A Mixed-Methods Approach to Understanding the Impact of a First-Year Peer Mentor Program

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Abstract. This study is a mixed-methods research project designed to measure the effectiveness of a peer mentor program in meeting institutional goals such as increased academic performance and retention. The results suggest that peers are useful in helping students manage the demands of the first year by normalizing the experience and linking the students to campus supports. The results also demonstrate a relationship between first-year students who interact with a peer mentor and increased academic performance; however, the link to retention is not as clear. More research, over a longer time frame, is needed to understand the factors that affect retention. The intention of this research is to contribute to the growing body of literature that helps practitioners champion retention initiatives that respond to the holistic needs of first-year students.

Peer programs are initiated fora variety of reasons, including fostering success among first-year students, connecting students to a major, helping athletes balance the demands of a high-performance sport with the rigors of academia, and bringing together like-minded students for social causes. Whatever the reason, peer mentor programs seek to have more advanced students engage, teach, recruit, and retain first-year students. While postsecondary environments engage peers as mentors with a general understanding that this is a good way to assist students, there is little evidence to suggest an impact on institutional goals (Budge, 2006; Crisp & Cruz, 2009; Gershenfeld, 2014). This project was designed to investigate the effect of a peer mentor program on institutional goals, such as improved academic performance and lower attrition rates between first and second year, and is an important piece of research linking student affairs activity with critical institutional priorities.

Literature Review

It has long been understood that the first year of college for students who enter directly from high school is filled with significant transition issues (Pascarella & Terenzini, 2005), many of which are related to the different level of academic expectations accompanying postsecondary studies. These academic demands are coupled with the challenges of leaving home for the first time, making new friends, learning new life skills, and balancing a variety of distractions. For some students, the combined effect of these factors is overwhelming and negatively affects their experience. Students who fail to navigate these new demands leave the institution for alternate paths, more markedly after their first year (Upcraft, Gardner, & Barefoot, 2005).

Historically, student retention was thought to be solely related to the individual characteristics of the student (Tinto, 2006). Thus, if the institution recruited motivated, mature, and academically qualified students, attrition would not be a problem (Hossler & Anderson, 2005). However, even though institutions crafted stringent admissions policies to attract increasingly high-qualified applicants, retention remained a problem (Tinto,2005).As a result, institutions turned their attention to mitigating some of these challenges by focusing on students' environment (Krause,2006; Krause & Coates, 2008; Seifert, Arnold, Burrow & Brown, 2011). More recently; retention is thought of as a by-product of a high-quality student experience (Tinto, 2005; Kuh, 2009). Institutions that invest in programming to enhance a sense of belonging and assist students in making friends increase success and retention in the first year (Pittman & Richmond, 2008; Kuh, 2007). Research studies have suggested that the more students are involved in academic and social activities on campus, the more they benefit in terms of learning and personal development (Kuh, 2009; Pascarella &Terenzini, 2005).As a consequence, a body of literature has developed correlating student engagement with work done in student affairs. Students who are engaged both inside and outside the classroom are more satisfied, perform better academically; develop social networks, and persist at a greater rate (Tinto, 2006; Kuh, Kinzie, Schuh, & Whitt, 2005; Pascarella & Terenzini, 2005).

The literature supports the idea that peer mentor programs may have a variety of positive effects on the first-year student and are introduced in the postsecondary environment for a number of reasons, including the possibility that they aid students' transition to the postsecondary environment, positively affect engagement, and increase retention.

First-year students' unique developmental and cognitive stages lead them to rely on their peers for information more than any other age group (Astin, 1993; Sawyer, Pinciaro, & Bedwell, 1997), and positive interactions between peers can affect students' academic and social development (Kuh, Kinzie, Buckley, Bridges, &Hayek,2006). Some researchers believe an orchestrated peer mentor program helps with transition issues and ultimately retention rates (Goff, 2011). Researchers have indicated these programs positively affect student satisfaction (Sanchez, Bauer, & Paronto, 2006); others report a positive effect on retention and graduation rates (Mee-lee & Bush, 2003; Harmon, 2006). Still others indicate these programs improve self-confidence and self-esteem (Whitney; Hendricker, & Offutt, 2011; Smith-Jentsch, Scielzo, Yarbrough, & Rosopa, 2008).Budge (2006) suggests improved retention rates are a major reason that postsecondary institutions implement peer mentor programs.
The literature describes a wide variety of definitions, goals, and outputs included in peer mentor programs (Crisp & Cruz, 2009). Some are designed for a specific target group or within a specific discipline (Slack &Vigurs, 2006). Some are cohort-driven with the specific goals of increasing student engagement and social integration (Krause, 2006). Others are designed to provide academic interventions (Bonin, 2013; McLean, 2004; Milne, Keating, & Gabb, 2007). Still others have a psychosocial component to help students adjust and try to lower the attrition rate (Hall & Jaugietis, 2011).Nora and Crisp (2007) suggested good peer mentor programs include elements of the following: psychological support, degree and career support, academic interventions, and opportunities for role modeling_ Ferrari (2004) suggested a holistic program that provides social support as well as attending to transition issues can influence the success of the first-year student. The literature helps to emphasize that a peer mentor program responsive to the inclusive needs of the first-year student has the potential for greatest impact. Additionally, the literature suggests there are specific and important aspects to consider in developing mentors for these programs. For instance, a comprehensive orientation for mentors, in addition to ongoing structured support, is essential to creating an effective program (Packard, 2003; Mee-Lee & Bush, 2003, Terrian & Philion, 2008). More formal programs matching students before the start of their first term and having structured meetings and events for first-year students during first term were more successful than programs that did not have regularized contact (Rodger & Tremblay, 2003; McLean, 2004). A high-quality reporting system was important as it provided a good system of feedback and helped with evaluation and program improvements (Mee-lee &Bush, 2003).While the literature revealed some elements of a successful peer program, it was far from prescriptive and allowed for interpretation sensitive to the context. In general, peer mentor programs are believed to have good potential to affect success and retention when built with intentional outcomes and considering the multi-dimensional needs of students. It is this rich body of literature that guided the development of our peer mentor program.

Program Description

The study took place in a small, research-intensive, predominately undergraduate institution that had been established for five years. In 2010, the retention rate for students from first to second year averaged about 23% but was as high as 39%insome programs. Not surprisingly, institutional data suggested a correlation between students who were leaving and weak academic performance. The peer mentor program was introduced in 2010 as a as a pilot project with the hypothesis that the program would provide support for students, increase the opportunity for academic success, and ultimately affect retention. Realizing that results would take some time, the program was developed with a commitment to analyze data over a three-year period.
Each year, the first-year class of approximately 1,800 was divided into cohorts of 30-40 students, with each student matched to a senior student in the same discipline.
The intent was threefold: (a) to provide immediate and ongoing assistance with transition issues, (b) to connect students with academic resources, and (c) to provide navigation in this new and unfamiliar world. To accomplish these goals, the program included regular e-mail correspondence, social events aimed at building a community within the cohort, and interventions and referrals related to academic resources. The 40 to 50 senior students serving as peer mentors were trained and supervised by the First Year Experience coordinator, a staff member in the student development portfolio. The peer mentors were employed 12hours per week for a 10-month term starting in July and ending in April the following year.

Purpose

Criticism in the literature has suggested empirical research on peer mentor programs is lacking (Bonin, 2013; Gershenfeld, 2014; Jacobi, 1991). Previous studies tended to rely on qualitative evidence, causing some to argue external validity was weak (Budge, 2006). Studies lacking in rigorous methodology struggled to adequately link the

findings to the influence of the program (Gershenfeld, 2014; Rodger &Tremblay; 2003).The mixed-methods design was selected in response to this criticism and intends to contribute to the need for empirically based research. However, the authors believed quantitative measurement alone would not tell the full story. The qualitative data helped to explore and perhaps explain the findings from the quantitative data. Correlational analysis was used to indicate relationships between comparison groups and to test for the strength of the relationship (Albright, Winston, & Zappe, 2011).This particular analysis did not attempt to predict a cause-and-effect relationship but rather hinted at relationships between involvement in the peer mentor program and academic success or retention. The present study sought to answer the following questions:

1. What effect does a peer mentor program have on the emotional and social wellness of first-year students?
2. In what way does a peer mentor program contribute to academic success, as defined by GPA, for first-year students?
3. How does a peer mentor program contribute to improved retention of first-year students?

Method

Participants

All new, first-year students were invited to participate in the study and were given a detailed description of the research project in an initial invitation. They were informed their participation was voluntary and they could unsubscribe from the e-mail listserv at any time. Students who voluntarily interacted with a peer mentor from 2010 to 2012 became the population of interest in the analysis (Population A,N = 1,239).Using institutional data, a second matched sample of students who did not interact with a peer mentor during that same time period was created (Population B,N = 4,007). To control for differences in age and educational background, only data for first-year students who had come directly from high school with no previous postsecondary credit and who were 19 years old or younger were included in the analysis. The data-cleaning procedure removed about 8-10% of the students each year but provided a more homogeneous group for analysis.

Data Collection and Analysis

We used a mixed-methods design and employed a sequential explanatory strategy (Patton, 2002)_The qualitative data were used to explain and interpret what was discovered in the quantitative data, which came from two sources: (a) weekly logs of the peer mentors and (b) the institution's student information system. Qualitative data came from focus groups with first-year students.

The weekly logs provided frequency of interaction with peer mentors and type of concerns prompting first-year students to connect with the peer mentors. Initially, the mentors recorded the type of interaction with their students in a variety of ways, making the data inconsistent. To address this concern, the research team developed a guide to help the mentors track the issues more consistently. The categories and corresponding concerns are listed below:

- Emotional/social questions include issues with family, challenges with transition issues, homesickness, social/life balance, medical issues, loneliness, or roommate issues.
- Academic issues include clarification on assignments, information on class projects, clarification of terms, or referral to on-campus academic supports.
- Study skills include APA format, time management, paper writing, or managing the work volume.
- Other concerns include future studies, transferring to Vancouver, Go Global, or practicum placements.

In 2011, the peer mentors were trained to use these categories in their logs to track the concerns motivating a first-year student to make contact. Since the framework was not implemented until 2011, the information from the 2010 logs was not included in the analysis.

Academic success was defined as GPA at the end of the first year. Descriptive statistics of Population A and Population B were compared by GPA. The descriptive statistics such as mean and standard deviation provided a picture of how the populations correlated with GPA, but an independent sample t-test was conducted to look at

the statistical relevance.
The *t*-test compared the categorical variable (population category) to the continuous variable (GPA).
Retention was defined as a student who returned the following year. Retention analysis was performed only on data from years 2010 and 2011, as information for 2012 was not available by the completion of this project. The Pearson chi-square test of correlation was performed to determine whether a relationship existed between first-year retention and contact with a peer mentor.
Focus groups were selected to generate the qualitative data, as they solicit a wide variety of perspectives and increase trust in patterns emerging in the data (Patton, 2002).All first- year students were invited to participate. Three focus groups were held inthespringof2012 and 2013.In 2012, 18 students attended and in 2013, 38 students attended, for a total of56 students in six focus groups. Participants attending the focus groups were predominately female (8696) and mostly domestic (81%). All programs accepting first-year students were represented in the focus groups to varying degrees. The largest number of participants were from the Bachelor of Science in nursing (2896), followed closely by the Bachelor of Science (2696) and Bachelor of Arts (2596) programs. To a lesser degree, there were participants from business (14%), the kinesiology program (5%), engineering (2%), and fine arts (2%).
Each focus group lasted one hour and was facilitated by a staff member in the student affairs division who was not directly responsible for the program. This was intentional and designed to remove any concern that the information students shared could compromise their particular peer mentor or any staff member associated with the program. The facilitator used 10 questions to guide the participants through two major areas: (a) challenges from transitioning to their first year of university and (b) benefits experienced by being involved in the peer mentor program.
Each focus group was digitally recorded, transcribed, and then independently reviewed by three different reviewers. Each reviewer identified themes based on the number of times students mentioned an item or concern. Each reviewer assigned a title to the theme they identified and then cross-referenced their themes and indexed them against one another. This method of triangulating and mapping the themes (Ritchie &Spencer, 1994) was used until all three reviewers agreed both on the name of the theme and its significance for the students. In this sequential explanatory case study, the themes generated from the focus groups helped to explain the patterns determined in the quantitative data.

Limitations
A sophisticated regression analysis attempting to look at personal characteristics of students who engaged with a peer mentor would have provided very useful statistics, but these variables were not collected during this project. The inability to predict or infer from this study is a limitation and contributes to the body of literature suggesting more rigorous design is an important consideration. However, the findings are encouraging and contribute meaningfully to further research.

Quantitative Findings

The weekly logs indicate participation rates of students connecting with a peer mentor grew from 18%in 2010 to 40% in 2012.Thelargest percentage of these (80%) initiated contact from one to five times throughout the year. This has remained true for all three years, with a small percentage (less than 10%) initiating contact more than 10times in a year.
The peer mentor logs also tracked the type of concern prompting a first-year student to initiate contact. According to the peer mentor logs, just under half (47%) of the students initiated contact for emotional or social transition issues. This pattern remained consistent over two years.
Descriptive analyses explored the relationship between peer mentor contact and GPA. The mean and the standard deviation for three cohorts of students are provided in Table 1. In all three years, the *t*-test indicated a statistically significant difference ($p < .001$) between the distribution of GPA and peer mentor contact. In 2010, the effect was significant for students who contacted a peer mentor: $t(238) = 3.67, p < .001$. Similar results were found in 2011 and 2012: $t(1122) = 2.91, p < .001$ and $t(l814) = 2.97, p < .001$,respectively.The null hypothesis could be rejected, establishing a statistically relevant relationship between population group and GPA and specifically indicating a statistically relevant positive relationship between contact with a peer mentor and improved GPA.

Table 1
Impact of Peer Mentor Contact on GPA

	Population A		Population B	
Year	**Mean average**	**Standard deviation**	**Mean average**	**Standard deviation**
2010	71.3(n= 178)	11.3	66.0 (n= 1,444)	14.2
2011	69.5 (n= 547)	11.1	66.7 (n= 1,282)	12.8
2012	70.4 (n= 514)	12.5	68.4 (n= 1.281)	15.2

p< .001

The Pearson chi-square cross tabulation was conducted to determine whether contact with a peer mentor had an impact on retention. Table 2 indicates the percentage of students retained for each year. While the percentage of students interacting with a peer mentor retained into 2011 is higher, it is not statistically significant: x(I, n = 1,292) = .93, p = .33.Asimilar pattern was seen in 2012: x(l, n = 1162) =.02,p = .87.Whilethecross tabs hint at a relationship between peer mentor contact and retention, the Pearson chi-square test results are not statistically significant, indicating the pattern may be due to other unexplained variables.

Table 2
Percentage of Students Retained

Year	**Percentage of students retained for Population A**	**Percentage of students retained for Population B**
2010-2011	76.4	71.3
2011-2012	80.8	79.5

Qualitative Findings

The questions in the focus groups were centered on two main areas: (a) challenges from transitioning to their first year of university and (b) benefits experienced by being involved in the peer mentor program. Themes emerging from these focal areas are described below.

Transition Challenges

Data from the focus groups indicated three main themes in this category: (a) surprising academic expectations, (b) developing self-reliance, and (c) experiencing personal change. In all six focus groups, participants' most common statements related to the shock they experienced with the academic expectations and how difficult it was to maintain good grades. Students said they felt ready to be at the university and had historically been strong students but were surprised by the increased expectations. One student explained, I'm getting B's now whereas before I was like darn, I got an 80 but now if l get a B it's like YES!! This is satisfying but it's definitely a big change" (FG4, 2013).Another student summarized the surprising academic expectations in the following quote:

Keeping up with the work load and the demands like how midterms are all in one week and it's such a strain on everybody and you barely get any sleep during that week. Just a different change from high school. (FG5, 2013)

The second theme identified in transition challenges was building self-reliance. Students in all six focus groups spoke about realizing they had only themselves to depend on and they needed to develop self-reliance. Students spoke of the difficulty with balancing distractions and dealing with procrastination, as evidenced by one participant: it's just so easy to procrastinate you could so easily get distracted by Step Brothers [TV show] or something, you know·(FG6, 2013). Generally; students in all six focus groups noted the challenges with increased autonomy and independence and the need to become self-reliant, as demonstrated in the following quote:

You are kind of on your own as well, there is not a teacher there the next day to check and make sure you did your homework. You are expected to do the readings all on your own, no one makes you do anything in a sense. You have to do it for your own good. (FG 5,2013)

The third and final theme emerging in this category was the transformational nature of the first year. Many students said they thought that first year would be an extension of high school and were surprised by the magnitude of the change. The following quote captures this thought:

It's not like middle school to high school where everything is just a bit harder this is from high school to a whole new life and you have to learn how to transition to that accordingly. (FG6, 2013)

In summary, the focus group participants reflected on their experience during first year and spoke candidly and openly about the challenges they shared. Three themes were cultivated from the data, including (a) the surprising academic expectations, (b) the development of self-reliance, and (c) the transformative nature of the first year. The next section details the benefits the participants described with the program.

Benefits of the Peer Mentor Program

Three themes emerged from the data in relation to the benefits of the peer mentor program: receiving answers to questions, referrals to services, and emotional support. These also are presented in the order of frequency they were reported during the focus groups.

The benefit most often cited to having a peer mentor, especially one in the same discipline, was the valuable and often last-minute advice first-year students received. This advice ranged from items such as clarification on assignment expectations to best places to study. First-year students felt comfortable asking senior student's abroad range of questions, and getting the answers to those questions alleviated stress, as evidenced by one participant:

Even like, one morning for one of my classes I didn't know if I needed a lab coat or goggles so I e-mailed him in a panic. Do I need this for first lab or this ... he was like right away don't worry about it and I knew he knew so I could calm down_ (FG 2, 2012)

The second most-reported benefit of a peer mentor was the connection the mentor made to academic support services. More importantly, the participants in the focus groups suggested the mentors made it feel normal to use academic services:

I like all the help available on campus like with the math and science stuff. My peer mentor was always referring me to those services or inviting me to join a group for studying. I wish I had participated more often. (FG 1, 2012)

The third most-cited benefit of a peer mentor was the emotional support provided. Peer mentors provided help with concerns ranging from homesickness to anxiety about academic issues:

If I am stressed, mine talks me through it. She tries to relate to me about professors and classes. She gives me a heads up about what I'm getting into. It's nice to complain to someone and then they let me know it's 0K.Thathelpswith my learning because if I'm stressed out then I don't learn. (FG 4,2013)

Data from the first-year student focus groups suggested the peer mentor program helped in a variety of ways. Participants predominantly said they appreciated having their questions answered by a peer in the same discipline. They also found the connection to academic services helpful and recognized the emotional support they received from the more senior students.

Discussion

The data indicated the scope and breadth of the program increased over the three years, with about 40% of first-year students voluntarily interacting with a peer mentor by the program's third year. This increase was attributed to many factors but was most likely because of better advertising during the recruitment stage and word-of-mouth from students one year to the next. The data also indicated most students interacted with their peer mentors from one to five times per term, and the mentors indicated in their logs that first-year students mostly contacted them for emotional or social issues. This differed slightly from the responses in the focus groups, where first-year

students indicated they benefited most from the assistance with their academic issues. This discrepancy may be explained by the different perspectives held by the mentor and the mentee: the mentee getting a solution to an academic crisis, and the mentor experiencing the first-year student's anxiety. The academic issue was the root cause of the anxiety, but the mentor perceived that the student was connecting for emotional support. This is an interesting discrepancy and will require more thought from program staff to further refine their training with the mentors and the tracking process. Training mentors to identify and track the root cause will be useful in providing consistent data in the future.

The quantitative data indicated students who interacted with their peer mentors had a statistically significant positive relationship with academic success, as defined by GPA. Specifically, end-of-year GPAs for students who engaged with a peer mentor were, on average, 4% higher than those who did not; this was consistent for all three years. While more research is needed to fully understand why, the focus groups hinted at a few of the reasons this correlation might exist.

Focus group participants suggested two significant benefits of the program. First, the senior peer mentors normalized the experience of having academic challenges in the first year. Helping first-year students, most of whom are used to performing well in high school, understand that it is normal to be overwhelmed in first year was important and helped them feel more secure about reaching out for assistance_ This is an interesting finding and should be highlighted in the training for future cohorts of mentors. The program's second important benefit was the link mentors provided to academic resources. Mentors' knowledge of and ability to refer to resources available on campus has been critical to the success of the program. In this way, the focus group participants helped explain the relationship between interacting with a peer mentor and academic success. It would seem the mentors were not the cause of the mentees' academic achievement but rather a conduit to help first-year students understand the challenges and get appropriate support.

While a greater percentage of students who interacted with a mentor were retained, this finding was not statistically significant. As with academic success, more research is needed to better understand the factors affecting the retention results. Many variables affect first-year student retention, and future research will need to investigate personal attributes contributing to this pattern of retention. Research should also explore environmental considerations, such as type of residence or the types of academic resources accessed, on outcomes. Future research would benefit from an inferential analysis that included a multitude of variables.

Implications

A number of implications are inherent in the design and findings of this project. Some provide guidance to practitioners in the field who are interested in developing a peer mentor program, while others add to the literature on the impact peer mentor programs have on institutional goals such as academic success and retention_ The literature does not provide a blueprint for developing a peer mentor program but rather makes suggestions helpful to the practitioner in considering the holistic needs of first-year students (Ferrari, 2004). However, as practitioners, we work in environments with different pressure points that must be considered in the design. In this instance, unique variables influenced the structure of the program, including the age of the institution, the focus on the undergraduate experience, and the high attrition rate. Practitioners need to consider the unique factors that would mold and shape the development of any such program.

Having the support of senior administration for a peer mentor program was a critical success factor and has been identified in other similar studies (Mee-Lee & Bush, 2003; McLean, 2004). Thus, the program's design cannot be rigid and must respond both to the needs of the first-year student and the context in which it is developed. Our design, which included e-mail correspondence, social events and a focus on academic resources, has proven to be successful.

Similar to Mee-Lee and Bush (2003) and McLean (2004), this research suggests that a more formal approach to the program, with structured times and scheduled events, was important. Harmon (2006) found a high-quality training program that included weekly meetings with the student development staff was critical to the mentor's experience. 1his research concurs with that finding and suggests a comprehensive training program that regularly connects the mentor with a student affairs expert is critical to the project's success, longevity, and outcomes.

One recommendation stemming from this project that seems to be missing in the current literature is the inclusion of an inviting online presence. Mentors are interacting first and foremost with their constituent group via e-mail and social media; thus, these interactions need to be guided and cultivated to increase the chance of engagement

by first-year students. A comprehensive online presence should be an integral part of any future peer mentor programs.
Additionally, this research contributes to the growing body of literature suggesting peer mentor programs can and should be rigorously measured (Budge,2006) and provides some guidance on how to do that with a mixed-methods design. It also contributes to the literature suggesting peer mentor programs have a relationship with academic success (Rodger &; Tremblay; 2003; Goff, 2011) and a more satisfactory first-year experience (Sanchez, etal., 2006). 1hisproject did not find a statistically significant correlation between participation in peer mentoring programs and retention for first-year students, underscoring the need for more research to investigate the multitude of variables affecting retention.

Conclusion

The research was guided by three questions:

- What effect does a peer mentor program have on the emotional and social wellness of the first-year student?
- In what way does a peer mentor program contribute to the academic success of the first-year student?
- How does a peer mentor program contribute to improved retention of first-year students on campus?

The project answered these questions and gave direction for future research. A peer mentor program can improve the emotional and social wellness of first-year students by attending to a variety of anxiety-provoking situations. Providing meaningful answers in a just-in-time format reduced anxiety and improved students' ability to manage the multiple demands of the first year. 1his, coupled with the intentional programming that built community, developed friendships, and increased engagement, made the program successful. 1heproject also gave empirical evidence of a relationship between students who interacted with a peer mentor and improved academic success. While the interaction may not have caused this success, findings suggest it was a contributing factor in their improved academic achievement. Having upper-level students normalize the first-year experience and encourage students to make use of resources can be a powerful tool to assist with transition issues.
While the relationship between the peer mentor program and retention was not significant, the overall findings suggest a peer mentor program is a successful tool to engage first-year students, reduce anxiety, and help them use academic resources on campus. Retention and academic success are by-products o fa positive student experience, and a peer mentor program is a relevant and useful way to improve that experience for first-year students.

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