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A Mixed-Methods Analysis of First-Year Engineering Student Curiosity in the Context of a Liberal Arts Core Curriculum

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Introduction and Background

After several years of informally noticing that engineering students appear less inclined to appreciate the value of a liberal arts core curriculum, we performed a systematic, mixed-methods analysis of first-year engineering students' perceptions of their curiosity before and after their first-year introduction to college and the value of the University of Portland's liberal arts core curriculum. Through surveys that allowed for both quantitative and qualitative analysis, along with case study interviews, we explore engineering students' interests, what experiences they found engaging, and how their first semester of college may have impacted the breadth of their intellectual curiosity. Ultimately, we hope to use these insights to help engineering students see themselves as whole humans with lifelong aspirations of curiosity.

Motivation

One way to frame our effort is to start with Detweiler's [1] model of the relationship between Educational Experience (context and content) and Adult Outcomes (lives of consequence, inquiry, and accomplishment). The benefits of a college education to the individual are apparent (professional success, longer lifespan, higher incomes, and other life advantages), but these are primarily 'selfish outcomes' benefiting the individual. A liberal arts education is about the common good – benefiting humanity and the individual – though Detweiler also finds benefits of a liberal arts grounding for all students (not just liberal arts majors) regarding future accomplishments. At the same time, society has slowly adopted a view of higher education as an essential means for individual attainment, but not necessarily for the greater good [2].

According to Ajayi et al., it is essential to help students form an academic identity that synchronizes with the university's academic identity. This synchronization is an integral part of retention [3]. Our first-year seminar aims to introduce a sense of the university's educational values and ignite similar values in our students (even engineers). For this work, curiosity is the most critical value.

A breadth of knowledge, skills, and values is a fundamental outcome of a liberal arts education. However, modern higher education has often adopted a mindset that progress only occurs on the frontier, requiring specialized research [4]. A liberal arts education, even for engineers, is promoting anti-specialization, or better yet, an alternative to early specialization. Epstein articulates our motivation well by describing how we face the challenge of maintaining the benefits of breadth, diverse experiences, and interdisciplinarity in a world increasingly demanding hyperspecialization [5]. Encouraging students to value a broad education requires them to be curious (or develop curiosity). Curiosity is a cornerstone of a liberal arts education as it fundamentally requires: 1) interdisciplinary learning to explore and integrate diverse subjects; 2) critical thinking and questioning to move beyond surface-level understanding with a deep, epistemic curiosity; and 3) breadth of knowledge to allow individuals to make unexpected connections and innovate [6].

The classical purpose of a liberal arts education is education for freedom – drawing on the same root word as "liberty." Nelson argues that this is a freedom to engage in ways of knowing from multiple disciplines and perspectives to make sound judgments. It involves the freedom to have an intellectual curiosity about a field of specialization and other seemingly unrelated fields and the

freedom of opportunity to connect these fields. [4]

How do we encourage students to develop a 'both/and' instead of an 'either/or' mindset? We want them to see their whole education (engineering education ***and*** their liberal arts education) as part of their whole preparation (professional ***and*** member of an educated society).

One of our biggest obstacles has been that our students are increasingly looking for immediacy in their education. They want what they learn in class to apply in the short term (follow-on courses, internships, and first jobs). However, the big ideas of a liberal arts education may not have an immediate applicability, and we must recognize that our students may not appreciate it until much later in life. This study looks at the curiosity to help even the playing field between these short and long-term games.

Grounding in Existing Scholarship

Engineering students are interested in engineering, but we know they need exposure to more topics for their own benefit and for society's benefit. As described above, the broad education of a liberal arts tradition is fundamental to a well-functioning society and democracy.

Riley [7] reports incorporating liberative pedagogies into a traditional technical engineering course in thermodynamics. Riley discusses several course reforms suggested by liberal pedagogies and assesses those reforms. The reforms do bear some overlap with our study as they are 'big ideas' rooted in a liberal arts context. Some examples of overlapping reforms include 1) creating community, 2) ethics, 3) de-centering Western civilization in the engineering classroom, and 4) problematizing science as objectivity and normalizing mistakes. Riley's work succeeds in incorporating concepts from the liberal arts into engineering coursework for engineering students. Our project differs because we are trying to understand how engineering student curiosity can be leveraged to increase engagement in the liberal arts.

Lucena and Downey [8] report a course to leverage broad knowledge topics to improve cross-cultural competence. In this context, the cultural divide is not only cultural differences based on nationality, race, ethnicity, or religion but also an 'engineering culture' working with non-engineers. The authors succeed in offering a course specifically aimed at leveraging the liberal arts to prepare modern engineers to participate in technical and non-technical problems. Our project differs in that we are exploring how a first-year seminar on liberal education offers a glimpse into engineering students' curiosity in their holistic education.

Cech [9] notes that American engineering is not engaged in nontechnical debates and, in fact, essentially distances itself from public dialogue, policy formation, and the impact of its work on public welfare. The culprit for these attitudes is a 'culture of disengagement' formed by three pillars: 1) technical work should be disconnected from social/political work to avoid bias, 2) social competencies are less valued than technical competencies, and 3) meritocracy provides the correct social structure, so we do not need to address inequalities. These pillars would be challenged by a robust liberal arts education, which puts public welfare and civic duty as central tenets. Cech argues that engineering programs can challenge these ideological pillars to create engineers more considerate of public welfare. Our project starts earlier than this work in that we must first understand engineering student' curiosity about these liberatory concepts as a tool to engage them in curricula that will improve their ability to think more comprehensively about their role in society.

Deters and Leydens [10] present a relevant study comparing student passions to their campus's values. Their student passions survey found that students (at a primarily engineering and applied science university) have wide-ranging interests and rely heavily on structures outside the technical curriculum to develop their passions. Their findings reveal that many students want more from their education than professional preparation and that lack of time is why student interests are de-prioritized. The authors also note that many students' passions (humanitarian work, justice, and environmental topics) directly relate to engineering and that their institutions can improve by making those connections. Our project differs slightly in that our effort is not to integrate their passions into their engineering coursework but to find ways of igniting their curiosity and passion in their liberal arts general education.

Education is an endeavor in instrumentalism at the individual level (career attainment) and liberation at the societal level (ideological exploration). Liberty, freedom, and intellectual agility are common goods requiring sound judgment; sound judgment requires breadth of understanding and curiosity. This work attempts to understand curiosity among first-year engineering students in the context of a liberal arts core curriculum.

Methodology

We undertake a mixed-methods study to understand curiosity among first-year engineering students. A mixed-methods analysis is ideal for this complex study because the numerical data helps us identify patterns, relationships, and trends. In contrast, the non-numerical data offers more profound insights into specific experiences, perspectives, and contexts. For example, which will be expanded upon below, statistical analysis identified students who would be interesting to interview. Combining these varied methods creates a much more robust study.

Site Description

University of Portland (UP) is a primarily undergraduate and comprehensive institution with four schools (engineering, business, education, and nursing) and one college (sciences, social sciences, arts, and humanities). The academic experience combines a liberal arts core curriculum, drawing on the Catholic Intellectual Tradition, and the students' major-specific educational requirements.

The liberal arts core curriculum is 40 semester credits and begins with a first-year seminar (CORE 101). The course attempts to address two different but equal needs – 1) aid in the transition from high school to college by offering practical skills and resources for students and 2) introduce the students to our core curriculum with an emphasis on igniting an interest in approaching their general education with a sense of curiosity and opportunity. However, engineering students often come to UP with an instrumentalist mentality (i.e., to learn engineering and get a good job) and appear somewhat cynical of the liberal arts core curriculum.

Instruments

We utilize three instruments to conduct this study. Instruments 1 and 2 are detailed in Table 1 below.

Instrument 1 is a quantitative and qualitative survey administered to all incoming students before they begin their first semester at UP. Our Office of First-Year Programs surveys many purposes, so we selected a small subset of the questions for this work. Instrument 1 received 783 responses.

Instrument 2 is a quantitative and qualitative survey administered to all students after their first semester at UP. The UP Core Curriculum conducts the study through the CORE 101 instructors and courses. Instrument 2 received 407 total responses (not all students responded to all questions, so sample sizes vary). In this survey, we included a location for students to opt-in to provide their contact information to participate in a one-on-one interview, and 90 students provided their information. Instrument 2 consists of an 'informed consent' statement according to the university's Institutional Review Board protocols. Students who chose not to consent at this stage were not asked any further questions.

Instrument 3 is an interview administered during the second semester of a student's first year. The invitation went to approximately 10 students who experienced a significant change in curiosity (one standard deviation in Question 2) between Instrument 1 and Instrument 2. Ultimately, we undertook individual case study interviews with two of these students.

Survey Questions

Instrument 1 and Instrument 2 are both quantitative and qualitative surveys administered through Qualtrics. The questions in the surveys are listed in Table 1.

Table 1: Questions asked in Instruments 1 and 2

Question	Response Type	Instr.
1. What types of things are you most curious about?	(free entry long-form)	1,2
2. How curious are you about this habit? a. Literacy, Dialogue, and Expression b. Religion, Faith, and Ethics c. Aesthetic Inquiry, Imagination, and the Creative Process d. Scientific and Quantitative Literacy and Problem Solving e. Community, Diversity, Inclusion, and the Common Good f. Global and Historical Consciousness	(single choice – Not Very Curious, Curious, Very Curious)	1,2
3. What experiences during your first semester at UP impacted your general curiosity for subjects and ideas beyond your major and career interests? Please identify at least 1-2 experiences that have had a positive or negative impact.	(free entry long-form)	2
4. How important are each of the following to you personally? a. Being very well off financially b. Developing a meaningful philosophy of life c. Enriching my college education by participating in activities and attending events outside classes d. Using college as a time to explore ideas beyond fulfilling course requirements e. Building my resume during college to ensure I get a good job	(single choice: Not Important; Somewhat Important; Very Important; Essential]	2
5. Below are statements people often use to describe themselves. Please indicate the degree to which these statements accurately describe you. There are no right or wrong answers. a. I view challenging situations as an opportunity to grow and learn b. I seek out situations where it is likely that I will have to think in depth about something c. I enjoy learning about subjects that are unfamiliar to me. d. I find it fascinating to learn new information.	[single choice: does not describe me at all; barely describes me; somewhat describes me; neutral; generally describes me; mostly describes me; completely describes me]	2

Notes:

- Question 2 (all parts) is collectively called the 'habit-based curiosity scale.'
- Question 4 (parts a and e) are collectively referred to as the instrumentalist (career and job) values
- Question 4 (parts b, c, and d) are collectively referred to as the exploratory values
- Question 5 (all parts) is collectively called the 'general curiosity scale.'

The term 'habit' in Question 2 refers to UP's Core Curriculum [11], organized around six 'Habits of Heart and Mind.' The habits were introduced in 2021 after a lengthy curriculum revitalization process and are designed to provide a more meaningful structure. Parts a and b of Question 4 are taken directly from the HERI CIRP Freshman Survey [12] and help us calibrate our sample with national trends. We developed parts c, d, and e of Question 4 to use the same scale and assess students' importance of specific curiosity-related aspects of the college experience. Question 5 is taken from the standardized and validated curiosity scale Kashdan et al. presented to assess students' fundamental curiosity levels [13].

Case-Study Interviews

Instrument 3 is a one-on-one interview with two engineering students willing to participate in their responses to Instrument 2. We asked the participants questions focused on curiosity (past and present), a liberal arts core curriculum, an engineering curriculum, and a first-year experience.

Analysis

Three of our questions from Table 1 (Questions 2, 4, and 5) can be analyzed quantitatively by converting the responses to numerical scores. These three questions focused on curiosity and values.

Question 2, since it was a part of Instrument 1 and Instrument 2, provides some insight into the change in time of their curiosity about the 'Habits of Heart and Mind' that constitute UP's Core Curriculum (presented in Table 1 above as 2a to 2f). We present each habit with a brief paragraph description with some example courses and then ask the students to report their curiosity about each habit. The ratings were converted to a three-point scale: Not Very Curious (scored as 0), Curious (scored as 1), or Very Curious (scored as 2).

In our analysis, we calculated and compared average curiosity scores for each of these habits individually and in aggregate between Time 1 (start of the Fall term) and Time 2 (end of the Fall semester) across groupings for each of the university's five colleges and schools: Arts & Sciences, Engineering, Business, Education, and Nursing.

In comparing average scores, we were primarily interested in the main effects of differences in time (from the start to the end of the semester) and differences in major (between engineering and non-engineering students). We were also interested in potential interactions between time and major. We thus chose to use a repeated measures mixed ANOVA that used measurements of curiosity from the same students at two time points and mixed between-subjects and within-subjects comparisons. This allowed us to examine changes over time while accounting for major group differences within a single statistical test rather than running multiple separate analyses.

We also calculated individual-level difference scores by subtracting curiosity at Time 1 from curiosity at Time 2 to identify students who had become more or less curious over the semester. Excluding missing data, we had 337 valid aggregate difference scores with a mean of –0.14, a range of –8.0 to +7.0, and a standard deviation of 2.46. As such, when looking for case studies of students who had become more or less curious over the course of the semester, we focused on students whose difference scores were more than one standard deviation away from the mean (i.e., an aggregate difference score of at least +/- 3.0).

Question 4 was only asked in Instrument 2 and focuses on values. The five sub-questions are shown

in Table 1 as 4a to 4e. All five questions use the same response options: Not Important (scored as 0), Somewhat Important (scored as 1), Very Important (scored as 2), and Essential (scored as 3). The first two questions (4a and 4b) were borrowed directly from the HERI Freshman Survey [12]. We created three additional questions (4c to 4e) to compare students' views of their education. Questions 4c and 4d aim to assess an exploratory view of their education (philosophical big ideas), and Question 4e aims to assess an instrumental view of their education (financial and job status). As per HERI reporting conventions, our analysis aggregated the proportion of students who identified each value as "very important" or "essential."

Question 5 was only asked in Instrument 2 and utilized the 'Joyous Exploration' sub-scale of the Revised Five-Dimensional Curiosity Scale [13]. We selected this scale to ensure we had an independent measure of curiosity that was not directly tied to our curriculum but fit the spirit of philosophical exploration of interest to our project. We combined responses to the Question 5 sub-questions into a 'general curiosity score.' We used that in a correlational analysis with our measures of curiosity about our curriculum (Question 2: Habits of Heart and Mind). Questions 1 and 3 are free-entry responses, so we performed a thematic analysis with the Instrument 2 responses. Our analysis procedure approximately followed the process outlined by Clarke and Braun [14]. Each student's response was coded to interpret meaning into a standard set of terms. In the case of Question 3, responses were analyzed to separate positive experiences and negative experiences. We then taxonomized the codes into themes to generate the qualitative results below.

Results

Our study produced quantitative results, qualitative results from the thematic analysis, and a few select meaningful insights from the case-study interviews.

Quantitative Results

The first set of quantitative results focuses on students' curiosity about the Habits of Heart and Mind from our Core Curriculum, assessed at the beginning and end of their first semester at UP. Table 2 presents a single aggregated curiosity score for the two student populations (engineering students (N = 73) and non-engineering students (N = 270)) at two times in the semester.

According to our repeated measures mixed ANOVA, while aggregate curiosity scores remained stable across the semester for engineering and non-engineering students, this stability may encourage our efforts to promote a broad curiosity. First, it may be noteworthy that engineering students went up slightly, while others went down slightly (though neither was statistically significant). Second, the overall non-significant change is interesting because the Time 2 survey was done during the last week of the semester – when students have generally lost much of their initial enthusiasm.

Table 2: Aggregated Scores for Curiosity about Habits of Heart and Mind

Group	Time	Mean Curiosity about habits	SD of Curiosity about habits
Engineering Students	Start of Term	5.79	2.27
	End of Term	5.84	2.25
Non-Engineering Students	Start of Term	5.99	2.17
	End of Term	5.80	2.23

By examining the habit curiosities separately (Figure 1), we see some differences between engineering and non-engineering students. Perhaps most noteworthy is that all students showed significant decreases in curiosity related to Science & Problem Solving, with both engineering and non-engineering students reporting lower curiosity in this subject by the end of the semester. However, this decline was offset by significant increases in curiosity related to humanities-oriented habits. Both groups showed increased curiosity in Faith & Ethics and Aesthetics & Creativity.

While engineering students maintained higher overall curiosity in Science & Problem Solving compared to their peers, and non-engineering students showed higher curiosity in Diversity & The Common Good, both groups demonstrated similar growth patterns in humanities-oriented domains. This suggests that while students may enter college thinking they are primarily curious about specific disciplinary interests, their intellectual curiosity can expand into new domains during their first semester.

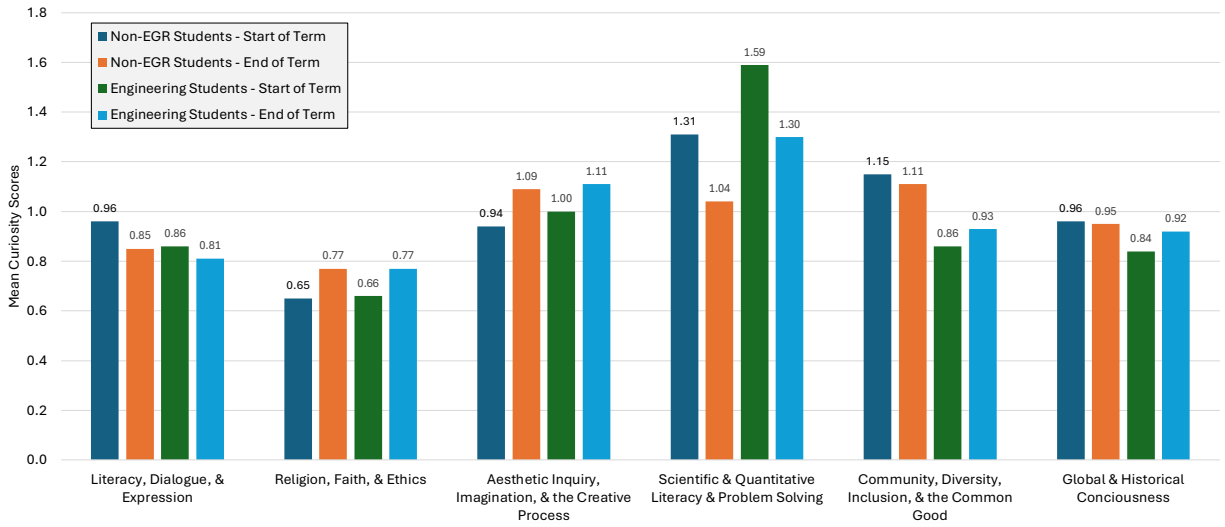

Figure 1: Mean Curiosity Scores by Habit for Engineering and Non-Engineering Students

Switching focus to students' educational values, we did find some differences between engineering (N = 75) and non-engineering students (N = 280), as shown in Figure 2. The chart shows the percentage of students that found each item 'essential' or 'very important' at this time in their educational development. The most notable difference emerged in students' views on exploring ideas beyond course requirements, with significantly fewer engineering students (60.0%) rating this as "very important" or "essential" compared to other majors (75.0%). While not reaching statistical significance, a similar pattern emerged regarding developing a meaningful philosophy of life, with engineering students (56.0%) rating this as less important than other majors (65.7%).

In contrast, engineering and non-engineering students showed remarkably similar views on instrumental values (financial and job status-related). Both groups highly valued being well off financially and building their resumes. Similarly, both groups placed moderate importance on participating in activities outside of class. This pattern suggests that while all students share similar financial and job status goals, on average, engineering students place less emphasis on philosophical exploration as part of a college education.

Finally, we performed an analysis on the entire student population (N = 337) to look for correlations between habit-based curiosity (Question 2), general curiosity (Question 5), and Educational Values (Question 4). The first important result is a significant correlation between the aggregate habit-based curiosity and aggregated general curiosity for all students (N = 337) between Time 1 and Time 2 (Table 3). There is also a correlation between change in habit-based Curiosity (between Time 1 and Time 2) and General Curiosity (r = .151, p = .005). This suggests that students who become more curious over the semester in curricular domains also express higher general curiosity.

The results of the correlational analysis (Table 4) also indicate that changes in aggregated habit-based curiosity were positively correlated with several educational values. The same educational values showed positive correlations with general curiosity. Neither measure of curiosity was significantly correlated with career-focused goals such as being well-off.

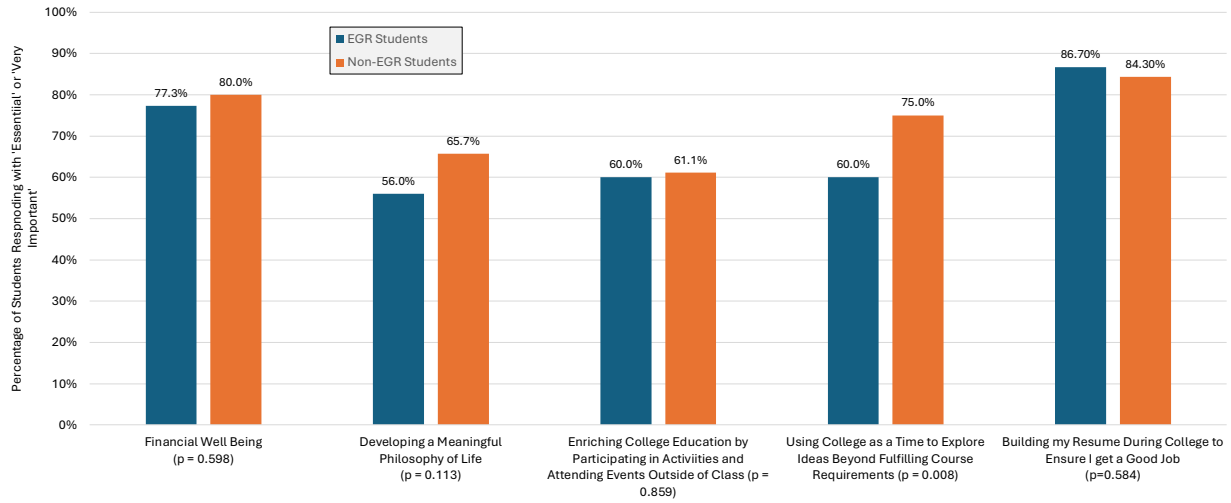

Figure 2: Percentage of Students Who Listed Each Value as 'Essential' or 'Very Important'

Table 3: Correlation between Habit-Based Curiosity and General Curiosity at Two Times

	Pearson Correlation	Significance (2-tailed)
Time 1	r = .227	p < .001
Time 2	r = .382	p < .001

The results of the correlational analysis (Table 4) also indicate that changes in aggregated habit-based curiosity were positively correlated with several educational values. The same educational values showed positive correlations with general curiosity. Neither measure of curiosity was significantly correlated with career-focused goals such as being well off financially or building a resume ($p > 0.05$ for all cases). This suggests that students interested in broader philosophical explorations during college are likely to exhibit more curiosity, while being more interested in instrumental values has no relationship with curiosity in either direction.

While our data does not allow us to make causal claims for any of these relationships, the findings suggest that philosophical explorations of diverse ideas and an openness to diverse activities are associated with positive trends in curiosity for our first-year students. To further understand these associations, we turned to our qualitative data.

Table 4: Correlations between Educational Values and Two Types of Curiosity

Educational Values	Change in Habit-Based Curiosity	General Curiosity
Financial Well Being	Correlation not statistically significant	Correlation not statistically significant
Developing a Meaningful Philosophy of Life	$r = 0.110$ $p = 0.044$	$r = 0.301$ $p < 0.001$
Participating in Activities Outside of Class	$r = 0.108$ $p = 0.048$	$r = 0.189$ $p < 0.001$
Exploring Ideas Beyond Course Requirements	$r = 0.126$ $p = 0.021$	$r = 0.234$ $p < 0.001$
Building a Résumé to Get a Good Job	Correlation not statistically significant	Correlation not statistically significant

Thematic Results

It is no surprise that students are curious about a wide variety of topics. When asked (Question 1 of Table 1) to report on things they are curious about, we collected dozens of unique topics (after coding). We organized these curiosities into themes and sub-themes to present them as the treemap in Figure 3. The treemap identifies the primary curiosity (e.g., 26 responses for STEM topics) and sub-curiosity (e.g., 16 responses for Math & Science topics and 10 for Computer Science and Engineering topics). From this visualization, we can confirm that engineering students are interested in STEM and its applications. It is noteworthy, however, that they are still curious about many topics at this point in their educational development.

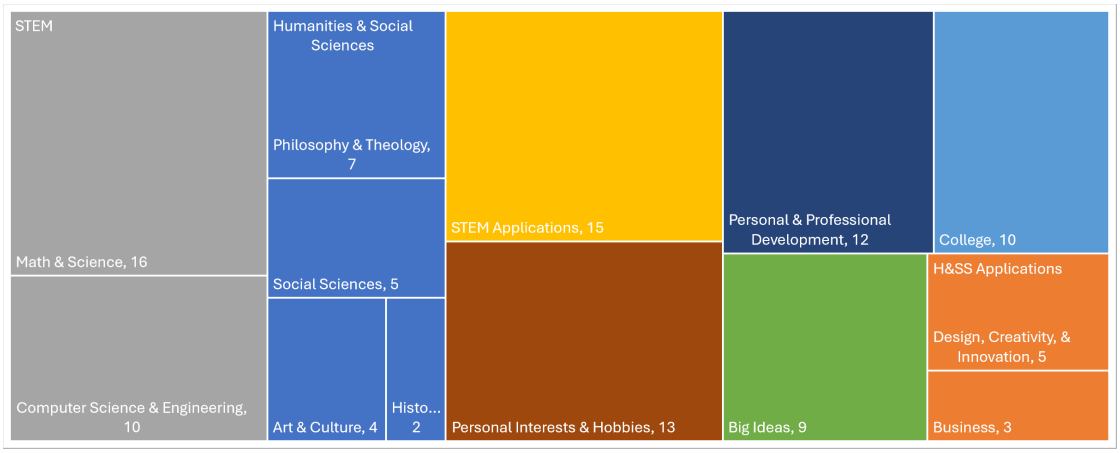

Figure 3. Treemap of Engineering Student Curiosity Topics

When asked about specific experiences (positive or negative) from their first semester that impacted their general curiosity (Question 3 in Table 1), we collected dozens of unique experiences (after coding). We organized these curiosities into themes and sub-themes to present them as the treemap in Figure 4. The treemap identifies seven major experience themes (excluding the additional 'negative experience' theme). This visualization shows that core courses and community are the biggest catalysts for first-year students' curiosity. In this case, 'community' includes engaging with peers from different majors and backgrounds/perspectives.

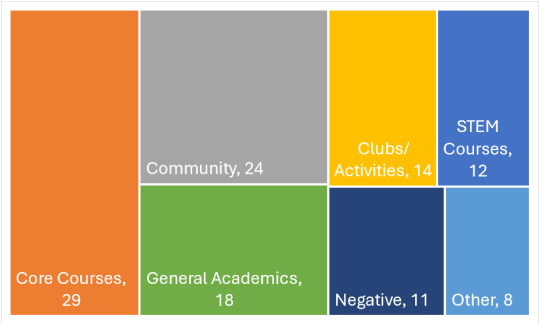

Figure 4. Treemap of Experiences Engineering Students Found Valuable

With this data, we see that a first-year student's curiosity can be effectively ignited by exploring new ideas (i.e., core courses), trying new activities (i.e., clubs/activities), and meeting new people (i.e., community participation).

Case-Studies

We interviewed two engineering students about their experience in their first year. The conversation focused on their perceptions of curiosity about themselves and how their experiences have sharpened or dulled their curiosity. We also touched on our curriculum (first-year seminar and liberal arts core courses) that they experienced and how those related to their curiosity.

Both students mentioned their philosophy courses as engaging and interesting because the faculty was passionate, and the students had not explored philosophy before. Repeatedly, the students mentioned that faculty can ignite curiosity like nothing else.

These students generally saw themselves as 'engineers-first,' whose interest in broad topics was separate from their career aspirations. Interestingly, many of their responses to questions about curiosity started by relating to engineering, but when subtly prompted, they would expand to other parts of their experience.

One student found their curiosity came from a community of students that cared about learning and wanted to explore. For example, a new friend on campus was passionate about photography, igniting curiosity. The student discovered their father was also passionate about photography and gave them an old camera to learn with.

One student is a commuter student (a rarity at our campus) who found their curiosity sparked by their faith and a local group of college-age students who gather to discuss big ideas from that lens. Interestingly, they did not appreciate the theology courses at UP because they found them too simplistic and ultimately decided to 'get it out of the way.'

Both students definitively saw the advantages (and some disadvantages) of a liberal arts education. One student knows they will not only be interacting with engineers and talking about engineering – still a very practical reason. The second student knows that the broad knowledge will affect their life (beyond their career) and appreciates getting time to learn it. The most significant downside is that there is just "less time to focus on the things that, in the end, will become not necessarily more useful, but more visible in what we do in our careers." One student pointed out that they thought

they could get a broad liberal arts education outside school but could not get an engineering education any other way.

We specifically asked them about how the culture of engineering might impact students' perceptions of the value of a broad liberal arts education, and the results were not surprising. Firstly, more senior engineering students often discuss 'getting core classes out of the way,' which further influences first-year student mentality. They perceive that engineering requires focus, mastery, excellence, and expertise in technical areas – making it hard to prioritize a broad education. One specifically perceives their peers as "rather be doing [their] engineering homework than doing philosophy." One mentioned that engineering students who do not have a broad liberal arts education are spending more time learning engineering. Ultimately, these students see a comprehensive education (engineering and the liberal arts) as a positive trade-off, but it is still a trade-off.

Limitations and Issues

This study does have some limitations and issues, as listed below:

- Instrument 2 came at the end of the term when students are least energized and effortful
- Instrument 2 came at the end of the term, a time when survey fatigue can become more prominent with course/instructor surveys, research studies, and quality control questionnaires
- Despite inviting nearly a dozen students for case-study interviews, only two ultimately followed through. We would have preferred a larger sample size of interviews that included engineering and non-engineering students.
- Since we only looked at one institution, it is difficult to say how well this might apply to engineering students in general

Discussion and Conclusion

This mixed methods study examined engineering student curiosity to aid them towards a more exploratory view of their education, particularly in the tradition of a liberal arts education where breadth of knowledge is a fundamental necessity.

Our study indicates that engineering students can, though they may not naturally, view their education as both instrumentalist (career preparation) and exploratory (informed society). Essentially, it is still possible for us to develop a 'both/and' mentality about their education instead of the apparent prevailing 'either/or.'

Students generally enter college primarily interested in their specific disciplinary interests, but their intellectual curiosity can expand into new domains during their first semester. In a sense, our findings agree with Deters and Leydens [10]. The passions of engineering students indicate broad curiosity about many topics, providing an opportunity. Faculty (those in engineering programs and liberal arts programs) can leverage these passions and curiosities to improve engagement in their holistic education.

Finally, our findings suggest several potential ways to help students engage with their educational values in an exploratory way, including meeting new people (residence halls, clubs, campus events), trying new activities (clubs, seminars, performances, recreation), and exploring new ideas (breadth

of requirements, core curriculum). If engineering faculty can also help frame the liberal arts as an opportunity to develop a broad curiosity – bringing them intellectual agility, creativity, and other skills – then that will be useful in careers, individual well-being, and in society. This, in turn, may help fulfill the liberal arts ideal of developing and liberating whole humans.

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