for these assessments. Martin Methodist administrators could potentially decrease the time students are required to spend in developmental courses by sending home information about the importance of the placement exams and requiring (or at least strongly suggesting) that students prepare for the placement exams. Given the lack of material provided to students, we rated MMC a one in this area.

Mandatory assessment. Martin Methodist does currently require students who score below a 20 on their ACT to take a supplemental placement test (the COMPASS). To improve upon this practice, the college can employ the Developmental Studies Committee members to select another assessment that more closely aligns to the developmental curricular competencies to augment the placement process and to streamline the transition into college-level classes. We rated MMC a three in regard to this best practice area.

Placement exam questions match course competencies. We found no evidence that MMC ties course competencies to the questions on its course placement exams. Thus, we rated MMC a one for this practice.

Co-requisite learning to support students near score cut-offs. Our interviews with faculty and staff at MMC did show minimal evidence that the institution is working toward this best practice for developmental math courses. Faculty members from that program discussed their attempts to move students more quickly through the developmental course requirements, particularly for students who scored on the margins of needing developmental coursework. Accordingly, we rated MMC a two for this practice area.

Average rating score for placement. As with both costs and structure, determining the average of the ratings for placement provides a general rating score for how MMC compares overall to the placement best practices. Using our ratings for all five best practice areas, our average rating score for MMC for placement was 1.60, which means, using our rating descriptions, that there is more than "no" but less than "minimal evidence" at MMC of the best practices for placement.

Summary

To summarize our findings of the comparison between MMC and the best practice framework, we found few instances of "satisfactory" or "consistent and exemplary evidence" of the best practice areas (ratings four and five) and many instances of "no," "minimal," or "some evidence" of the best practices (ratings one, two, and three).

Specifically, our findings for the best practice areas of costs, structure, and placement were:

Costs

1. Costs less than 1.2% of total budget. We found that costs are less than 1.2% of MMC's total budget, so we rated MMC a five.

2. Cost per FTE lower than that for other academic programs. We were not provided with enough evidence to rate MMC in this area.

3. Cost per FTE is less than $6,360. Cost per FTE for developmental education at MMC is less than $6,360, so we rated the College a five.

4. Program does not operate at a loss. Because of a lack of sufficient information, we could not adequately address this practice.

5. Cost reduction efforts in place. We found no evidence of cost reduction efforts and, thus, rated MMC a one for this practice area.

6. Use of grant funding to offset costs. Likewise, we found no evidence that MMC uses grant funding to offset costs and, thus, rated MMC a one.

Average costs rating: 3.00, meaning there is "some evidence" at MMC of the best practices for costs.

Structure

1. Stated institutional commitment & clearly defined mission statement. MMC has an implicit institutional commitment to developmental education but lacks a clearly defined mission statement. Thus, we rated MMC a three in this area.

2. Centralized or highly coordinated program. Developmental courses at MMC are neither centralized nor highly coordinated and confusion exists over the DSC Chair's role as program coordinator. Thus, we rated MMC a two.

3. Collaboration among faculty & between support services personnel & instructors. Collaboration among developmental faculty is generally moderate but varies by department, and there is at least limited interaction between instructors and SRC personnel. As such, we rated MMC a three.

4. Alignment between & among developmental & non-developmental courses. Developmental and subsequent courses are aligned formally but potentially could be misaligned in practice. Thus, we rated MMC a three.

5. Ongoing, systematic program evaluation. We found limited evidence of ongoing and systematic program evaluation and, thus, rated MMC a two. However, because the College did not provide copies of its assessment reports, we were not able to fully evaluate its assessment efforts.

6. Adjunct faculty integrated within the program & college community. Although some adjuncts have long-term connections to the College and feel well integrated, there is evidence of a disconnect between full-time and adjunct faculty. As such, we rated MMC a two in this area.
7. Professional development & other training offered to faculty. Developmental faculty receive little to no training and have limited involvement in professional development related to developmental education; thus, we rated MMC a two.
8. Comprehensive support services provided. The College provides comprehensive academic and other support services through the SRC, so we rated MMC a five.
9. Students offered accelerated options for completing developmental coursework. The Math program has made efforts to shorten the developmental sequencing, but the English program has not made similar efforts. Accordingly, we rated MMC a two.

Average structure rating: 2.67, meaning there is more than "minimal" but less than "some evidence" at MMC of the best practices for structure.

Placement

1. Use of multiple measures to determine course placement. MMC relies solely on test scores; thus, we rated the College a one in this area.
2. Materials describing importance of placement and suggesting test prep. Students at MMC noted they both were unaware of the placement procedures and failed to prepare for these assessments. Thus, we rated MMC a one in this area.
3. Mandatory assessment. MMC requires students who score below a 20 on their ACT to take the COMPASS but could improve upon this practice by selecting another assessment that more closely aligns to the developmental curricular competencies to augment the placement process and to streamline the transition into college-level classes. Accordingly, we rated MMC a three in this area.
4. Placement exam questions match course competencies. We found no evidence that MMC ties course competencies to the questions on its course placement exams. Thus, we rated MMC a one.
5. Co-requisite learning to support students near score cut-offs. We found minimal evidence that the institution is working toward this best practice for developmental math courses. As such, we rated MMC a two.

Average placement rating: 1.60, meaning there is more than "no" but less than "minimal evidence" at MMC of the best practices for placement.

Methods, Data Analysis, and Findings for Project Question Two

Our second project question was "How do MMC students enrolled in two or more developmental courses fare?" Specifically, MMC asked us to examine the impact of developmental courses on students' self-concept and self-efficacy, the extent to which the First-Year Experience course for developmental students improves retention rates and grade point averages, and whether or not students in developmental courses acquire the skills they need to be successful in subsequent, credit-bearing courses.

Project question two and its sub-questions were addressed via primary research conducted at MMC, including a pre- and post- first semester survey of all first-year students and semi-structured interviews of faculty members who teach developmental courses, faculty members who teach subsequent credit-bearing courses, the DSC Chair, and the coordinator of the First-Year Experience seminar. Additionally, we requested data from MMC's student database system on enrollment, grade point averages, grades in developmental courses and subsequent credit-bearing courses, and common exam scores. We had planned to also use interviews of students to answer this project question, but an insufficient number of students were willing to participate in the interview process (n=6) for us to be able to draw any conclusions from the data gathered.

Self-Concept, Self-Efficacy, Student Engagement, and Persistence

We designed a survey to answer the project sub-question, "What is the association between developmental course-taking and students' academic self-concept, academic self-efficacy, engagement, and persistence?" The survey measured four concepts. These included academic self-concept, academic self-efficacy, student engagement, and persistence behaviors. Each of these concepts is explained in greater detail below. Additionally, the survey included demographic questions.

Brief background on concepts

Self-efficacy refers to an individual's beliefs about his or her abilities to perform the actions necessary to achieve certain results (Bandura, 1977, 1989, 1993, 2001; Becker & Gable, 2009; Bong & Clark, 1999; Lampert, 2007; Wernersbach, 2011). As such, self-efficacy is considered task-related (Bandura, 1977, 1989, 1993, 2001; Becker &Gable, 2009; Bong & Clark, 1999; Lampert, 2007; Wernersbach, 2011). Self-concept, meanwhile, "is tied to an individual's feelings about him- or herself as a person in addition to that individual's belief in his or her ability" (Wernersbach, 2011, p. 7). Both self-concept and self-efficacy, particularly their academic subcomponents, are thought to influence student academic effort and performance and, through these, student persistence (Bandura, 1977, 1989, 1993, 2001; Becker & Gable, 2009; Bong & Clark, 1999; Lampert, 2007; Reynolds, Ramirez, Magriña, & Allen, 1980; Reynolds, 1988; Wernersbach, 2011). Self-efficacy is considered domain-specific and, thus, will vary given the specific task at hand (Wernersbach, 2011). Self-concept, on the other hand, is considered to be generally stable; however, it is thought to be situationally unstable (Reynolds, 1988; Shavelson, Hubner, & Stanton, 1976). This situational instability makes self-concept an ideal construct for investigating MMC

administrators' concerns that taking developmental courses may negatively impact students on an affective level. Likewise, self-efficacy's domain sensitivity makes academic self-efficacy ideal for examining whether taking developmental courses influences students' beliefs about their academic abilities.

Student engagement is a concept commonly used as a predictor of retention in higher education. The first explanation for student withdrawal that centered on student engagement was developed by Pascarella and Terenzini (1979). This work centers on the concept of integration, which Pascarella and Terenzini (1977) describe as malleable based on student behaviors, including academic and social interaction between students and faculty. These measures were later expanded and are now included as student engagement measures on survey instruments such as the National Survey of Student Engagement (National Survey of Student Engagement, 2012).

Kuh (2003), one of the developers of the surveys of student engagement, defines engagement as the amount of time and energy students devote to "educationally purposeful activities" (p. 1). Research on student engagement typically centers on services provided by institutions and practices in which institutions can participate to increase student engagement (Astin, 1991; Chickering & Reisser, 1993; Kuh, Schuh, Whitt & Associates, 1991; Pascarella & Terenzini, 1991). We included measures of student engagement in the survey to provide an additional potential mechanism for explaining the difference in persistence rates when comparing students enrolled in two or more developmental classes to students enrolled in one or fewer developmental classes. If the survey showed significant differences in student engagement between the two groups of students, this could provide a rationale for the differences in persistence.

Because MMC administrators are specifically concerned with the persistence of students enrolled in two or more developmental classes, we felt it was important to include some survey items measuring students' intent to re-enroll. Intent to return has been shown to be one of the best predictors of ultimate persistence in higher education (Bean, 1980, 1983; Pascarella, Duby, and Iverson, 1983; Voorhees, 1987; Cabrera, Casteneda, Nora, and Hengstler, 1992). Some measures for intent to re-enroll include purpose for enrolling, intent to leave (Voorhees, 1987), students' educational objectives, and intent to re-enroll (Bers & Smith, 1991).

Survey structure

The survey consisted of ten scale items plus six demographic items. Five of the scale items contained multiple sub-items which respondents rated on either a four- or five-point Likert scale. Item one measured academic self-concept. Item two measured academic self-efficacy. Items three through seven measured student engagement, and items eight through ten measured student intent to persist (see Table 1). The

Table 1: Survey Scales, Items, Sources, and Reliability

Concept	Survey Questions	Source(s)	Cronbach's alpha from original research
Academic Self-Concept	Q1A-NN	Reynolds, Ramirez, Magriña, & Allen, 1980; Reynolds, 1988	.91 (1980) .92 (1988)
Academic Self-Efficacy	Q2A-GG	Owen & Froman, 1988	.90 (2nd test, .92)
Student Engagement	Q3-7	National Survey of Student Engagement, 2012	.729
Intent to Persist	Q8-10	Voorhees, 1987; Bers & Smith, 1991; Mulligan & Hennessy, 1990	Unknown

survey took approximately 25 minutes to complete. See a complete copy of the survey in Appendix V.

Survey administration

We administered the pre-survey in paper format to participants in person during freshman convocation on Sept. 9 and 10. First-Year Experience course instructors administered the post-survey in paper format on our behalf toward the end of the semester during students' class time. For the first survey administration, we addressed all freshmen who attended convocation and orally requested participation in the survey (see attached script in Appendix VI). Each participant was required to sign an informed consent document prior to participation that informed him/her that participation was voluntary and had no impact on his/her grades or status with the College. We explained the document prior to commencement of the survey administration and provided paper copies of the document to participants explaining how they could opt out of participation at a later time if they changed their minds.

Those who chose to participate were given a paper survey, which they completed at that time and returned immediately upon completion. For the second administration, due to the College's cancellation of the second series of convocations, we mailed paper copies of the surveys to each First-Year Experience instructor with a script and an addressed envelope with pre-paid postage in which to return the completed surveys. The post-surveys were administered during the last two weeks of the fall semester.

In order to compare individual student responses to determine changes that occurred during the semester, each participant was asked to code both their pre-survey and their post-survey with the first two letters of the first elementary school they attended and the last four digits of their phone number. Only the researchers had access to individually identifiable data, and this data was de-identified following completion of data analysis.

Survey responses

We administered 243 paper surveys in September. We surveyed 100% of the population (375 students) and had a 65 percent response rate. We mailed surveys for the 359 freshmen still enrolled in November. Two hundred twenty-three surveys were returned for a 62 percent response rate. Our response rates for the survey are high, and using a Z test to compare column proportions in SPSS among the groups for demographic information on both survey administrations, we found no significant differences at the $p<.05$ level other than in the age category, which can be accounted for by the aging of the population from the first survey administration to the second survey administration (see Table 2). However, we cannot be sure that the survey responses are completely unbiased. Because we were not provided with demographic information for the entire freshman class, we cannot be sure that some group is not underrepresented in our responses. Additionally, there may be other, unknown similarities among non-respondents that create bias in our survey responses.

Analysis

After combining all survey responses into one data set, we created scale variables for our dependent variables of academic self-concept, academic self-efficacy, engagement, and intent to persist. We calculated composite scales for academic self-concept, academic self-efficacy, engagement, and intent to re-enroll by summing the responses for each item in the scale for each respondent and dividing by the total number of items in the scale. We analyzed each scale variable using descriptive statistics. The means and standard deviations of each scale variable are shown on Table 3.

We selected a method of analysis known as "difference in differences" (Angrist & Pischke, 2008) to determine whether or not there were differences in our four groups (students enrolled in two or more developmental classes surveyed at the beginning of the fall semester, students enrolled in one or fewer developmental classes surveyed at the beginning of the fall

Table 2: Demographic Comparisons of Survey Administrations

Variable	*Group 1 Time 1*	*Group 1 Time 2*	*Group 2 Time 1*	*Group 2 Time 2*
White/Caucasian	34	24	156	139
Black/African American	18	15	11	19
Latino/Latina	2	1	11	9
Asian/Pacific Islander	1	1	1	1
Native American/Alaska native	0	0	1	0
Multiple races/biracial	3	2	4	5
Other	3	2	0	2
Male	38	25	67	60
Female	23	20	117	115
Age 18	34	28	155**	109**
Age 19	16	13	21**	58**
Age 20	5	1	4	6
Age 21	1	1	2	1
Age 22	4	2	0	0
Age 23	0	0	0	0
Age 24+	1	0	1	1
Single	60	44	180	172
Married	0	0	3	3
Divorced	1	1	0	0
Widowed	0	0	1	0
0 children	56	44	178	168
1-2 children	4	0	6	6
3-4 children	0	0	0	0
More than 4 children	1	1	0	1
Not employed	41	26	104	96
Works part-time on campus	8	5	23	16
Works full-time on campus	1	0	1	1
Works part-time off campus	9	13	53	56
Works full-time off campus	2	1	3	6

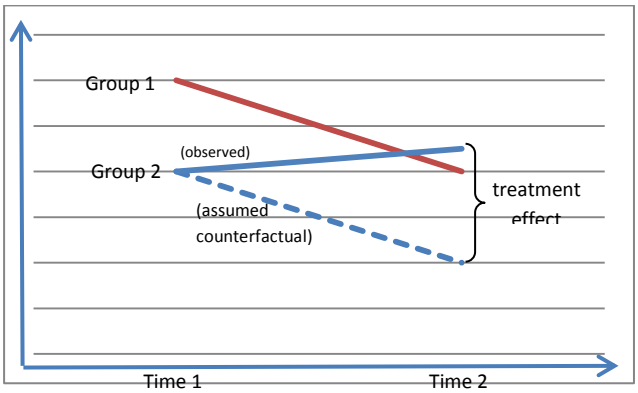
Note: **p<.05

semester, students enrolled in two or more developmental classes surveyed at the end of the fall semester, and students enrolled in one or fewer developmental classes surveyed at the end of the fall semester). The difference in differences method of analysis allowed us to measure the effects of a treatment (enrollment in two or more developmental courses) at a given period of time (the first semester of college), and to measure the change caused by the treatment. This method of analysis, as illustrated below (see Chart 1), is designed to measure the difference between the observed value of the variable in question and what the value of the variable would have been if the trends between the two groups had been parallel. In other words, if the treatment caused no difference in the two groups, the two lines (s=1 and s=2 in Chart 1) would be parallel.

Table 3: Summary of Scale Variables

Variable	*Mean*	*SD*
Academic Self-Concept Scale	2.78	.32
Academic Self-Efficacy Scale	3.34	.58
Student Engagement Scale	2.59	.45
Intent to Persist Scale	3.26	.52

Chart 1: Illustration of the Difference in Differences Method of Analysis



If the treatment does cause a difference in the treatment group, the difference between the observed value of the treatment group and the expected value of the treatment group (parallel to the control group) is the treatment effect.

This method of analysis also allowed us to compare students in the four groups without facing the multiple measures problems we would have faced in conducting multiple t-tests.

To perform this analysis, we calculated binary variables for each group (group 0 represents students enrolled in two or more developmental classes and group 1 represents students enrolled in one or fewer developmental classes), each time (time 0 represents the pre-test and time 1 represents the post-test), and the product of group and time (labeled group_time). We conducted a linear regression analysis using the variables of academic self-concept, academic self-efficacy, engagement, intent to persist as the dependent variable and using "group," "time" and "group_time" as independent variables. Our original intent was to conduct a repeated measures t-test. Not enough students used their individual code on the post-survey to enable us to individually match the pre- and post-surveys of individual respondents, so we opted for a linear regression model comparing aggregate survey responses. The regression model employed was: $Yi = \alpha + \beta 1*g + \beta 2*ti + \beta 3*g_t + \varepsilon i$, where the α is a constant, the average value of group 0 in time 0, students enrolled in two or more developmental classes on the pre-test, $\alpha + \beta 1$ is the average for students enrolled in one or fewer developmental courses on the pre-test, $\alpha + \beta 2$ is the average for students enrolled in one or fewer developmental courses on the post-test. This enabled us to measure the difference between pre- and post-test scores for each group, and the differences in the differences (how much did students enrolled in one or fewer developmental classes grow on these scales compared students enrolled in two or more developmental classes). The test of significance for $\beta 3$ determines whether there is a difference in growth between the two groups over the time period. We set an $\alpha<.05$ level of significance a priori for this test.

A key concern with this type of analysis is multicollinearity among the independent variables (Ethington, Thomas, & Pike, 2002). To test for this, we conducted a collinearity diagnosis for each independent variable in the regression. Because each tolerance was greater than .10 and each VIF was less than 10, this analysis indicated that multicollinearity is not a problem for any of the variables we used (see Table 4).

Table 4: Summary of Collinearity Diagnosis for Independent Variables

Variable	*Self-Concept*		*Self-Efficacy*		*Engagement*		*Persistence*	
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
Group	.551	1.813	.549	1.823	.553	1.810	.553	1.810
Time	.226	4.417	.225	4.440	.223	4.484	.223	4.484
Group_Time	.186	5.376	.185	5.400	.184	5.444	.184	5.444

Quantitative findings

Based on the linear regression analysis we conducted, there was a significant difference ($p<.05$) on the group variable ($\beta = .122$) for academic self-concept (see Table 5). This indicates that the members of the two groups do not have equal academic self-concept. Students in one or fewer developmental classes had higher academic self-concept than students enrolled in two or more developmental classes. Additionally, there was a significant difference on the group variable ($\beta = .215$) for intent to persist (see Table 8). This indicates that the members of the two groups do not have equal intent to persist. The non-developmental group members had stronger intent to persist than the developmental group members. There was no significant difference on the group variable for academic self-efficacy or student engagement (see Tables 6 and 7).

There were no significant differences among any of the concepts (academic self-concept, academic self-efficacy, student engagement, or intent to persist) on the time variable (see Tables 5-8). This indicates that the levels of each concept did not change for each group from the beginning of the first semester of college to the end of the first semester of college.

Finally, there were no significant differences among any of the concepts (academic self-concept, academic self-efficacy, student engagement, or intent to persist) on the group_time variable (see Tables 5-8). This indicates that enrollment in two or more developmental classes through the first semester of college did not have a measurable effect on students' academic self-concept, academic self-efficacy, engagement, or intent to persist when compared to enrollment in one or fewer developmental classes through the first semester.

Table 5: Summary of Regression Analysis for Academic Self-Concept Scale Variable

Variable	*B*	*SE B*	*Â*
Group	.122	.047	.159**
Time	-.041	.061	-.064
Group_Time	-.095	.070	-.143

Note: $R^2 = .044$. , **p<.05

Table 6: Summary of Regression Analysis for Academic Self-Efficacy Scale Variable

Variable	*B*	*SE B*	*Â*
Group	.122	.086	.089
Time	.082	.112	.071
Group_Time	-.052	.128	-.044

Note: $R^2 = .007$., **p<.05

Table 7: Summary of Regression Analysis for Student Engagement Scale Variable

Variable	*B*	*SE B*	*Â*
Group	-.059	.067	-.055
Time	.027	.088	.030
Group_Time	.049	.100	.053

Note: $R^2 = .007$., **p<.05

Table 8: Summary of Regression Analysis for Intent to Persist Scale Variable

Variable	*B*	*SE B*	*Â*
Group	.215	.076	.173**
Time	-.106	.100	-.102
Group_Time	-.107	.113	-.100

Note: $R^2 = .051$., **p<.05

Qualitative findings

In addition to the quantitative analysis described above, we also performed qualitative analysis on interviews we had conducted with faculty and staff to provide further insight into the project sub-question, "What is the association between developmental course-taking and students' academic self-concept, academic self-efficacy, engagement, and persistence?" All three researchers conducted interviews with 15 faculty and staff members during the fall semester of 2013. The interview participants consisted of faculty members who teach developmental courses, faculty members who teach the subsequent, credit-bearing courses in the course sequences, the Director of the First Year Experience Program, and administrators whose roles are relevant to developmental education at MMC. These individual interviews were conducted in the faculty or staff member's office or in some other private area and generally lasted 45 to 60 minutes each. The interviews were conducted using a semi-structured format, which allowed us to use standard interview protocols, and included the topics background information, program organization, professional development opportunities, interaction with other faculty, the First-Year Experience program, classroom interactions, supplemental support, interactions with students, and assessment (see Appendix IV), and also left open the possibility to ask additional, probing questions as needed. We also attempted to conduct interviews with students to supplement our answer to this sub-question, but since so few students agreed to participate in our interviews (n=6) we felt this data may not be representative of the population as a whole and were unable to include this data in our qualitative analysis.

We analyzed the qualitative data gathered from these interviews using the matrix method (Rubin & Rubin, 1995). First we transcribed the interviews. Next, we reviewed the transcriptions for relevant themes found in multiple interview transcriptions. We developed a matrix of themes and placed data and salient quotes from our interview transcriptions on this matrix.

The qualitative data gathered from interviews with faculty and staff provide further insight on the association between developmental course taking and student academic self-concept and academic self-efficacy. One of the concerns MMC administrators raised at the start of our project was that taking developmental courses could have a negative affective impact on students. Some of the faculty members interviewed expressed similar concerns. As Janet, an MMC faculty member, explained:

> *"...they're not sure they should be here in the first place..."*
> *-- MMC faculty member*

I see a lot of students get very easily discouraged. They start dropping out, and it is usually our developmental-level students, because, again, they're not sure they should be here in the first place, many of them. So, you know, you need to keep emphasizing to them the need to hang in there.

Motivation is one important factor in academic self-concept and academic self-efficacy that is described in the literature, and many of the faculty and staff members we interviewed at MMC described the lower levels of motivation among developmental students. David, a math instructor, said that students in his developmental courses "were much less motivated. Not that most people in a math class are motivated, but I can usually, you know, get my Algebra students to do their homework. In developmental, it was harder to convince them they needed to do the homework."

Even the Vice President of Academic Affairs described the motivation problem. "The problem is the students who take those courses are not motivated to do well," he said. "And that's the biggest problem, I think, is just lack of motivation. But there are a few who come through it and do okay."

Sarah, an English instructor, agreed with this assessment and felt that assignment to developmental courses may have impacted students' motivation and academic self-concept. She said:

Well, I think the, the biggest problem or the biggest difference with the developmental students would be motivation. …Many of them want very much to be successful, but they don't seem as able to translate those desires into success in and out of the classroom. And part of it may be—of course, now I've never been a public school teacher, so this is just theory; I don't have any real basis in fact—but part of it may have been that they have labeled themselves as developmental and they feel that they can't achieve as effectively as other students, so it is hard for them then to do so.

However, Julia, who taught developmental English, disagreed. In her experience, the developmental students were more motivated than she had anticipated.

I come from the community college background, where a lot of students are very unmotivated to take developmental classes or frustrated that they're in there to start with, and that was not the case with my students. I had them in the spring. Most of them had taken a developmental course in the fall in order to get to ENG 100, which is what I taught. But, I mean, it went really well…. I had students who did really well.

> *"…if the developmental students focus, they're just as capable of doing the work at the same level… as the nondevelopmental students are…."*
> *--Director of FYE at MMC*

According to the Director of the First-Year Experience program, the FYE 100 course is designed, in part, to improve motivation, academic self-concept, academic self-efficacy, and intent to persist for developmental students. The course promotes a "survivorship mentality" among the students, many of whom do not have supportive family members or adequate academic preparation. The Director describes the survivorship curriculum as:

those kind of mentalities of no matter what life throws at you, you just keep going, you follow your dreams, you keep pursuing things even if people tell you they don't think you're college material, be that family members, be that teachers,… you know, you're gonna show them, you know, you can, you determine what your life story is going to be, … not other people.

Lawrence, an English instructor, said that in addition to differences in motivation levels among developmental and non-developmental students, there are differences in the behaviors they exhibit. In his experience, the students in his developmental English courses had to be taught classroom decorum, as well as that deadlines should be met and assignments should be completed. From his experiences teaching developmental courses at MMC, Lawrence said he learned not to make assumptions about his students' understanding of academic norms.

Don't take anything for granted. I mean, you can't just assume that they understand the academic culture. Uh, some of the very obvious things that they can take advantage of, they won't. For whatever reason. It could be cultural. It could just the school they were in that they just don't approach the professor, they would never think of doing that.

The Director of FYE echoed this: "Ability-wise I think that… if the developmental students focus, they're just as capable of doing the work at the same level… as the non-developmental students are.… But sometimes, they lack the belief in themselves or the desire to settle down and actually get the work done." Greg, who teaches developmental

math courses, agrees.

They do not know how to study. They don't even realize that they're in class yet.… This is our second week of meeting and some of them don't even have their books yet. So, you're dealing with people who have not been properly taught.… They don't know how to do homework. They won't do homework. They perceive that if they come to class, they will learn the material. And they can't. Math is doing.

Faculty members varied in their assessments of students' academic self-concept and academic self-efficacy. Calvin described an incident with a student who entered his Developmental Writing I course with a very low estimate of her ability: "[She] looked at me on the first day of class and told me, 'Just so you know, I write like a fifth grader.'" Greg described a situation in which he was on the verge of removing a problem student from one of his developmental courses. He visited the student's high school and learned that the student barely graduated. He says that the student was not stupid, but it took a great deal of individual attention for the student to pass his course, as the student was accustomed to receiving passing grades with minimal effort. In his experience, many developmental students have the same mindset.

Marvina, a developmental English teacher, had a similar experience. She had a student in her developmental writing course who told her that he did not have to attend class or complete assignments in high school to pass because he played basketball. In college, he expected to perform in a similar manner and was angry when she required him to participate in group work and quizzes.

Many faculty members described a "high school mindset" and a lower level of maturity for developmental students when compared to non-developmental students, which gave developmental students an artificially high academic self-concept. The Director of FYE had a slightly different opinion of the origin of this high school mindset and its impact on students' academic self-concept.

They're very wed to whatever their high school teachers told them. Like if their high school teacher told them, "You're a really strong writer," and then their English teacher [at MMC] tells them, "Not so much. You need to work on your organization and your grammar and your punctuation." I mean, it sort of, it takes them aback.… They don't deal with criticism very well… if it contradicts something that they… had heard prior to coming college. Then we're just being mean and too tough and too strict and we expect too much.

Meredith, who teaches developmental English courses, described students' challenges with academic self-efficacy in this way:

They're not quite sure how to behave when they come out of a total—I don't think that's the right word I want, but to me totalitarian education system—into one where they're actually asked to have an opinion and a voice and participate in discussions and things. They're not quite sure where the balance is between being too outrageous and too out there with their behavior and being calm and controlled and reasonably professional with their behavior.

Calvin also described developmental students as being more engaged with faculty than non-developmental students. "When I finally got an office, I couldn't get them out of it.… They spent a lot of time in my office. They still do, for that matter.… It's good to have that kind of relationship with students." Several developmental faculty members mentioned giving students their personal phone numbers, and that students were more likely to contact them by phone or text if they had questions or problems. Other faculty members reported rarely having contact with any students, developmental or non-developmental, outside of class or during their office hours. Sarah indicated that engagement with faculty was mixed. She said:

My sense is that developmental students may avoid their professors a little more, just because they feel less secure in the college environment, but then there may also be some developmental students who realize they need more help, and so they go to their professors a lot.

Discussion and interpretation of key findings related to academic self-concept, academic self-efficacy, student engagement, and persistence

Intent to persist has been shown in the literature to be a significant predictor of student persistence (Bers & Smith, 1991; Vorhees, 1987). Because MMC is interested in retention rates for students enrolled in two or more developmental classes in the first semester of college, the finding that MMC's developmental students have significantly lower intentions to persist than MMC's non-developmental students is important. This finding could at least partially account for the more than thirty percentage point difference in retention rates among the two groups of students.

Academic self-concept "is tied to an individual's feelings about him- or herself as a person in addition to that individual's belief in his or her ability" (Wernersbach, 2011, p. 7). This construct was also significantly lower for the group of students MMC defines as "developmental students" (those enrolled in two or more developmental courses at MMC, as previously defined in this paper) than for "non-developmental students" (as defined by MMC as students enrolled in one or fewer developmental courses). The concerns MMC administrators and faculty raised about the affective impact of taking developmental courses also appear in the literature. Arendale (2010), for example, says that students often experience stigma as a result of enrolling in developmental courses, and he identifies several factors that contribute to this stigma:

(1) mandatory enrollment in developmental courses; (2) new students placed in cohorts identified for academic risk; (3) use of terms such as "at-risk students," "high-risk students," "developmental students," and "academically disadvantaged students," all of which represent a negative condition characterizing students' academic abilities and potential; (4) public policy fights over admission of students perceived to be academically underprepared; and (5) memories of emotional hazing in previous schools (pp. 12-13).

Arendale notes, however, that no stigma is attached to using learning assistance centers (LACs), which are available to all students and don't marginalize underprepared students (p. 43).

At Martin Methodist, there was no difference in academic self-concept of developmental students from the beginning of their first semester of college to the end of their first semester of college, which is consistent with the literature which indicates that academic self-concept is generally stable, though it can be situationally unstable (Reynolds, 1988; Shavelson, Hubner, & Stanton, 1976). Academic self-concept is tied to students' beliefs that they can be successful in academic endeavors. That developmental students, who may be more likely to have experienced academic failures in the past, culminating in their placement in non-credit-bearing developmental courses in college, have lower academic self-concept may not be surprising. However, MMC's FYE 100 course, designed to teach academic skills to students enrolled in two or more developmental courses, does not seem to be improving students' academic self-concept from its level at enrollment.

That academic self-efficacy for MMC's developmental students did not change over the course of the first semester is somewhat surprising. Academic self-efficacy is believed to be domain specific (Wernersbach, 2011), yet enrollment in multiple developmental courses in the first semester of college neither improves academic self-efficacy by providing students with remedial instruction on topics they have previously encountered, nor worsens academic self-efficacy by requiring students to take non-credit courses on subjects they were to have mastered in high school. In either case, it is evident from the survey research that enrollment in developmental courses in the first

semester did not impact academic self-efficacy for this group of students.

As Janet, a faculty member, explained: "Our students are not less capable who end up in those classes. A lot of them just graduated from small high schools with limited resources,… so they're just less prepared." She added that "most of the students … have a pretty good sense of if they came out of a high school that prepared them well for college or if they're here in spite of some of that education." Our student interviews, though limited, provide some evidence of this assessment. One reason students associated their academic problems with their prior education more so than their developmental courses may be that their college experience was still fairly new. They had longer exposure to their prior schools and that experience likely still served as the primary foundation for their academic perceptions. If interviewed after their first semester at Martin Methodist or later, they may express different beliefs about themselves academically and about their academic experiences.

Our survey results indicated there was no difference in student engagement among developmental and non-developmental students. This may not be unexpected, as we found no literature that states that student engagement differs among these two groups of students. However, as student engagement is a common predictor of persistence (Pascarella & Terenzini, 1991), we thought that it might potentially explain a portion of the difference in retention rates for developmental and non-developmental students at MMC. It does not.

Retention

Numerous studies demonstrate the positive impact of First-Year Experience programs on student retention (Jamelske, 2008; Schnell & Doetkott, 2002; Porter & Swing, 2006). Pascarella and Terenzini (2005) found considerable evidence that such programs positively impact students' persistence from the first to the second year of college. While such programs vary across institutions, 95 percent of four-year institutions nation-wide have some sort of First-Year Experience program (Pascarella & Terenzini, 2005). However, we found no research that specifically addresses the question of whether a First-Year Experience course specifically designed for students enrolled in developmental classes helps institutions improve retention rates of students in that group.

In order to answer the project sub-question, "What is the association between the First-Year Experience course and developmental students' retention rates?" we requested five years of retention data (three years leading up to the implementation of the First-Year Experience course for developmental students and the two years since its inception) from Martin Methodist College. Specifically, we asked for the following for each freshman enrolled for the first time over the previous five years: date of enrollment; graduation date (if applicable); last semester of attendance; list of developmental courses in which each student enrolled; and various demographic data including age, race and gender.

Unfortunately, the College was unable to provide us with this data for the entire population requested. The College provided a sample of student enrollment data, but, because we were unsure of how the sample was determined and whether it is representative of the population, we were unable to determine the association between the First-Year Experience course for developmental students and retention rates.

While we did not have the data to address this sub-question quantitatively, some of our faculty and staff interviews provided qualitative data related to this topic. Lawrence, an English instructor, described a change from initial resistance to the FYE program to institution-wide acceptance of the benefits it provides for students and retention. He said, "Now it's become such a part of the culture of the place… everybody is fine with it, and it has had a positive … impact. I mean, it's hard, I know that you have to correlate all the data, but certainly things are moving in the right direction."

The Director of the FYE program agreed. The FYE 100 course, she said, is designed to provide a fam-

ily atmosphere for students who lack family support to encourage them to persist at MMC. However, she was not overly optimistic about the impact of the course on student success.

I think there are some people at Martin who think that… when some FYE 100 level students get suspended or put on [academic] probation, it's like, you know, "The course was supposed to fix this." And I'm like, "I'm sorry… it's not magic." You know, we're still struggling to meet [students'] needs and figure out what they need… and then try to get their buy-in in a way that says… I'm willing to do the work that it takes to get me across this much longer bridge than some of my peers have to travel. And I think all those things are a challenge.

> *"…there are some people at Martin who think that… when some FYE 100 level students get suspended or put on [academic] probation, it's like, you know, 'The course was supposed to fix this." And I'm like, 'I'm sorry.... It's not magic."*
> *--Director of FYE at MMC*

Sarah also described the FYE 100 course as successful for improving student retention. She said, "I know that we have had pretty good success with that class [FYE 100] in keeping the students and getting them through…. If they make it through that first year, even the first semester, then they're likely to be successful."

Discussion and interpretation of key findings related to retention

While we were unable to assess quantitatively whether or not the FYE 100 course has had an impact on student retention, we did uncover evidence of a general feeling among faculty that the program benefits student retention. Faculty members mentioned that it provides tools to help students persist including a family-like support network. While we found no literature regarding the impact of First-Year Experience courses for retention of developmental students, the faculty members' opinions of the efficacy of the FYE 100 course at MMC mirror the findings in the literature that First-Year Experience courses help institutions improve retention rates for students in general.

Grade point averages

First-Year Experience courses have been shown to positively impact student grade point averages (Jamelske, 2008; Olds & Miller, 2013; Noble, Flynn, Lee, & Hilton, 2007). However, we found no research that specifically addresses whether or not First-Year Experience courses positively impact the grade point averages of developmental students in the same manner as for students as a whole.

In order to answer the project sub-question, "What is the association between the First-Year Experience course for developmental students and their grade point averages?" we requested from MMC five years of student performance data (three years leading up to the implementation of the First-Year Experience course for developmental students and the two years since its inception). Specifically, we asked for the following for each freshman enrolled for the first time over the previous five years: date of enrollment; cumulative college grade point average; and various demographic data including age, race and gender.

Unfortunately, the College was unable to provide us with this data for the entire population requested. The College provided a sample of student performance data, but, because we are unsure of how the sample was determined and whether it is representative of the population, we were unable to determine the association between the First-Year Experience course for developmental students and student grade point averages.

Discussion and interpretation of key findings related to grade point averages

We were unable to address this sub-question due to lack of data provided for either quantitative or qualitative analysis.

Preparation for subsequent courses

Evidence on how well developmental education programs prepare students for subsequent, credit-bearing courses is mixed. While multiple colleges and universities are engaging in promising mechanisms for the delivery of developmental education (Boatman, 2014; Zachry & Schneider, 2010), other studies find that developmental courses do little to develop students' academic skills, and instead simply divert or delay students from enrollment in subsequent courses (Scott-Clayton & Rodriguez, 2012). Additionally, developmental courses may be less effective in preparing students who are required to take multiple levels of developmental courses prior to entering college-level courses (Boatman & Long, 2011).

In order to answer the project sub-question, "Do students in developmental courses acquire the skills they need to be successful in subsequent, credit-bearing courses?" we requested five years of student course performance data from MMC. Specifically, we asked for the following for each freshman enrolled for the first time over the previous five years: date of enrollment; whether or not the student enrolled in each developmental course and the grade earned in that course, if applicable; whether or not each student enrolled in the subsequent credit-bearing course and the grade in that course, if applicable.

Unfortunately, the College was unable to provide us with this data for the entire population requested. The College provided a sample of student performance data, but, because we are unsure of how the sample was determined and whether it is representative of the population, we were unable to determine the extent to which developmental courses prepare students for subsequent, credit-bearing courses.

While we did not have the data to answer this sub-question using quantitative analysis, many of the faculty and staff we interviewed provided their opinions about how developmental students perform in subsequent, credit-bearing classes. The Vice President of Academic Affairs said he believes that the developmental courses have helped students taking subsequent, credit-bearing courses. However, he admits that the institution has never tracked these students to see whether or not they are actually successful in subsequent courses.

There were fewer failures… I do think that it does provide for students who don't have the background, an opportunity to get… the background they need, the skills they need to go into the college-level work. I don't know about the success rate overall. I haven't really bothered, and I should have.… The problem is having to check by name everybody that goes through, what percentage who actually start in the lowest levels actually complete the sequence and then are they successful when they go into freshman composition or whatever math they take.

George, a math instructor, agreed. He said, "Most of the time anytime they go through the developmental courses they're gonna struggle, need extra help, have to go to the SRC, the Student Resource Center, for help, but… at least some of that phobia is gone that… many of 'em have for math."

Calvin, an English instructor, said that students who had previously taken developmental reading or writing courses tended to perform much better in subsequent courses than other students.

Their grades on average were a little higher. They were more spot-on in doing research. They were citing things more regularly. Their grades were generally, if I went back and looked, I think the last time I did, they were about a letter grade ahead of people who had started in, say, Comp 101.… They were more prepared. They didn't seem as stressed at mid-term and at finals. They were already more acclimated to being in college by the time they got to the harder classes.…

According to Calvin, "I think that the students who take those [developmental] classes are generally more apt to succeed and stick through all four years here."

The DSC Chair described student success in subsequent courses as the purpose of the developmental education program at MMC.

What we've said over and over again is that the… overall purpose is that they succeed when they get into their program coursework and their core coursework. … We do consider ourselves to be a failure if we're putting students into those classes and they're not succeeding.

He explained that some students are able to transfer the knowledge learned in developmental courses to the subsequent, credit-bearing courses. However, others are not able to successfully make the transition. The Director of FYE linked this to the institution's retention rates. "If a student doesn't feel competent or that the course is helping them build competency that they're going to need in their future classes, you lose them," she explained.

Discussion and interpretation of key findings related to preparation for subsequent courses

While we were unable to address this topic quantitatively, our qualitative analysis shows that faculty members generally believe that developmental courses help to prepare students for subsequent, credit-bearing courses. However, the literature on the topic shows mixed results, and indicates that the developmental courses that best prepare students for subsequent, credit-bearing courses are typically ones that involve innovative delivery methods. Therefore, further analysis of a quantitative nature may be needed to confirm the faculty members' beliefs about the efficacy of this program.

Summary

To summarize our findings regarding our second project question, "How do MMC students enrolled in two or more developmental courses fare," there are significant differences between the two groups for academic self-concept and intent to persist, but that there are no changes from the beginning of the semester to the end of the semester in any of the measured concepts as a result of enrollment in two or more developmental courses.

To specifically address the first sub-question regarding the association between developmental course-taking and students' academic self-concept, academic self-efficacy, engagement, and persistence: Students in one or fewer developmental classes had higher academic self-concept than students enrolled in two or more developmental classes. The group of students enrolled in one or fewer developmental courses had stronger intent to persist than the developmental group members. There was no significant difference on the group variable for academic self-efficacy or student engagement, indicating no difference in the two groups for these two concepts.

Due to lack of data we were unable to quantitatively address the remaining three sub-questions regarding the association between the First-Year Experience course and developmental students' persistence, the association between the First-Year Experience 100 course and students' grade point averages, and whether students in developmental courses acquire the skills they need to be successful in subsequent, credit-bearing courses.

Limitations

The research and findings from this project are subject to five key limitations. These limitations restrict the extent to which our conclusions can be generalized to MMC's peer institutions. The limitations also temper the conclusions and recommendations that we can make for MMC. MMC administrators can mitigate the impact of these limitations on future practices by engaging in the recommended institutional research delineated in a subsequent section.

Death of the Director of the FYE Program

During the course of this research project, the director of the First-Year Experience program at MMC died. Because this director was a particularly charismatic leader who had embodied the FYE program at the institution since its inception, it is reasonable to think that her death in the middle of the semester would lead to changes in the program and that it might impact students at the institution, as well as their views and experiences in their first semester of college. Therefore, any conclusions drawn up to this point in time regarding the association of the First-Year Experience program with student outcomes are subject to change in the near future.

Limited Data Provided by MMC from the Student Data System

We had planned to do several different types of quantitative analysis to explore project question two and its sub-questions. However, much of the analysis we had planned required data from the MMC student data system, which MMC was ultimately unable to provide. While the College did provide data for a sample of students, we were uncomfortable using this data due to the small size of the sample and lack of information about how it was derived. We have provided an explanation and recommendations for MMC to conduct this analysis at a later date, if they are still interested in the answers to the relevant sub-questions. This lack of data was a limitation for us in responding to all of the sub-questions in the manner in which we had originally intended.

Developmental Assessment Reports Not Provided by MMC

We had hoped to use the assessment reports related to developmental education that MMC had compiled prior to the inception of this project. However, MMC was ultimately unable to provide these assessment reports, so we were unable to use this data to determine changes in student performance in developmental courses over time, prior to the inception of our study at MMC.

Few Students Agreed to Participate in Interviews

We had planned to supplement our data for project question two, "How do MMC students enrolled in two or more developmental courses fare?" with qualitative data gathered from interviews of students. However, after inviting every student in the population to participate multiple times via email and in person and after offering an incentive for participation, we were still only able to find six students out of the population of 77 students enrolled in two or more developmental courses who were willing to participate in the interviews. This is a significant limitation to our study because the students may have been able to provide

additional detail about how they have been impacted, socially or academically, by being placed in multiple developmental courses in their first semester of college.

Survey Responses

Our survey response rates ranged from 62 to 65 percent. While we feel that this is a relatively high survey response rate, we cannot be sure that the students who completed the survey are not different in some fundamental way from students who did not complete the survey. If there are unknown differences in these two groups of students, the results of the survey may not apply to the population as a whole.

We asked students to provide unique identifiers on the surveys so that we could match pre-surveys and post-surveys by respondent. In order to ensure students' anonymity, these unique identifiers were designed such that the surveys could not be traced back to a specific student and could only be matched using the identifying codes. The survey forms asked students to indicate the first two letters of their first elementary school and the last four digits of their phone number. However, more than fifty percent of the students did not complete this item on the survey, making it impossible (due to the size of the population) for us to perform any analysis comparing individual students' changes over the course of their first semester of college.

Conclusions

Through our study we have sought to provide an objective assessment of MMC's current practices in developmental education and of how students exposed to these practices fare. Though moderated by the limitations described above, our findings lead to several conclusions and recommendations that could prove highly beneficial to the College. In this section, we advance four conclusions, two for each project question; each conclusion is described in detail and organized by project question. Our recommendations follow in a separate section.

Project question one: How does MMC's developmental education compare to programs at other schools and to model programs, best practices, or programs that have been identified as effective in the research literature?

Gap between goal and practice of being a "college of opportunity"

Given that none of the average best practice rating scores for MMC was above a three, there is a gap between the College's goal of being a "college of opportunity" and the actual practices it employs to provide such opportunity for underprepared students. As described earlier, the College has a demonstrated commitment to serve such students. However, when compared to best practices in the field of developmental education—specifically in terms of costs, structure, and placement—MMC falls short in many areas. Although such shortfalls do not necessarily indicate a diminished commitment to help underprepared students, they do indicate a need to overhaul the College's efforts to serve its developmental students and to serve those faculty and staff members who work with them.

Best practice deficits go beyond costs

At the start of our study, MMC expressed a strong interest in decreasing its costs related to developmental education. Our study found, however, that the College currently has a low investment in this area in comparison to best practices in the field. Indeed, some of the best practice deficiencies identified by our study, such as the lack of professional development opportunities and the absence of placement test preparation materials, likely are influenced by this low investment. Yet, given the College's concern about costs, it is important to emphasize that many of the best practice deficits are not related to costs, although some faculty or administrators may assume otherwise. During our interviews, for example, some faculty and administrators expressed concern about the College's recent shift from full-time to lower-cost adjunct instructors for the majority of developmental courses. Although it might be tempting for some to conclude that any program shortcomings related to adjuncts are indicative of an underinvestment in developmental education by the College, such a conclusion cannot be drawn from our findings. In fact, many of the problems identified that concern adjuncts—and full-time faculty as well—suggest a need for clearer and more frequent communication and better institutional training. Remedies for such problems may require additional commitments of time, but they should not necessarily require adjustments to the College's financial commitments. Such findings, combined with our findings that MMC already operates its developmental education program at

very low cost, indicate a need for the College to shift its focus from cost reduction to other areas that need attention and that can benefit the program if addressed.

Project question 2: How do MMC students enrolled in two or more developmental courses fare?

MMC intervention efforts may not be having intended effects

Our findings that there was no measurable change over the course of the semester in developmental students' academic self-concept or academic self-efficacy undoubtedly will be a relief for administrators and faculty concerned that enrollment in multiple developmental classes has a negative affective impact on students. However, these findings, as well as the similar findings related to engagement and intent to persist, should still raise concerns considering the College's efforts (particularly though the FYE 100 course) to improve developmental students' views of themselves and their motivation to succeed in their courses and to persist to graduation. While it is possible that changes occurred that our survey could not detect, it is also possible that MMC's interventions are not having the intended effects. As such, MMC may want to focus additional attention in the areas of building academic self-concept and encouraging students to commit to persist until graduation. Further study, however, is recommended.

Potential for course misalignment could have detrimental effects on student preparation for subsequent courses

Our finding from project question one that courses could be misaligned in practice has direct implications for student preparation for subsequent courses, a topic of one of the sub-questions for project question two. Although faculty members overall expressed belief that developmental courses help to prepare students for subsequent courses, these views were largely based on general impressions or experience with individual students whom the professors taught in both developmental and credit-bearing courses. It is much easier to prepare students for subsequent courses that you, yourself teach than for courses others teach or with which you are unfamiliar, especially if course alignment has not been ensured. As stated previously, students have a greater likelihood of being exposed to the material needed for subsequent courses if they have the same instructor for developmental and latter courses. However, having the same instructor would not necessarily guarantee such exposure and having different instructors would further decrease the likelihood that students would receive the full instruction intended. Careful study of the alignment between MMC's developmental and subsequent credit-bearing courses is essential to ensure that students acquire the skills they need to be successful.

Recommendations for Policy and Practice

Based on our findings and conclusions, we offer the following eight recommendations to the College.

Devote more funds to developmental education

We recognize that costs are an important concern for MMC and that funding may be scarce in the current economic environment. However, because MMC's current costs for developmental education are low in comparison to the best practices in that area, we recommend additional investment in the developmental education program. A large proportion of MMC's students are required to take developmental courses upon enrollment, and MMC would like to see more of these students retained until graduation. Substantial changes to the program (some of which are included in our recommendations) may be necessary to promote retention increases. While implementing these changes will have some costs associated, the College's current under-investment in such a large proportion of its student body is surprising given its desire to see these students succeed.

To offset some of the additional required costs, we recommend that MMC aggressively seek grant funds. Some organizations that have funded initiatives related to developmental education or education in general are Next Generation Learning Challenges, the Luce Foundation, the Institute of Education Sciences, and the Lumina Foundation. Corporate foundations like the Walmart Foundation and AT&T Aspire also fund educational programs. Additionally, organizations like the National Association for Developmental Education and the National College Learning Center Association provide individual scholarships and grants for professional development and other training.

Restructure or terminate FYE 100

The FYE 100 course does not seem to be helping to improve the academic self-concept of students enrolled in two or more developmental courses in the first semester of college. Because a major goal of this course is teaching students necessary behaviors to be successful in higher education, and academic self-concept measures students' beliefs about their own academic abilities, there seems to be a disconnect between the goals of the course and its actual impact on students. Therefore, we recommend restructuring or terminating the FYE 100 course in favor of provision of additional academic resources, such as supplemental instruction, tutoring, test preparation, and advising, for students enrolled in multiple developmental classes.

Adopt a written mission statement

Given the potential for misinterpretation of the purpose of developmental education at MMC, the College should adopt a written mission statement that clearly defines what it means for an underprepared student to become prepared. If shared campus-wide, such a statement would decrease the opportunity for misinterpretations or multiple interpretations of the exact purpose of MMC's program and would allow for better public assessment of the program's success.

Better define the role of the Chair of the Developmental Studies Committee

Because there is confusion on campus about the content and extent of the DSC Chair's

responsibilities, the College should more clearly define the Chair's official role and ensure that the campus is informed of his duties. Additionally, the College should either expand his role or establish a director position to ensure a higher level of coordination within the developmental education program.

Provide training and professional development related to developmental education

Because many of the developmental faculty felt ill prepared when they began teaching in the program, MMC should provide training and professional development opportunities for both full-time and adjunct faculty. During our interviews, the English program coordinator said a teaching center was set to open on campus in fall 2013 and that she planned to pursue providing training to the developmental faculty. Such training is essential to ensure that students are adequately prepared for college-level work.

Offer more accelerated course options

Given the widespread desire to see students complete the developmental course sequences more quickly, the College should develop more accelerated developmental course options, particularly in English. Mainstreaming upper-level developmental students into college-level courses is a particularly promising option that could drastically reduce the time it takes students to complete developmental and core courses.

Require multiple measures, including non-cognitive assessments, for course placement

As revealed in our best practices research, using multiple measures can enhance students' course placement and in some cases can drastically improve their net placement scores (Colorado Community College System, 2013; Safran & Visher, 2010; E. Tovar, personal communication, 11 Feb 2014). As such, MMC administrators should include multiple measures in students' overall placement portfolios, including both subject test scores and non-cognitive assessments.

Provide test prep materials & in-person review session

Because our student interviews, though limited, revealed that students were unaware of MMC's placement procedures and that they failed to prepare for these assessments, we recommend that the College send students placement test prep materials in both electronic and paper format to improve COMPASS scores. Additionally, MMC should give students the opportunity to come to campus for an intensive review session over the summer prior to taking placement exams so they can place into a higher class.

Recommendations for Institutional Research at MMC

Retention

If College administrators are still interested in the sub-question "What is the association between the First-Year Experience course and developmental students' retention rates?" they could measure it in the following way. We recommend they use data from the entire population, particularly given the small population size.

We recommend isolating students enrolled in two or more developmental courses in their first semester at Martin Methodist. Divide this group into two subgroups: students who did enroll in FYE 100 and students who attended the college prior to the inception of this course. Compute the percent of students in each subgroup who were still enrolled at the college one year later. Perform a t-test to determine if the difference between the two percentages is significant. If the difference is significant ($p<.05$), the discrepancy between retention rates is most likely not due to chance. While other factors may have changed simultaneously with the inception of the FYE 100 class, at least part of the statistically significant difference in retention rates may be due to this class. After completing this analysis, the College may want to conduct the same analysis for students enrolled in one or fewer developmental courses to determine whether or not changes in retention rates for the students enrolled in two or more developmental classes mirror changes in retention rates for students enrolled in one or fewer developmental classes.

Grade Point Averages

If College administrators are still interested in the sub-question "What is the association between the First-Year Experience course for developmental students and their grade point averages?" they could measure it in the following way. We recommend they use data from the entire population, particularly given the small population size.

We recommend isolating students enrolled in two or more developmental courses in their first semester at MMC. Divide this group into two subgroups: students who did enroll in FYE 100 and students who attended the College prior to the inception of this course. Compute the students' grade point averages as of the end of their first semester of enrollment. Using these grade point averages, compute the mean grade point average for each group. Perform a t-test of means to determine if the difference between the two averages is significant. If the difference is significant ($p<.05$), the discrepancy between averages is most likely not due to chance. While other factors may have changed simultaneously with the inception of the FYE 100 class, at least part of the statistically significant difference in grade point averages may be due to this class. After completing this analysis, the College may want to conduct the same analysis for students enrolled in one or fewer developmental courses to determine whether or not changes in grade point averages for the students enrolled in two or more developmental classes mirror changes in grade point averages for students enrolled in one or fewer developmental classes.

Preparation for Subsequent Courses

If College administrators are still interested in the sub-question "Do students in developmental

courses acquire the skills they need to be successful in subsequent, credit-bearing courses?" they could measure it in the following way. We recommend they use data from the entire population, particularly given the small population size.

First, the College must convert the course grades to numbers (A=4, B=3, C=2, D=1, F=0). Second, the College should isolate the students enrolled in developmental courses. Next, perform correlation analyses comparing the performance of students enrolled in the lowest level developmental math course to the next level developmental math course and then the second developmental math course to the first college credit-bearing course. Then the College should perform the same analysis for each developmental English course and the first credit-bearing English course. The extent to which each course's grades are correlated with the next can serve as a proxy for whether or not students were prepared for the subsequent course.

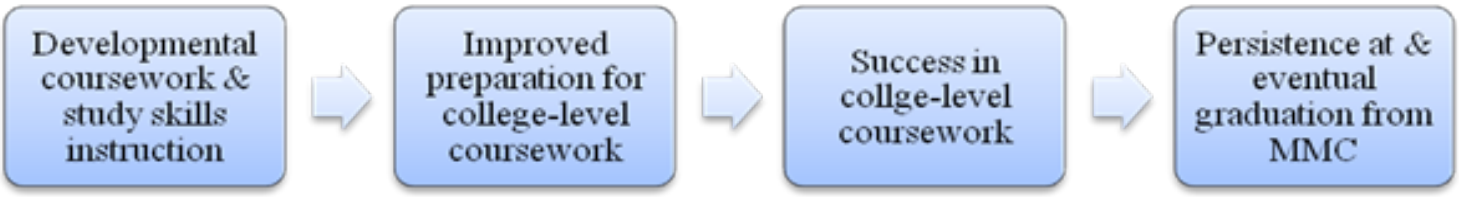
Next, the College should compare course grades in the first credit-bearing English and math courses for the population of students who were not enrolled in developmental courses to the population of students who were. The College can determine average grades in each credit-bearing course, and can perform a t-test to determine whether or not the difference in means is significant. If the difference is significant, it is unlikely that students who were required to take developmental course and students who were not required to take developmental courses were similarly prepared.

Closing Thoughts

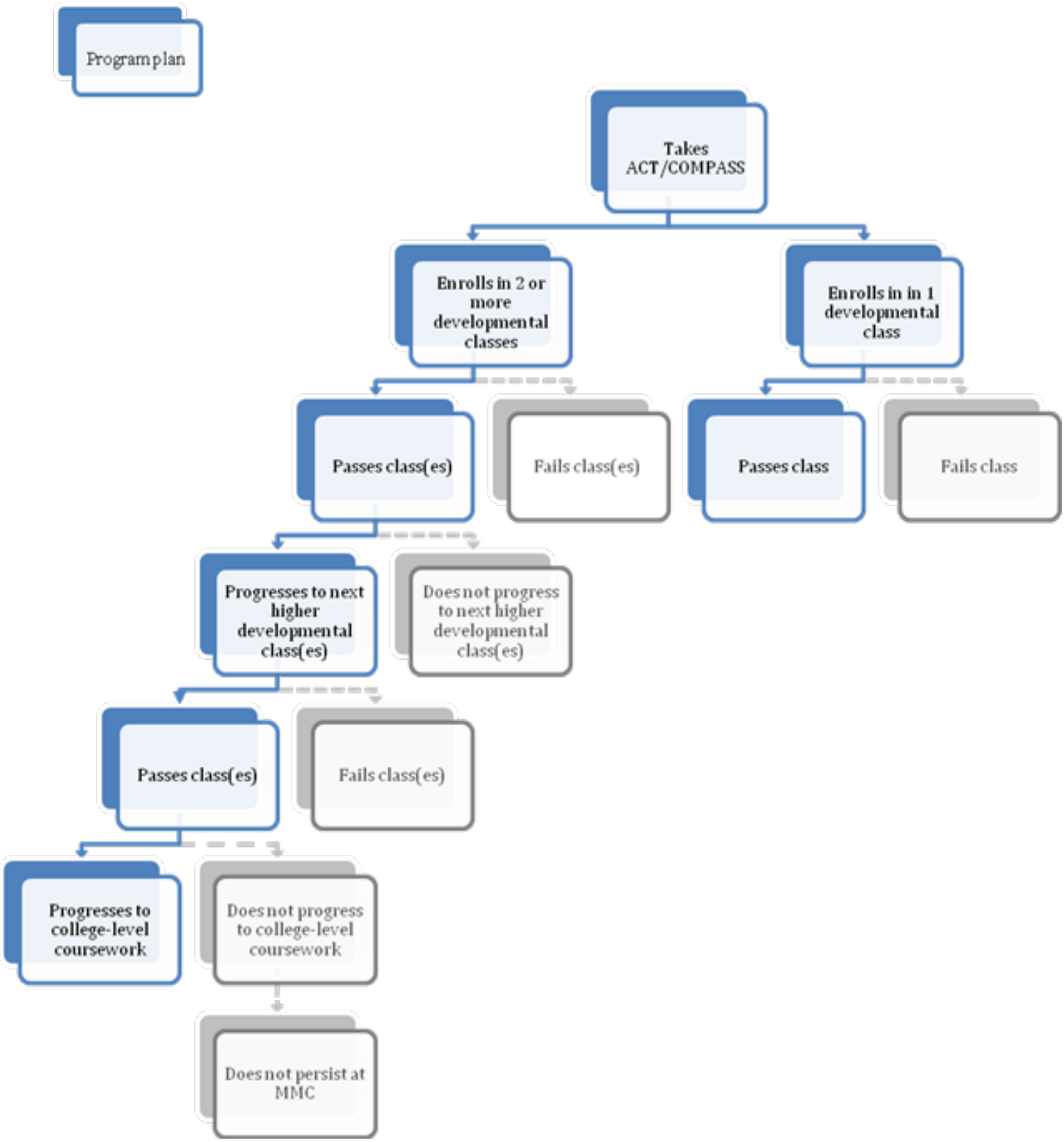
The goal of this project is to contribute useful analysis of and practical recommendations for practice at Martin Methodist College. The Framework for Best Practices in Developmental Education (Appendix X) may be widely applicable to other schools with developmental education programs. We hope this is a genuine contribution to the greater developmental education literature. Our other hope is that the MMC students enrolled in developmental courses will be more likely to persist to graduation after the implementation of the above-mentioned recommendations.

Appendices

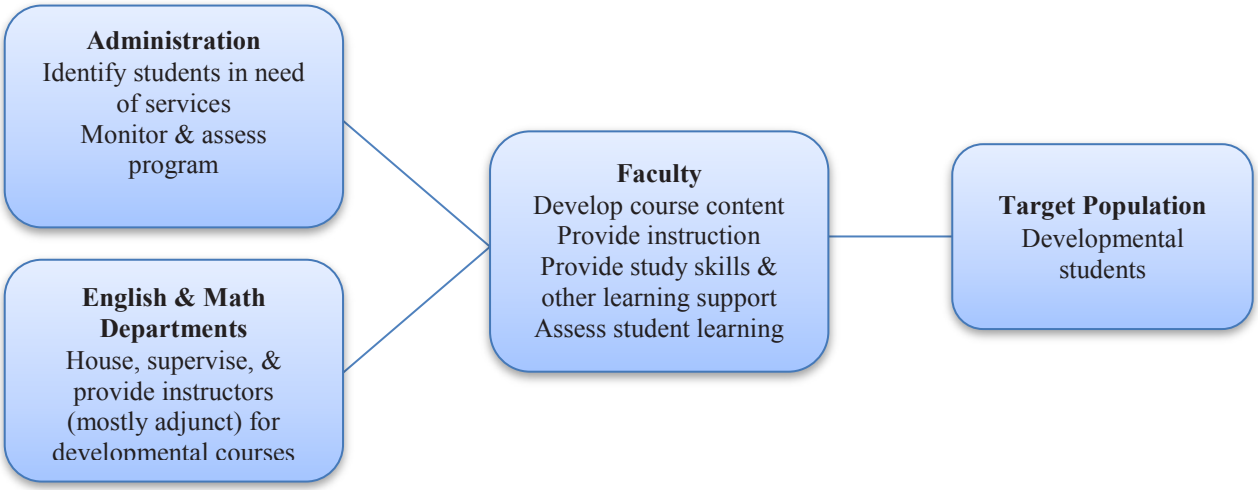
Appendix I: Program Impact Theory



Appendix II: Service Utilization Flowchart



Appendix III: Organizational Schematic



Appendix IV: Martin Methodist College Interview Protocols

Current students

Background info
1. Tell me a little about yourself. Where are you from? Is your family still there? Where did you go to high school?
2. What kind of classes did you take in high school (college prep, etc.)?
3. What were your grades like in high school?
4. Did you like high school?
5. Why did you come to Martin Methodist?

Student performance
1. What developmental classes are you taking?
2. Do you feel that you were placed in these classes appropriately? (Program organization)
3. Do you think these classes will help you? Why or why not?
4. Do you know which and how many developmental courses you have to take before you enroll in college-level math or English courses?
5. What other classes are you taking?
6. Do you enjoy your classes? (Satisfaction)
7. What are your grades like? What do you think your grades will be at the end of the semester?
8. Which classes are your hardest? Why is it (are they) the hardest?
9. Have you missed any of your classes? If so, how often have you missed class? Why do you miss class?

Program organization
1. How much do you know about how developmental education is set up at Martin Methodist? Can you describe how it's set up? For example, how are students placed in developmental classes? How many classes are there? Who advises students about which developmental classes they must take?
2. Do you think it's set up to help you succeed?
3. Do you think it should be set up differently?
4. Is there help that you need that you're not getting?

Supplemental support
1. Who do you ask for help if you need help with your work?
2. Do you ever ask your professors or classmates for help while in class? Outside of class?
3. Have you ever been to one of your professors' offices? Why did you go there?
4. How much schoolwork do you do outside of class?
5. Do you have to work hard outside on your school work of class?

First Year Experience
1. Do you find the First Year Experience Learning Strategies class (FYE 100) helpful? Why or why not? What parts are most helpful? Least helpful?
2. How often does the class meet? What do you do in the class?

Classroom interaction
1. Tell me about a typical meeting of one of your math or English classes.
2. How often does your professor lecture in front of the class?
3. Does your professor use technology in the classroom? What technology? How does he/she use it?
4. Does your professor encourage students to contribute during class? Do students contribute a lot?
5. Do students work in groups a lot?

6. Do students help each other understand the material?

Interaction between faculty & students outside class
1. Do you ever interact with your professors outside of class? If so, when and how much?
2. Do you interact with your classmates outside of class? If so, when and how much?

Satisfaction
1. What expectations did you have about college before you came to Martin?
2. Have your expectations been met? Have your expectations changed?
3. Have you enjoyed your time at Martin so far?
4. If you had it to do over again, would you enroll here?
5. What have you liked most about your classes?
6. What have you liked least?

Self-efficacy
1. Have you faced any challenges in your classes? Has there been material you have had a hard time understanding?
2. How have you handled these situations?
3. Have you found yourself working harder as the semester has progressed?
4. Do you think you can do the work to pass this semester?
5. Do you feel that you are learning the material in your classes? Do you feel that you will be able to master the material by the end of the semester?

Outside influences
1. Have you had problems not related to school that have made it difficult for you to go to class or do your coursework? Explain.
2. Have your family and friends been supportive of your going to college?

Future plans
1. Do you plan to enroll at Martin Methodist next semester?
2. Do you think you will graduate from Martin?
3. Do you think you will take a semester off?
4. What are your aspirations or plans for the future? Have you made any changes in your plans since enrolling at Martin Methodist?

Wrap-up
1. Is there anything you'd like to add that we haven't discussed?

Developmental faculty

Background info
1. Tell me a little about yourself. Where are you from?
2. How long have you been teaching?
3. How long have you worked at Martin Methodist?
4. What's your academic background? What degrees do you have and where did you earn them?
5. What classes do you teach?
6. How long have you taught developmental classes?
7. Do you like teaching developmental classes? Do you like working with the students in the classes? Why or why not?
8. Do you feel prepared to teach developmental classes? If he or she has been teaching developmental classes for

a while: When you first began teaching developmental classes, did you feel prepared to teach them?
9. What steps have you taken (or did you take) to become prepared?
10. Do you now or have you ever taught non-developmental classes?
11. If so, how do the students in the non-developmental classes compare to the students in the developmental classes?

Program organization
1. Describe developmental education at Martin Methodist. How is it organized? What theory, if any, undergirds the program?
2. Do you think the program is organized appropriately?
3. Do you think it's organized to help students succeed?
4. Do you think it should be organized differently?
5. Are there programs at other schools that you like? Have you or would you like to implement parts of those programs here?

Professional development
1. What professional groups do you belong to?
2. Do you belong to groups that focus on developmental or remedial education?
3. How often do you attend group meetings and/or conferences? At what level (state, regional, or national)?
4. What professional publications do you read regularly? Do you read publications related to developmental education?

Interaction with other faculty
1. Do you meet with other developmental faculty to discuss or coordinate your classes? If so, how often?
2. Do you meet with professors who teach the courses students take immediately after passing your course to discuss or coordinate your classes? If so, how often?

First Year Experience
1. Do you think the First Year Experience Learning Strategies class (FYE 100) helps students? Why or why not?
2. Were you teaching here before the FYE seminar was implemented? If so, have you noticed a difference in student performance?

Classroom interaction
1. Tell me about a typical meeting of one of your classes. What is the format (mostly lecture, etc.)?
2. Do you use technology in the classroom? What technology do you use? How and how often?
3. Do you encourage students to contribute during class? How so? Do students contribute a lot?
4. Do students work together much during class? Do they help each other?
5. How many graded assignments do you give each semester?
6. When in the semester do students receive their first grade?
7. How do you address it when students are having problems understanding the material?
8. How early in the semester and how do you address the situation of students who are struggling in the class?
9. Do students ever approach you if they are struggling? What do you tell them?

Supplemental support
1. Is there somewhere else on campus where students can go to get help? Who provides the help?
2. Do you think the help provided is beneficial? Do you think it's enough?
3. Do you have recommendations for improvement?

Interaction between faculty & students outside class
1. Do you ever interact with your students outside of class? If so, when and how much?

2. Do you encourage students to study together outside of class?
3. How often do students visit you during office hours?

Wrap-up
1. Is there anything you'd like to add that we haven't discussed?

Faculty teaching subsequent courses

Background info
1. Tell me a little about yourself. Where are you from?
2. How long have you been teaching?
3. How long have you worked at Martin Methodist?
4. What's your academic background? What degrees do you have and where did you earn them?
5. What classes do you teach?
6. Do you now or have you ever taught developmental classes?
7. If so, how do the students in the developmental classes compare to the students in the non-developmental classes?
8. Do you like working with students who have taken developmental classes? Why or why not?
9. Do you feel prepared to teach them? What steps have you taken to become prepared to teach them?

Program organization
1. How much do you know about how developmental education is organized at Martin Methodist?
2. Do you think the program is organized appropriately?
3. Do you think it's organized to help students succeed?
4. Do you think it should be organized differently?
5. Do you know of developmental programs at other schools that you like?

Student performance
1. How have students who have successfully completed developmental classes performed in your class(es)?
2. How do they compare to students who have not taken developmental classes? Do they perform as well? Is there any difference in how they interact with you or other students in class?

Interaction between faculty & students outside class
1. Do you ever interact with your students outside of class? If so, when and how much?
2. Is there any difference in the amount you interact outside of class with students who have taken developmental classes and those who have not?
3. Do you encourage students to study together outside of class?

Professional development
1. What professional groups do you belong to?
2. Do you or have you ever belonged to groups that focus on developmental or remedial education?
3. Have you ever attended meetings or conferences related to developmental education? At what level (state, regional, or national)?
4. What professional publications do you read regularly? Do you read publications related to developmental education?

Interaction with developmental faculty
1. Do you meet with developmental faculty to discuss or coordinate your classes? If so, how often?

First Year Experience

1. Do you think the First Year Experience Learning Strategies class (FYE 100) helps students? Why or why not?
2. Were you teaching here before the FYE seminar was implemented? If so, have you noticed a difference in student performance?

Wrap-up
1. Is there anything you'd like to add that we haven't discussed?

First-Year Experience Director

Background info
1. Tell me a little about yourself. Where are you from?
2. How long have you been teaching?
3. How long have you worked at Martin Methodist?
4. What's your academic background? What degrees do you have and where did you earn them?
5. Do you or have you taught classes besides the FYE Learning Strategies course? If so, which ones?
6. If he/she has taught non-developmental courses: How do the students in the non-developmental classes compare to the students in the developmental classes?
7. Do you like working with students who have taken developmental classes? Why or why not?
8. Do you feel prepared to teach them? What steps have you taken to become prepared to teach them?

Program organization
1. Describe developmental education at Martin Methodist. How is it organized? What theory, if any, undergirds the program?
2. How does the FYE course fit in this organization?
3. Do you think the program is organized appropriately?
4. Do you think it's organized to help students succeed?
5. Do you think it should be organized differently?
6. Are there programs at other schools that you like? Have you or would you like to implement parts of those programs here?

First Year Experience
1. How did the FYE course come about? What's the reasoning behind it?
2. Describe the overall course.
3. Tell me about a typical class meeting.
4. Do you use technology in the classroom? What technology do you use? How and how often?
5. Do you think the course helps students? Why or why not?
6. What have been the results of the course? Has there been a difference in student performance in their other courses?
7. Have you implemented any changes to the course since its inception?

Interaction between faculty & students outside class
1. Do you ever interact with your students outside of class? If so, when and how much?
2. Do you encourage students to study together outside of class?

Supplemental support
1. Is there somewhere else on campus where students can go to get help?
2. Is there ongoing support after students complete the FYE course?

Professional development
1. What professional groups do you belong to?

2. Do you or have you ever belonged to groups that focus on developmental or remedial education?
3. Have you ever attended meetings or conferences related to developmental education? At what level (state, regional, or national)?
4. What professional publications do you read regularly? Do you read publications related to developmental education?

Wrap-up
1. Is there anything you'd like to add that we haven't discussed?

Developmental Assessment Coordinator

Background info
1. Tell me a little about yourself. Where are you from?
2. How long have you worked at Martin Methodist?
3. What's your academic background? What degrees do you have and where did you earn them?
4. What are your duties as developmental assessment coordinator? Do you have other positions or roles at Martin Methodist?
5. How long have you been assessment coordinator?
6. Do you interact with students? If so, in what capacity?

Assessment
1. Describe the assessment process.
2. How have assessment results been put to use?
3. What trends have you observed since you've been assessing the program?
4. Has the program changed since you've been assessing it? If so, how?

Program organization
1. Describe developmental education at Martin Methodist. How is it organized? What theory, if any, undergirds the program?
2. Do you think the program is organized appropriately?
3. Do you think it's organized to help students succeed?
4. Do you think it should be organized differently?
5. Are there programs at other schools that you like? Have you seen or would you like to see parts of those programs implemented here?

Wrap-up
1. Is there anything you'd like to add that we haven't discussed?

College Student Survey

Martin Methodist College

We are interested in your experiences as students at Martin Methodist College. Your responses are strictly confidential and will not be shown to others.

ID Code: Please write the first two letters of the name of the first elementary school you attended and the last four digits of your phone number. _____

1. Listed below are a number of statements concerning school-related attitudes. Rate each item as it pertains to you personally, and base your ratings on how you feel most of the time. Please respond to each item independently, and do not be influenced by your previous choices.

	Strongly Disagree	Disagree	Agree	Strongly Agree
A. Being a student is a very rewarding experience.	1	2	3	4
B. If I try hard enough, I will be able to get good grades.	1	2	3	4
C. Most of the time my efforts in school are rewarded.	1	2	3	4
D. No matter how hard I try I do not do well in school.	1	2	3	4
E. I often expect to do poorly on exams.	1	2	3	4
F. All in all, I feel I am a capable student.	1	2	3	4
G. I do well in my courses given the amount of time I dedicate to studying.	1	2	3	4
H. My parents are not satisfied with my grades.	1	2	3	4
I. Others view me as intelligent.	1	2	3	4
J. Most courses are very easy for me.	1	2	3	4
K. I sometimes feel like dropping out of school.	1	2	3	4
L. Most of my classmates do better in school than I do.	1	2	3	4
M. Most of my instructors think that I am a good student.	1	2	3	4
N. At times I feel college is too difficult for me.	1	2	3	4
O. All in all, I am proud of my grades in college.	1	2	3	4
P. Most of the time while taking a test I feel confident.	1	2	3	4
Q. I feel capable of helping others with their class work.	1	2	3	4
R. I feel teachers' standards are too high for me.	1	2	3	4

	Strongly Disagree	Disagree	Agree	Strongly Agree
S. It is hard for me to keep up with my class work.	1	2	3	4
T. I am satisfied with the class assignments that I turn in.	1	2	3	4
U. At times I feel like a failure.	1	2	3	4
V. I feel I do not study enough before a test.	1	2	3	4
W. Most exams are easy for me.	1	2	3	4
X. I have doubts that I will do well in my major.	1	2	3	4
Y. For me, studying hard pays off.	1	2	3	4
Z. I have a hard time getting through school.	1	2	3	4
AA. I am good at scheduling my study time.	1	2	3	4
BB. I have a fairly clear sense of my academic goals.	1	2	3	4
CC. I'd like to be a much better student than I am now.	1	2	3	4
DD. I often get discouraged about school.	1	2	3	4
EE. I enjoy doing my homework.	1	2	3	4
FF. I consider myself a very good student.	1	2	3	4
GG. I usually get the grades I deserve in my courses.	1	2	3	4
HH. I do not study as much as I should.	1	2	3	4
II. I usually feel on top of my work by finals week.	1	2	3	4
JJ. Others consider me a good student.	1	2	3	4
KK. I feel that I am better than the average college student.	1	2	3	4
LL. In most of the courses, I feel that my classmates are better prepared than I am.	1	2	3	4
MM. I feel that I do not have the necessary abilities for certain courses in my major.	1	2	3	4
NN. I have poor study habits.	1	2	3	4

2. How confident are you about doing each of the behaviors listed below? Mark the response that best represents your confidence level.

	Not at all confident	Somewhat confident	Neutral	Confident	Very confident
A. Taking well-organized notes during a lecture.	1	2	3	4	5
B. Participating in a class discussion.	1	2	3	4	5
C. Answering a question in a large class.	1	2	3	4	5
D. Answering a question in a small class.	1	2	3	4	5
E. Taking "objective" tests (multiple-choice, T-F, matching)	1	2	3	4	5
F. Taking essay tests.	1	2	3	4	5
G. Writing a high quality term paper.	1	2	3	4	5
H. Listening carefully during a lecture on a difficult topic.	1	2	3	4	5
I. Tutoring another student.	1	2	3	4	5
J. Explaining a concept to another student.	1	2	3	4	5
K. Asking a professor in class to review a concept you don't understand.	1	2	3	4	5
L. Earning good marks in most courses.	1	2	3	4	5
M. Studying enough to understand content thoroughly.	1	2	3	4	5
N. Running for student government office.	1	2	3	4	5
O. Participating in extracurricular events (sports, clubs).	1	2	3	4	5
P. Making professors respect you.	1	2	3	4	5
Q. Attending class regularly.	1	2	3	4	5
R. Attending class consistently in a dull course.	1	2	3	4	5
S. Making a professor think you're paying attention in class.	1	2	3	4	5
T. Understanding most ideas you read in your texts.	1	2	3	4	5
U. Understanding most ideas presented in class.	1	2	3	4	5
V. Performing simple math computations.	1	2	3	4	5
W. Using a computer.	1	2	3	4	5

	Not at all confident	Somewhat confident	Neutral	Confident	Very confident
X. Mastering most content in a math course.	1	2	3	4	5
Y. Talking to a professor privately to get to know him or her.	1	2	3	4	5
Z. Relating course content to material in other courses.	1	2	3	4	5
AA. Challenging a professor's opinion in class.	1	2	3	4	5
BB. Applying lecture content to a laboratory session.	1	2	3	4	5
CC. Making good use of the library.	1	2	3	4	5
DD. Getting good grades.	1	2	3	4	5
EE. Spreading out studying instead of cramming.	1	2	3	4	5
FF. Understanding difficult passages in textbooks.	1	2	3	4	5
GG. Mastering content in a course you're not interested in.	1	2	3	4	5

We are interested in your current level of engagement. Please mark the response that best represents your answer.

3. Rate the quality of relationships you have with other students in your classes.

Very Poor	Poor	Average	Above Average	Excellent
1	2	3	4	5

4. Rate the quality of relationships you have with faculty members.

Very Poor	Poor	Average	Above Average	Excellent
1	2	3	4	5

5. How much time each week do you spend preparing for class?

Less than 2 hours	2-4 hours	4-6 hours	More than 6 hours
1	2	3	4

6. What percentage of your total assignments require group work?

Less than 10%	10-25%	25-50%	More than 50%
1	2	3	4

7. Please mark the extent to which you engage in each of the following endeavors.

	Not at all	Small extent	Moderate extent	Major extent
A. Do you spend time with other students who have different racial/ethnic or religious backgrounds than you?	1	2	3	4
B. To what extent does your coursework emphasize applying theories or concepts to practical situations?	1	2	3	4
C. To what extent do you contribute to class discussions?	1	2	3	4
D. To what extent have you discussed ideas from your readings or classes with others outside of class?	1	2	3	4

8. Please mark how much of a problem the following are during your current degree program.

	No problem at all	Small problem	Moderate problem	Major problem
A. Transportation (parking, access to public transportation, etc.)	1	2	3	4
B. Family responsibilities (e.g., child or parent care)	1	2	3	4
C. Job-related responsibilities	1	2	3	4
D. Cost of tuition and other education-related expenses	1	2	3	4
E. Social life	1	2	3	4

9. Please mark your future plans.

	Not likely at all	Somewhat likely	Likely	Verly likely
A. How likely are you to enroll next semester?	1	2	3	4
B. How likely are you to graduate from this college?	1	2	3	4
C. How likely are you to take a semester off from Martin Methodist?	1	2	3	4

10. Why did you enroll in this college? (mark all that apply)

1. Convenient location
2. To obtain a promotion at work
3. Personal growth
4. To get a college degree
5. To further my existing knowledge
6. The college has a good reputation
7. My guidance counselor/teacher recommended this college
8. A family member recommended this college
9. I was offered financial aid/scholarships
10. Other _____

11. With what racial or ethnic group do you identify?

1. White/Caucasian
2. Black/African-American
3. Latino/Latina
4. Asian/Pacific Islander
5. Native American/Alaska Native
6. Multiple Races/Biracial
7. Other

12. What is your gender?

1. Male
2. Female

13. What is your age?

1. 18
2. 19
3. 20
4. 21
5. 22
6. 23
7. 24 or older

14. What is your current marital status?

1. Single
2. Married
3. Divorced
4. Widowed

15. How many children do you have?

1. 0
2. 1-2
3. 3-4
4. More than 4

16. Do you work?

1. No
2. Yes, part-time, on campus
3. Yes, full-time, on campus
4. Yes, part-time, off campus
5. Yes, full-time, off campus

In the space provided below, please feel free to provide any comments.

Appendix VI: Survey Administration Scripts

Survey Script (pre-survey)

Martin Methodist College is involved in a research project about developmental education and retention and departure among freshmen at Martin Methodist College. This project involves surveying students about their experiences as freshmen at Martin Methodist. Today we are administering a beginning of the semester survey. Participation is voluntary and will have no impact on your grades or status with the College.

Please complete the survey in pencil. If you do not have a pencil, I have one that you may use.

Thank you for your time and participation.

Survey Script (post-survey)

Martin Methodist College is involved in a research project about developmental education and retention and departure among freshmen at Martin Methodist College. This project involves surveying students about their experiences as freshmen at Martin Methodist. Today we are administering a follow-up survey to one that you may have taken at the beginning of the semester. Participation is voluntary and will have no impact on your grades or status with the College.

Please complete the survey in pencil. If you do not have a pencil, I have one that you may use.

Thank you for your time and participation.

Appendix VII: MMC's Developmental Courses

ENG 097 Reading Strategies 3 hours institutional credit
This course is designed to introduce students to the various strategies of successful college-level reading, including improved comprehension, speed, and vocabulary. Students who place in ENG 097 will be required to successfully complete the course before enrolling in sophomore-level literature classes. Fall and Spring

ENG 099,100 Developmental Writing I and II 3 hours institutional credit
This two-semester course is designed to introduce students to the various strategies of successful college-level expository writing. Course instruction includes punctuation, grammar, mechanics, essay structure, and topic development. Course placement is determined by ability level as indicated by test scores. A student placed in Basic Writing (ENG 099 or ENG 100) must successfully complete ENG 100 in order to advance to ENG 101 Composition I. Fall and Spring.

MAT 099 Developmental Mathematics 3 hours institutional credit
This is a one-semester developmental course which includes a study of whole numbers, fractions, decimals, percents, ratio and proportion, units of measure, geometry, basic statistics, and an introduction to algebra. Calculators of any kind are not permitted in this course. The use of a calculator or any computational device on any assignment or test in this course will be considered academic dishonesty and a violation of the Honor Code. Fall

MAT 100 Elementary Algebra 3 hours institutional credit
This is a one-semester developmental course designed especially for those students with less than one year of high school algebra. This course consists of the traditional topics in a beginning algebra course. Students may use this course as a preparatory course for entrance into Mathematics 111. This course is not open to students with one or more years of high school algebra and does not meet the mathematics requirement for graduation. Calculators of any kind are not permitted in this course. The use of a calculator or any computational device on any assignment or test in this course will be considered academic dishonesty and a violation of the Honor Code. Fall

FYE 100 Learning Strategies 3 hours credit
This course is designed to introduce students to the various strategies of successful college-level learning including generating questions from lecture notes, test preparation, time and task management, critical thinking skills, learning different types of information, writing, research, and public speaking. Fall and Spring

Appendix VIII: MMC's Subsequent Courses

ENG 101, 102 Composition I & II 3 hours credit each
This two-semester course focuses on the conventions of standard written English. Parallel reading will be assigned. Research and analytical skills will be emphasized in the spring. Fall and Spring

MAT 111,112 Introductory College Mathematics 3 hours credit each
This is a two-semester course which includes the study of many of the topics in intermediate algebra. The first semester includes a study of properties of real numbers, sets, exponents and roots, linear equations and inequalities, the Cartesian Coordinate System, systems of linear equations, polynomial functions, graphing, Cramer's Rule, and factoring. The second semester includes the study of rational expressions and equations, complex numbers, Quadratic equations and inequalities, the conic sections, exponential and logarithmic functions, arithmetic and geometric sequences. Emphasis is placed on problem-solving skills necessary for entrance into college algebra. Prerequisites: One year of high school algebra and one year of geometry or satisfactory completion of MAT 100; MAT 111 or permission of the instructor is a prerequisite for MAT 112 Fall and Spring

MAT 115 College Algebra Recitation 2 hours credit
This course will provide students with immediate help and reinforcement for College Algebra (MAT 131). The focus will be on working through examples and doing problems individually and in groups, as well as providing another place for students to ask questions and have concepts clarified. Students should expect additional work in this course separate from MAT 131. Students enrolled in this course must successfully complete MAT 115 in order to pass MAT 131. Prerequisite: Successful completion of MAT111 or the equivalent Pass/Fail Fall and Spring

MAT 131 College Algebra 3 hours credit
This course includes the study of functions and their graphs, linear equations and inequalities, linear curve fitting, mathematical modeling applied to functions, polynomial and rational functions, and exponential and logarithmic functions. The graphing calculator is required and is used extensively in this course. Students enrolled in ESL 105 or MAT 115 concurrently with MAT 131 must successfully complete that course in order to pass MAT 131. Prerequisites: Two years of high school algebra and one year of geometry, satisfactory completion of Math 112, or current enrollment in MAT 115 Fall and Spring

MAT 171 Introduction to Modern Mathematics 3 hours credit
This course will introduce students to a variety of topics in modern and contemporary mathematics. The topics will be presented in a more conceptual, rather than computational, way when appropriate. The course will cover approximately 4 topics chosen based on the instructor's and the class's interests. Possible topics include infinity, voting theory, fair division, graph theory, fractals, geometry, logic, probability and counting, cryptography, and mathematics found in nature, art, and music. This course is intended for students not majoring in science or mathematics. Prerequisites: Two years of high school algebra and one year of geometry or satisfactory completion of Math 111 Fall and Spring

MAT 211 Math Concepts 3 hours credit
This is a liberal arts math course. Topics include fundamentals of problem solving, sets, symbolic logic, introductory probability and statistics, the number systems, informal geometry, linear and quadratic equations, and graphing techniques. Basic graphing calculator functions are considered. Prerequisite: MAT 112 or ACT math score of at least 19, or COMPASS Algebra score of at least 45 Fall

MAT 231 Statistics 3 hours credit
This course includes descriptive statistics, probability, and statistical inference with mean, standard deviation, variances, ANOVA, regression and correlation analysis, chi-square, T-test, and nonparametrics. Prerequisites:

Two years of high school algebra and one year of geometry or satisfactory completion of MAT111 Fall and Spring

FYE 101 First Year Experience Seminar 1 hour credit
FYE 101 is the beginning of an overall educational journey resulting in individuals who have learned to learn and to think about their world in intentional, constructive, critical, and reflective ways. The course provides students access to knowledge and skills that will make them more successful in college and encourage them to seek fulfilling lives of continued learning. Course content includes learning and study skills, test-taking skills, time management skills, and life skills (service, career choices, health and wellness, diversity, relationships, handling stress, personal safety, and finances). Students are encouraged to explore their potentials; to develop tolerance and respect for others; to build stronger interpersonal relationships; and to formulate a greater sense of self-identity, self-achievement, and civic responsibility. Fall and Spring

Appendix IX: MMC's Course Placement Procedures (from the College catalog, p. 42-43)

Students who enter the College with basic deficiencies in reading, writing, mathematical or study skills may be required to take classes designed to help them overcome these deficiencies and to prepare them to succeed in college-level composition or mathematics courses. These courses do not count towards graduation requirements and the grades earned are not included in the grade point average (GPA).

ACT scores and/or placement scores (COMPASS) for first-year students shall be evaluated to determine placement in reading, writing and mathematics classes. Placement in writing classes shall also be determined through a diagnostic essay administered and evaluated by members of the English faculty. Should a student dispute his/her placement in one of these classes, the objection must be submitted in writing to the Program Coordinator for English within one week of the placement, upon which time a second diagnostic essay shall be scheduled. This essay will be evaluated by three independent members of the English faculty. Final placement in ENG 099 or ENG 100 is mandatory. A student placed in a Developmental Reading, Writing, or Mathematics class at any level must successfully complete the sequence of developmental courses before advancing to a college-level class in those academic areas.

ACT scores in English for placement in writing classes shall be as follows:

14 and below	Placement in ENG 099
15-18	Placement in ENG 100
19-24	Placement in ENG 101
25 and above	Recommended placement in ENG 111

COMPASS Score Range for MMC Writing Placement

65 or below	Placement in ENG 099
66–79	Placement in ENG 100
80 or above	Placement in ENG 101

ACT scores for reading placement are as follows:

17 or below	Placement in Reading Strategies, or if no ACT score, a score of 75 or below on the COMPASS placement test.

COMPASS Score Range for MMC Reading Placement

75 or below	Placement in ENG 097
75 or above	No developmental requirement

ACT scores for Mathematics placement are as follows:

1-14	Developmental Math 099
15-16	Beginning Algebra Math 100
17-18	Introduction to College Math 111/112
19-36	College Algebra Math 131, 171, 231 or higher

COMPASS Score Range for MMC Mathematics Placement

Pre algebra	1 - 29	Math 099
	30-100	Math 100
Algebra	1 - 35	Math 100
	36 – 49	Math 111
	50-100	Math 131, 171, or 231
College Algebra	1-50	Math 131, 171, or 231
	51-100	Math 141

		1- No evidence of this practice	2- Minimal evidence of this practice	3- Some evidence of this practice	4- Satisfactory evidence of this practice	5- Consistent and exemplary evidence of this practice
Cost	Costs are less than 1.2% of total budget					X
	Cost per FTE is lower than cost per FTE for other academic programs					
	Cost per FTE is less than $6360					X
	Program does not operate at a loss					
	Cost reduction efforts in place (including computerized instruction and partnerships with local high schools)	X				
	Use of grant funding to offset costs	X				
Structure	Stated institutional commitment & clearly defined mission statement			X		
	Centralized or highly coordinated program		X			
	Collaboration among faculty & between support services personnel & instructors			X		
	Alignment between & among developmental & non-developmental courses			X		

	Ongoing, systematic program evaluation		X			
	Adjunct faculty integrated within the program & college community		X			
	Professional development & other training offered to faculty		X			
	Comprehensive support services provided					X
	Students offered accelerated options for completing developmental coursework		X			
Placement	Multiple measures (test scores and non-cognitive questions) used to determine course placement	X				
	Placement exam questions match coursework competencies	X				
	Materials emphasizing importance of placement and suggesting test prep sent to students from the College	X				
	Offer co-requisite learning support courses for students near the cut-off score		X			
	Assessment for placement is mandatory			X		

Appendix XI: Best Practice Institutions

Institution	Individual Contacted	Reason Selected
Middle Tennessee State University	Marva Lucas, Linda Clark	The University adopted an approach that mainstreams underprepared students into special sections of college-level courses that include additional content and academic supports, thus reducing time to completion of general education requirements.
Jackson State Community College	Betty Frost, Bobby Smith	The College has been noted for its success in reducing costs associated with developmental education and simultaneously increasing retention of developmental students using a computer-based approach.
North Carolina State Board of Community Colleges	Karen Yerby	The Board recently adopted a multiple measures approach to placement for developmental courses.
University of Texas at Austin	Larry Abraham	The New Mathways initiative has received national attention for its approach to providing relevant, challenging, field-specific mathematics content, including developmental math.
Arizona State University	Scott Surgent, Fabio Milner	The Knewton mathematics program was featured in an article in *Scientific American* for its individualized approach to teaching developmental and non-developmental math.
The Community College of Denver	Nancy Story	The College has implemented an Accuplacer program, including workshops, test prep, and testing, to ensure students are appropriately placed in developmental or non-developmental courses.
Santa Monica College	Esau Tovar	The College has won awards for its test preparation materials for placement testing.

To: Dr. James Murrell
From: B.J. Keeton, Lisa James, and Austin King
Date: October 2013
Re: SRC Effectiveness (Spring 2012 and AY 2012-13)

Introduction

The Student Resource Center has been tracking usage and effectiveness using TutorTrac since 2010. However, over the past three academic years, new versions of the software have become available, and each version uses a dramatically different tracking database. Because of these changes and data loss during upgrades, we are limited to Spring 2012 and AY 2012-13 to judge effectiveness.

Because of the data loss and upgrade issues with TutorTrac, the MMC IT department has written a custom in-house tracking software called TutorCal which should be implemented in Spring 2014. Because of the integrated nature of TutorCal with SONISweb, data loss and incompatibility should be non-issues once the transition takes place.

Evidence of effectiveness

In 2011, the SRC revised its original outcomes based on previous effectiveness data. The revised (and current) changes are as follows. Please note that all of this report's data and interpretation are based on these outcomes.

- 65% of students taking developmental courses in writing, mathematics, and reading who use the SRC's tutoring services will obtain a grade of "C" or better
- 70%of students taking general education core requirement courses who use the SRC's tutoring services will obtain a grade of "C" or higher

Effectiveness Interpretation

2010-11 Overall average for all courses: 65%
2010-11 Average for developmental courses: 71%
2010-11 Average for core courses: 63%
2010-11 Average for all English courses: 72%
2010-11 Average for all Math courses: 57%

Spring 2012 Overall average for all courses: 86% (21% increase from 2010)
Spring 2012 Average for developmental courses: 71% (no change from 2010)
Spring 2012 Average for core courses: 84% (23% increase from 2010)
Spring 2012 Average for all English courses:81% (9% increase from 2010)
Spring 2012 Average for all Math courses: 73% (16% increase from 2010)

2012-13 Overall average for all courses: 78%
2012-13 Average for developmental courses: 80%
2012-13 Average for core courses: 77%
2012-13 Average for all English courses: 100%
2012-13 Average for all Math courses: 70%

Spring 2012	Percent.	Compare to 2010-11
BIO111	50%	Down
BIO112	67%	N/A
CHE111	N/A	N/A
CHE112	100%	Up
ENG097	N/A	N/A
ENG099	60%	Down
ENG100	67%	Same
ENG101	100%	Up
ENG102	80%	Up
ENG111H	N/A	N/A
ENG112H	100%	N/A
HIS111	N/A	N/A
HIS112	100%	N/A
HIS201	100%	Up
HIS202	63%	N/A
MAT099	N/A	N/A
MAT100	29%	Down
MAT111	100%	Up
MAT112	100%	Up
MAT131	65%	Up
MIS210	N/A	N/A
MIS220	N/A	N/A
PHY101	N/A	N/A
PHY102	N/A	N/A
REL101	100%	Same
REL102	100%	Up

AY 2012-13	Percentage	Compare to 2010-11
BIO111	75%	Down
BIO112	100%	N/A
CHE111	33%	Same
CHE112	0%	N/A
ENG097	100%	Same
ENG099	100%	Up
ENG100	100%	Up
ENG101	100%	Same
ENG102	100%	N/A
ENG111H	N/A	N/A
ENG112H	N/A	N/A
HIS111	80%	Up
HIS112	80%	N/A
HIS201	50%	Down
HIS202	89%	N/A
MAT099	67%	Up
MAT100	46%	Down
MAT111	65%	Up
MAT112	86%	Up
MAT131	85%	Up
MIS210	67%	N/A
MIS220	N/A	N/A
PHY101	N/A	N/A
PHY102	100%	Same
REL101	75%	Down
REL102	75%	Down

We are pleased to note a much increased rate of student success since AY 2010-11 (from 65% to 78/86%). We were not happy with the just-above-minimum rates of success in 2010, so the SRC administration sat down and devised a strategy to increase effectiveness over the next few years.

Our primary change came in with the increase of staff and a restructuring of the SRC administration. We felt that it was necessary to hire more core tutors (math and English) with faculty recommendations. When that was done in late 2011/early 2012, we began to far exceed our stated outcomes. Notably in English, when **we achieved 100% effectiveness with tutored students making a C or higher in tracked English courses in AY 2012-13**—including developmental courses, which are notorious for a high failure rate among students.

In addition, the advent of a major in mathematics at MMC has allowed for the expansion of our mathematics tutoring staff, and we believe having CRLA-trained math majors is what has led to the significant increase in reaching our stated outcomes in math. (It should also be noted that developmental/core English and Math courses make up approximately 80% of our total tutoring sessions, which is why our emphasis is placed so heavily on them.)

Proposed and Implemented changes to the SRC

In 2011, we used our usage data to determine the following list of necessary changes to the SRC.

- move peak-time tutoring sessions/testing to an adjacent lab
- use the main SRC lab for computer use/study space
- propose a new structure for SRC staffing
- continue upgrading computers in both labs
- pilot electronic textbooks (to save space and streamline/expand the collection of available texts)

Upon implementation, we have seen success in 4 of the 5 points. When peak-time tutoring was moved to an adjacent lab, our return visits for tutoring dropped approximately 40%. We spoke with tutors and students in private and found out that the separation from the main lab made students feel uncomfortable and isolated; therefore, we immediately moved those sessions back to our main lab and continue to use that space for computer use and study space, as well.

Electronic Textbooks:

Most of the textbooks used on the MMC campus are able to be accessed through various computer and tablet apps such as *CourseSmart*. SRC administration has spoken with our textbook representatives at *CourseSmart*, and they have approved our center's access for student use of desk copies of ebooks while within our center.

We can log in a student using our ID and add almost any book they need to our collection. Limited printing is available within the software, but most students simply use the textbooks for their assignments in the lab. We do not allow them to leave the center with the iPads, nor do we give them access to the password—such precautions allow us to make sure the student body of MMC does not have unlimited free textbooks, which is against the nature of our deal with *CourseSmart.*

In addition, 2013 has brought the fulfillment of electronic textbooks in the SRC, with roughly up to a dozen students coming into the SRC each week to utilize ebooks on either our computers or iPads.

Supplemental Instruction:
The Student Resource Center has piloted Supplemental Instruction courses (in which a tutor attends classes as a student, works with the instructor, works with students to complete all assignments, and hosts study sessions for the students enrolled for credit in the class) across the mathematics department at MMC. Students have been given a survey at the beginning and at the end of the course, and the SRC administration has taken that data and used it to alter the SI program to where we feel it will be the most beneficial to the students who need assistance. Classes were chosen to host an SI tutor based on demand, instructor request, and tutor availability. There have been piloted SI tutors placed in Math for Management and College Algebra courses, and after taking student comments into consideration, the SRC has begun placing students in Precalculus as well as expanding the SI program into General Biology.
Of those surveyed, 70% reported they attended SI study sessions because they didn't understand the topic, 40% wanted feedback on their work, 20% were falling behind in the class, and 40% didn't perform as well on a previous exam as they had wanted. In addition, 100% of students who filled out an end-of-class survey reported **making higher grades on assignments and exams after study sessions**. In addition, 81% of students who attended an SI study session or a one-on-one tutoring session with their SI leader passed the class with a C or higher.
Given that this is a pilot program and we had no precedent regarding SI student outcomes, **we feel as though our SI program is highly effective**. It surpasses our expectations for general education core tutoring (70%), which we consider a sufficient baseline for the Supplemental Instruction program and justifies our continued expansion of putting SI leaders in new disciplines such as History and Biology (and other general education core classes as requested).
With the increased focus on SI leaders, the SRC is in the beginning stages of SI leader training. We intend to model the training program on our existing Tutoring Practicum class (TUT 100), but SI training will probably not be an officially offered course. We hope that by giving structure and interdisciplinary training to the SI leaders, both students and instructors will see them as another, more legitimized resource for the courses.

Staffing
Regarding the proposed new structure for SRC staffing, a tutor coordinator/administrative assistant was hired in 2013 to supplement the Director and Assistant Director and to meet the increased demand in the limited space available. The current tutor coordinator is a graduate of MMC and worked in the SRC for three years before being hired on as staff; the coordinator's primary job is tutoring, but other duties are assigned as center usage dictates.

When SRC tutoring was split between two labs, we increased our number of work study students to accommodate staffing both locations. However, despite the separate lab for tutoring being unsuccessful, we have kept more work study students to handle increased traffic flow into the main lab and to make sure every student who comes to us for help gets what he or she needs. The extra staffing has allowed us to accommodate more students in a more efficient manner, which has led to increased success in exceeding our expected outcomes as a center.

Conclusions

The Student Resource Center has made significant improvements in its effectiveness since AY 2010-11. By analyzing the data from our previous effectiveness report, we were able to make changes in the SRC staffing, policies, and procedures.

By hiring additional staff in both administrative areas and discipline-specific tutoring, we have dramatically increased our success in achieving our outcomes, as well as our daily service usage. More students than ever are coming into the SRC for assistance, and our data shows that we are increasingly able to accommodate them in an efficient and effective manner.

If growth continues along the same trajectory, the SRC will need a larger budget and a larger space to accommodate demand. However, as the split-lab experiment did not prove fruitful, it will be necessary to find a single larger space rather than multiple spaces that are together in name only. Increased usage and staff also necessitates a larger budget, which will need to be addressed before the beginning of the next academic year (2014-15). We do not take budget requests lightly, and we also understand there are serious space issues at MMC. However, our effectiveness data proves that the SRC is highly effective at promoting success among the student population, and it is the administration's collective opinion that continued growth and effectiveness are only possible through the expansion of services and facilities.

Appendix XIII: Best Practice Interview Protocols

Background questions

1. How long has your institution had a developmental education program?
2. What developmental courses do you offer?
3. What's your role?
    How long have you been at the institution?
    How long have you been in your current role?

Structure

1. Is developmental education a priority at your institution? If it is, how is this communicated (i.e., is there consistency between institutional goals and the goals of developmental education? Is developmental education featured prominently in the college catalog? Is developmental education considered an institution-wide responsibility? Do members of the campus community who aren't involved with developmental education still consider it to be important? Is developmental education part of the institution's long range planning?)?
2. Is there a clearly defined mission statement for developmental education at your institution?
3. Is your developmental education program centralized in one department or are the courses housed in their respective disciplines?
    If it's not centralized, is there any type of overall coordination for developmental education (e.g., all developmental faculty/instructors meet regularly; there are common goals and objectives for all developmental courses and services; etc.)?
    Is there a developmental education coordinator or administrator?
4. Does your developmental education program employ adjunct faculty?
    Who teaches the majority of your developmental classes (adjuncts or full-time faculty)?
    How much are adjunct instructors paid at this institution? (Costs)
5. What support services (both academic and personal intervention) are offered to students in your developmental education program?
6. How are support services organized and/or integrated within the developmental ed program?
    How are they staffed and funded?
    If there's a central developmental education department, are support services part of this department?
7. Do developmental education faculty & instructors regularly collaborate with each other?
    Do they collaborate with those who teach subsequent courses?
    Do they collaborate with support services personnel?
8. Are developmental courses aligned?
    Do they align with college-level courses?
9. How do you evaluate your developmental education program?
    Is evaluation ongoing?
10. How involved are adjuncts in developing courses and assessing the program?
    How integrated are adjuncts in the program and the college community as a whole?
11. What type of training is offered to new developmental ed faculty?
12. What opportunities and resources are available for professional development for existing faculty?
    Are these opportunities and resources available for adjuncts, too?
13. Do you offer accelerated options for students to complete developmental coursework?
14. What role does technology play in the overall structure of your developmental education program?

Assessment & Placement

1. Describe your institution's policy on assessing students for placement in developmental courses. For example:
    How are students identified for assessment?
    What methods do you use to assess students?
    Is assessment mandatory?

2. How do you notify students about your assessment methods?

If you use a placement exam, do you advise students to prepare for the exam?

If so, do you provide material or other help for them to prepare?

Do students seem to understand the significance of the placement exam?

3. Does your placement exam test competencies identified in developmental coursework?

4. What are your guidelines for placing students in developmental courses?

Is placement mandatory?

5. Are students notified of their scores and of whether they are close to the cutoff?

Is any support (such as tutoring or a co-requisite learning support class) offered for students who are close to the placement score cutoff and want to enroll in the higher course?

Costs

1.How is developmental education funded at your institution?

Have you ever sought and/or received grant funding for your program?

If so, do you regularly pursue grant funding?

2. Has your institution made any efforts to reduce costs associated with developmental education?

If yes, what have you done?

Were the efforts successful?

3. Has your institution made any investments in resources specifically for developmental education (i.e., designated computer labs, tutoring, other student services, etc.)?

4. Do you know the average cost per student for developmental education at your institution?

If yes, what is it?

If no, how many students are in your developmental education program?

How much is your total annual budget for developmental education?

5. What is the maximum number of students assigned to developmental courses?

References

Adams, C. J. (2014). "Transitional" courses catch on as college-prep strategy. Education Week. Retrieved from: http://www.edweek.org/ew/articles/2014/02/19/21highschool.h33.html?cmp=SOC-SHR-FB

Angrist, J. D. & Pischke, J. S. (2008). Mostly harmless econometrics: An empiricist's companion. Princeton, NJ: Princeton University Press.

Arendale, D. R. (2010). Access at the crossroads: learning assistance in higher education. San Francisco, CA: Jossey-Bass.

Astin, A. W. (1977). Four Critical Years. San Francisco: Jossey-Bass.

Astin, A. W. (1991). Assessment for excellence: The philosophy and practice of assessment and evaluation in higher education. New York: American Council on Education.

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. Psychological review, 84(2), 191.

Bandura, A. (1989). Regulation of cognitive processes through perceived self-efficacy. Developmental psychology, 25(5), 729.

Bandura, A. (1993). Perceived Self-Efficacy in Cognitive Development and Functioning. Educational Psychologist, 28(2), 117–148. doi:10.1207/s15326985ep2802_3

Bandura, A. (2001). Social cognitive theory: An agentic perspective. Annual review of psychology, 52(1), 1–26.

Bassett, M. J., & Frost, B. (2011). SMART Math: Removing roadblocks to student success. Retrieved February 20, 2014, from Jackson State Community College: http://www.jscc.edu/uploads/SMART%20Math/bellwether.ppt

Bean, J. P. "Dropouts and turnover: The synthesis and test of a causal model of college student attrition." Research in Higher Education, 1980, 12, 155-187.

Bean, J.P. "The application of a model of turnover in work organizations to the student attrition process." Review of Higher Education, 1983, 12, 155-182.

Becker, S. P., & Gable, R. K. (2009). Self-efficacy and post-secondary first-term student achievement. Presented at the Annual Meeting of the New England Educational Research Organization, Portsmouth, N.H. Retrieved from http://scholarsarchive.jwu.edu/highered/1/?utm_source=scholarsarchive.jwu.edu%2Fhighered%2F1&utm_medium=PDF&utm_campaign=PDFCoverPages

Bers, T. H., & Smith, K. E.(1991).Persistence of community college students: The influence of student intent and academic and social integration.Research in Higher Education, 32(5), 539-556.

Boatman, A. (2014). Beyond ready, fire, aim: New solutions to old problems in college remediation. Washington, D.C.: Center on Higher Education Reform, American Enterprise Institute.

Boatman, A., & Long, B. T. (2011). Does remediation work for all students? How the effects of postsecondary remedial and developmental courses vary by level of academic preparation. New York: National Center for Postsecondary Research.

Bong, M., & Clark, R. E. (1999). Comparison between self-concept and self-efficacy in academic motivation research. Educational Psychologist, 34(3), 139–153.

doi:10.1207/s15326985ep3403_1

Boylan, H. R. (2002). What works: Research-based best practices in developmental education. Boone, NC: Continuous Quality Improvement Network with the National Center for Developmental Education.

Boylan, H., Bliss, L., & Bonham, B. (1997). Program components and their relationship to student success (PDF). Journal of Developmental Education, 20(3), 2-4, 6, 8.

Boylan, H. R., & Saxon, D. P. (1998). An Evaluation of Developmental Education in Texas Colleges and Universities. Austin, TX: Texas Higher Education Coordinating Board.

Breneman, D. W. (1998). Remediation in higher eduation: Its extent and costs. In D. Ravitch, Brookings papers on education policy (pp. 359-382). Washington, DC: The Brookings Institution.

Brothen, T., & Wambach, C. A. (2004). Refocusing developmental education. Journal of Developmental Education. 28(2), 16-18, 20, 22, 33.

Cabrera, A. F., Castaneda, M. B., Nora, A., and Hengstler, D. "The convergence between two theories of college persistence." Journal of Higher Education, 1992, 63, 143-164.

Center for Student Success. (2007). Basic Skills as a Foundation for Student Success in California Community Colleges. Sacramento: Research and Planning Group for California Community Colleges.

Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. AAHE Bulletin, 3-7.

Chickering, A. W., & Reisser, L. (1993). Education and identity. San Francisco: Jossey-Bass.

City of New York, Mayor's Advisory Task Force on the City University of New York. (1999). Report I: Financial analysis of remedial eduation at the City University of New York (Final Report: Revised). New York: City of New York, Mayor's Advisory Task Force on the City University of New York.

Colorado Community College System. (2013). Best practices regarding student placement procedures. Retrieved from: http://www.cccs.edu/developmental-education/index.html

Community College Research Center. (February 2013). Designing Meaningful Developmental Reform. New York, NY: Columbia University, Teachers College, Community College Research Center.

Edgecombe, N., Jaggars, S.S., Baker, E.D., & Bailey, T. (2013). Acceleration through a holistic support model: An implementation and outcomes analysis of FastStart@CCD. New York, NY: Columbia University, Teachers College, Community College Research Center.

Ethington, C. A., Thomas, S. L., & Pike, G. R. (2002). Back to the basics: Regression as it should be. In J. C. Smart (Ed.), Higher education: Handbook of theory and research (Vol. 17, pp. 263-293). New York: Agathon.

Finholt, T. A., & Olson, G. M. From laboratories to collaboratories: A new organizational form for scientific collaboration. Psychological Science, January 1997; vol. 8, no. 1; pp. 28-36.

Gerlaugh, K., Thompson, L., Boylan, H., & Davis, H. (2007). National study of developmental education II: Baseline data for community colleges. Research in Developmental Education, 20(4), 1-4.

Haskins, D. (2013, October 8). Cost associated with developmental education at Martin Methodist College. (K. Martin, M. Goldwasser, & E. Harris, Interviewers)

Jackson State Community College. (2011, September). Jackson State Community College's SMART Math Center. Retrieved February 21, 2014, from Jackson State Community College: http://www.jscc.edu/uploads/SMART%20Math/TBR%20Sept%202011.pptx

Jamelske, E. (2009). Measuring the impact of a university first-year experience program on student GPA and retention. Higher Education, 373-391.

Kuh, G. D. (2003). The National Survey of Student Engagement: Conceptual framework and overview of psychometric properties. Bloomington: Indiana Uni-

versity Center for Postsecondary Research and Planning.

Kuh, G. D., Schuh, J. S., Whitt, E. J., & Associates. (1991). Involving colleges: Successful approaches to fostering student learning and personal development outside the classroom. San Francisco: Jossey-Bass.

Kulik, C. C.-L., Kulik, J. A., & Schwab B. J. (1983). College programs for high-risk and disadvantaged students: A meta-analysis of findings. Review of Educational Research, 53, 397-414.

Lampert, J. N. (2007, July 27). The relationship of self-efficacy and self-concept to academic performance in a college sample: Testing competing models and measures. Pacific University, Forest Grove, OR. Retrieved from http://commons.pacificu.edu/spp/86

Martin Methodist College. (n.d.). About MMC. Retrieved from http://www.martinmethodist.edu/about/landing

Martin Methodist College. (n.d.). College history. Retrieved from http://www.martinmethodist.edu/about/college-history

Martin Methodist College. (n.d.). First-year experience. Retrieved from http://www.martinmethodist.edu/academics/first-year-experience

Martin Methodist College. (n.d.). Student Resource Center. Retrieved from http://www.martinmethodist.edu/academics/academic-success/student-resource-center

McCabe, R. H. & Day, P. R. (1998). Developmental Education: A Twenty-First Century Social and Economic Imperative. Laguna Hills, CA: League for Innovation in the Community College.

Mulligan, S.C., and Hennessy, J.J., (1990). Persistence in a community college: Testing attrition models. Paper presented at the annual meeting of the American Educational Research Association, Boston.

National Center for Education Statistics. (2013). IPEDS Data Center. Retrieved February 23, 2014, from National Center for Education Statistics: http://nces.ed.gov/ipeds/datacenter/SnapshotX.aspx?unitId=adad-abb2abac

National Survey of Student Engagement. (2012). Benchmarks of effective educational practice. Retrieved October 1, 2012, from About NSSE: http://nsse.iub.edu/pdf/nsse_benchmarks.pdf

Noble, K., Flynn, N. T., Lee, J. D., & Hilton, D. (2007). Predicting successful college experiences: Evidence from a first year retention program. Journal of College Student Retention, 39-60.

Olds, B. M., & Miller, R. L. (2013). The effect of a first-year integrated engineering curriculum on graduation rates and student satisfaction: A longitudinal study. Journal of Engineering Education, 23-35.

Owen, S. V., & Froman, R. D. (1988). Development of a college academic self-efficacy scale. Presented at the Annual Meeting of the National Council on Measurement in Education, New Orleans, LA.

Pascarella, E. T., Duby, P., and Iverson, B. "A test and reconceptualization of a theoretical model of college withdrawal in a commuter institution setting." Sociology of Education, 1983, 56, 88-100.

Pascarella, E. T., & Terenzini, P. T. (1979). Interaction effects in Spady and Tinto's conceptual models of college attrition. Sociology of Education, 197-210.

Pascarella, E. T., & Terenzini, P. T. (1977). Patterns of student-faculty informal interaction beyond the classroom and voluntary freshman attrition. The Journal of Higher Education, 540-552.

Pascarella, E. T., & Terenzini, P. T. (1991). How college affects students: Findings and insights from twenty years of research. San Francisco: Jossey-Bass.

Pascarella, E. T., & Terenzini, P. T. (2005). How college affects students: A third decade of research. San Francisco: Jossey-Bass.

Perin, D. (2002). The location of developmental education in community colleges: a discussion of the merits of mainstreaming vs. centralization. Community College Review, 30(1), 27-44.

Perin, D. (April 2002). The Organization of Devel-

opmental Education: In or Out of Academic Departments? New York, NY: Columbia University, Teachers College, Community College Research Center.

Porter, S. R., & Swing, R. L. (2006). Understanding how first-year seminars affect persistence. Research in Higher Education, 89-109.

Reynolds, W. M. (1988). Measurement of academic self-concept in college students. Journal of Personality Assessment, 52(2), 223–240. doi:10.1207/s15327752jpa5202_4

Reynolds, W. M., Ramirez, M. P., Magriña, A., & Allen, J. E. (1980). Initial development and validation of the academic self-concept scale. Educational and Psychological Measurement, 40(4), 1013–1016. doi:10.1177/001316448004000428

Roueche, J., & Baker, G. (1987). Access and Excellence: The Open-Door College. Alexandria, VA: Community College Press.

Rubin, H. & Rubin, I. (1995). Qualitative Interviewing. Thousand Oaks, CA: Sage.

Safran, S. & Visher, M. (2010). Case studies of three community colleges: The policy and practice of assessing and placing students in developmental education courses. Retrieved from: http://www.cccs.edu/Docs/dev-ed/CaseStudies%203community%20colleges%20assessment%20and%20placement.pdf

Saxon, D. P., & Boylan, H. R. (2001). The cost of remedial eduation in higher education. Journal of Developmental Education, 2-8.

Schnell, C. A., & Doetkott, C. D. (2002). First year seminars produce long-term impact. Journal of College Student Retention, 377-391.

Schwartz, W., & Jenkins, D. (2007). Promising Practices for Community College Developmental Education: A Discussion Resource for the Connecticut Community College System. New York, NY: Columbia University, Teachers College, Community College Research Center.

Scott-Clayton, J., & Rodriguez, O. (2012). Development, discouragement, or diversion? New evidence on the effects of college remediation. Cambridge: The National Bureau of Economic Research.

Sperling, C. B. (2009). "Massachusetts Community Colleges Developmental Education Best Policy and Practice Audit: Final Report." Boston, MA: Massachusetts Community College Executive Office and Jobs for the Future.

The Charles A Dana Center. (2007). Higher education performance review: Legislative budget board. Austin: The University of Texas at Austin.

The College Board. (2013). Martin Methodist College. BigFuture. Retrieved from https://bigfuture.collegeboard.org/college-university-search/martin-methodist-college?searchType=college&q=MartinMethodistCollege

The Institute for Higher Education Policy. (1998). College remediation: What it is, what it costs, what's at stake. Washington, DC: The Institute for Higher Education Policy.

Voorhees, R. A. (1987).Toward building models of community college persistence: A logit analysis.Research in Higher Education, 26(2), 115-129.

Wernersbach, B. M. (2011, May 1). The impact of study skills courses on academic self-efficacy. Utah State University, Logan, UT. Retrieved from http://digitalcommons.usu.edu/etd/909/

Zachry, E. M., & Schneider, E. (2010). Building foundations for student readiness: A review of rigorous research and promising trends in developmental education. New York: National Center for Postsecondary Research.