Redesigning a Student Success Course for Sustained Impact: Early Outcomes Findings

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Abstract

Many community colleges offer a “student success” course—also known as College 101 or Introduction to College—as a means to help incoming students transition to college and become successful. The typical course is meant to provide key information and address important non-cognitive skills and behavioral expectations with the goal of familiarizing students with the college environment and giving them the tools they need to build important competencies, persist in college, and earn a credential. This paper examines the efforts of Bronx Community College in implementing a redesigned student success course called First Year Seminar (FYS), which is intended to better support students than a typical student success course by incorporating academic content, skill-building exercises, and applied teaching pedagogies, among other features, into the course.

Based on both qualitative and quantitative analysis, our study finds that FYS participation is associated with positive student outcomes that appear to be sustained for a longer period of time than what is typically found for students taking a traditional student success course. The focus of FYS on student-centered pedagogy and on integrated course content appears to be beneficial. Our findings also suggest that when students have the opportunity to practice student success and basic academic skills within the context of an improved student success course, they are likely to apply those skills in future courses, potentially increasing their long-term educational attainment.

Contents

1. Introduction

College persistence and completion rates are strikingly low in public two-year colleges across the nation. Only about 30 percent of first-time, full-time students at these colleges earn a certificate or associate degree within three years (Aud, Wilkinson-Flicker, Kristapovich, Rathbun, Wang, & Zhang, 2013). Student persistence in college is low, even for students who are considered academically well-prepared (Roksa, Jenkins, Jaggars, Zeidenberg, & Cho, 2009). The low completion rates among both students who are deemed "college-ready" and those who are considered underprepared suggest that community college success depends not only on academic skills but also on a set of non-academic skills and behaviors (Karp, Bickerstaff, Rucks-Ahidiana, Bork, Barragan, & Edgecombe, 2012; Karp & Bork, 2012).

In order to successfully transition to college, many new community college students must learn new kinds of behavioral strategies and must acquire the cultural know-how to navigate effectively through college experiences both in and out of the classroom (Karp & Bork, 2012). It is therefore important that incoming students are both made aware of these behavioral expectations and exposed to strategies for meeting them. Learning these kinds of strategies and learning other college readiness skills is especially important for community college students who have little familiarity with them and who are provided with little guidance or instruction on these matters (Karp & Bork, 2012).

One approach to improving success for community college students is to have them take a student success course, also known as College 101 or Introduction to College. These courses, offered in most colleges around the country, provide students with an orientation to college life, including information about the campus and about basic learning, study, and self-management skills that are considered important for academic success. Research has found that such courses have short-term positive outcomes for students (Boudreau & Kromrey, 1994; Schnell & Doetkott, 2003; Strumpf & Hunt, 1993) but that these effects fade over time (Rutschow, Cullinan, & Welbeck, 2012; Weiss, Brock, Sommo, Rudd, & Turner, 2011). These findings suggest that there is room for improvement in order to create opportunities for sustained student success.

This paper examines the efforts of one college to engage in such improvement. Bronx Community College (BCC) undertook a substantial and ambitious restructuring of its college success course, creating a new course called First Year Seminar (FYS) intended to better support students during their first year of college. FYS builds upon traditional student success courses by integrating academic content and skill-building with traditional college orientation activities. FYS creates opportunities for students to practice new skills via student-centered and constructivist pedagogies, embeds advising and student support into the course, and provides opportunities for instructor learning. Our study uses mixed methods to assess the early outcomes of students who took the FYS course and to better understand whether and why the early positive impact of the course has the potential to be sustained. We use propensity score matching to examine early student outcomes from course participation. We then use qualitative methods, including yearlong course observations and interviews with FYS students, to examine which elements of the course appear to contribute to the positive FYS outcomes found in the propensity score analysis.

Our results are consistent with previous research that has found that student success courses have a positive influence on early student outcomes. Our results also indicate that restructuring such courses to focus on student-centered pedagogy and integrated course content has the potential to make them more impactful over the long term. In addition, our findings suggest that, as hypothesized by Karp and colleagues (2012), when students have the opportunity to practice student success skills within the context of a student success course, they are likely to apply those skills in future courses, potentially improving their long-term educational outcomes.

2. Literature Review

2.1 Student Success Courses

Student success courses are offered at both two- and four-year colleges. They are meant to orient new students to college by providing them with information about campus resources and services and to impart or explain some important skills needed for

academic success, such as skills related to study habits and time management (O'Gara, Karp, & Hughes, 2009). The courses aim to address non-cognitive skills and behavioral expectations with the goal of familiarizing students with the collegiate environment and giving them the tools they need to persist and earn a college credential. Many also attempt to help students acclimate to college via interpersonal relationships, emphasizing the social connection among students and between students and their instructors.

Of community colleges participating in the 2012 survey from the Center for Community College Engagement (CCSE), 84 percent offered a student success course. The structure and focus of student success courses vary widely across different institutions, however. For example, these courses may have a credit value of between 0 and 3 credits, and in some cases the courses can be linked with other discipline courses. Content taught in success courses typically focuses on college readiness skills and/or on general personal well-being (Karp et al., 2012). Most courses also include information about campus resources and policies as a main topic area.

Student success courses build on prominent theories of student persistence. For example, their focus on building student relationships with peers and faculty is aimed at increasing integration and attachment to college (Tinto, 1994). Their emphasis on teaching students study skills and exposing students to college support services is intended to help students learn how to meet collegiate behavioral expectations (Karp & Bork, 2014). Student success courses provide students with the opportunity to engage in college and career planning to help them navigate the often-confusing sea of curricular choices and requirements offered by colleges (Bailey, Jaggars, & Jenkins, 2015; Karp, O'Gara, & Hughes, 2008; Rosenbaum, Deil-Amen, & Person, 2006).

Previous research generally suggests that student success course participation is associated with a range of positive outcomes. For example, using a matched comparison group design, Schnell and Doetkott (2003) and Boudreau and Kromrey (1994) examined student success courses in four-year institutions and found significantly greater multi-year retention for participants than for similar nonparticipants. Boudreau and Kromrey also found a positive relationship between completion of a student success course and academic performance. Larger-scale correlational and quasi-experimental studies in Florida, Virginia, and North Carolina found that students who enrolled in student success

courses, as compared with similar peers who did not, were more likely to persist in college and, in some cases, were more likely to earn an associate degree or to transfer (Cho & Karp, 2013; Yamasaki, 2010; Zeidenberg, Jenkins, & Calcagno, 2007).

Despite these promising results, more rigorous analyses have shown that the positive outcomes associated with participation in college success courses do not appear to hold long-term. Random assignment studies have found that participation in these courses improved short-term outcomes—including credit accrual and grade point average (Scrivener, Sommo, & Collado, 2009; Weiss et al., 2011), as well as student motivation, self-concept, and commitment to college—but had no effect on longer-term academic outcomes (Rutschow et al., 2012). The early gains shown by participants disappeared over time, such that treatment and control students had similar long-term outcomes, particularly in terms of graduation and transfer rates (Rutschow et al., 2012; Weiss et al., 2011). A few other less rigorous studies also found diminishing effects from student success course participation. The positive short-term results found by Boudreau and Kromrey (1994), for example, did not translate into improved graduation rates.

Qualitative research provides one possible explanation for this fade-out effect (Karp et al., 2012; O'Gara et al., 2009). In-depth examination of student success courses found that they typically cover a wide range of content in a short period of time, leading to teacher-directed, lecture-based pedagogies focused on "covering all the topics" rather than on the fostering of deep learning (Karp et al., 2012). As a result, student success courses effectively deliver important information for students but do not appear to help students develop the ability to use their newfound knowledge in future courses. For example, students are informed of various support services on campus, but they are not given the opportunity in the classroom to reflect on when they might need to access those services, how they would do so should the need arise, or how to become comfortable seeking help from college personnel.

2.2 Theories of Learning

Rooted in cognitive and developmental psychology, theories of how individuals learn indicate that exposing students to content and new skills through rote memorization and instruction alone is not an effective method for encouraging knowledge application and changed behavior. Rather, the application of new knowledge occurs when students

are provided with opportunities to fully engage and practice new skills, as well as when they are assisted in developing the metacognitive skills to reflect on their learning and engage in more critical thinking (Bransford, Brown, & Cocking, 2000; Bransford & Stein, 1993; Davidson, Deuser & Sternberg, 1994; Hiebert & Grouws, 2007; Perin & Hare, 2010).

In a meta-analysis of 164 studies, Alfieri, Brooks, Aldrich, and Tenenbaum (2011) found that "enhanced discovery" learning, in which students are guided to construct meaning and knowledge, is associated with greater learning than other instructional approaches. The authors also found that explicit teaching leads to greater learning than *unassisted* discovery (for example, when students are given a problem but not given guidance on how to approach or solve it) and that *assisted* or enhanced discovery leads to more learning than either unassisted discovery or direct instruction. In other words, while giving students information to solve a problem is preferable to letting them figure it out entirely on their own, guiding them via questioning, examples, or "worked examples" leads to even greater learning.

Similarly, Chi (2009) conceptualized learning activities as occurring along a continuum from passive to interactive. Passive activities merely expose students to new information; active activities (for example, underlining text) engage students in learning. Constructive activities require students to produce their own knowledge, often by having them go beyond the information presented (for example, by creating a concept map). Finally, interactive activities enable learners to build knowledge by engaging in dialogue with others.

In examining the literature, Chi (2009) found that this continuum represents both increasing cognitive engagement and increasing efficacy. Students engaged in active or constructive learning, for example, had greater learning gains than those engaged in passive learning activities. Students engaged in interactive learning, such as peer tutoring, had greater learning gains than those engaged in actively answering questions. In other words, deeper and more substantial learning occurs when learning activities help students think deeply and creatively about the content to which they are being exposed.

In addition, it is widely held that students must also be provided with enough time to thoroughly process the information that they are receiving in the classroom for the

subsequent transfer of knowledge to new situations to occur (Bransford et al., 2000). Moreover, this processing time must be structured and guided in order to ensure that students achieve the intended learning outcomes (Alfieri et al., 2011; King, 1994). The extended time and opportunity for processing may be part of the reason that constructive and interactive learning activities encourage greater learning than passive and active activities (Chi, 2009).

The above findings imply that certain types of pedagogies are likely to be more effective than others. Strategies that help students engage deeply with content, via guided engagement, constructive learning, or interaction, are more likely to encourage lasting learning than other, more passive or less reflective strategies. Research has found that in order for students to apply what they have learned to future courses or situations, they must understand issues of context, relevance, and utility, and that they benefit from opportunities for practice.

For example, King (1994) compared students who were and were not taught how to construct, ask, and answer questions focused on reconstructing information and integrating previous learning into new lessons. The students were then were given the opportunity to practice such exercises. The former group learned more and retained more information over time, as compared with the latter group. Similarly, Alfieri and colleagues' meta-analysis (2011) suggests that pedagogies such as guided discussion, scaffolded tasks, encouraging students to provide explanations for their ideas, and providing worked examples are likely to be more effective than either direct lecture or unguided or un-facilitated discussions. Other studies also support the use of active pedagogies in order to further students' understanding of course content and build their knowledge (Anderson & Adams, 1992; Braxton, Milem, & Sullivan, 2000; Chickering & Gamson, 1987).

These theories of learning suggest the usefulness of an applied pedagogical approach that allows students to actively learn the material covered via authentic opportunities for practice and reflection. Doing so is thought to help learners "take control of their own learning" by teaching them how to become aware of the points at which they understand the content they are learning and also when more information is needed to understand something or to solve a problem. These practices therefore allow

students to develop metacognitive skills, which some studies suggest enhance transfer of knowledge to new settings (Bransford et al., 2000).

The perspectives on learning reviewed here suggest that for student success courses to have long-term impacts, they must offer students an in-depth learning experience in which students can start to understand when and how they will return to the knowledge and skills they have learned for use in new situations. Additionally, they indicate that the integration of metacognitive strategies within success courses, such as reciprocal teaching or group problem-solving, will allow students to both actively participate in their own learning as well as assess their own understanding of the material and thus improve knowledge transfer (Bransford et al., 2000).

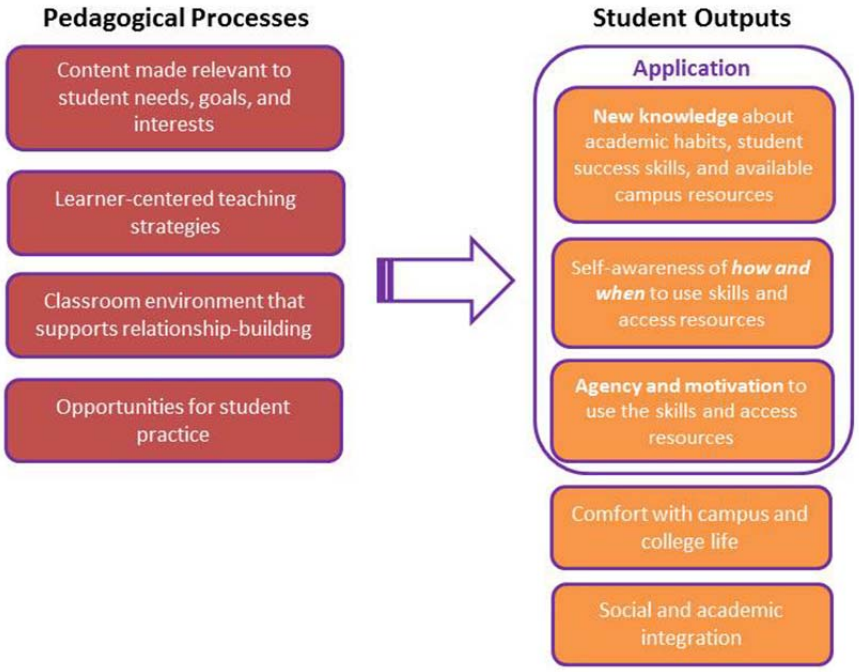
Under this perspective, the paucity of improved long-term outcomes in prior research for student success courses can be viewed as a reflection of their typical pedagogical approach (Karp et al., 2012). When course content is disconnected from academic coursework and when large amounts of content are delivered rapidly and with little depth, students are exposed to important knowledge but may not have the opportunity to understand how to use that knowledge to support their academic success. Thus the current information-focused structure of student success courses may be insufficient to encourage lasting positive outcomes.

3. Conceptual Framework

Karp and her colleagues (2012) presented a theory of action that provides a conceptual framework to illustrate how the student success course classroom environment and certain pedagogical approaches can help students develop knowledge and skills that will be useful in future academic endeavors. They referred to this framework as *teaching*- and *learning-for-application*; it is illustrated in Figure 1. This framework uses the word "application" to refer to instances when students use information gained via student success courses in new settings. Learning-for-application is the process by which students learn useful content *and* how to access it for later use; teaching-for-application includes the array of strategies that encourages such knowledge

transfer. Most of these strategies mirror those found by learning theorists to promote deep learning, as described in this paper's literature review.

Figure 1
Conceptual Framework for an Optimized Student Success Course



We use this framework to identify the aspects of BCC's FYS that may contribute to sustained student success. In Figure 1, the bottom two student outputs—comfort with the college campus and social and academic integration—are the two outcomes assumed by most student success course theories of action. The top three outputs, which are circled, are the outcomes that the "optimized" theory assumes lead to longer-term impacts. Within this framework, we see that student success courses, when optimized, can lead to these three additional types of learning outcomes, which together allow for knowledge transfer. First, they expose students to new knowledge of what skills are required for success and what services are available to support success. Gaining such knowledge is an important first step, as students cannot apply knowledge they have not yet gained. Moreover, short-term positive outcomes from student success course

participation likely accrue from students' initial exposure to useful knowledge about college success, such as how to register for courses, manage time, and take notes.

Long-term success is predicated on applying such knowledge over time. Thus, the second outcome is student development of self-awareness regarding when and how to access services. Knowing that tutoring services exist is only useful to students if they know when they should visit the tutoring center. Developing the metacognitive skills to self-diagnose needs and to understand which services or strategies are appropriate for which academic challenge or task is a key aspect of being able to use information in new situations.

The third outcome is the development of agency and motivation to independently and appropriately use services and knowledge. Students must be willing to use their knowledge once they realize it is warranted. For example, knowing when and how to access tutoring is insufficient if students do not have the self-direction to make use of the service. Taken together, these three outcomes enable students to apply knowledge in ways that should support long-term academic success.

If student success courses focus on information exchange or relationship development without paying attention to learning-for-application, students are unlikely to develop skills that can be used later in their academic careers. Learning-for-application is thought to be supported or encouraged by specific pedagogical processes, as noted by Karp et al.'s (2012) framework. In particular, making content relevant to students' lives and providing opportunities for students to practice using new skills and knowledge can help students understand when and how to apply new knowledge and information outside of the student success course. Similarly, using learner-centered teaching strategies that encourage students to construct their own knowledge (such as investigations, discussions, or student-led lessons) may encourage deep and applied learning, particularly when compared with teacher-directed approaches.[1] Notably, these processes mirror the types of pedagogies that learning theorists have identified as leading to deep and meaningful content learning, as described in the literature review above.

[1] Increasingly, these approaches are referred to as *knowledge transmission* and *learning facilitation*, rather than as teacher-directed and student-centered approaches (see, for example, Bailey, Jaggars, & Jenkins, 2015). However, the intervention that formed the backbone of this study used the terms student- and teacher-centered, so we adopt them in this paper.

According to this framework, an optimized student success course focuses on student-centered, contextualized pedagogies, rather than providing copious information without opportunities for reflection. Thus, while Karp and colleagues (2012) found that student success courses tend to present students with handouts listing various campus resources or strategies for time management, a student success course designed to optimize learning-for-application might present less content but spend more time on each topic. For example, rather than providing a handout and a lecture, a course focused on teaching- and learning-for application might present students with information about time management strategies, then ask students to reflect in small groups about the strategies they currently use or their own challenges in managing school, work, and family. Students might then be asked to design their own schedule using the tips provided, and adhere to it for a week. They might then be asked to reflect on how the schedule worked and to revise accordingly.

This paper uses the teaching- and learning-for-application framework to examine whether, within a revised course structure, student success course instructors use strategies that encourage application, thereby enabling students to apply their learning in subsequent semesters. Should this be the case, we hypothesize that students are likely to experience longer-term positive outcomes than have been found in studies of conventional student success courses.

4. Bronx Community College and the First Year Seminar

Located in the South Bronx, New York City, BCC is a community college in the City University of New York (CUNY) system. Students at BCC are largely low-income students, and are largely either immigrants or the children of immigrants. The vast majority (97 percent) are racial/ethnic minorities, approximately one-half (51 percent) are employed, almost one-third (31 percent) are supporting children, 41 percent have an annual household income less than $15,000, and 27 percent are in the first generation in their family to attend college. Almost all (90 percent) of entering BCC freshmen require remediation in one or more basic skill area (reading, writing, mathematics), with almost one-quarter (24 percent) requiring remediation in all three basic skill areas. As at many

community colleges around the country, BCC students struggle to persist and graduate: BCC's four-year graduation rate is only about 20 percent, and its one-year retention rate is only about 60 percent.[2]

Until spring 2012, incoming first-year students had the option of enrolling in BCC's student success course, titled Orientation and Career Development (OCD). The OCD course is structured like other traditional success courses across the country, meeting one hour a week to provide students with basic information about the college and success skills. As described in the college catalog, the course helps "students develop basic college survival skills in areas of academic life." First offered in 1983, the Department of Student Development developed, led, and taught this course. OCD does not offer any college credit and is not mandatory for all students.

In 2009, as part of its accreditation self-study, BCC identified an array of challenges with the OCD course. The self-study found that course completion and pass rates were substantially below the BCC's average rates, that there were no standard expected learning outcomes or assessments for all sections of the course, and that the one-hour format was too limited to cover all of the course topics. The 2009 BCC self-study recommended further assessment of the OCD course, including further examination of the course objectives, strategies, and outcomes.

In 2010–11, BCC engaged in an institutional self-study and improvement plan, launched under the auspices of the John Gardner Foundations of Excellence in the First Year, in an effort to assess and address low retention and graduation rates. This intensive self-study revealed, among other things, the need for a revised approach to students' first year of college. In response, a subcommittee including members of the college's leadership and faculty created, developed, and revised a new student success course called First Year Seminar (FYS), which includes the provision of research-based high impact practices designed to enhance student engagement and success in the first semester and beyond (Chickering & Gamson, 1987).

FYS was developed in response to previous research on student persistence and student success courses (e.g., Cho & Karp, 2013; Karp et al., 2012; Pascarella &

[2] Data is from the fall 2010 cohort and is provided by the CUNY Office of Institutional Research and Assessment.

Terenzini, 2005; Tinto, 1994; Weiss et al., 2012) to create a course structure aligned with the teaching- and learning-for-application framework described above. Rather than merely providing information to students, FYS embeds mandatory advising, student-centered pedagogy, and contextualized and integrated instruction into the course.[3] It integrates college success skills, personal development and the building of social connections, and academic content into a small seminar in order to encourage students to apply student success course content in other academic contexts.

FYS covers many of the same topics as OCD and other student success courses, such as time management, campus resources, and academic planning. It meets once a week for two hours and, like other student success courses, is a semester long. Students earn one credit.

However, instructors are given flexibility in how they present this content so that they can embed success topics in real-world and academic topics. Instructors—many of whom are academic faculty—identify an academic theme for their FYS course, which they use to ground success skills and create opportunities for reflection, practice, and application.[4] For example, a discussion of immigration in a history-themed FYS course might lead to the opportunity to explore students' own sense of dislocation in college, which might lead into a discussion of campus support services.

The FYS curriculum is also intended to reinforce basic academic skills, such as reading, writing, and critical thinking skills. Many sections also provide an overview to disciplinary content. FYS course designers hoped that such an approach—integrating academic support, student support, and college content—would provide opportunities for students to understand how traditional student success course content relates to and can support success in other courses.

To support longer-term, reflective, and constructivist activities, FYS class sessions are two hours long, rather than one. The additional class time is meant to provide the opportunity for instructors to engage with students in discussions, group activities, and other sustained learning experiences. FYS instructors are also provided with

[3] At the time of our study, OCD was still offered at BCC but was being phased out in favor of rapidly scaling FYS.
[4] Ideally, students select an FYS section with a theme that aligns with their major or interests. At the time of our study, this did not happen with regularity.

significant, long-term professional development, including summer workshops and bi-weekly meetings with their colleagues, in order to help them develop their skills using teaching-for-application pedagogies.

FYS also aims to foster student integration and build student relationships; it does this via a number of strategies. First, the college has dedicated FYS advisors who work with students for the entirety of their first year of college enrollment. Students are required to meet with their advisors during the semester in which they are taking FYS course, although not during their second semester. FYS also uses peer mentors to create a sense of community and support. FYS peer mentors are advanced college students who are selected, trained, and paid to participate in FYS. They serve as a resource and as role models for FYS students, providing advice, encouragement, and social support. Peer mentors are provided with weekly pieces of information by FYS staff and spend 5–10 minutes each class session presenting this information to FYS students.

5. Methods

This study uses mixed methods to examine early student outcomes among those students who take FYS at BCC in comparison with students who take no student success course at the college. We hypothesize that if FYS instructors use applied and contextualized teaching approaches, we will see (1) better student outcomes among the FYS participants and (2) evidence of students applying FYS knowledge and skills in non-FYS courses. Such early findings would suggest—though certainly not prove—that FYS students are likely to have sustained positive outcomes in future semesters.

5.1 Propensity Score Analysis

Our analysis exploits the fact that during the 2012–2013 and 2013–2014 academic years, BCC was rapidly scaling FYS but did not yet mandate the course nor have enough sections to enroll all incoming students.[5] Student interviews as well as informal

[5] At the time of our study, the college continued to offer some sections of OCD but was phasing out the course in favor of rapid scale-up of FYS. Students enrolled in FYS and OCD mostly at random, as advisors and faculty did not yet uniformly believe one course was better than the other. In addition, both courses

conversations with advisors and staff indicate that students opted in or out of FYS based primarily on scheduling circumstances and constraints; if a section that fit into their schedule was not available, they did not enroll. Some students also opted out of the course because they believed they did not need it or did not want to take it. In addition, faculty and advisors had mixed opinions of the course, and so students were unevenly encouraged or discouraged from enrolling. Therefore, it seems that students enrolled or did not enroll in FYS mostly at random, though it is possible that motivation or other unmeasured factors influenced their participation.

Data sources. Data for propensity score analyses are from the CUNY Institutional Research Data Base (IRDB), which is an historical database for all CUNY colleges that includes demographic and academic data for all CUNY students. The BCC Office of Institutional Research provided CUNY's Office of Research, Evaluation, and Program Support (REPS) with a de-identified data file containing demographic and academic information of all first-time freshmen who entered the college in the fall 2012, spring 2013, and fall 2013 semesters. The file contained 1,403 students who participated in the new FYS and 1,076 students who did not participate in a student success course of any kind.[6]

The file contained the following variables used to match students for the propensity score analysis: race/ethnicity; gender; full-time/part-time status; receipt of federal and state financial aid; incoming CUNY skills placement (CAT) scores in reading, writing, and mathematics; a composite score indicating overall remedial need ("level scores"); and basic skills exemption status (determined by SAT or NYS Regents scores). The file also included student academic performance (grades, credit accumulation) and persistence (retention at BCC) for each term of enrollment. An indicator variable for imputed values was generated for use in the propensity score

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were offered throughout the day and week. Informal interviews with staff, as well as our interviews with students, indicate that students were not aware of the differences and generally enrolled in the course section that best fit their schedule. Given that OCD was being phased out, we focus our analyses on the potential impact of FYS.

[6] We excluded OCD participants from our analysis because OCD participants received some treatment, though not the one under study. This study investigates the impact of FYS as compared with no student success course. FYS is an example of an *improved* student success course. OCD is an example of a traditional course. As we have noted, traditional courses have already been studied extensively.

estimation model. Variables for which missing data were imputed using regression included: CUNY Assessment Test (CAT) reading (26.1 percent), CAT writing (26.9 percent), CAT math 1 (5.4 percent), CAT math 2 (5.9 percent), and level scores (4.1 percent).

Data analyses. Table 1 shows that FYS students differed significantly from non-participating students across observable variables including age, financial aid receipt, and remedial status in the basic skills areas. In an effort to correct for bias associated with these observable differences between the treated and untreated groups, we used a propensity score matching method. Propensity score matching, a statistical matching method originated by Rosenbaum and Rubin (1983), allows for the construction of a comparison group in lieu of a random assignment study. The propensity score is the likelihood, conditional on observable variables, that a student will receive treatment. Based upon this score, treated students were matched to untreated students, creating samples that were balanced across observable variables. This process typically results in a significant reduction in bias (Rosenbaum & Rubin, 1983).

We created a set of matched students comparing FYS participants with nonparticipants. Students' propensity scores were estimated using a logit model that included student-level demographic variables (gender, race/ethnicity, and age), financial aid status, attendance, remedial status, and CAT scores. BCC first-time freshmen who participated in FYS were matched to the pool of non-participant students based on their propensity scores using a one-to-one nearest-neighbor matching method with a caliper of 0.0015 of the raw propensity score and with replacement. In order to account for any differences associated with a student's semester of entry, all treated students were matched to untreated students who matriculated at the same time. Descriptive statistics for both groups both pre- and post-matching are shown in Table 1.

Table 1
BCC FYS and Non-Participant Student Characteristics, Pre- and Post-Match

	Pre-Match					Post-Match	
	FYS		Nonparticipants			FYS	Nonparticipants
Variable	(N)		(N)		p^a		
Demographic characteristics							
Male	1,403	47.8%	1,076	48.0%		48.9%	48.2%
Asian	1,403	2.5%	1,076	2.5%		2.5%	1.6%
Black	1,403	30.6%	1,076	32.7%		30.4%	30.8%
Hispanic	1,403	65.0%	1,076	62.6%		65.3%	65.6%
Age (in years)	1,403	21.0	1,073	22.7	***	21.0	20.8
Financial aid							
Pell recipient	1,403	86.8%	1,076	75.9%	***	87.4%	89.4%
TAP recipient	1,403	54.7%	1,076	38.5%	***	56.5%	54.7%
Attendance							
Full-time	1,403	90.6%	1,076	78.2%	***	90.9%	91.2%
Remedial status							
Pass or exempt in math	1,354	18.2%	1,034	15.0%	**	17.9%	16.8%
Pass or exempt in reading	1,376	81.2%	1,047	64.8%	***	80.2%	80.8%
Exempt in writing	1,379	75.6%	1,044	56.9%	***	73.7%	73.3%
Level score[b]	1,336	6.8	1,021	6.2	***	6.8	6.8
CAT scores							
Math 1	1,306	40.5	1,004	38.6	**	40.7	39.7
Math 2	1,291	27.0	1,003	24.7	***	26.7	26.4
Reading	832	71.5	818	67.7	***	71.9	72.0
Writing	830	53.6	803	51.1	***	54.3	54.0

*p < .10; **p < .05; ***p < .001

[a] Significance tests compared pre-match FYS treated and untreated samples (t-test for continuous outcomes and chi-squares for dichotomous outcomes). Significance tests comparing the matched FYS treated and untreated samples revealed no differences across all variables between the two groups.
[b] A combined skill level variable ranging from 3 to 9 based on a student's remedial status (3 = needs remediation in all three basic skills areas; 9 = college-ready in all three basic skills areas).

After matching FYS students to untreated students, 81.1 percent (1,138) of the treatment group was matched to a student in the untreated group; unmatched observations were dropped. Given one-to-one matching, the final sample compared 1,138 first-time freshmen who did not participate in any freshman program with 1,138 similar first-time FYS enrollees. Significance tests comparing the matched FYS treated and untreated samples (t-test for continuous outcomes and chi-squares for dichotomous outcomes) revealed no differences across all variables between the two groups. After matching the

FYS treatment group to nonparticipants, the balance between comparison groups on background variables was considerably improved (see Table 1).

Outcome variables include credit-course GPA (which includes grades only in credit-bearing courses), all-course grade average (a non-weighted average including grades in all credit and non-credit courses), and credits accumulated. Students were retained in the sample for all analyses, regardless of whether or not they remained enrolled through fall 2014.

First, we look at all three cohorts' performance on all three outcomes after their first semester of enrollment. This enables us to assess short-term outcomes of FYS participation after the same length of time for all cohorts. It also mirrors much of the student success literature in its examination of impact on early enrollment experiences.

We then assess longer-term outcomes by examining student credit-course cumulative GPA and credits accumulated for the most recent semester for which we have data, fall 2014. It is important to note that these analyses are for different lengths of enrollment for different cohorts; for the fall 2012 cohort, for example, the 2014 analyses reflect 2.5 years of potential enrollment, while for the fall 2013 cohort, the analyses reflect only 1.5 years. However, examining all students at this point in time enables us to look at outcomes over a longer period in order to identify the potential long-term impacts of FYS participation. Because FYS was new and relatively small in 2012, we chose to group all cohorts together in order to ensure a larger sample size than would be possible examining each cohort individually.

To assess outcome differences between matched groups, we conducted t-tests for continuous outcomes (GPA and earned credits) and Pearson chi-square tests for dichotomous outcomes (retention).

5.2 Qualitative Analysis

To understand the extent to which FYS encourages teaching- and learning-for-application, as well as students' use of FYS-related skills and knowledge in subsequent courses, we engaged in detailed qualitative data collection and analysis during the 2013–2014 academic year. The data collection instruments were designed to enable us to answer the following research questions:

- Do students report gaining new knowledge, self-awareness, and agency?
- Do students report displaying self-awareness and agency outside of their FYS course?
- Which course components and features appear to encourage or discourage teaching- and learning-for-application?

Data sources. Qualitative data are drawn from three sources collected throughout the 2013–2014 academic year. During fall 2013, we observed 10 FYS course sections (out of 25 offered) at the beginning, middle, and end of the semester. Courses were purposefully selected to represent both new and experienced FYS instructors and a range of disciplinary themes. During the spring semester, we narrowed our focus to five course sections, all of which were taught by instructors whose sections we had observed during the fall. These five sections represented a range of instructor orientations and skill levels in order to ensure a robust representation of various teaching approaches, pedagogies, and proficiencies. The first round of observations in the fall was minimally useful, as instructors tended to focus on class business rather than on teaching course content. Therefore, we observed each section only twice (middle and end) during the second semester. In total, we completed 40 observations of 15 different FYS sections.

Course observations were conducted using a structured observation protocol. In addition to describing the class context (number and demographics of students, types of materials used, etc.), the protocol used a critical components approach (Century, Rudnick, & Freeman, 2010). The data collection tool included sections for each element of the course deemed "critical" by course developers, such as "use of student-centered pedagogy and collaborative activities." During the class observation, researchers described class activities and categorized them by critical component. For example, researchers noted the types of pedagogies used, the types of content covered, and the types of activities in which instructors and students engaged. Most relevant to this paper is the section of the protocol prompting researchers to describe the instructor's overarching pedagogical approach as well as the pedagogy of each activity completed during the course session. Researchers recorded this information in narrative form.

We also conducted semi-structured interviews with each instructor whose course we observed. Instructors who participated in both rounds of data collection were interviewed twice in order to understand any changes they may have made to their courses or instructional approaches between the fall and spring semester. In total, we conducted 15 interviews with 10 FYS instructors.

Instructor interviews focused on course content, pedagogy, and implementation challenges. Of most relevance for this paper are a series of questions focusing on instructors' preferred teaching strategies. Instructors were asked to describe classroom activities and assignments, the instructional strategies they use in FYS, the types of skills and knowledge they teach and how they do so, and the reasons they make the instructional choices they do. Wherever possible, we probed instructors to provide context for the activities and strategies we saw during our classroom observations.

Finally, we conducted interviews with FYS students during and after their enrollment in the course. During fall 2013, we sent an email invitation to all students enrolled in FYS at BCC. Students were invited to participate in one of four focus groups lasting approximately 90 minutes. The purpose of the focus groups was to understand the context of FYS and students' experiences in the course. In addition to our sending the invitation, instructors were asked to explain the study to their students and encourage participation. Students were paid $25 for participation. In total, 27 students participated in the group interviews.

During the last half of the spring 2014 semester, we reached out to all focus group participants, inviting them to participate in a one-on-one follow-up interview. This interview was also semi-structured and focused on students' educational experiences after completing FYS. Questions were designed to generate student reports of their use of knowledge, skills, and habits emphasized in the FYS curriculum; their motivation to use them; the contexts under which FYS-related knowledge, skills, and habits were applied; and the extent to which students attributed the use of these to their academic success (or lack thereof). So as not to lead students to attribute learning or academic success to FYS, the protocol was structured to ask broad questions about students' experiences and application of knowledge; only after students had reflected generally were they asked to consider whether or not FYS helped them gain student success skills and knowledge.

Interviews lasted approximately one hour. Interview participants were compensated $25 for their time. In total, we interviewed 19 students, a 70 percent response rate from our focus group sample.

For all interviews and focus groups, we took notes via computer during the interview. In most instances, two researchers participated in each interview, enabling one researcher to take detailed (often word-for-word) notes while the other researcher conducted the interview. We also audio-recorded the conversations to ensure accuracy of our written notes and to enable us to revisit interesting or important pieces of interviews during data analysis. We did not transcribe the data, relying instead on our written record and the audio-recording. Quotes presented in this paper are taken from our notes.

Data analysis. Student interview data was coded according to Karp et al.'s (2012) framework for learning in student success courses in order to identify the ways in which FYS might help students gain new skills and knowledge, self-awareness of when and how to use new skills and knowledge, and the agency and motivation to use skills, knowledge, and resources (see Figure 1). Using course materials and informal interviews with course designers, we generated a template outlining the key learning outcomes for FYS. Outcomes included general education competencies (such as reading and critical thinking), academic success skills (e.g., time management), personal accountability, college resources, and non-academic habits (i.e., goal setting), among others.

The template differentiated between *learning about* skills and knowledge and *using or applying* skills and knowledge. Data were coded differently depending on whether students reported being exposed to new information (i.e., being told about the tutoring center) or reported using that information (i.e., visiting the tutoring center to get help). Finally, in order to identify instances when students directly attributed their learning or application of knowledge or success skills to FYS, we differentiated between explicit and implicit learning. *Implicit* learning was defined as instances when students mentioned gaining or using an FYS-related knowledge, skill, or habit. *Explicit* learning was defined as instances when the students themselves attributed that learning to FYS.

All student interview data were coded in order to categorize instances of self-reported learning according to the template. To ensure reliability, two researchers initially coded a randomly selected interview and shared the output. We discussed areas of

disagreement, refining the coding scheme and our definitions. We engaged in the same procedure again until we reached approximately 80 percent consensus for an interview. At that point, a single researcher began coding the remaining data, with the two researchers conferring on tricky passages. The senior researcher for the project also conducted spot-checks throughout the remainder of the coding process.

Analyzing the student interviews enabled us to generate a picture of student-reported learning from FYS. We used these findings to guide close and careful readings of teacher interview and observation notes. Analyses of these data focused on identifying the types of instructional practices that might encourage the learning reported by our student sample, and which could explain the early positive outcomes seen for FYS.

We analyzed observation and teacher interview data thematically to (1) confirm or disaffirm students' descriptions of their FYS courses and (2) highlight the various pedagogical approaches used within FYS. We examined the pedagogical component of the observation data for examples of the types of teaching found in FYS courses in our sample. The two researchers conducting the qualitative component of this study met weekly to compare our impressions and highlight key findings, common themes, and emergent conclusions. We were particularly attentive to the types of pedagogical approaches used in FYS, and how this teaching aligns with Karp et al.'s (2012) teaching- and learning-for-application framework.

6. Findings

In this section, we present the findings from the propensity score matching analyses. These analyses indicate that FYS students had positive and sustained early outcomes as compared with BCC students who did not participate in a student success course. We use the qualitative findings to examine the potential reasons for the quantitative findings, and to argue that it is likely the positive outcomes were sustained over a longer period of time. The qualitative findings indicate that students in FYS had the opportunity to learn *and practice* key academic skills in their FYS course. Though these qualitative findings are not causal and do not involve a comparison group, they

indicate that the positive outcomes experienced by FYS students may have stemmed from the learning-for-application that occurred in the course.

6.1 FYS Student Outcomes

As with other studies of student success courses, we find that FYS participants had better early outcomes than nonparticipants (see Table 2). FYS students demonstrated higher academic achievement during and after their first semester. Their first semester grade average (including grades in developmental courses) was nearly half a grade point higher than those of comparison students (2.36 compared with 1.94). When only college credit courses are included, FYS students still had a nearly half-grade advantage in their GPAs (2.31 compared with 1.84). Finally, the FYS students earned, on average, a greater number of credits (6.34) during the first semester, compared with their matched sample (5.68).

Table 2
Outcomes for FYS and Matched Sample

	FYS	Matched Sample	Difference
Average 1st semester all-course grade average (including developmental education courses)	2.36	1.94	0.42***
Average 1st semester credit-course GPA (college-level courses only)	2.31	1.84	0.47***
Average 1st semester credit accumulation	6.34	5.68	0.66***
1st semester retention rate	81.7%	72.1%	9.6***
1-year retention rate	64.4%	54.1%	10.3***
GPA, end of fall 2014 semester (college-level courses only)	2.15	1.83	0.32***
Credits earned, end of fall 2014 semester	21.97	17.54	4.43***

* $p < .10$; ** $p < .05$; *** $p < .001$

Unlike in previous studies of traditional student success courses, the early advantage for FYS students appears to have been maintained over time. Table 2 shows that FYS students had higher GPAs at the end of 2014 than comparison students (2.15 compared with 1.83), though the gap narrowed slightly. They also earned more credits (21.97 compared with 17.54). With respect to persistence, the FYS group had an

approximately 10 percentage point higher retention rate after both one semester (82 percent compared with 72 percent) and one year (64 percent compared with 54 percent).

6.2 FYS and Learning-for-Application

The teaching- and learning-for-application framework posits that sustained positive student outcomes stem from exposure to *and the opportunity to practice* the key skills and knowledge necessary for students to succeed in college. In what follows, we first demonstrate that the curriculum of FYS exposes students to the types of information necessary for success in college. Next, we show that students reported contextualized and applied learning of this information and provide examples of the types of pedagogies used by FYS instructors to encourage learning-for-application. Finally, we present data indicating that students had or gained the motivation and agency to apply their learning during their second semester in college.

Exposure to key skills and knowledge. Both interview and observation data indicate that students were exposed to key academic and success skills in their FYS sections. We found that students were exposed to three broad types of skills and knowledge in their FYS sections.

First, as in most student success courses, students reported exposure to information intended to orient them to college. Most often, orientation information took the form of exposure to various campus resources and support services, such as the library and college offices. For example, we observed presentations from guest speakers such as the assistant director from the Office of Student Life and a facilitator from the Career and Transfer Services Office. During these sessions, various services and supports were described to students so that they would be familiar with these resources, should they need them at a later time. We also observed a class session during which the instructor brought her entire class to the college library, where students were provided general information about the library and support services. They were also alerted to upcoming student affairs events, such as a leadership retreat, and to library resources that they could take advantage of when completing their coursework. During these presentations, students were expected to listen, ask questions, and retain the information for future use. They were also provided with handouts and flyers listing resources available at the library as well as at the Office of Student Life.

Second, students were exposed to academic success skills, such as effective forms of communication and time management strategies. Providing students with this type of information is also typical of student success courses at community colleges across the country. In FYS, peer mentors took on a major role delivering academic success skill content by offering a brief presentation each session on a specific success skill or piece of knowledge. One student described this part of the course by saying,

> In FYS, I had two peer mentors. … They had things to tell us about campus, career fair, add/drop timing, deadlines, and any announcements going around campus. We talked about communicating with professors, so that was something good I learned through the peer mentors.

Observation data confirm that peer mentor presentations offered students academic success information on topics such as classroom etiquette and how to register for classes. Instructors shared similar information on topics such as stress management, plagiarism, and various campus resources.

Third, students reported exposure to disciplinary content knowledge and academic skills such as reading and writing during their FYS courses. This is not surprising given that the FYS curriculum is designed around academic themes and aims to purposefully integrate disciplinary faculty into first-year student success efforts; it is, however, unusual in the context of student success courses. Academic content exposure was most frequently mentioned among students who were in sections that included an academic theme in a core discipline, such as psychology or history. A student told us, “Most things I picked up were psychology-related—the professor focused on psychology topics and helped us understand the meaning of different concepts that were the same in my psychology class.”

Observation data from this instructor’s FYS section show that students were exposed to psychology content through readings and discussion as well as through the use of activities. In one class session, the instructor reviewed the topic of nature versus nurture using a reading handout from which each student took turns reading aloud. The instructor then facilitated an activity in which students had to associate various traits with nature, nurture, or both, while discussing the reasoning for their choices.

Opportunities for practice and reflection. As noted, however, the types of exposure described above do not, by themselves, appear to lead to long-term learning or improved student outcomes. Importantly, our data indicate that students in FYS are given multiple opportunities to practice new skills and learn how to apply their knowledge in future situations. Student interviews and observation data indicate that FYS instructors used pedagogical approaches that foster an understanding of how and when skills and resources should be used, and that instructors also presented these in the context of the community college student role to emphasize their relevance.

Students reported that rather than merely receiving information intended to orient them to college, they were required to put that information to use. For example, FYS students were required to meet with an academic advisor at least once, and often twice, during the semester. Rather than just offering students information about the availability and utility of academic advising services, the structure of FYS required students to practice appropriate skills. They had to make an appointment with an advisor, follow through on the meeting, and experience what it is like to engage with the advising office. Students generally reported that they fulfilled this requirement and met with their advisor during the semester they were enrolled in FYS.

Similarly, we saw and were told about myriad opportunities for students to practice academic support skills, such as time management, note-taking, and communication skills. Notably, the discussion-based format of FYS provided students with the opportunity to practice engaging in academic discourse (Karp & Bork, 2014). One student described this process by saying, “Everybody gave their own opinion, and you saw different views. It was interesting to listen.”

Observation data show that students engaged in a range of activities to practice academic skills, from sketching out well-balanced schedules to working in small groups to practice effective note-taking skills. For example, during one FYS class we observed, the lesson focused on why notes are important, strategies for taking good notes, and practice in taking and using notes. According to our observation notes (10/10/2013), the class session began with a lesson on note-taking:

> The book for the course is *Game Change*; each chapter is written from a different person’s perspective.… Whole-class discussion on taking notes about the book; [instructor]

> demonstrates how to create a timeline. Discusses various organizational forms and which learners might benefit (i.e., index cards are good for visual and kinesthetic learners to use when organizing writing). Notes that the book is written from different characters' points of view and [that] note-taking can help organize the different perspectives found in the book.

The lesson then moved into a practice-based activity, in which students were asked to take notes on a reality show.

> [Instructor] tells the students, "You have learned some, now we will do some application. We don't deal in theory, we deal in practice." He says they are going to watch an episode of a reality show and reminds them that, just like in their book, the show takes the perspective of different characters. He wants them to take notes about the relationships of the cast members. He tells them to take notes on characters' interactions with other people. After, the students will debrief in small groups and write up their notes together to create a summary of the show.

The instructor told us in an interview that he used this approach to engage students and provide a context for them to practice their skills.

> Having a discipline is practical. So when I'm doing something, I can apply it to the material we are reading. Here is the book, we covered how to read the book. Here's how you take notes while you read the book. It's my favorite part of the whole design.

In another section of FYS, students were given the opportunity to practice academic research skills in preparation for a final project. One student explained how she developed new skills as a result of practicing them in her FYS section to prepare for the final project:

> In FYS, we did a project on diabetes. I did a lot of research on it. I can still cite statistics. Before, I don't know how I would do papers. I would just do a rough draft and write. Now I put in thought and brainstorm—[using] pie charts, bubbles, to get ideas on paper.

During her interview, this student described the ways that the structure of FYS allowed for the practicing of skills, rather than merely serving as a vehicle for providing knowledge. She explained that without her FYS project, she would not have known how to use the library search database: “It used to be, I went straight to the Internet and go blindly. Now I can go to BCC and go to their catalog and find stuff I know will be acceptable for a research paper.” This student made the distinction between just being informed about a library database and practicing how to use it for real application.

Finally, students were also given the opportunity to engage in and reflect on that content in deep and meaningful ways in order to develop their critical thinking skills and to make connections to their own lives. For example, one instructor used multiple sources—including readings from different authors as well as a video clip—to explore complex notions of racial/ethnic identity and the sense of duality of identity that can arise in the lived experience of particular persons, for example, those in immigrant families. She then facilitated a class discussion and asked students to discuss how they might experience duality of identity in their own lives, probing students to self-reflect by asking questions such as, “Do you feel that you are being authentic to yourself?” In this class session the instructor offered students opportunities for building their self-awareness while reinforcing academic content (the notion of “duality of identity”) and academic skills (reading, academic discourse, and critical thinking).

Learning theory posits that deep and applied learning is facilitated when students are given the opportunity to reflect on their learning and think about how the knowledge being presented can be used in the future. The examples described above reveal that FYS students had opportunities to engage in such reflection. Importantly, these opportunities often integrated various types of learning (the learning of particular skills as well as the learning of academic content) to allow for holistic and multi-faceted reflection, often in the context of their own lives. For example, students frequently described lessons on time management, test-taking, and studying that emphasized self-reflection.

Application of FYS knowledge to new situations. The final dimension of learning-for-application is gaining the motivation and agency to use learning in new situations. For former FYS students, this can be demonstrated by taking the success skills and foundational knowledge learned in the FYS course and using them in subsequent

semesters and courses. Application of FYS skills and knowledge in subsequent courses can be seen as an outcome of learning-for-application and could contribute to sustained student success over time. Our analysis found that students reported using the skills and knowledge they learned in FYS during their second semester of college enrollment. Frequently, though not always, they explicitly attributed their ability to use their new skills and knowledge to FYS.

When discussing their second semester educational experiences, students often described applying the information gained in FYS in subsequent courses. Sixteen of the 19 students we spoke with mentioned using at least one type of FYS-related skill/knowledge (related to academic success, personal development, or academic content) outside of the course. For example, students received information about academic advising and the library, as we described in the previous sections. Students indicated that they were able to put this information to use, often noting that the opportunity to practice applying their new knowledge in FYS contributed to their future use of this knowledge. The student described earlier who completed the diabetes project told us that learning to use the library to do research "helped a lot" during her second semester of college enrollment.

We heard from multiple students that having to meet with their academic advisor—rather than merely being told that advising was useful—encouraged them to continue to see their advisor after FYS was over. One student said, "I was required to meet with him two times, but I met with him four times because I was confused about Math 06 and I'm trying to avoid taking any semesters off." Another student also commented on her consistent communication with her advisor during second semester, saying, "I'm always e-mailing, texting her … about my plans and my schedule, anything I was worrying about, like dropping a class." Use of advisors was one of the most frequently mentioned explicit examples of application of FYS knowledge in our data. Every student in our sample mentioned meeting with an advisor, usually more than once. We counted 72 instances in which students discussed advising; in 30 of those, they noted that an advising meeting was related to or a result of FYS.

Similarly, students were able to apply academic success skills to their post-FYS coursework. In some instances, students described application of these skills without

directly attributing it to FYS. Students often indicated that they had learned to use their time wisely and to set priorities due to their first semester college experiences. For example, one student discussed his second semester in this way: “I am just trying to stay on task … so I’m trying to do [what needs to be done] before deadlines.” Though students probably gained these skills via multiple first semester experiences, it is likely FYS was an important source for them, given that our observation data indicate that setting priorities, staying on task, and organizing one’s time was part of the FYS curriculum.

In other cases, students spoke explicitly about the influence of FYS. For example, one student spoke about learning to reach out to professors and how to communicate with them through the previously described peer mentor presentations in her FYS class. She explained that in FYS, “we talked about communicating with professors, so that was something I learned through the peer mentors.” Later in her interview, she told us that as a second-semester student, she now spoke with her professors outside of class regarding revisions of essays because she was aware that “if [I have] questions, they have open hours.” She explained how she was “always e-mailing professors about checklists and forms” and that she sometimes went to meet with them to talk about her papers and also about how she was performing in the class. This finding echoes previous research indicating that a key element of college success is developing an understanding of what the expectations are and learning how to enact those expectations (Karp & Bork, 2014).

Students often referred to FYS when speaking about their application of academic success skills. One student described working on her class final group project, from which she was able to gain leadership skills: “I was a group leader and had to assign roles. I had to speak out for the group. I wasn’t the loudest person, but got my point across.” She went on to explain that she had never been the type of person to speak out loud or state her opinion, but that this “was a good experience” that she could build on in her other classes.

Another student described the collaborative opportunities she was provided in her FYS class that encouraged her to feel more comfortable engaging in academic discussion in other contexts:

> When I was in high school, and even in the beginning of college, I was a shy person and wouldn't talk. But in that class, we really do have discussions, go over topics, give opinions and stuff. … Now I'm more outspoken. I feel more comfortable, confident. … My professor stressed that—talking. She would tell people to speak louder for them and for her.

The instructor's student-centered approach in facilitating entire-class discussions helped this student learn to apply her communication skills and apply her cultural know-how in new settings. Using such know-how is an important component of successfully navigating the college environment (Karp & Bork, 2012), and it appears that the opportunity to practice in FYS helped this student enact an appropriate role successfully in her other courses.

Students also applied the content knowledge gained in FYS to other courses. This was particularly true for students in the psychology-themed FYS sections; students who were simultaneously enrolled in or who later enrolled in social science courses found the content to be complementary. One student explained this by saying during her second semester interview, "FYS helped a lot with psychology last semester and sociology this semester. I'm learning about the id, ego, and superego again." It appears that the academic content presented through lessons and activities in FYS was similar to the content introduced in the disciplinary courses, which enhanced its applicability.

7. Discussion and Conclusion

According to the teaching- and learning-for-application framework, sustained learning leading to positive student outcomes is, in essence, a three-stage process. First, students must be exposed to key skills and knowledge. Second, students must be given opportunities to *practice* these skills. Finally, students must actually access and use their knowledge and skills in new contexts. Such use is the most far-reaching desired outcome of learning-for-application associated with a student success course—if students are able to apply their success skills in subsequent courses, they are generally more likely to be successful than if they do not. Knowing about time management, for example, only leads

to academic success if that knowledge is actually put to use later on, to help the student balance his or her course load during the second or third semester of enrollment.

Previous research (Karp et al., 2012) found that the second and third stages of teaching-for-application are often weak in student success courses, potentially contributing to the fading positive outcomes of such courses found in other studies (Boudreau & Kromrey, 1994; Rutschow et al., 2012; Weiss et al., 2011). The findings presented in this paper indicate that using a teaching- and learning-for-application approach, including contextualized student success content and student-centered and applied pedagogies, may help to overcome such weaknesses.

Here, as in other studies of student success courses, propensity score analyses found positive short-term outcomes for FYS participation. As compared with non-participating BCC students, FYS participants demonstrated substantially higher grades during their first semester of enrollment and stronger persistence to a second semester and second year. What is more, these analyses also provide early evidence that FYS may have produced sustained positive outcomes, as FYS participants had higher GPAs and more credits earned at the end of the fall 2014 semester—the third, fourth, or fifth potential semester of college for the participants, depending on the cohort sample.

To be sure, longer follow-up with larger cohorts of students is needed to be certain that the early positive outcomes of FYS continue as students move toward credential completion. Additional research is particularly important because our propensity score matching analyses could only account for observed differences between participants and nonparticipants, and small sample sizes necessitated grouping different cohorts together for the longer-term outcomes. Nonetheless, FYS students retained their advantage over nonparticipants beyond their semester of enrollment in the course.

These quantitative findings align with Karp et al.'s (2012) model, which posits that student success courses can only lead to sustained student success if they encourage teaching- and learning-for-application. Our qualitative data indicate that while enrolled in FYS, students were engaged in learning opportunities that allowed them to practice the skills covered in class, rather than merely learning about them. The structure of FYS—as evidenced by student self-reports, instructor self-reports, and structured observations—appears to have facilitated student-centered, contextualized, and applied learning.

It is therefore not surprising that FYS participants transferred their knowledge to new situations. Students reported applying their FYS-related learning to other courses as well as to other college experiences, including support services. They were able to perform FYS-learned skills and knowledge successfully within the context of new courses during a new semester. Often, they noted explicitly that they were able to do so due to their FYS experiences. It appears that because the skills, knowledge, and habits taught in FYS are fundamental to academic success, once FYS students applied their learning to new courses, they experienced more positive academic outcomes, as compared with other BCC students not enrolled in FYS.

Such application is additional evidence that FYS may lay the groundwork for sustained positive outcomes. Given the data indicating that students were able to apply their FYS-gained skills and knowledge, it is not unreasonable to assume that they will continue to engage in behaviors that promote sustained academic success, such as meeting with advisors and managing their time well. Therefore, it is sensible to expect their academic success to continue.

Although this study finds promising evidence that FYS leads to positive early outcomes and has the potential to contribute to longer-term academic success, it has a number of weaknesses that must be acknowledged. First, both quantitative and qualitative data are drawn from students' early enrollment periods (extending, in the case of the quantitative data, to 1.5 to 2.5 years of total enrollment, depending on the cohort). So, while these data indicate that FYS is associated with longer-lasting positive outcomes than has been found for students enrolled in more typically structured success courses, and that FYS students were able to apply FYS-related learning in subsequent courses, the data presented here cannot speak to longer-term impacts such as credential completion. Longer-term follow-up is clearly warranted.

Second, the propensity score analyses follow first-year students for only up to five semesters and utilize only those characteristics that are available in BCC's database. As noted, the analyses cannot account for unobserved characteristics. More motivated, dedicated, or savvy students may opt to take FYS, and the apparent impact of FYS may be driven by these student characteristics rather than by course experiences.

Third, to be more explicit, these findings are not causal. Neither propensity score matching nor the qualitative data can prove that students' positive outcomes and applied learning are the result of FYS rather than some other influence. It is likely, for example, that students engaged in other forms of learning concomitantly with FYS—they may have engaged with the college campus and peers on their own, they could have learned college success skills from professors or friends, or they could have matured over time, enabling them to better engage with college-related demands over the course of the school year. Future research should address questions of causality, but for the purposes of this paper, we acknowledge that our findings are *suggestive* of learning-for-application due to FYS participation rather than definitive evidence of it.

Nonetheless, this paper provides strong suggestive evidence that FYS leads to sustained rather than fading positive student outcomes. The use of contextualized, thematic instruction coupled with a course structure that encourages applied pedagogies and opportunities for student practice appears to encourage student success. Moreover, students appear able to apply their FYS-gained skills and knowledge in new situations during their second semester, and there is little reason to think that they would stop doing so in their subsequent semesters of enrollment. Thus, FYS appears to be a promising model for the reform and improvement of student success courses.

References

Alfieri, L., Brooks, P. J., Aldrich, N. J., & Tenenbaum, H. R. (2011). Does discovery-based instruction enhance learning? *Journal of Educational Psychology, 103*(1), 1–18.

Anderson, J. A., & Adams, M. (1992). Acknowledging the learning styles of diverse student populations: Implications for instructional design. *New Directions for Teaching and Learning, 1992*(49), 19–33.

Aud, S., Wilkinson-Flicker, S., Kristapovich, P., Rathbun, A., Wang, X., & Zhang, J. (2013). *The condition of education 2013* (NCES 2013-037). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Bailey, T., Jaggars, S. S., & Jenkins, D. (2015). *Redesigning America's community colleges: A clearer path to student success*. Cambridge, MA: Harvard University Press.

Boudreau, C. A., & Kromrey, J. D. (1994). A longitudinal study of the retention and academic performance of participants in freshmen orientation courses. *Journal of College Student Development, 35*(6), 444–449.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.). (2000). *How people learn: Brain, mind, experience, and school.* Washington DC: National Academies Press.

Bransford, J. D., & Stein, B. S. (1993). *The IDEAL problem solver: A guide to improving thinking, learning, and creativity* (2nd ed.), New York, NY: W. H. Freeman.

Braxton, J. M., Milem, J. F., & Sullivan, A. S. (2000). The influence of active learning on the college student departure process: Toward a revision of Tinto's theory. *Journal of Higher Education, 71*(5), 569–590.

Century, J., Rudnick, M., & Freeman, C. (2010). A framework for measuring fidelity of implementation: A foundation for shared language and accumulation of knowledge. *American Journal of Evaluation, 31*(2), 199–218.

Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE bulletin*.

Cho, S.-W., & Karp, M. M. (2012). Student success courses *and educational outcomes at Virginia Community Colleges.* (CCRC Working Paper No. 40). New York, NY: Columbia University, Teachers College, Community College Research Center.

Chi, M. T. H. (2009). Active-constructive-interactive: A conceptual framework for differentiating learning activities. *Topics in Cognitive Science, 1*(1), 73–105.

Davidson, J. E., Deuser, R., & Sternberg, R. J. (1994). The role of metacognition in problem solving. In J. Metcalfe & A. E. Shimamura (Eds.,), *Metacognition: Knowing about knowing* (pp. 207–226). Cambridge, MA: MIT Press.

Hiebert, J. S., & Grouws, D. A. (2007). The effects of classroom mathematics teaching on students' learning. In F. K. Lester, Jr., (Ed.), *Second handbook of research on mathematics teaching and learning* (pp. 371–404). Charlotte, NC: Information Age Publishing.

Karp, M. M., Bickerstaff, S., Rucks-Ahidiana, Z., Bork, R. H., Barragan, M., & Edgecombe, N. (2012). *College 101 courses for applied learning and student success.* (CCRC Working Paper No. 49). New York, NY: Columbia University, Teachers College, Community College Research Center.

Karp, M. M., & Bork, R. H. (2014). "They never told me what to expect, so I didn't know what to do": Defining and clarifying the role of a community college student. *Teachers College Record, 116*(5), 1–40.

Karp, M. M., O'Gara, L., & Hughes, K. L. (2008). *Do support services at community colleges encourage success or reproduce advantage? An exploratory study of students in two community colleges* (CCRC Working Paper No. 10). New York, NY: Columbia University, Teachers College, Community College Research Center.

King, A. (1994). Guiding knowledge construction in the classroom: Effects of teaching children how to question and how to explain. *American Educational Research Journal, 31*(2), 338–368.

O'Gara, L., Karp, M. M., & Hughes, K. L. (2009). Student success courses in the community college: An exploratory study of student perspectives. *Community College Review, 36*(3), 195–218.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research* (Vol. 2). San Francisco, CA: Jossey-Bass.

Perin, D., & Hare, R. (2010). *A contextualized reading-writing intervention for community college students* (CCRC Brief No. 44). New York, NY: Columbia University, Teachers College, Community College Research Center.

Rosenbaum, J. E., Deil-Amen, R., & Person, A. E. (2006). *After admission: From college access to college success*. New York, NY: Russell Sage Foundation.

Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika, 70*(1), 41–55.

Roksa, J., Davis, J., Jaggars, S. S., Zeidenberg, M., & Cho, S.-W. (2009). *Strategies for promoting gatekeeper course success among students needing remediation: Research report for the Virginia Community College System*. New York, NY: Columbia University, Teachers College, Community College Research Center.

Rutschow, E. Z., Cullinan, D., & Welbeck, R. (2012). *Keeping students on course: An impact study of a student success course at Guilford Technical Community College.* New York, NY: MDRC.

Schnell, C. A., & Doetkott, C. D. (2003). First year seminars produce long-term impact. *Journal of College Student Retention, 4*(4), 377–391.

Scrivener, S., Sommo, C., & Collado, H. (2009). *Getting back on track: Effects of a community college program for probationary students.* New York, NY: MDRC.

Strumpf, G., & Hunt, P. (1993). The effects of an orientation course on the retention and academic standing of entering freshmen, controlling for the volunteer effect. *Journal of the Freshman Year Experience, 5*(1), 7–14.

Tinto, V. (1994). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago, IL: University of Chicago Press.

Weiss, M. J., Brock, T., Sommo, C., Rudd, T., & Turner, M. C. (2011). *Serving community college students on probation: Four-year findings from Chaffey College's Opening Doors program.* New York, NY: MDRC.

Yamasaki, K. (2010). *Enrollment in success courses: Credential completion rates and developmental education in the North Carolina Community College System* (Master's thesis). Durham, NC: Duke University, Sanford School of Public Policy.

Zeidenberg, M., Jenkins, D., & Calcagno, J. C. (2007). *Do student success courses actually help community college students succeed?* (CCRC Brief No. 36). New York, NY: Columbia University, Teachers College, Community College Research Center.