

The Impact of Living Learning Community Participation on 1st-Year Students' GPA, Retention, and Engagement

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Presentation Overview

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About the University of Toledo (UT)

- 10 Colleges, 230 programs
- 23,000 students
 - 18,000 undergraduate (4,000 in RH)
 - 5,000 graduate
- 1,300 international students
- 4,700 full-time employees
- \$812 million annual budget (2010-2011)



General Definition: Living Learning Communities

- “Learning communities, in their most basic form, begin with a kind of co-registration or block scheduling that enables students to take courses together, rather than apart” (Tinto, 2003, p. 1).
- “ ‘Living learning communities’ combine shared courses with living. Students, typically those beginning their first semester of college, enroll in a number of linked courses and living together in a reserved part of a residence hall” (Tinto, 2003, p. 4).

Source: Tinto, V. (2003). Learning better together: The impact of learning communities on student success. *Higher Education Monograph Series, 1*, 1-8.



Living Learning Community (LLC) at UT

Unique Features

- Provide opportunities to live and interact with other students who share the same or similar interests
- Interact with faculty outside of the classroom
- Participate in related programming and specialized services designed for LLC

Purposes

- Help student make a smooth transition to college
- Promote student intellectual, social, and personal growth
- Facilitate better academic achievement and retention



LLC at UT

UT has 7 LLCs

- Arts
- Honors
- Education
- Business
- Politics, Law & Society
- Engineering
- Health Professions (Nursing, Pharmacy, HSHS, Medicine)



Purpose of the Study

The purpose of the study is to examine the effects of student participation in LLC on their first-year college GPA, retention, and engagement.



Research Questions

1. How does student participation in LLC influence students' 1st-year college GPA?
2. How does student participation in LLC influence retention?
3. Is there any association between students' participation in LLC and student engagement, as measured by NSSE results?

Sources of Data

1. From our student information system (Banner®), we identified the entire freshmen cohort along with their high school GPA & ACT scores and 1st-year college GPA
2. Retention database, maintained by IR, provided student retention data
3. Residence Life provided LLC participants info
4. We then linked LLC participants with NSSE 2009 database, maintained by IR



Methods of Analysis

- Using LLC participation as a dummy variable and high school GPA and ACT scores as control variables, we used multiple linear regression model to examine the effect of LLC on college GPA
- Using LLC participation as a dummy variable and college GPA as control variable, we applied logistic regression model to explore the impact of LLC on retention.
- We used Chi-square tests to test the association between participation of LLC and engagement.
- Using pharmacy LLC as an example, we also explored the impact of LLC on students' outcomes within the same academic field.

Descriptive Analysis Results

Table 1

Summary of 1st-Year College GPA, HS GPA & ACT Scores (Fall 2009)

	N	Average ACT score	Average HS GPA	Average College GPA
Participants of LLC	194*	22.3	3.28	2.95
Non-participants of LLC	3,556*	21.9	3.17	2.56

*All are 1st-time full-time freshmen



Figure 1. Distribution of first-year students' high school GPA

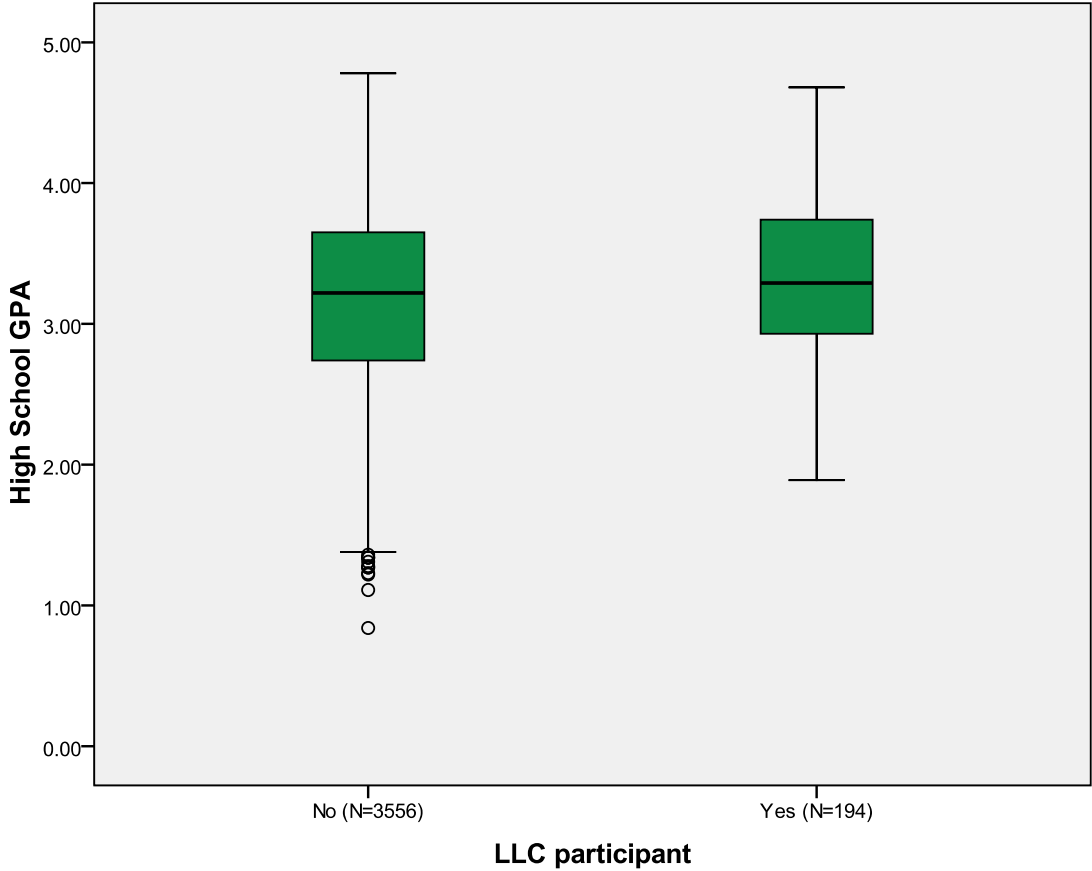


Figure 2. Distribution of first-year students' ACT score

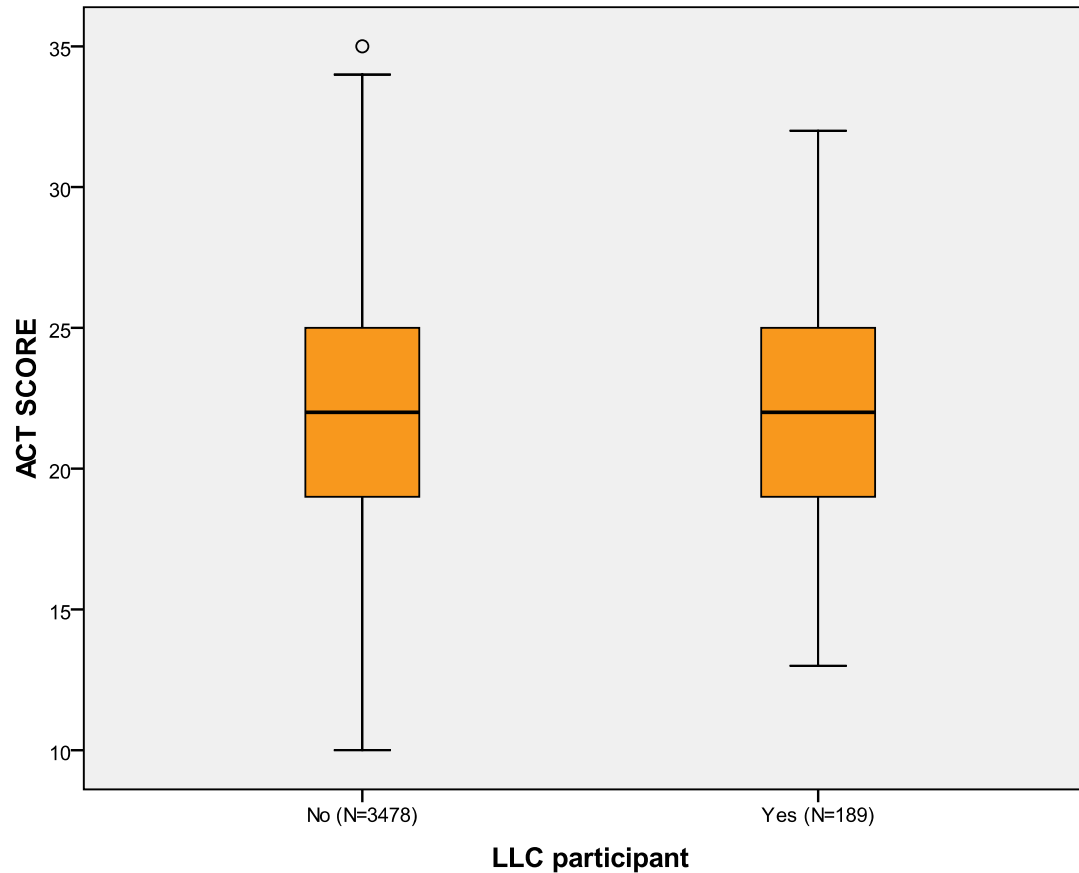
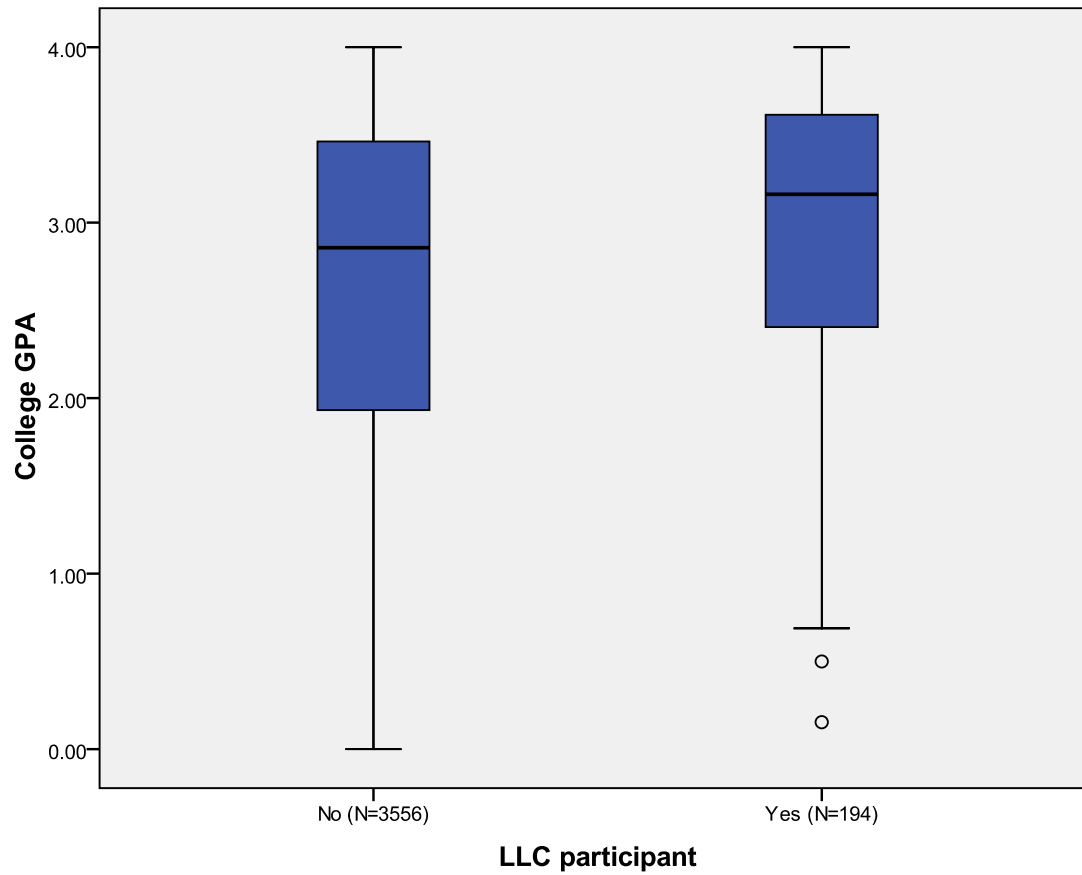


Figure 3. Distribution of 1st -year students' college GPA



Comparison of Retention Rate

Table 2

Retention Rate Comparison

	N	Retention Rate
Participants of LLC	194	85.1%
Non-participants of LLC	3,556	67.4%

Findings from Multiple Linear Regression Analysis

1. Participating in LLC has a significant positive effect on students' first year college GPA
2. On average, a student's college GPA is expected to increase by 0.25 if he or she participates in LLC

Table 3

Multiple Linear Regression Results (Dependent Variable: College GPA)

Variable	Parameter Estimate	95% Confidence Limits	p-value
LLC	0.25	(0.12, 0.38)	0.0003
ACT	0.01	(0.01, 0.02)	0.0028
HS GPA	0.93	(0.87, 0.99)	<0.0001

Findings from Logistic Regression Analysis

Students who participated in LLC are more likely to return than those who did not.

Table 4
Logistic Regression Results (Dependent Variable: Retention Status)

Variable	Parameter Estimate	Wald Chi-square	p-value
LLC	0.72	10.44	0.0012
College GPA	1.09	732.72	<0.0001

Findings from Odds Ratio Analysis

The odds of returning (retention) for LLC participants are two times the odds of returning for LLC non-participants

Table 5.

Odds Ratio Estimates of Logistic Regression Model

Effect	Point Estimate	95% Confidence Limits
LLC	2.05	(1.33, 3.16)
College GPA	2.98	(2.76, 3.23)

Link LLC Data with NSSE Results

We selected four questions from NSSE to analyze:

1. Discuss career plans with a faculty member or advisor (Engagement)
2. Worked harder than you thought you could to meet an instructor's standard (Engagement)
3. Overall rating of academic advising (Satisfaction)
4. Entire educational experience (Satisfaction)



Chi-Square Analysis with NSSE Results

There is no significant association between participation of LLC and student engagement; however, a caution is that the number of students who participated in both LLC and NSSE are extremely small

Table 6
Chi-Square Test Results (Example)

	Discuss career plans with a faculty member or advisor			
	Never	Sometimes	Often	Very often
Participants of LLC	2	5	5	0
Non-participants of LLC	22	45	31	9

The Chi-square test statistics = 1.67, with df=3.

The corresponding p-value =0.64

Note: Since 38% of expected counts less than 5, and the chi-square test results may not be valid.

Focused Study: College of Pharmacy LLC



Overview of Pharmacy Freshmen Cohort

Table 7

College GPA, High School GPA and ACT for Pharmacy Majors

	N	Average ACT score	Average HS GPA	Average College GPA	Retention Rate
Participants of LLC	85	23.9	3.56	2.97	89.41%
Nonparticipants of LLC	315	23.4	3.52	2.65	71.97%

Findings from Pharmacy LLC

- Participating in Pharmacy LLC has a significantly positive effect on Pharmacy students' first year college GPA. On average, a pharmacy student's college GPA is expected to increase by **0.22** if he or she participates in Pharmacy LLC
- Students who participate in Pharmacy LLC are more likely to return than those who do not. The odds of returning for Pharmacy LLC participants are **2.7** times the odds of returning for nonparticipants

Summary

- After controlling for students' academic input characteristics, LLC has a significant impact on student 1st-year college GPA and retention.
- The positive impact is even more significant at the College of Pharmacy, which has the largest LLC cohort
- The analysis between LLC participation and student engagement, although no association was found, could be inconclusive due to the small sample size.

Future work

- Our study provided critical information for decision-makers at UT who plan to make an expansion of LLC
- The Office of Residence Life will conduct a pre- and post-survey to measure students' attitudes toward LLC in fall 2010. Our study will be more complete once we include the analysis of students' perceptions of LLC based on the survey data.
- We intend to use data from multiple years to conduct further analysis
- We intend to push for higher participation in NSSE among LLC students
- We will also track graduation rate for all LLC participants to see the long-term effect of LLC on student outcomes.



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