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Using Faculty Learning Communities to Link FYE and High-Risk Core Courses: A Pilot Study

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Abstract

Can success rates in a gateway course be improved by linking it to a college success course? This article describes the results of a pilot study that linked a first-year biology course that had a high drop-out and failure rate to a college success course that included study skills. The proposal to link courses came from the work of a faculty learning community aimed at sharing strategies for increasing engagement in first year courses. Faculty involved in the link worked closely together. The college success course used biology content to provide hands-on study skills applications for students. The results illustrate that students in the pilot program did significantly better in the biology course as well as in their overall fall GPA than students in the same biology course who were not in the learning community.

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Using Faculty Learning Communities to Link FYE and High-Risk Core Courses: A Pilot Study

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There is little doubt that learning communities are beneficial for first-year students (Hotchkiss, Moore, & Pitts, 2006; Yale, Brinjak, & Longwell, 2004). The focus of this study is on a particular type of learning community where a high-risk core course was paired with a college success course. A pilot study was conducted linking a first-year biology course with high dropout and failure rates to a college success course that included study skills and strategies. The college success course used the content of biology to provide hands-on study skills applications for students. Results illustrate that students in the pilot program did significantly better in the biology course as well as in their overall fall GPAs than students in the same biology course who were not in the learning community.

Learning communities have a long history dating back to the early 20th century (Smith, MacGregor, Matthews, & Gabelnick, 2004). Though they have evolved over the years, the major premise remains the same: enhancing higher education through class construction and innovative teaching methods. A learning community is defined as “a variety of curricular approaches that intentionally link or cluster two or more courses, often around an interdisciplinary theme or problem, and enroll a common cohort of students” (Smith et al., p. 20). Learning communities have been shown to increase study skills, to promote connections with faculty, to create a sense of belonging to the university, to increase grade point averages, and to improve retention (Gardner, Upcraft, & Barefoot, 2005; Laufgraben, 2005; Laufgraben & Shapiro, 2004; Smith et al., 2004; Swing, 2004; Fink, 2003; Barefoot, Fidler, Gardner, Moore, & Roberts, 1999). This study adds to the body of knowledge about learning communities by

focusing on the impact of linking a college success course with a high-risk core course through a faculty learning community.

Learning Communities

First-Year Seminar Learning Communities

First-year seminars are becoming an integral component to many university first-year programs across the country (Kuh, Kinzie, Shuh, & Whitt, 2005; Kuh, 2005; Hunter & Linder, 2005). They are seen as an excellent way to introduce entering students to the college experience. After considering the success of first-year seminars, many universities are adding learning communities to their first-year programs. These learning communities are created when the first-year seminar is linked with another course. The positive effects of these learning communities are far reaching compared to stand-alone first-year seminars. A study conducted by Swing (2004), which utilized the First-Year Initiative Benchmarking Survey, found that many improvements were made for participating students. For example, there was a 16% increase in peer-to-peer connections. “The Connections with Peers Factor is based on three response items about the degree to which the course improved the student’s (a) efforts to get to know students in classes, (b) ability to meet new people with common interests, and (c) ability to establish close friendships with peers” (Swing, p. 12). Because of the shared courses, students felt more comfortable engaging in friendships with classmates. By establishing friendships, students “reported a 6% higher mean score on overall satisfaction with the college they are attending” (Swing, p. 9).

A study conducted at Georgia State University by Hotchkiss, Moore, and Pitts (2006) sought objective evidence regarding the efficacy or inefficacy of learning communities. The authors focused on three major points: academic performance during the first semester, persistence in academic performance, and retention. The researchers found that “belonging to a freshman learning community increases a student’s GPA from about three-quarters to one full letter grade, depending on the student’s race and gender” (Hotchkiss et al., p. 207). Concerning academic persistence, “the impact of a freshman learning community on academic performance diminishes after the first semester, but still has a positive and significant 0.34 boost to the student’s cumulative GPA one year after enrolling in a freshman learning community” (Hotchkiss et al., p. 205).

Research on First-Year Seminar Learning Communities

In 2000 and 2001, Slippery Rock University instituted several Learning Community Clusters/First-Year Studies seminar programs. The

learning communities consisted of a major-specific course or a core class, and a first-year seminar. At the end of the semester, students were given surveys regarding their satisfaction with the university. In both of the years the tests were administered, students who were enrolled in the seminar program indicated much greater satisfaction with the university. Most notably, in 2001 students enrolled in the seminar program showed higher satisfaction with the university and “were found to be significantly more likely to access student services than non-participants” (Yale, Brinjak, & Longwell, 2004, p. 103). The researchers felt that the seminar program educated students on available resources and services at the university, increasing the students’ level of integration into the campus. This study also demonstrated that students admitted to the university under special circumstances (i.e., on academic probation) and enrolled in the seminar program were “retained at a significantly higher rate than similarly prepared students who did not participate” (Yale et al., p. 105).

Faculty Learning Communities at West Texas A&M University

Like many colleges and universities, West Texas A&M University (WTAMU) realized in recent years that courses in the core curriculum were among the courses most often failed by students and that many students do not understand the reasons behind the group of classes they are required to take. In addition, these courses are often the ones least favored by faculty, so many core courses are taught by faculty with the least experience or part-time instructors. Because of this, the administration made a conscious decision to revamp the core curriculum, hoping to make the academic basis for all WTAMU degrees a more engaging, challenging, productive, and connected group of courses that prepare students for their upper-level work.

To this end, in the spring of 2005, a faculty learning community was established called Core Fellows. Faculty who taught core curriculum courses were recruited to join the program in an effort to energize these faculty members and to increase the level of first-year student success in these classes. The 15 recruited faculty members met monthly throughout the next academic year, observing one another’s courses, sharing innovative teaching strategies, and building a learning community of instructors focused on student learning in core classes.

In the second year of Core Fellows, faculty members teaching core courses were recruited to join in spring 2006 and began to meet as a group at the beginning of the 2006–2007 academic year. This year, the program started with a two-day workshop where teaching strategies, goals for the coming year, and community building were the priorities for the group.

Returning fellows became mentors to the new recruits, and groups were established so that each member had a sense of belonging to a smaller group as well as to the larger program. Time was intentionally spent in the definition and establishment of a learning community where the group of 18 faculty could ask questions, practice new technologies, and discuss pedagogy with an overall goal of making their core courses more engaging for students.

Student Learning Communities at West Texas A&M University

Core Fellows evolved into another campus initiative for the 2007–2008 academic year. Realizing the benefit of the learning community for the previous group of Core Fellows, it was decided that the next recruited group would bring this to the students through linked courses. This meant faculty members joined as pairs and coordinated the content and process of their courses for the benefit of the students. Ten pairs of faculty members worked to develop relationships with one another, to identify relationships between their courses, and to create themes that described this connection during the summer of 2007. Linked classes were marketed extensively at the new student orientation sessions held throughout the summer; students enrolled in both of the linked courses or could not enroll in either. This created learning communities of approximately 22 students who were in the two classes together and two faculty members who were, at minimum, aware of the other course, and, at best, using examples and ideas from both areas in the teaching of their individual content.

As with all new programs, some of the components worked more effectively than others. Some faculty members visited one another's classes, while others communicated only by e-mail. Some met regularly to discuss the process, but others did not. Some courses were scheduled consecutively so students walked together from one class to the other. Others met on different days so the students saw one another every day of the week. The level of integration of the linked material also varied since integrating the material was more difficult in practice than it had seemed in development, and faculty members had the challenging task of making the link work in many of the courses chosen.

Each learning community had a peer leader as part of the group who planned out-of-classroom activities for the students during the semester. The group worked on a service learning project related to the theme, also chosen and led by the peer leader. The peer leader maintained contact with the students throughout the spring 2008 semester, extending the support gained from the learning community experience.

Though many universities have used learning communities, the researchers wanted to focus on linking a high-risk core class with a college success course. In order to explore this concept, a pilot program was established to link a college success course with a core biology course, chosen because it was identified as a high-risk course with drop and failure rates well above 50%. In this situation, the instructor teaching study skills in the college success course could use material from the biology course to illustrate note-taking and study-skills techniques.

For this research, the following research question was posed: In what ways does linking a college success course with a high-risk core course impact student success?

Method

Participants

In this pilot study, there were a total of 45 students enrolled in the introductory biology course, BIOL 1406. Of that number, 19 (42%) were also enrolled in a college success course to form a learning community. The 19 first-year students in the learning community were in their first semester. There was a mix of genders and ethnicities in both the learning community and the non-learning community group. The university male-to-female ratio for the first-year class is 58% female and 42% male. The learning community had a slightly different ratio and was comprised of 63.2% females ($n = 12$) and 36.8% males ($n = 7$). The non-learning community had fewer females and was comprised of 53.8% females ($n = 14$) and 46.2% males ($n = 12$). In terms of ethnicity, the learning community had more diversity with 73.7% classified as white non-Hispanic, 21.1% as Hispanic, and one student (5.2%) as African American. The non-learning community was less diverse with 88.5% classified as white non-Hispanic, 7.7% as Hispanic, and one student (3.8%) as international.

Students in both groups were roughly equal in terms of standardized test scores. For the learning community, the mean ACT score was 21, and the mean SAT score was 1025. For the non-learning community, the mean ACT score was 20, and the mean SAT score was 1099.

Procedure

To determine the differences between the learning community and the non-learning community, individual test scores, overall course grades, semester GPAs, and fall-to-fall retention numbers were collected for the students in BIOL 1406. This procedure was approved by the Institutional

Review Board. The learning community scores were then compared to the non-learning community scores.

A focus group was also conducted with the learning community students during a session of their college success course. This focus group was conducted by an outside evaluator to ascertain student perceptions about the linked courses. Standardized questions were asked and every response was recorded. This was done in an attempt to gather qualitative data about the reactions of the learning community students to the unique link between their college success course and their biology course. It was hoped that using the qualitative data along side the quantitative data will provide a more robust assessment of the pilot project and make concrete suggestions for future learning community pairings and assignments.

Results

When comparing the test results and course grades between the learning community students and the non-learning community students for BIOL 1406, the evidence strongly suggests the linked courses produced greater student success. For the introductory biology course, the final grades were largely determined equally by scores on four tests. Independent sample *t* tests were run to compare the two groups in terms of their test scores. Though students in the learning community scored higher on every test than those in the non-learning community, there was not a significant difference until the third and fourth tests and the combined test scores. Table 1 provides specific means for each exam between the students in the learning community versus those students enrolled in the exact same section who were not involved with the learning community.

These results indicate that students enrolled in the learning community experienced greater success than their comparison group. Not only did the learning community students do better in biology, but also their success in this course was transferable to their overall course grades and their GPAs at the end of the fall semester. The learning community students had higher overall course grades and higher GPAs than their non-learning community counterparts did.

The other area of significant difference between the learning community and non-learning community was in terms of fall-to-fall semester retention. Students in the learning community had a much higher retention rate than their non-learning community counterparts. Students in the learning community had a drop and failure rate of 15% for biology compared to non-learning community students who had a drop and failure rate of 24% in biology. The drop and failure rate for students in the 10

other biology sections was 27%. This is especially interesting because the comparison was between students who came in with equal abilities and were in the exact same biology course.

Table 1. Comparisons Between Linked and Non-Linked Biology Test Grades

Test results	Mean	Standard deviation	t value	Sig.
Test 1				
Linked biology	71.11	15.96	0.59	0.27
Non-linked biology	68.54	12.99		
Test 2				
Linked biology	73.00	15.64	0.07	0.06
Non-linked biology	65.42	16.41		
Test 3				
Linked biology	77.50	18.18	0.02*	0.02
Non-linked biology	65.81	17.95		
Test 4				
Linked biology	79.17	21.73	2.31**	0.01
Non-linked biology	64.77	19.33		
Combined test scores				
Linked biology	75.20		4.40**	0.002
Non-linked biology	66.14			

* $p < .05$. ** $p < .01$.

There was also a significant difference between the overall success of students. The overall course grade for students in the learning community was statistically higher than for students in the non-learning community ($p < .01$). In addition, the overall GPA for the fall semester was also significantly higher for the learning community students ($p < .05$). Table 2 provides details of these scores.

Table 2. Overall Student Success Measures

Comparisons	Mean	Standard deviation	t value	Sig.
Overall course grade				
LC	84.1	14.64	1.68**	0.01
Non-LC	74.6	14.72		
Overall fall GPA				
LC	3.16	1.00	0.03*	0.02
Non-LC	2.54	1.11		

* $p < .05$. ** $p < .01$.

Discussion

The pilot study supports the notion that learning communities enhance student success, which is consistent with the literature (Gardner et al., 2005; Laufgraben, 2005; Laufgraben & Shapiro, 2004; Smith et al., 2004; Swing, 2004; Fink, 2003; Barefoot et al., 1999). The unique nature of this pilot study is the direct comparison of the influence of learning communities on student learning in ways the literature has not fully captured. This study provides direct comparisons that isolate the influence and effectiveness of learning communities on student outcomes.

Impact of the Pilot Program

The scores for the first exam in the course showed no difference between the students in the learning community and those only in the biology section. This was expected since the learning community students had not spent much time together at this point or worked on their biology test-taking skills. Before the second exam, the college success course instructor and students worked on test preparation for one class period. On the second exam, there was a higher point spread between the averages for each group, though the difference was not significant. At this point in the learning community, the college success course content had not fully explored test-taking strategies, nor had the students developed supportive relationships with each other.

Before the third exam, when students in the college success course arrived for class, walking together from their biology lecture, the instructor immediately engaged in discussions specific to biology. The instructor asked students to discuss the main topics from the lecture, and for 15 minutes at the start of each class, the students discussed their ideas of the main points and memorization techniques for the biology concepts. For the third exam, the difference between the groups was even greater, and this difference showed statistical significance. Students in the learning community also developed study groups that met outside of class at least once before the exam.

The fourth exam had the largest difference in average between the learning community and non-learning community students, 79.17 versus 64.77. This difference was also statistically significant. For the fourth exam, students worked in their college success course engaged in specific strategies targeting learning biology concepts. Students developed possible questions for the exam, which they asked of one another, created illustrations and rhymes to help in remembering the material, and spent 15 minutes of each class reviewing what had been covered in the biology

lecture for the day. Students reported this method was effective in helping them study over a period of weeks rather than cramming the night before. They also reviewed one another's notes, adding in anything they felt was missing, and met at least twice outside of class in their study groups. As one student explained during the focus group, "Without this class, I would not have studied until the test date." Another stated, "Without the link, we would never have had the study groups and would not have passed the tests." Students acknowledged the difference these learning communities made for their success in the biology link.

Comparisons in overall GPA for the semester were also statistically significant. Study and note-taking skills, taught in the college success course to assist in overall college success using the material from the biology class, helped students to develop transferable skills for other classes. As a student observed, "IDS [college success course] taught me several skills for adjusting to college life both inside and outside the classroom. It provided me with resources to the different offices around campus who are here to help students succeed." This student, like other learning community participants, received direct support for study and life-management skills development.

According to Crissman Ishler and Upcraft (2005), relationships and connections with peers and instructors is a major factor in ensuring that students persist. The college success and core course link not only facilitated relationship development, but also provided structure for the relationships. One student said, "It is great to have been able to form these friendships, especially during the tough freshman year. We pushed each other to do our best and provide support for each other."

Students in the college success course worked extensively on time management skills and building supportive relationships with one another so that when assistance was needed, even in other classes, they had peers they felt comfortable asking for help. One student stated, "I felt more comfortable asking others to study with me. If you are struggling, you know who you can go to." Another student explained that the relationships developed in the link were significant to college success. He claimed, "I am doing better in biology or at least trying harder because of the link."

These relationships provide academic and personal confidence that has impact beyond the linked experience. The results of the pilot indicate that students successfully transferred study and time-management skills to other courses. As one student observed, "IDS made my first and second year a lot smoother. I felt more comfortable and also more welcomed to West Texas my freshman year."

Limitations and Future Research

One of the limitations in generalizing the model of the pilot is maintaining a high level of instruction across differing linked courses. In this pilot, the instructors had a proven track record for success and were recognized across campus for their teaching skills and relationships with students. While these were important skills for the link, the success of the high-risk course and FYE course model should be tested with a broader range of instructor experience levels and teaching effectiveness. To help the success of this type of link, faculty learning communities can play an integral role in reinforcing the processes necessary for success.

Another limitation is that the pilot study only reviewed the linked concept through one high-risk course. Extrapolating success from this link to similar links needs further research. As a result, future research should expand to other high-risk course links. West Texas A&M University expanded this pilot program to 12 similarly linked learning communities for fall 2008. The results will provide new insights to the effectiveness of this model and further our understanding of successes in this pilot study.

Conclusion

The pilot study provides direct comparisons between learning community students and non-learning community students in the same biology section. The results are important and significant. The pilot project demonstrates the importance of college success courses and their potential as links with high-risk courses in science, math, English, and history. In each potential link, the college success instructor is not required to have specific content knowledge, but, rather, skill in facilitating learning, motivating students, and developing relationships. Most importantly, the college success instructor involved in such links must develop student expertise and peer support. As one student noted, "A year later, I fell more confident and prepared for the college life than ever and am thankful for its [learning community] part in teaching me." With further research and an extension of this pilot study to additional sections in a variety of high-risk courses, the importance of learning communities can be further demonstrated.

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