Impact of a Living Learning Community Model for First-Year Pre-Pharmacy Students

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Objective. This retrospective cohort pilot study aimed to evaluate the impact on markers of success for first-year, full-time Pre-Pharmacy student participating in a Living Learning Community (LLC) designed for students interested in pursuing pharmacy as a career compared to their peers who did not participate in the LLC.

Methods. Persistence, retention, and progression were measured for LLC student cohorts and compared to their peers who did not participate in the LLC.

Results. Despite comparable admissions characteristics, students participating in the LLC demonstrated statistically significantly higher grade point averages and retention than their peers not participating.

Conclusion. These results suggest that LLC programming may be a valuable contributor to markers of student success.

Keywords: pre-pharmacy, living learning community, retention

INTRODUCTION

High impact educational practices are a set of teaching and learning methods that have been widely studied to show benefits for students from a variety of backgrounds and increase both retention and student engagement. The American Association of Colleges and Universities (AACU) has identified 11 high impact practices which include: first-year seminar experiences, common intellectual experiences, learning communities, collaborative assignments and projects, writing-intensive courses, undergraduate research, diversity and global experiences, e-portfolios, service learning, internships, and capstone courses. Living learning communities (LLCs) offer a less fragmented approach to a student’s academic experience by fostering a sense of deeper learning. This is accomplished by students living together in a residential community and taking at least one class together, as well as integrating course curricula with tangible student experiences outside of the classroom.

LLCs are well documented to have a positive impact on grade point average (GPA), retention, and progression. For example, Stassen examined three different types of learning communities at a large public institution; all three models demonstrated increased first semester academic performance and first to second year retention despite differences in student selection (first-come, first-served versus application only), major of study (single versus a mix of majors) and residential living requirement. These results indicate that any efforts to create learning experiences alongside of the curriculum and increased connections between what is learned within the classroom to what is learned outside of the classroom may have lasting benefits for students in measured areas of success such as GPA. This is particularly of importance for undergraduate pre-pharmacy students who typically begin to apply to pharmacy schools during their second year of college. The first undergraduate year is followed by the opening of the pharmacy school admissions cycle, with Early Decision applications due in early September of their second year of undergraduate studies, thus these students only have one year of courses. Additionally, increased retention efforts are also desirable as applications to pharmacy schools decline nationally.

Connections, support, and transformative experiences allow students to immediately become immersed within the university, major, and community as new students, thus enabling a pattern of involvement early within their academic career. Additionally, LLCs bring students and faculty together outside of the classroom, as well as inside of the classroom, which may have a significant positive impact on student success. Spanierman and colleagues’ insights were particularly meaningful in relation to creating a sense of belonging amongst marginalized groups of students. They utilized measures of social and academic support, leadership development, and multicultural experiences to be a representation of meaningfulness associated with the LLC. This creation of meaningfulness was proposed to fosters sense of belonging within the community based on shared experiences. A study by Bauer and Kiger also supports the concept of meaningfulness, support, and connection created by the LLC amongst nursing students. These results may be
applicable to students within a pre-pharmacy major due to the unique challenges associated with a short program of study prior to professional schooling.8,11

The University of New England (UNE) has created a pre-pharmacy program designed to: 1. Foster connections and provide support intended to assist in making informed decisions and identity formation, both individual and cohort. 2. Provide transformative experiences that further support resume building and generate confidence for future experiences. 3. Increase the success of its’ students throughout their education. The three components of this pre-pharmacy program include advising and mentoring, classroom and experiential engagement, and optional participation within a first-year LLC. All first-year pre-pharmacy students were provided advising and mentoring, as well as classroom and experiential engagement opportunities. Students who participated in the LLC live on the same residential floor and take at least one class together each semester for their first year of undergraduate studies (fall and spring semester). Commuting students were also allowed to participate in all of the LLC activities and classroom experiences, without the residential component.

Year-long LLC programming is offered to participating students, as well as additional access to upperclassmen and others within the pharmacy community. Examples of LLC programming include an early orientation with cohort team building, a meal and conversation with pharmacy students, programming designed to connect students to resources and support services at the university, and an off-campus trip to volunteer at a pharmacy student community service project. Weekly events in the first month were followed by monthly or twice monthly events throughout the rest of the year. Events were jointly planned and coordinated by the First Year Experience Coordinator and the faculty member. From year to year, events varied based on availability and student preference. Most students attended planned events, as the resident assistant was present to encourage attendance, although attendance was not mandatory. This pilot study aimed to evaluate the impact on markers of success for those participating in the LLC compared to their peers.

METHODOLOGY

Subjects

Students included in this study were first-year, full-time students beginning in a fall term and declaring a pre-pharmacy major at UNE. Students who transferred into the pre-pharmacy program from another major or college at any point past their first semester were excluded from this study.

Procedures

This was a retrospective cohort study. The LLC began in the fall of 2016. Data were collected from 2014-2018, thus 5 years of data were obtained on students not participating in the LLC and 3 years of data for students participating in the LLC. Cohort 1 was defined as students who participated in the LLC. Cohort 2 was all five years of students who did not participate in the LLC. Cohort 3 is a subset of cohort 2 defined as the students who chose not to participate in the LLC during the three years it was available. Data were obtained on the following variables: admissions characteristics, persistence and retention of the student across the study years, progression to being a student at UNE College of Pharmacy (COP), and GPA during their first year as pre-pharmacy students.

For this study, the markers of success were GPA, persistence, retention, and progression. Persistence was defined as the student continuing at the university from the fall to spring academic terms. Retention was defined as the student enrolled at the university during a subsequent fall term from when they began at the university. Progression was defined as being ‘on-time’ if the student successfully moved from the pre-pharmacy program to the UNE COP in either two or three years of initial enrollment in the pre-pharmacy program. The project was approved by the Institutional Review Board of UNE.

Analysis

Data were both manually entered into an Excel spreadsheet and exported into the sheet from the university reporting system and subsequently analyzed using IBM SPSS version 25. Descriptive statistics were performed using means and percentages. T-tests and Chi-square tests were used to compare Cohorts 1, 2, and 3 for admissions characteristics, GPA in their first two semesters of college, and persistence, retention, and progression at the university. For all variables, Cohort 1 was compared to both Cohort 2 and Cohort 3. A p value of less than .05 was considered significant.

RESULTS

Seventy-eight students participated in the LLC (Cohort 1) and 135 students did not participate in the LLC over the 5 years (Cohort 2). Of the 78 LLC students, 6 were commuting students and the other 72 lived within the LLC residential community. 46 students chose not to participate in the LLC during the three years it did exist (Cohort 3). Table 1 shows the admissions characteristics for the cohorts of students. Students in the cohorts were comparable upon admission to the university based upon high school GPAs and Scholastic Assessment Test (SAT) scores.
The first semester GPA for Cohort 1 students was 3.49, while the GPA for Cohort 2 was 2.99 (t=-6.7; p<.01). The first semester GPA for Cohort 3 was 3.12 compared to Cohort 1’s GPA of 3.49 (t=-3.8; p<.01). The second semester GPA for Cohort 1 was 3.15, while the GPA for Cohort 2 was 2.85 (t=-2.5; p=.02). Comparing Cohort 1 to Cohort 3 showed that the second semester GPA for Cohort 3 was 2.60 (t=-2.9; p=.01). Thus, students in the LLC achieved statistically significantly higher course grades than students not participating.

Table 2 shows the persistence, retention and progression results for LLC and non-LLC students. As seen in the table, nearly all students persisted at the university between the fall and spring of their first year. Non-LLC students’ year one retention was statistically lower than LLC students. While not statistically significant, there was a trend for LLC students to have better second-year persistence from fall to spring semester. About half of LLC students had a successful on-time progression, whereas, approximately one-third of non-LLC students successfully progressed.

DISCUSSION

Similar to other studies of LLC’s, statistically significant results were obtained for success markers within the LLC, as defined previously, for GPA and year one retention, despite having similar high school GPAs and SAT scores upon admission to UNE.\(^\text{12}\) Similarly, Stassen found a statistically significant positive effect on first-term GPA, as well as year one retention across three different LLCs despite programmatic differences, even when controlling for admissions characteristics including high school GPA and SAT scores, as well as several others.\(^\text{4}\) Also, Baker and Pomerantz found that students enrolled within learning communities at a commuter metropolitan university earned statistically significantly higher first semester GPAs.\(^\text{13}\)

Creating opportunities that foster interpersonal connections may contribute to the results generated from this study, as has been found by Inkelas and Weisman.\(^\text{14}\) Factors may include living in close proximity, attending many of the same classes together, and the likelihood that students chose to study together. While all students received advising and mentoring, the students in the LLC had additional programming that created opportunities that increased connection with their faculty advisor and the Coordinator of the First-Year Experience program. This increased access to and support from faculty and professional staff may also have contributed to the differences seen in the results, as this has previously been reported in the literature as a factor promoting student persistence by Pike, Schroeder, and Berry.\(^\text{15}\)

Perhaps the largest limitation of this study is that students self-selected into the living learning community. While the faculty advisor individually engaged all deposited students about the LLC program and its potential benefits, some students opted not to participate. Therefore, students who self-select into the LLC may have higher levels of motivation and focus. Additional limitations to this study may include the researchers’ inability to control for numerous factors that may affect markers of success such as first-generation, low income, and/or underrepresented populations.

Taken together, these results imply that potential benefit may outweigh costs to the institution, as students were already living on campus, taking these courses, and interacting with faculty. The packaging of these offerings is slightly different, although marketing and costs of promotion were minimal and utilized as part of the admissions process. True costs may be realized as the cost of increased correspondence between student affairs and faculty, as well as increased contact time with faculty. It is arguable that these benefits should be a mainstay of practice in any institution regardless.

CONCLUSION

As this was a pilot study with small cohort numbers, our data are preliminary. As the LLC is only three old, no students have graduated from pharmacy school yet who participated in the LLC. Future analyses could include data for graduating pharmacy students, GPA trends within pharmacy school, self-reported student gains on the impact to their engagement, and career-ready skills.

This study provides preliminary evidence that a LLC for pre-pharmacy students supports student success as measured in terms of GPA and retention. Our results may be limited by student self-selection into the community who may be more likely to succeed. Regardless, this study illustrates the importance of supporting programs such as this as a key initiative for student success.

REFERENCES


Table 1. Comparison of Students Participating in an LLC and Those Not Participating Based Upon Admission Characteristics

<table>
<thead>
<tr>
<th>Admission characteristic</th>
<th>Cohort 1*&lt;br&gt;(n=78)</th>
<th>Cohort 2*&lt;br&gt;(n=135)</th>
<th>Cohort 3*&lt;br&gt;(n=46)</th>
<th>p value*&lt;br&gt;(Cohort 1 to 2*)</th>
<th>p value*&lt;br&gt;(Cohort 1 to 3*)</th>
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</thead>
<tbody>
<tr>
<td>High School GPA</td>
<td>3.34</td>
<td>3.30</td>
<td>3.31</td>
<td>.64</td>
<td>.79</td>
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<tr>
<td>Math SAT</td>
<td>559</td>
<td>552</td>
<td>536</td>
<td>.65</td>
<td>.31</td>
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<tr>
<td>Verbal SAT</td>
<td>539</td>
<td>528</td>
<td>538</td>
<td>.49</td>
<td>.98</td>
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<tr>
<td>Total SAT</td>
<td>1101</td>
<td>1081</td>
<td>1073</td>
<td>.47</td>
<td>.51</td>
</tr>
</tbody>
</table>

*Cohort 1=students participating in the LLC; Cohort 2=all students not participating in the LLC; Cohort 3=students not participating in the LLC when it was available

*p value* Results from t-tests

GPA=grade point average; SAT=scholastic assessment test
Table 2. Comparison of Students Participating in an LLC and Those Not Participating Based Upon Persistence, Retention, and On-Time Progression at the University

<table>
<thead>
<tr>
<th>Admission characteristic</th>
<th>Cohort 1* (%)</th>
<th>Cohort 2* (%)</th>
<th>Cohort 3* (%)</th>
<th>p value+ (Cohort 1 to 2*)</th>
<th>p value+ (Cohort 1 to 3*)</th>
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<tr>
<td>Persistence year 1</td>
<td>92.3</td>
<td>91.3</td>
<td>95.7</td>
<td>.91</td>
<td>.46</td>
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<td>Persistence year 2</td>
<td>82.8</td>
<td>72.3</td>
<td>70.0</td>
<td>.11</td>
<td>.16</td>
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<tr>
<td>Year 1 to 2 retention</td>
<td>88.5</td>
<td>76.3</td>
<td>73.9</td>
<td>.03</td>
<td>.04</td>
</tr>
<tr>
<td>Year 3 progression to COP</td>
<td>50.0</td>
<td>35.3</td>
<td>30</td>
<td>.05</td>
<td>.07</td>
</tr>
<tr>
<td>Year 3 or 4 progression to COP</td>
<td>53.1</td>
<td>38.7</td>
<td>33.3</td>
<td>.06</td>
<td>.73</td>
</tr>
</tbody>
</table>

*Cohort 1 = students participating in the LLC; Cohort 2 = all students not participating in the LLC; Cohort 3 = students not participating in the LLC when it was available

+Results from Chi-square test
COP=College of Pharmacy