



A First-Year Attrition Survey: Why Do They Say They Are Still Leaving?

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1.0 Abstract

Many retention programs measure success through the basic metrics of 1-, 2- and 3- year retention rates and/or 6 year graduation rates. When these numbers are increasing we can infer that the retention initiatives are successful. Further study of this retained population through surveys and focus groups can yield additional insight into the reasons behind student persistence. But, what if we changed our perspective and instead examined the inverse population? What valuable insight can be gained by looking at the reasons behind why some still leave STEM programs? More specifically, are there predominant factors still underlying the loss of students from an engineering program even when overall retention is improving?

In 2009, LeTourneau University, a small, private university sought to identify the reasons behind low graduation rates in the School of Engineering and Engineering Technology (SEET). They deployed an exhaustive survey to students that had left the school asking these former students (leavers) to rank the influences behind their decision to leave engineering. Results were utilized to help develop several first-year retention initiatives targeted at engineering persistence of first time in any college (FTIC) students. These initiatives, aided with funding through an NSF-STEP grant began with the 2010 cohort and have continued until present. Subsequent deployments of the identical survey to cohorts 2009 through 2013 have resulted in two distinct populations: PRE-STEP (cohorts 2006-2009) and POST-STEP (cohorts 2010-2013).

This exhaustive survey asks questions such as:

- Rank the top reasons why you changed your major from engineering or engineering technology to something else considering factors such as: lost interest or motivation to study engineering, had difficulty with coursework, uncertain of future career options, began engineering due to parental pressure but decided it was not for me.
- If difficulty with coursework was a reason for leaving, please indicate the degree that certain factors played in this decision such as: inadequate study or time management skills, inadequate preparation in math and/or science, inadequate note-taking skills, addiction to gaming, or inadequate computer skills.
- State in your own words why you left.

This paper begins with a summary of the school's STEP retention initiatives providing a context for the subsequent comparison of survey results between the pre and post populations. It then provides composite survey results revealing the dominant factors affecting engineering attrition in the entire population while attempting to highlight differences in the results between the pre and post populations. Finally, the paper concludes by offering some lessons learned for institutions desiring to implement a similar assessment instrument.

2.0 Introduction

The following introductory information has been presented in various forms in previous ASEE papers^{1,2,3,4} that address other aspects of this project. It is updated and included here to provide context for the “leaver” survey discussed in this paper.

2.1 Background

Characteristics of LeTourneau University

LeTourneau University is a private faith-based university offering over 60 academic programs, including engineering and engineering technology, the aeronautical sciences, business, education, the liberal arts, and sciences. The School of Engineering and Engineering Technology (SEET) is the largest of the five academic divisions of the university. Of the 1400 undergraduate students on the campus, over 575 of them are matriculated in the SEET, which offers two undergraduate Bachelor of Science degrees: Engineering and Engineering Technology. The Engineering degree provides six concentrations: *biomedical, civil, computer, electrical, materials joining, and mechanical*, while the Engineering Technology degree provides five concentrations, *aeronautical-electrical, aeronautical-mechanical, electrical, materials joining, and mechanical*. All of these concentrations build upon a common core of general education and technical coursework.

First-Year Initiatives for Retention Enhancement (FIRE)

Our school engineering graduation rates have been declining despite steadily increasing enrollment. Retention and graduation rates declined to significantly subpar levels, motivating an internal study³ of underlying causes. This study, conducted in the summer of 2009, analyzed performance and predictor data, as well as surveys of the literature and of non-retained SEET students, and produced several recommended actions based on documented best practices. An ensuing NSF STEP grant was obtained in August of 2010 to aid in the implementation of these initiatives. The primary goal of *First-Year Initiatives for Retention Enhancement (FIRE)* is to increase the school’s graduation rate from its recent five-year average of 42% to an improved five-year average of 65%. This will put us above the average graduation rates of undergraduate engineering programs across the nation. Reported numbers vary from one source to another, but a national average of about 55% is in reasonable agreement with the sources identified.^{5,6,7,8} A pilot version of the program was carried out during the 2010-11 academic year and full implementation began in the fall of 2011.

All of our approximately 140 “First time in college” (FTIC) freshmen are the focus of the SEET’s retention improvement efforts. The SEET’s multifaceted initiatives for improving retention include several best-practice components, namely:

- 1) exposure to engineering practice through two new courses, Introduction to Engineering Practice I & II, employing multidisciplinary projects⁹, including presentations by practicing engineers;
- 2) the development of a faculty mentoring program for first-year students;
- 3) the development of a peer mentoring program for first-year students;

- 4) the development of an industrial mentoring program for first-year students.

The mentoring aspects of the program utilize first-year interest groups (FIGs) consisting of 6-12 like-major freshmen, a peer mentor, a faculty mentor, and shared access to an industrial mentor.¹⁰

2.2 Overall Retention and Graduation Rates

Recent one-, two- and three-year retention rates are shown in Figure 1. After the first 4 years of the project the retention rates have increased for “first time in college” (FTIC) students in the School of Engineering & Engineering Technology. As seen in graph, the current trend indicates an increasing retention over the historic SEET baseline suggesting positive project impact. While we cannot link the increase directly to the efforts of this project, there is a strong correlation between the beginning of the project (2010) and increase in retention numbers. Table 1 provides the average 1-year retention rate within the SEET for the 3 years prior to the FIRE project and for 3 years subsequent to its start. The 2010 cohort is considered transitional, since the retention project elements were not yet fully implemented, and is therefore not included in the averages. So far the average 1-year retention rate has increased by nearly 9 percentage points during the project. At the same time the average 1-year retention rate for the rest of the university only increased by 2%. Since SEET students and non-SEET students experienced the similar external factors (e.g. university admissions requirements, maintaining scholarship requirements, effects of the national economy, etc.) during this time period, the data suggests that the FIRE project is the major contributor to the increased retention.

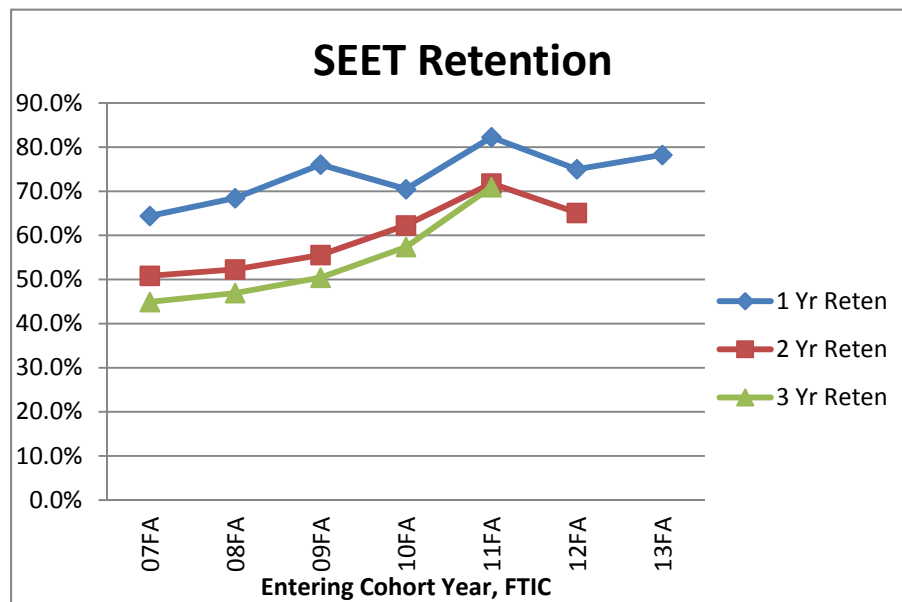


Figure 1. Retention in Engineering and Engineering Technology (FA = Fall semester)

Table 1. Average Retention in Engineering and Engineering Technology

Cohorts	SEET 1-Year Retention	Non SEET 1-Year Retention
07, 08, 09	69.6%	71.8%
11, 12, 13	78.5%	73.9%
Change	+ 8.9%	+2.1%

We do not yet have 6-year graduation rate results, but we anticipate that we will reach our long-term goal of 65%. The cohort of 2011 with its 3-year retention rate of over 70% is on track to be the first group ever to reach the target graduation rate. It should be noted that the 2012 cohort's decline in retention was likely precipitated by a 30% spike in incoming enrollment that year which overstretched retention resources.

2.3 Project Surveys

Assessment Instruments

The FIRE program is partially funded by an NSF STEP grant and due to the yearly reporting requirements assessment instruments have been numerous and varied to track the overall health of the program initiatives. The following surveys have been deployed each semester since the beginning of the project in 2011-12:

- Intro to Engineering Class Pre and Post Survey: this is intended to gauge the student's attitudes towards the engineering profession at beginning and end of the fall semester's first year intro course (only deployed in the fall semester)
- FIG Student Survey: Asks questions specific towards the students' experience with the first-year-interest groups
- PM Survey: Seeks to gauge the mentor's overall attitude about the PM program.
- Faculty Mentor (FM) survey: Seeks to gauge the faculty mentor's attitudes and experience in the PM program.
- Industrial Mentor (IM) survey: Seeks to gauge the IM's attitude and experience with their involvement in the program

In addition to the project assessment surveys given to those are still currently participating in the project, surveys have also been given to those that have left the SEET.

Leaver Surveys

In 2009 an exhaustive survey was deployed to students that had left the school asking these former students (leavers) to rank the influences behind their decision to leave engineering. The results of this survey were utilized to help develop the several first-year retention initiatives targeted at persistence of FTIC engineering students. Subsequent deployments of the identical survey to cohorts 2009 through 2013 have resulted in two distinct populations: PRE-STEP (cohorts 2006-2009) and POST-STEP (cohorts 2010-2013). This student "leaver" survey

(contents, results, and analysis) is the focus of the remainder of this paper. Even with improved retention, why are some still leaving?

3.0 Our Findings

Armed with the background information on the STEP program and the increased retention rates documented since the start of the retention initiatives we can begin to look at some of the reasons why students continue to leave through analysis of the “leaver” survey. In this section we will detail the methodology behind the survey including how it was structured and deployed. The quantitative results will be examined beginning with a summary of the basic demographic information and continuing with the data deemed most applicable to this audience. Qualitative data collected through the question “in my own words this is why I left” will be introduced throughout the discussion on each question to reinforce some of the findings.

3.1 Methodology

Subjects

The criteria for the survey population included any student enrolled in the SEET as an FTIC or transfer for at least one semester before leaving the school or university. Student names and email addresses were obtained from the university’s records office. Additional information included the id number, cohort year, telephone number and in some cases an alternate email address. Overall cohort years spanned 2006 through 2013. The SEET has an approximate enrollment of 550-575 students and an average freshmen class size of 150-175 students, therefore overall population was small and the response rate for the “leaver” survey would be critical to collecting enough useful data.

Survey deployment

SurveyMonkey.com was utilized to deploy the survey and collect results. Over the five-year period of collection a total of 143 responses were collected. One initial deployment and three additional updates were deployed as summarized in Table 2 below.

Table 2. "Leaver" survey deployment data

Deployment Date	Cohort Yrs Captured	Invites Sent	Responses Received	Response Rate	Incentive
June-July 2009	2006-2008	93	31	33.3%	None, phone call reminder
June-Nov 2010	2006-2009	98	38	38.7%	None, phone call reminder
June 2012	2009-2010	104	18	17.3%	\$50 Amazon gift card lottery
June 2014	2011-2013	181	52	28.7%	\$10 Amazon gift card per response

It was anticipated that response rates would be low for this type of exhaustive survey so the initial deployment in June 2009 was accompanied by personal phone calls from a faculty

member to encourage the former student to fill out the survey and in some cases responses were recorded live over the phone. This method resulted in the highest response rates of 33.3% in 2009 and 38.7% in 2010 at the expense of being somewhat labor intensive to make the calls. The June 2012 update which consisted primarily of students from the 2009 and 2010 cohorts included a raffle for a \$50 Amazon gift card resulting in only a 17.3% response rate. Desiring a higher rate in the 2014 update we incentivized the survey with a \$10 Amazon gift card for all respondents. In addition we tasked student workers with making reminder calls and chasing down bad email addresses resulting in a slightly better 28.7% response rate. While incentives can run the risk of skewing results with respondents being focused on the prize rather than submitting quality answers a review of the responses verifies that quality data was collected.

Survey Structure

It was desired to separate the students who left the SEET but remained at the university from those that left the university entirely. This action allows us to target the specific influences for leaving engineering. Therefore, the final question in the demographic section asked “Upon leaving the university or the SEET, I did the following:” Based upon the answer from this question the survey navigated in one of two directions as shown in Figure 2 below.

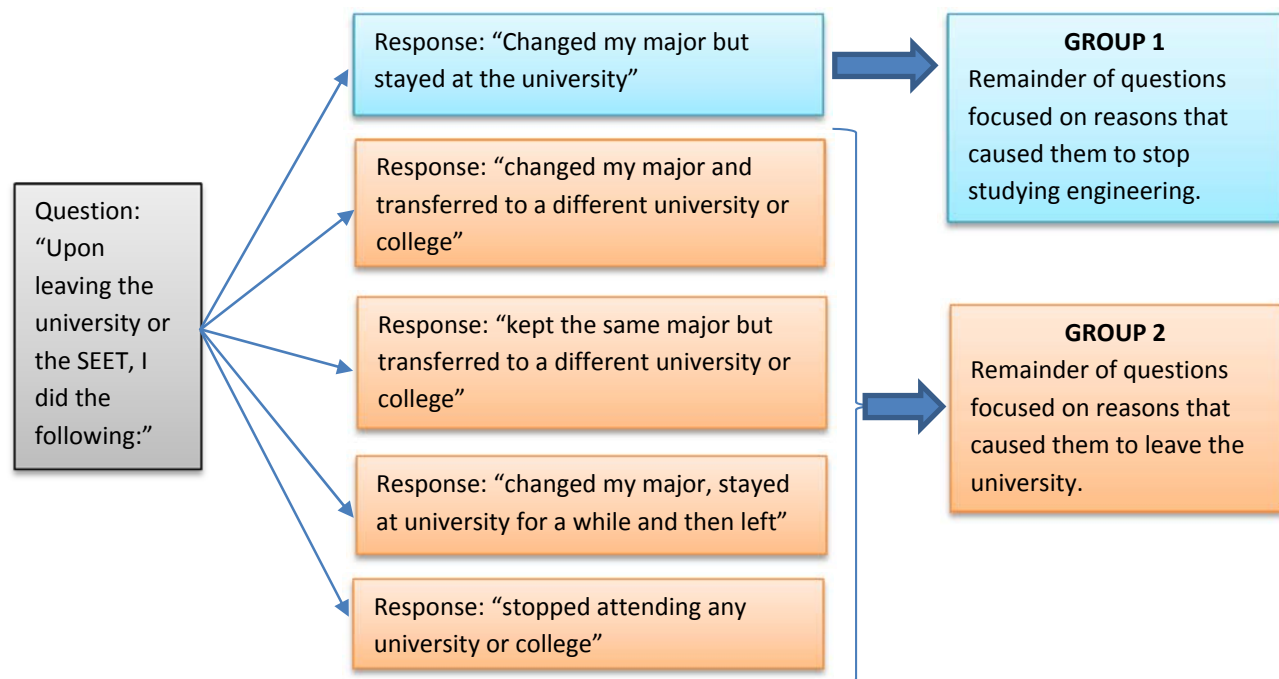


Figure 2. Demographic question used to separate groups

The bulk of the analysis that will follow is focused on group 1 since it is more applicable to this audience as well as the work associated with the NSF-STEP grant. The group 2 data will only be examined to understand any outside influences that are unique to the university.

Survey Questions

Demographic data was collected in order to supplement the basic information provided by the university records office. This information was as follows:

- Name
- Email
- Phone Number (for possible follow-up questioning)
- Gender
- First time or transfer student
- Major
- Living situation: on campus/off campus/some of each
- Withdrew after how many semesters
- After leaving what did you do?

As mentioned in the survey structure section above, depending on the answer from the last demographic question the survey moved on to ask specific questions concerning influences for leaving the SEET or the university. Each question asked the respondent to either rank the given influences 1st, 2nd and 3rd or to ask to what degree certain factors played a role from minimally through a significant amount. Each question was accompanied with an “Other” category allowing the respondent to record an influence or reason that was not listed, although this option was rarely chosen. An example of the question format can be viewed in Figure 3 below. Additional inquiries were made pertaining to specific reasons relating to coursework problems and financial challenges. A complete survey can be examined in Appendix A.

2. Why I Changed My Major

1. RANK the top ONE (1) to THREE (3) of the following influences on your decision to change your major from engineering or engineering technology to something else.

	1st (most)	2nd	3rd (least)
Had difficulty with coursework (academic performance)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lost interest in / motivation to study engineering or eng. tech.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Initially majored in engineering or eng. tech. due to parental pressure and later decided it just wasn't for me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Uncertain of future career options	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (specify the influence AND rank it):	<input type="text"/>		

Figure 3. Sample of SurveyMonkey.com question format

3.2 Survey Results and Analysis

Demographic Results

The survey data was compiled and separated into two distinct groups: PRE-STEP (cohorts 2006-2009) and POST-STEP (cohorts 2010-2013). In addition, 17 responses that identified themselves as a transfer student were removed in an effort to maintain strictly an FTIC comparison as transfer students are not exposed to all the current retention initiatives. The resulting 126 responses separated into the two groups along with some basic demographic data can be reviewed in Table 3 below.

Table 3. Demographic Data

Question	Cohorts 2006-2009 (PRE-STEP)	Cohorts 2010-2013 (POST-STEP)
Total number of respondents (n)	78	48
Male % / Female %	87% / 13%	81% / 19%
Engineering % / Engineering Tech %	88% / 12%	85% / 15%
Lived on campus % / off campus % /both %	96% / 1% / 3%	80% / 16% / 4%
Average semesters stayed in the SEET	2.12	2.63

One statistic that stands out in the demographic data is the half point increase in the amount of time a student stayed in the SEET. This may be a by-product of the positive effects of the retention initiatives. Other surveys given to FTIC students demonstrate a better understanding of the engineering profession and possibly providing some additional motivation to students who are on the fence whether to persist or not.

In comparing the PRE-STEP and POST-STEP populations for the analysis of the survey it must be through the lens of improved retention. Recall that the retention rate for cohorts 2011-2013 was 8.9% greater than the 2006-2009 cohorts. The STEP project is likely a major contributor to this increase. Therefore it is somewhat difficult to perform a true comparative analysis as the populations have had a different first-year experience.

Question: Upon leaving the SEET I did the following:

This was the final question in the demographic section of the survey and as stated earlier (Figure 2) separated the respondents into two groups. Figure 4 depicts the results and illustrates the differences in our PRE-STEP and POST-STEP cohorts. A key finding from this question shows that our retention initiatives are providing a better understanding of the engineering profession and allowing students to make a more informed decision regarding career paths. This is partially supported by an additional assessment instrument given to FTIC students at the beginning and end of their first semester which measures this increase in understanding.

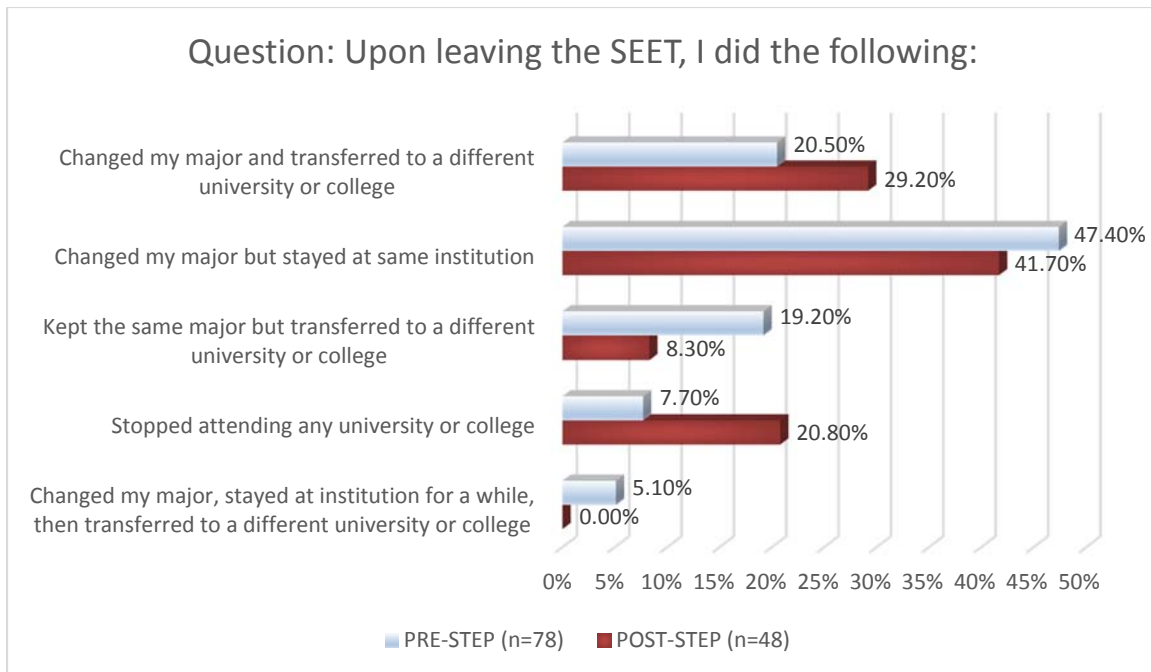


Figure 4. Final demographic question designed to separate respondents into two groups

Armed with the understanding that the POST-STEP group maintained significantly higher 1-year and 2-year retention rates the results from this question are in line with what is expected. The main focus of the STEP initiatives are intended to either energize a first-year student to study engineering or to steer them in an alternative direction. With this in mind the 8.7% increase in students who changed majors and transferred to a different university or college becomes clear. Reviewing the open-ended comments from these students indicates a clear decision that engineering was not a path of study they desired to pursue.

We believe the 10.9% decrease in students who kept the same major but transferred to a different university or college is an example of students having a better understanding of the engineering discipline. They are more likely to abandon engineering altogether than to try a different school and discover after another one or two semesters to finally leave engineering.

What is troubling from the results of this question is the 13.1% increase in students choosing to stop attending any university or college. Again, the open-ended comments hint at the underlying reasons for most of these. Poor academic performance, financial struggles and maturity issues were the overwhelming theme of those students who chose to stop attending any college.

Question: Rank the top reasons to change major from engineering to something else:

This question was asked only to the first group that changed major from engineering but remained at the university. This allows us to isolate the specific reasons that affected the major change without any other outside influences. The student was actually asked to rank the top three out of four given reasons. The rankings were then weighted by multiplying a one ranking by three, two rankings were multiplied by 2 and a third ranking was multiplied by 1. The weighted results which have been converted to percentages for ease of comparison can be viewed in Figure 5 below. This question provided the most insight into attrition revealing several key

findings such as: retention initiatives have not created a significant difference PRE-STEP to POST-STEP, qualitative data from this question indicate clear decision making in the reason to leave engineering, and finally, patterns from our study reflect others work in this area.

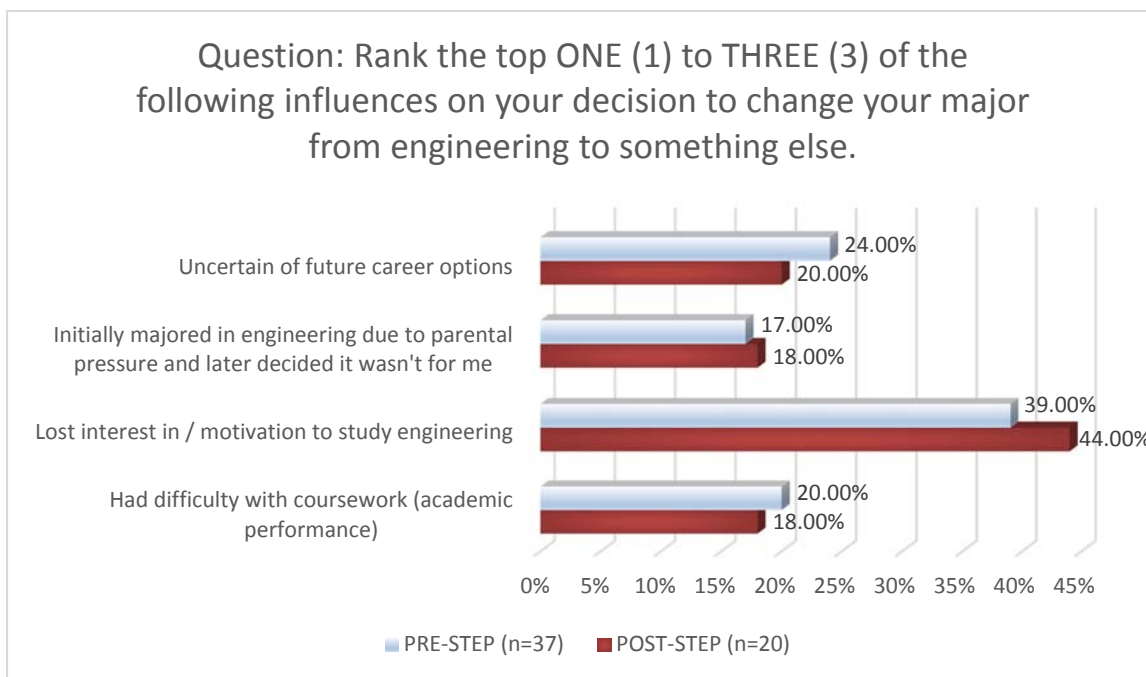


Figure 5. Influences for leaving engineering.

The 5% increase in the amount of students who lost interest or motivation to study engineering may be interpreted as a positive result of the retention initiatives. The information provided to the freshmen through the first-year experience courses, plus faculty and industrial mentorship provide a realistic picture of an engineering career and the increase might suggest that the students leaving the school are more decisive in their choice of major. However, when the small sample sizes are considered this value is not statistically significant and therefore difficult to draw any major conclusions.

While no significant conclusions can be drawn between the PRE-STEP and POST-STEP populations on this question some insight can be garnered from analyzing the qualitative data with respect to the question “in my own words, this is why I left the SEET”. This optional question was responded to by 94% of the students indicating an open willingness to convey their experiences. For those respondents who ranked the “lost interest in/motivation to study engineering” as their top reason the comments consistently indicate a clear direction as shown in a sampling of these responses below.

“I realized I was not interested in engineering in itself, and by the time I decided to leave SEET I did not think good job prospects alone justified going into an engineering career.”

“I left LeTourneau’s engineering program because I lost interest in my major (Biomedical Engineering concentration) and because I gained interest in another (Computer Science).”

“I thought engineering was a good fit for me, but I found I was more interested in another subject.”

“Left SEET because I did not enjoy the "hands-on" aspect of engineering. I prefer more abstract work (i.e. programming (abstract) over circuit board design (hands-on/concrete)).”

“I honestly just wasn't enjoying mechanical engineering anymore. I would see and hear how my fellow classmates felt about it and their passion for it and I realized that I didn't have that same passion. It just wasn't for me.”

“I left SEET because I finally felt peace about not getting a degree in something that would provide me job security and a great salary that I absolutely would be miserable doing.”

The influence titled “uncertain of future career options” was intended to be focused on the actual job market, however, we believe this was interpreted by some respondents as having difficulty picturing themselves working as an engineer for their career. In fact the open comments seem to bear this out with numerous respondents arriving at the realization that engineering was simply not for them based upon early academic performance or influence of others. If this is true then there is likely some overlap between the influence concerning motivation in engineering deducing that if one does not picture themselves as an engineer they are likely to lose interest and motivation to study to that end. Comments suggest that a student was just as likely to arrive at the same conclusion before the initiatives were in place as after, with a minor caveat that the average stay POST-STEP was about half a semester longer than PRE-STEP. A sampling of the comments from students who selected this reason as their first or second reason is provided below. Notice the similarities to the students who selected the “lost interest in/motivation to study engineering” as their top reason.

“I left the SEET program because I was not interested in being an engineer. I could not see a future for myself in the field as I did not feel creative or passionate enough for the profession.”

“I decided engineering was not something I would enjoy doing as a career”

“I left the engineering program because I really didn't like it. It wasn't for me. I changed career fields completely and switched to biology.”

“I felt like I didn't have what it took to be an engineer (lack of motivation, poor math skills) and felt called to do other things. I liked the idea of engineering, but it really wasn't for me.”

“I did not see being an engineer as the career path that was for me.”

The students having difficulty with coursework mirrors what was reported by a University of Pittsburgh 6-year study in which approximately 25% of students leaving engineering did so because of difficulty with coursework¹⁴. Of the respondents who ranked this as their number one reason the open-ended comments seem to indicate inadequate preparedness in basic math and science. This also reflects what was found in the group 2 population when asked specifically the

reason for difficulty with coursework. A sampling of the responses from respondents that selected difficulty with coursework at their top reason are shown below.

“LeTourneau really turned me off to engineering just because it was too hard.”

“LeTourneau is a fantastic school with rigorous course work. I could not keep up with the math to make it in engineering.”

“Basically, I felt that I was not well enough prepared for the basics. It seemed like my peers had prior experiences which made the professors lecture on a level that was above my knowledge of the subject.”

“I wasn't able to get a 4.0 in Eng, so I changed my major to Chemistry.”

Question: RANK the top reasons for leaving the university

For the students who left both the SEET as well as the university we asked them to rank the specific influences for leaving. Recall that some students who left, 19.2% PRE-STEP and 8.3% POST-STEP (from Figure 2), continued to study engineering at another university. The rankings were then weighted by multiplying a one ranking by 3, two rankings were multiplied by 2 and a third ranking was multiplied by 1. The weighted results which have been converted to percentages for ease of comparison can be viewed in Figure 6 below. This question reveals how outside influences such as social atmosphere of the campus or financial struggles compare to the engineering-related reasons for leaving.

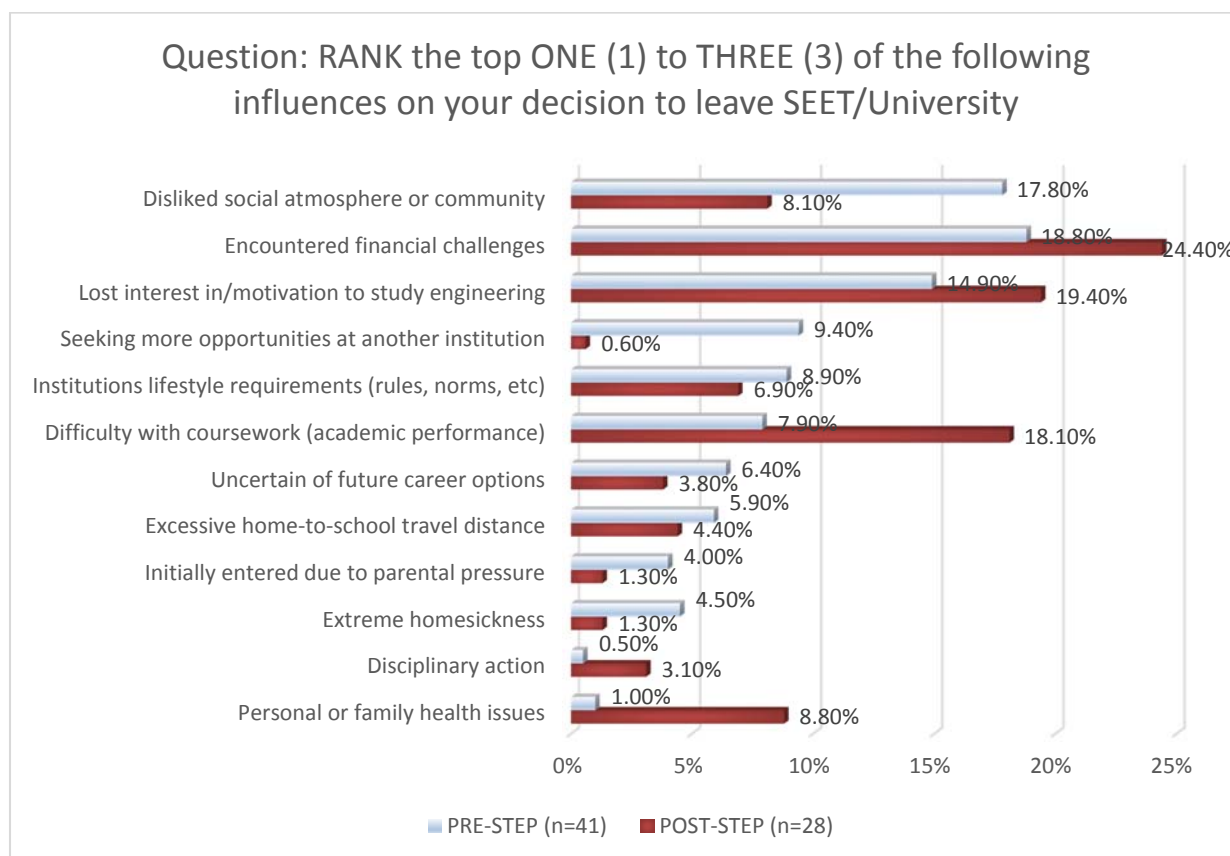


Figure 6. Influences for leaving SEET and/or university

A comparison between PRE-STEP and POST-STEP results is difficult with the small sample sizes, however, what becomes clear from this data is the comparative results between the engineering specific influences versus outside influences. While again, not statistically significant, this population followed a similar pattern as the data in which students left the SEET and stayed at the university (Figure 5). We see increases in the students who lost motivation to study engineering and a decrease in students who were uncertain of future career options. However, we do see a sharp rise, 10.2%, in students experiencing difficulty with coursework. This is likely due to a more rigorous and structured first-year experience class in the POST-STEP group. The new fall semester course which is intended to answer the question “what do engineers do?” replaced a generic engineering graphics course and has a lab component to allow the students to apply what they have learned in the classroom. The 3-credit spring course replaced an existing 2-credit hour course which introduced basic programming using Lego’s NXT equipment. The new course incorporates Arduino microcontrollers and several team oriented design projects.

4.0 Conclusions

Lessons Learned

The following observations are offered for institutions seeking to perform a similar assessment in order to capture data related to attrition. The complete survey can be found in Appendix A.

Response rates for this type of survey were expected to be low so several incentive techniques were utilized including: personal phone calls from faculty, a gift card raffle and a small \$10 gift card for all responders. While the phone calls achieved good responses it was very labor intensive. The gift card raffle was not significant enough to lure enough responders, however, the \$10 gift card achieved close to a 30% response rate and was not difficult to implement using Amazon electronic gift cards and email accounts. Those who did respond were extremely honest in their open comments and suggestions for improvement of our programs and some took a significant amount of time to convey their experiences while in our program.

More specific influences should have been added concerning the question entitled “Rank the top influences on your decision to change your major from engineering to something else” (Figure 4). There was too much overlap between the influences on “losing motivation” and “uncertain of future career options”. Furthermore, questioning concerning the effect of specific retention initiatives such as peer and faculty mentoring would have been helpful in evaluating our first-year program.

One improvement that could be made to a “leaver” survey is to seek an indication of the level of engineering knowledge prior to starting a degree program. The groundbreaking work of Simon and Hewitt¹¹ tell us that those who persist in engineering programs are academically similar to those who do not. There may be some research opportunities to determine the effect of pre-college activities and their relation to persistence in engineering programs. While being academically similar, most students have varying levels of their knowledge of the engineering discipline. A question that asks about participation in high school programs such as robotics, pre-engineering, Project Lead the Way, advanced math, science etc. may be beneficial in tying persistence in engineering programs to the influence received prior to the collegiate level.

Final Conclusions

No program will ever achieve a 100% retention rate. The SEET has adopted proven methods to support engineering students through various forms of mentoring and first-year experience courses designed to motivate the student to persist in their field of study. This is all backed with a solid support system providing several resources to ensure success of the first-year student. The program is working as evidenced by the increased retention rates and anticipated increase in graduation rates. However, students are still leaving, albeit at a slower rate than previously. The “leaver” survey tasked with identifying the reasons for the attrition has not suggested any significant differences in the data since our retention program began in 2010. All of this is not to degrade the value of a “leaver” survey. This instrument still provides excellent data on the influences affecting attrition and was a major factor in constructing a retention program that has proven to be effective.

While the data provided by the “leaver” survey is useful for the implementation of retention programs it is far from perfect. Future deployments of the survey will include some modifications to help narrow the focus of reasons why students leave engineering. It may also include additional questions to assess the effectiveness of retention initiatives associated with our STEP grant such as the peer and faculty mentorship programs and first-year experience courses.

We know that not every student entering an engineering program is destined to end up an engineer. We have learned from Ohland et al’s work¹² that engineers are a persistent group and there are a large number of FTIC students who very clearly follow the path towards that goal. We also learn know from Eris et al’s work¹³ that a major factor among persistence is dependent on pre-college influences and mentors that our out of our control. Our programs are designed to mentor those students who are intent on an engineering field of study while providing a realistic picture of the career for those who are less intent of pursuing engineering for their future.

Both the quantitative and qualitative data collected through the leaver survey point to the primary reason why students leave the SEET as being a lack of motivation to study engineering. This reason has not changed since the implementation of our retention initiatives in 2010 and is consistent with others findings in this area. When reviewing all of open-ended responses on the question “in my own words, this is why I left” the permeating theme is the lack of regret over the decision to leave engineering. There is not a single response lamenting the decision and desiring to work their way back into the engineering program. The over-arching conclusions was that due to various reasons, mainly associated with motivation or career paths, engineering was not the correct road to pursue. As the quantitative data from the survey supports, this was just as true before our initiatives as it is after. Additional data from other assessment instruments prove that the retention initiatives are providing a better understanding of the engineering profession and though not fully supported by this “leaver” survey data it appears that the FTIC students are being provided a more realistic picture of what they may expect with a career in engineering. We can ascertain that our initiatives are helping those on the fringe of remaining in engineering while highlighting an incompatibility for others.

Acknowledgement

The project, entitled **First-Year Initiatives for Retention Enhancement (FIRE)**, is supported by the National Science Foundation under Grant No. 0969382. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

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Appendix A
Example of “Leaver” Survey

Reasons for Non-Retention of [REDACTED] SEET Students 2014

[Exit this survey](#)**1. Basic Data**

This survey is being conducted by the School of Engineering and Engineering Technology (SEET) at [REDACTED] University ([REDACTED]). Its purpose is to help us identify the leading causes of student withdrawal from SEET degree programs, so that in the future we can do a better job of helping our students to engage, persist, succeed and graduate.

Your identity as a survey-taker will be omitted from any publication of your responses to persons outside of the retention study team, which consists of Professors [REDACTED] and [REDACTED], and SEET Dean [REDACTED].

The survey should take no more than about 15 minutes to complete. THANK YOU for your time and honest feedback.

~~~ IMPORTANT ~~~

Please complete one (1) page at a time. Once you advance to the next page by pressing the 'NEXT' button, you will be unable to go back and edit your previous responses. If this happens by accident, please notify Professor [REDACTED].

**1. Please enter the following information about yourself.**

(This is only to validate your input as being that of a former [REDACTED] SEET student.)

Name:

Email Address:

Phone Number:

**2. My gender is:**☐ Male☐ Female**3. I entered [REDACTED] University as a:**☐ First-time student☐ Transfer student

Additional Comment (optional):

**4. My major while attending [REDACTED] was:**

(Check one or more.)

☐ Engineering (any concentration)

Engineering Technology (any concentration)

Design Technology

**5. I lived:**

On campus

Off campus (commuter)

Some of each

**6. I withdrew from a SEET degree program and/or stopped attending [REDACTED] after this many SEMESTERS.**

Additional Comment (optional):

**7. Upon leaving [REDACTED] and/or SEET, I did the following:**

Changed my major but stayed at [REDACTED].

Changed my major and transferred to a different university or college.

Kept the same major but transferred to a different university or college.

Changed my major, stayed at [REDACTED] for a while, then transferred to a different university or college.

Stopped attending any university or college.

(If applicable...) My current major and/or university/college are:

Next

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# Reasons for Non-Retention of [REDACTED] SEET Students 2014

Exit this survey

## 2. Why I Changed My Major

1. **RANK the top ONE (1) to THREE (3) of the following influences on your decision to change your major from engineering or engineering technology to something else.**

1st (most) 2nd 3rd (least)

Had difficulty with  
coursework (academic  
performance)

Lost interest in /  
motivation to study  
engineering or eng. tech.

Initially majored in  
engineering or eng. tech.  
due to parental pressure  
and later decided it just  
wasn't for me

Uncertain of future career  
options

Other (specify the influence AND rank it):

2. If **DIFFICULTY WITH COURSEWORK** was one of your top three influences, please indicate the degree to which each of the following factors played a role.

**NOTE: Any that you leave blank will be counted as "Not Sure", but we would prefer that you actually mark them as such.**

Not at All Minimally Somewhat Significantly Very Significantly [Not Sure]

Inadequate preparation in  
math and/or science  
before coming to [REDACTED]

Inadequate preparation in  
written English before  
coming to [REDACTED]

Inadequate note-taking  
skills

Inadequate study skills

Inadequate computer  
skills

Inadequate time  
management skills for the  
course load that I took

Inability to find help when  
needed

Too involved in  
extracurricular activities  
(sports, clubs, etc.)

Addiction to video  
gaming, online social  
networking, etc.

Other (specify factor AND its significance):

**3. Again, if DIFFICULTY WITH COURSEWORK was one of your top three influences, please list one or more COURSES that you found to be especially problematic. Also, please tell us WHY.**

Course

#1 and

Reason:

Course

#2 and

Reason:

Course

#3 and

Reason:

**4. Again, if DIFFICULTY WITH COURSEWORK was one of your top three influences, please list one or more INSTRUCTORS whom you found to be especially problematic. Also, please tell us WHY.**

Instructor

#1 and

Reason:

Instructor

#2 and

Reason:

Instructor

#3 and

Reason:

Prev

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# Reasons for Non-Retention of SEET Students 2014

Exit this survey

## 2. Why I Left

1. RANK the top ONE (1) to THREE (3) of the following influences on your decision to leave SEET.

|                                                                    | 1st (most) | 2nd | 3rd (least) |
|--------------------------------------------------------------------|------------|-----|-------------|
| Had difficulty with coursework (academic performance)              |            |     |             |
| Encountered financial challenges                                   |            |     |             |
| Lost interest in / motivation to study engineering or eng. tech.   |            |     |             |
| Disliked social atmosphere/ community at                           |            |     |             |
| Seeking more opportunities at another institution                  |            |     |             |
| Initially entered due to parental pressure and didn't want to stay |            |     |             |
| Uncertain of future career options                                 |            |     |             |
| Excessive home-to travel distance                                  |            |     |             |
| Extreme homesickness                                               |            |     |             |
| Personal or family health issues                                   |            |     |             |
| lifestyle requirements (rules, norms, expectations)                |            |     |             |
| Disciplinary action                                                |            |     |             |
| Other (specify the influence AND rank it):                         |            |     |             |

2. If DIFFICULTY WITH COURSEWORK was one of your top three influences, please indicate the degree to which each of the following factors played a role.

NOTE: Any that you leave blank will be counted as "Not Sure", but we would prefer that you actually mark them as such.

|                           | Not at All | Minimally | Somewhat | Significantly | Very Significantly | [Not Sure] |
|---------------------------|------------|-----------|----------|---------------|--------------------|------------|
| Inadequate preparation in |            |           |          |               |                    |            |
| math and/or science       |            |           |          |               |                    |            |

before coming to

Inadequate preparation in  
written English before  
coming to

Inadequate note-taking  
skills

Inadequate study skills

Inadequate computer  
skills

Inadequate time  
management skills for the  
course load that I took

Inability to find help when  
needed

Too involved in  
extracurricular activities  
(sports, clubs, etc.)

Addiction to video  
gaming, online social  
networking, etc.

Other (specify factor AND its significance):

**3. Again, if DIFFICULTY WITH COURSEWORK was one of your top three influences, please list one or more COURSES that you found to be especially problematic. Also, please tell us WHY.**

Course   
#1 and  
Reason:

Course   
#2 and  
Reason:

Course   
#3 and  
Reason:

**4. Again, if DIFFICULTY WITH COURSEWORK was one of your top three influences, please list one or more INSTRUCTORS whom you found to be especially problematic. Also, please tell us WHY.**

Instructor   
#1 and  
Reason:

Instructor   
#2 and  
Reason:

Instructor   
#3 and  
Reason:

**5. If FINANCIAL CHALLENGES was one of your top three influences, please indicate the degree to which each of the following factors played a role.**

Not at All      Minimally      Somewhat      Significantly      Very Significantly      [Not Sure]

Loss of academic scholarship from [REDACTED]

Loss of other financial aid

Loss of family income

Effects of economic decline/recession

Other (specify factor AND its significance):

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Reasons for Non-Retention of █████ SEET Students 2014

Exit this survey

3. Wrap-Up

1. I would describe the degree of camaraderie and connectedness I experienced at █████ as:

Close-Knit

Reasonably Friendly / Inclusive

Lukewarm

Isolating / Exclusive

Additional Comment (optional):

2. (Most important question of the survey...) In my own words, this is why I left █████ and/or SEET:

3. I would offer the following suggestions for improvement:

Thank you for completing the survey. If you qualify for the Amazon gift card a code will be sent to your email account within 1-2 weeks of close of survey.

Prev

Done

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