

Flying Towards Success: Aviation Living-Learning Community and Effect of Gpa And Persistence To Graduation

Jason Underhill, M.B.A.¹, David Rolfe, Ed.D.², Bo Li, Ed.D.³

^{1,2}Central Washington University, USA

³St. Ambrose University, USA

Corresponding Author: Jason Underhill, M.B.A

ABSTRACT: *The Living-Learning Community (LLC) is a dedicated residence hall within a university for students seeking similar degrees. LLCs have been shown to connect and create a rich sense of community among students and faculty alike (Shushok & Sriram, 2010). Although connectivity and culture have been shown as strong indicators among prior research, less emphasis has been given to actual academic performance among students. Using Tinto's (1975) Integration Model as a theoretical framework, student performance and attrition have many causes and predictors such as academic, social, and psychological factors.*

The purpose of this study was to examine the effect of involvement in a Living-Learning Community among aviation students in a mid-sized, regional university. Over a total of six years, a total of n=195 participants were considered for this study: 97 participating in the LLC, and 98 non-participants. Data for the participants included: high school GPA, first year university GPA, degree completion, cumulative GPA upon graduation, and total number of terms enrolled in the LLC. A multiple regression model of statistical analysis was employed to consider the data. The data revealed that first-year GPA could predict overall student GPA. However, the data also revealed that a student's participation in LLC programming was neither a significant factor in GPA nor graduation persistence. These findings are supported by prior research which suggests that although LLC participation can provide meaningful peer and faculty connections, actual academic performance may be less robust (Grills, et. Al., 2012).

KEYWORDS: *Living-Learning Communities (LLC), GPA, persistence, graduation, aviation*

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I INTRODUCTION

Efficacy of college initiatives to increase persistence rates has been widely studied and the body of research indicates that the residential setting of the student can and does play a role in academic gains and persistence rates. The Living-Learning Community (LLC) is a dedicated residence hall within a university for students seeking similar degrees or academic interests. LLCs have been widely adopted across college campuses in the US and abroad. According to Tinto (1997), "Being a member of a [LLC] proves, even after controlling for performance and other attributes and behaviors of students, an independent predictor of persistence into the second year of college" (p. 608). If LLC participation is an independent predictor of persistence, this research project aimed to determine if LLC participation also could be used as a predictor of persistence to graduation.

This study was performed at a regional public university with an aviation program. The aviation program has had a LLC since 2006 and the researchers wanted to determine if there were any differences in academic gains in the form of grade point average (GPA) between aviation students participating in the LLC and those who reside elsewhere. Additionally, the study wanted to identify if participation in the LLC had any impact on persistence through graduation.

This study utilized a longitudinal regression analysis of institutional data over a 6-year period (2006-2011) comparing high school GPA, end of first year GPA, and graduation GPA. Additionally, the study tracked graduation and GPA data to determine if participation in the LLC impacted persistence to graduation.

II LITERATURE REVIEW

The body of literature suggests that participation in LLCs has a positive impact on the student's success while in college. Habely, Bloom, & Robin (2012) suggested that student success is directly attributed to how connected they are to achieving their academic goals. LLC research has shown evidence that LLC participation strengthens the student's connection to their major, their peers, and the university as a whole (Grills, Fingerhut, Thadani, & Machon, 2012).

According to Tinto (1997), students participating in a LLC reported higher instances of engagement in social and academic activities. Additionally, LLC participants reported, “greater perceived developmental gains over the course of the year than did students in the comparison classes of the regular curriculum” (Tinto V. , 1997, p. 606). Rohli and Rogge also studied LLC participants and found that they reported increased satisfaction with their academic performance compared to non-LLC participants (Rohli & Rogge, 2012).

Garrett and Zabranskie (2003) conducted a three-year longitudinal study that suggests LLC participants have significantly higher instances of faculty interactions including meetings, advising, and information exchange. On an informal level, LLC participants went to more campus events, visited instructors socially, and discussed career plans with their instructors (Garrett & Zabranskie, 2003). Increased interactions with faculty also had, “the potential of increasing the richness of the LLC experience for the students and housing professionals who administratively support it” (Garrett & Zabranskie, 2003, p. 43).

The 2004 National Study of Living-Learning Programs (NSLLP) found that participants in a LLC, “made a smoother transition to college, both academically and socially” (Brower & Inkelas, 2010, p. 40). The smooth transition to college also contributed a “lasting effect on students,” even if their LLC participation was for only one year.

LLC participation not only leads to greater student success in achieving their academic goals, but also may result in academic gains in the form of higher first-term GPA compared to non-LLC students. According to a study conducted at a large university in the Northeast, “Students in all three learning communities [had] substantially higher first-semester GPAs than students not in an [LLC]” (Stassen, 2003, p. 595). Participants reported more contact time with their peers, increased study hours, and reported positive academic behaviors.

Conversely, Grills, Fingerhut, Thadani, & Machon (2012) found that LLC participation’s impact on academics was not clear. LLC participants outperformed non-LLC students in some areas, but the overall, “effects were not so consistent or so robust” (Grills, Fingerhut, Thadani, & Machon, 2012, p. 52).

Taking the academic success research a step further, Pascarella, Wang and Trolian (2013) studied 4193 students from 17 different institutions involving their liberal arts education experience. Although not technically a LLC, the liberal arts experience mirrors the experience of LLC participation within a larger university. The results indicated that liberal arts students demonstrated higher critical thinking and cognitive skills. They posit, “Exposure to clear and organized instruction and deep learning experiences significantly fostered four-year cognitive growth irrespective of institutional type” (Pascarella, Wang, & Trolian, 2013, p. 582). This suggests that a similar experience at a LLC may have similar results. The conflicting results within the literature suggest additional research is needed to determine if LLC’s impact on GPA is warranted.

LLC participation may be linked to academic and student success, but to what end and for what reasons? Persistence has also been a studied phenomenon regarding LLCs. Participation in LLCs brings students and faculty together, increasing the number of faculty interactions and the quality of those interactions (Shushok Jr. & Sriram, 2010; Garrett & Zabranskie, 2003; Pike, 1999; Tinto V. , 2012; Brower & Inkelas, 2010). Additionally, early faculty/student interaction, within the first 6-7 weeks, has a positive impact on student persistence (Milem & Berger, 1997). “A student who persists is one who continues to enroll at the institution after matriculation” (Habley, Bloom, & Robbins, 2012, p. 4).

According to a survey of what campuses assess while evaluating LLC programs, institutions assess LLC effectiveness by tracking student GPA and degree progress, but track graduation rates to a lesser extent (Lardner, 2014). Although LLC participation has been shown to lead to increased persistence rates in the second year (Tinto, 1997), fewer studies have examined LLC’s impact on persistence to graduation.

Students participating in LLCs may also show evidence of greater involvement and engagement between students and faculty. Garrett and Zabranskie (2003) conducted a longitudinal study over three years. Using a psychometrically-sound instrument, they compared LLC students with control students and conducted an analysis of variance (ANOVA). Their results included significance in engagement for: meetings, advising, and information with faculty. In other words, “The results of this study suggest that students participating in a LLC are more likely to have interaction with faculty members – both at the formal-academic level and the informal-mentor level – than their peers not involved in the living-learning programs” (Garrett & Zabranskie, 2003, p. 42).

Following similar research, Grills et al. (2012) studied students in an introductory psychology course. LLC students reported high levels of peer-connectivity, but mid- to low-levels of academic success. Showing evidence of engagement but refuting academic evidence, “...(LLC) helped the students connect to the university, the major, and to their peers. The data on academic component was less clear. Though students in (LLC) outperformed comparison students on some dimensions, the effects were not so consistent or so robust” (Grills, Fingerhut, Thadani, & Machon, 2012, p. 52).

III METHODS

This study compared the academic gains, in terms of GPA and persistence to graduation, of a group of aviation degree students residing in an aviation career-focused LLC, with similar aviation degree students that did not participate in the LLC.

The study reviewed historical GPA and graduation data from participants in their first year of the aviation degree program from 2006 through 2011. Graduation data was examined through 2016 to ensure at least five years for degree completion. Over the six years, there were a total of 195 first-year aviation students, with each year identified as a separate cohort. Participation in the aviation LLC was almost evenly split with 97 participants in the LLC and 98 not in the LLC. Participants in the LLC were exposed to additional social and academic resources, group discussions, meals with faculty, field trips, and other gatherings not available to non-LLC participants.

Based on the body of research on the benefits of learning-living communities, the following research questions were considered:

RQ1: Does participation in the aviation LLC have an impact on first-year GPA?

RQ2: Does participation in the aviation LLC lead to a higher persistence rate to graduation?

RQ3: Which factors could predict aviation graduates' GPA?

The historical student GPA and graduation data was retrieved through the university's Office of Institutional Effectiveness. In order to ensure the LLC and non-LLC participants were as similar as possible, the researchers compared the mean high school GPA between the two groups.

To address the second research question, a chi-square analyses was conducted to examine whether participating in the LLC had any impact on persistence to graduation. A multiple regression analysis was conducted to answer which factors could be used to predict aviation graduates' GPA.

IV RESULTS

Of the 195 aviation students, the vast majority of students were male ($n=166$; 85.1%). Nearly half of the aviation students participated in LLC project ($n=97$; 49.7%). Among those students who participated in LLC, more than 80% attend three or more quarters of the LLC (see Table 1).

The data for LLC versus non-LLC included several results. The first consideration was strictly between LLC and non-LLC students in terms of GPA. In Table 2, the mean and standard deviation of high school GPA, first year university GPA, and graduate GPA for both LLC enrolled students and non-LLC enrolled students have been reported. The high school GPA between LLC students and non-LLC students were very close, with the average high school GPA for LLC participants was 3.19 ($SD = .41$) while the average GPA for non-LLC participants was 3.10 ($SD = .40$).

The first research question was to examine whether participation in the aviation LLC will have a positive impact on first-year GPA. The results of an independent t-test indicated that there was not a significant difference between students who participated in the aviation LLC and those who did not participate in the LLC in terms of their first-year GPA, ($t(195) = -0.27, p = .97$).

The second research question was meant to explore whether participation in the aviation LLC could lead to a higher persistence rate to graduation.

Of 195 students, 86 students completed their degree. Among these 86 graduates, 44 students (51%) participated in the LLC program while 42 students (49%) did not. The results of the chi-square analyses showed that there was not a significant relationship between participation in the aviation LLC and graduation rate, ($\chi^2(1) = .124, p = .73$).

Researchers also conducted an independent t-test to examine whether participating in the LLC had any impacts on these graduates' GPA in four years. Even though graduates' who participated in LLC college GPA ($m = .061, SD = .31$) increased slightly more than those who didn't ($m = .046, SD = .32$), the difference was not significant, ($t(86) = .23, p = .48$).

The third research question was meant to examine which factors could predict college graduates' GPA and a multiple regression analysis was conducted. A significant regression equation was found ($F(3, 82) = 56.73, p < .001$), with an R^2 of .68. It was found that a student's first year GPA predicted the graduate's GPA ($\beta = .765, p < .001$), which means that if a student's first year GPA increased by .77, the student's graduation GPA will increase by 1.0.

Table 1 Descriptive statistics

		Total (n)	%
Gender	Male	166	85.1
	Female	29	14.9
Participate in LLC	Yes	97	49.7
	No	98	50.3
Number of Quarters attended	0	98	50.3
	1	9	4.6
	2	9	4.6
	3	55	28.2
	4	5	2.6
	5	1	.5
	6	15	7.7
	7	1	.5
	8	1	.5
	9	1	.5
Year to attend	2006	10	5.1
	2007	42	21.5
	2008	42	21.5
	2009	33	16.9
	2010	36	18.5
	2011	32	16.4
Degree completion	Yes	86	44.1
	No	109	55.9

Table 2. Mean and Standard Deviation of First year GPA and High School GPA for each group

Categories		Mean	Standard Deviation
LLC Students enrolled (n= 97)	High school GPA	3.19	.41
	First year GPA	3.09	.55
	(n=44)	Graduation GPA	3.21
Non-LLC Students enrolled (n= 98)	High school GPA	3.10	.40
	First year GPA	3.12	.53
	(n=42)	Graduation GPA	3.31

Table 3 Results of multiple regression analysis for graduates' GPA

Variable	B	SE (B)	β	t
Number of Quarters attended	-.013	.015	-.057	-.89
High School GPA	.099	.068	.101	1.46
First year GPA	.596	.055	.765	10.91**

Notes: $p^* < .05$ $p^{**} < .01$

V DISCUSSION

The high school GPA for both groups of students were analyzed to determine the similarity between the two groups. LLC participants mean high school GPA was 3.0994 with a $sd = .55468$, while non-LLC participants' mean high school GPA was 3.121 with a $sd = .52634$. The mean GPA and standard deviations for both groups were nearly identical, indicating no statistical significant difference between the two groups.

The body of research seemed to indicate that participation in the aviation LLC might lead to higher overall GPA and persistence to graduation, but the results of the correlation and regression analysis do not suggest that the sample was consistent with prior research. The correlation analysis did not find a significant relationship between students who participated in the aviation LLC and their associated persistence rate to graduation. Essentially, LLC participation had little impact on whether or not a student would eventually graduate from the aviation degree program.

RQ1: Does participation in the aviation LLC have an impact on first-year GPA?

The study compared first-year GPA between LLC participants and those living elsewhere to determine if LLC participation impacted cumulative GPA. The correlation analysis provided no significant difference in first-year GPA between the two groups. This was surprising because several prior studies have reported LLC participation as a factor in academic gains and increased GPA.

RQ2: Does participation in the aviation LLC lead to a higher persistence rate to graduation?

The results indicate that participation in the aviation LLC did not impact a student's GPA, nor did it impact whether or not a student would persist to graduation. Both of these findings were surprising to the researchers, as the body of research indicated that persistence and academic gains in terms of GPA have been reported by LLC participants at many other institutions. A possible reason for these results may be due to the highly driven nature of aviation students; suggesting that their living conditions have little impact on their academic focus. Future research will be necessary to test this hypothesis. Aviation students must apply to the aviation program separately from the institution and therefore they are already degree-focused when they matriculate.

RQ3: Which factors could predict aviation graduates' GPA?

A multiple regression analysis was used to determine what factors could be used to predict a student's GPA upon graduation. The multiple regression analysis results indicate first-year GPA was significant as a predictor of GPA upon graduation and could be a tool for predicating future GPA. Other factors, such as high school GPA and the number of quarters students participated in the aviation LLC were not significant predictors of GPA upon graduation.

VI LIMITATIONS

This study contained a limited sample size of 195 participants over a six-year timeline. Although longitudinal data is preferable, the smaller sample size is a limitation and was considered prior to conducting the study.

The findings should not be applied universally at other colleges or institutions, because this research was conducted at a single institution in a very focused and integrated degree program. Additionally, LLCs that are not centered on a focused area of study may not yield similar results.

Finally, this study did not examine additional factors and background experience other than high school GPA. There might be other factors that could contribute to overall academic gains that were not considered as part of this study.

VII FUTURE RESEARCH

The focus of this study was first-year aviation students from 2006-2011. This date range provided at least five years for degree completion for analyzing persistence to graduation. Future research could analyze the same GPA and persistence data since 2011 to determine if there were any changes in student GPA or persistence to graduation since 2011.

Additionally, future researchers should create a qualitative instrument to be administered to first-year aviation students participating in the LLC and those not participating in the LLC, to determine student perception of the impact their living situation has on their GPA and persistence to graduation.

Finally, scholars should compare the results of this study with the other degree specific LLC groups at similar universities. There are several other degree focused LLCs at the same institution. Comparing the results between the different LLCs could provide a basis of evaluating the effectiveness of the LLC initiative on campus. A comparison model could provide a more generalizable data set for future scholars and practitioners alike.

VIII CONCLUSION

This study analyzed GPA and persistence to graduation of first-year aviation students in an aviation degree program and discovered evidence that first-year university GPA can be a predictor of future university GPA. Additionally, participation in the aviation LLC had no statistical significant impact on first-year GPA. Finally, participation in the aviation LLC was not a reliable predictor of persistence to graduation.

This information may be used for academics and non-scholar collegiate practitioners. The findings of this study may be used to further the body of research among LLC and learning-models in higher education, while at the same time, providing valuable and empirical data for those in the business of student success. Understanding best-practices for academic, social, and emotional success among students is paramount to the success of any college or university.

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