



# Students Seeking Different Paths to Entrepreneurial Education

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## Purpose

We rigorously looked at student participation in curricular and co-curricular entrepreneurship experiences. In an attempt to control for the diversity of opportunities available to entrepreneurship students, we selected to study students involved in a single institution entrepreneurship program that have the option of participating in two co-curricular activities with high levels of institutional support and varying levels of student engagement. This focus was selected to establish the basic relationships between student characteristics and student selected paths to entrepreneurship education, curricular, co-curricular or both.

## Introduction

Many engineering programs augment their curricula by offering co-curricular entrepreneurship experiences, allowing students to put entrepreneurial skills into practice, such as competitions or mentorship. Often, these co-curricular experiences are used to offer students entrepreneurship education while addressing the concern that there is a limited availability for electives in engineering curriculum.

As these new entrepreneurship programs continue to thrive and innovatively develop across engineering colleges, there is value to deconstructing the entrepreneurship education students experience to better understand the impact of such comprehensive programs, not only as a research question but also for more effective administration.

Few studies evaluate the impact of student characteristics and their participation in entrepreneurship opportunities outside of the classroom. We adapted Terenzini and Reasons' (2005) college impact model to examine relationships between student characteristics (e.g., gender and academic performance) and entrepreneurship education programmatic choices (e.g., curricular and co-curricular) on students in a single Midwest research institution.

We define co-curricular experiences as student, self-selected, non-credit bearing entrepreneurship experiences that can be characterized by two different variables, level of institutional support and level of student engagement.

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## Methods

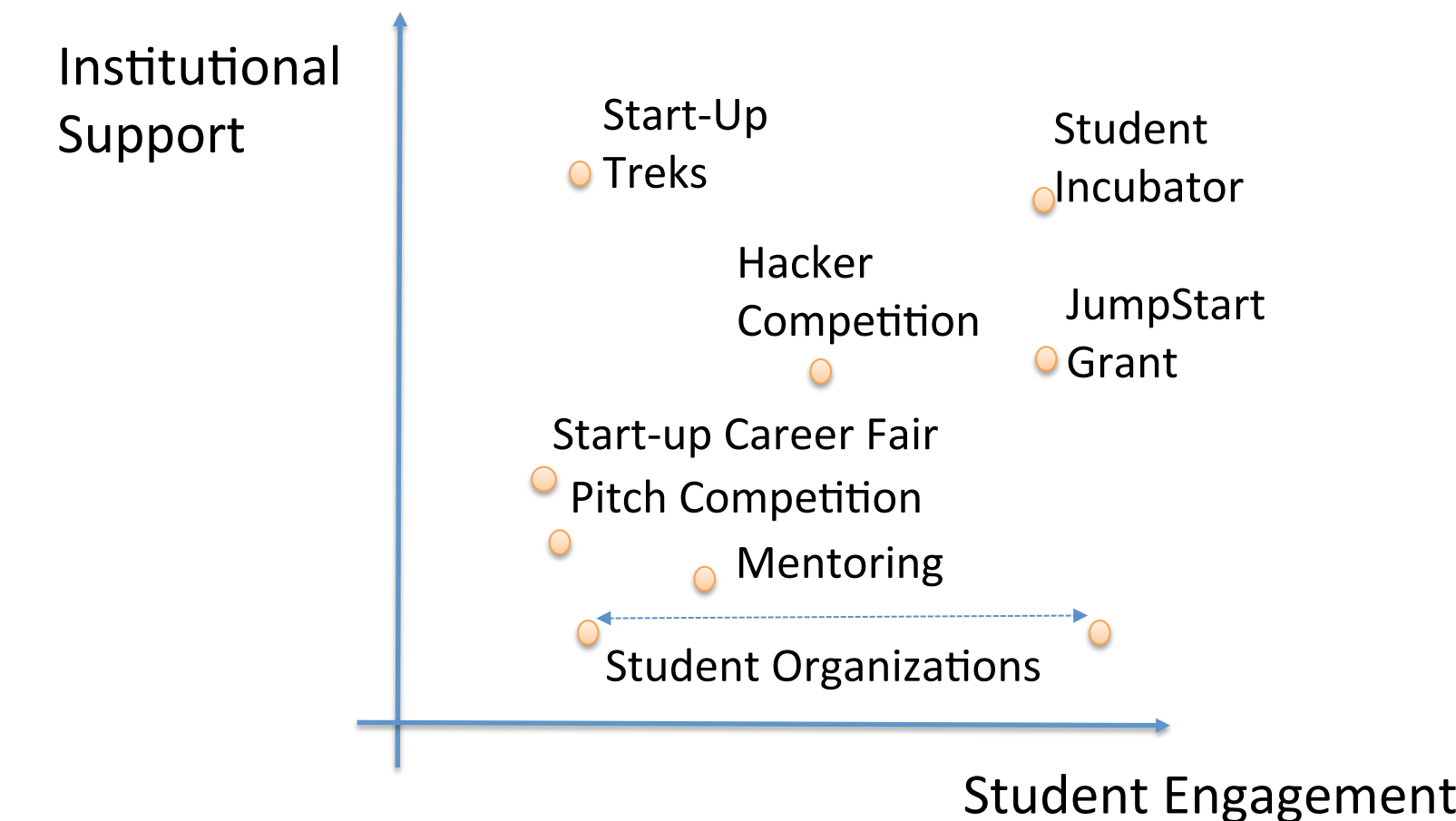
### Entrepreneurial Site & Data Collection

Data was collected from an entrepreneurship program anchored in a large, Midwest, public research university, college of engineering center for entrepreneurship (CFE).

Table 1 : Curricular and Co-curricular Experiences Offered by the CFE

Curricular (for credit)	Co-Curricular (not for credit)
Individual Classes	Provost Funded Jump Start Grant
9-credit Program in Entrepreneurship	Start-Up Trek's
	Pitch Competitions
	Student Incubator
	Mentoring
	Start-up Career Fair
	Student Entrepreneurial Organizations

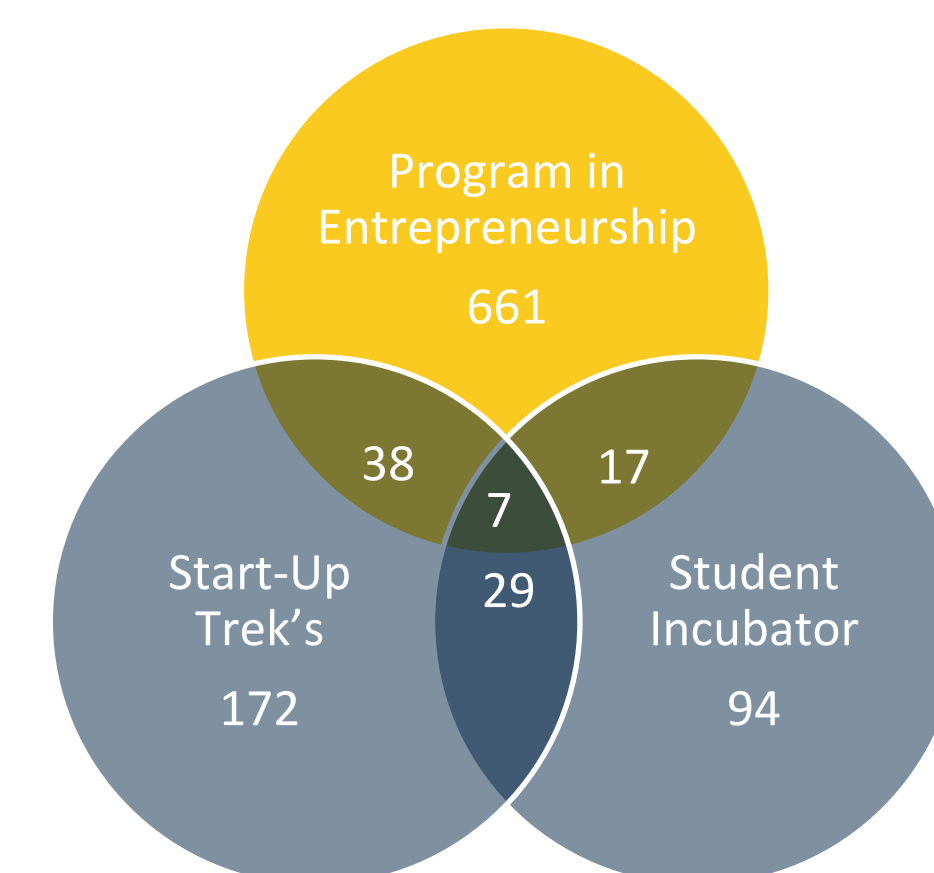
Figure 1: Co-Curricular Experiences Supported by the CFE



## Participants

1,018 undergraduate students participated in these curricular and co-curricular activities between 2007 and 2013.

Figure 2: Venn's Diagram of Student Participation



## Analysis

Multiple univariate analysis was used to test differences among groups. Chi-squared tests were used to tests differences in the distribution of participation. We also conducted t-tests to compare mean differences in GPA (at their first semester and the cumulative GPA in the last semester enrolled in the institution) between students enrolled in the curricular program and those who only participate in co-curricular activities.

## Results

Table 2: Distribution and Means of Student Participation in Curricular and Co-curricular Paths

	Curricular <sup>a</sup>		Co-curricular (only)		diff. (%)	P
	N	%	n	%		
Female	228	32%	66	22%	10%	<.01
International	78	11%	22	7%	4%	.105
Underrepresented minority (urm)	63	10%	26	10%	0%	.909
Engineering major	233	32%	157	53%	-21%	<.001
	Mean	Sd	mean	sd	diff.	
Initial GPA - first semester	3.21	0.52	3.36	0.47	-0.15	<.001
Cumulative GPA - last semester	3.24	0.87	3.58	1.65	-0.34	<.001

Notes: <sup>a</sup> The column for the curricular path includes the 62 students who participated in both curricular and co-curricular activities.

- We found differences between students who enrolled in the curricular program and those who participated in the two specific co-curricular programs organized by the CFE.
- Gender seems to be a key factor in determining the type of participation. Female students represented 32% of the population enrolled in the curricular program. In contrast, female students were only 22% of the co-curricular population.
- The same proportion of international students participated in both types of programs (10% approx.).
- Among US citizens and permanent residents, underrepresented minority students also participated at the same rate (10% approx.) in both types of programs.
- Results also suggested differences in academic performance prior to enrolling in the institution. Students who only participated in co-curricular programs had a greater GPA (3.36) than their counterparts (3.21).  $t(1016) = -4.2656, n = 1,018, p < 0.001$
- Considering the last semester registered for each student by 2013, students who only participated in co-curricular programs had a greater cumulative GPA (3.58) than their counterparts (3.24).  $t(1016) = -4.1891, n = 1,018, p < 0.001$

## Discussion & Conclusion

- Given the nascent state of the field of entrepreneurship education research, there is very limited research published regarding gender and entrepreneurship education. Our finding and several sociological findings suggest that a deeper evaluation of entrepreneurship education in relation to gender is worthy of further investigation.
- Our results indicate that students who only pursued co-curricular experiences for entrepreneurship had higher pre-college GPAs than those who enrolled in the curricular program. This result is partially consistent with Bilén et al.'s (2005) finding that students attracted to entrepreneurship programs had higher SAT scores than the general population. However, we do not have a clear answer to the difference we found between the two paths.

## Key References

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