HELPING STUDENTS MAKE THE TRANSTITIONS BETWEEN HIGH SCHOOL AND COLLEGE

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Abstract *— The transition from high school to college can be very difficult for many students. At the University of Pittsburgh, we have a system of courses and academic counseling that is designed to address these issues and help with this transition. One major component of our program is a process to help the freshman cope with academic failure. This paper discusses an approach to address the emotional issues that the freshmen students endure due to their academic failure. It was determined through this research that the freshmen engineering students must adjust their unrealistic, preconceived academic expectations transferred from high school, as well as accept academic failure and learn to react in a positive manner to their classroom performance.*

Index Terms —Freshman Retention, Academic failure.

INTRODUCTION

Numerous studies document the importance of educating new students about their new academic setting [1 - 5]. Indeed, helping students anticipate and understand life changes can help the university realize a significantly higher first-year student persistence rate [6]. For many years, university programs have incorporated these components via the implementation of pre-college orientation programs that include:

1. Raising the knowledge level of first-year undergraduate students with regard to lifestyle changes that can occur in moving to a campus environment [7].
2. Developing an awareness of the services offered by the university is crucial in the creation of a productive adjustment process [8].
3. Expanding new students' knowledge of changes in status, residence, failure, relationships, and authority through both interactive discussions and written materials documenting success strategies [9].
4. Helping students develop a positive attitude toward their first year at the university.

We use our summer orientation programs to address these items, and also help students become aware of the changes that are taking place in their lives and begin the transition in the student's immediate family structure by introducing professional counselors and advisors during the summer registration program [10 – 12]. This expansion of their family is continued in the fall semester, in our seminar course ENGR0081 and introduction to Engineering course ENGR0011, as peer mentors and faculty are added to their family structure.

Mentoring is often thought to be a lot like coaching. In fact, many mentors do find that their role as mentor takes on the task of coaching the students through the various difficult transitions from high school to college. It is important that all participants in the student's life, including, parents, faculty and university staff, understand that during the transition from high school to college, students often experience a sense of loss for what has changed in their life or despair over relationships that have changed or have been replaced [13]. The first year college adjustment embodies both a loss experience as well as an exciting set of new opportunities [14]. These changes can affect the students' first year experience, including their performance in the classroom and their desire to stay in school. The culminations of such experiences are recognized within three major areas of transition:

TRANSITIONS

Family Transitions

For most first year students, arriving on campus initiates the progression from family and compliance, to residence hall living and independence. Being away from home for the first time is typically a period when students test their freedom, and begin apprehensively enjoying their challenging new environment. Simultaneously, parents may be either celebrating the departure of their child or trying to convince the student to come home every weekend. Additionally, parents might encourage the student to make new friends, or afraid of losing their child, they might prevent the student from making many university-related connections.

In our mentor sessions, students are told that the entire family is going through a change and is experiencing both excitement and sadness. It is okay and natural for the student to feel homesick and have doubts. Therefore, it is important to communicate both spontaneously and on a regular basis with their family.

Interestingly, what a family may not realize is research has discovered that leaving home often fosters improved relationships with parents via the compilation of new-found freedom to express affection while the student has begun

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individuating into an adult [20]. Furthermore, as a young person evolves into adulthood, they come to consider themselves to be more equal to their parents, and therefore more open to respecting each other's viewpoint. Recognized as mutual reciprocity, this developmental transformation of student/parent relations can lend to a positive family transitional experience [21].

Another benefit of the mentor program is discovered when students find they are able to confidently share relevant university information with their parents. Since parents are important to a student's perception formation, it seems likely open and accurate communications can lend to realistic expectation formation between the two groups [22]. The assumption is a satisfied student equals a happy family, which translates directly into the efficacy of the family's transitional success.

Personal Transitions

Being at a university means being a newcomer in a strange, and possible lonely community. Some days students may want to fly, run, walk, or drive home. There will be days where the student feels they cannot stand one more day in the residence halls, in the large lecture, with their roommate, with their professors and teaching assistants, or their load of courses. These personal transitions can consume a first year student's thoughts if they are unable to seriously focus on why the university experience is important to their career goals. Insights from mentors can be very helpful. There may be what appear to be insurmountable personal changes during the first year, and research on student persistence supports the importance of linking students to appropriate support personnel to assist with these challenges.

According to Greenberger (1982) psychosocial maturity, an important element in college student success development, is the capacity of an individual to function without the influence of parents [23]. Consequently, it would seem natural to assume a student functioning without parental supervision is developing psychosocial maturity. However, eliminating parents from a student's life is neither possible nor productive. Therefore, the challenge for the university is to help students establish clear boundaries with parents, without cutting them from the communication loop completely. Numerous studies document the importance of interaction with the freshmen during their first semester [24 – 27], thus, the freshman program has developed procedures within our courses that establish an environment that reinforces the existing student support system.

ACADEMIC TRANSITIONS

The final transition that many engineering students encounter is within the academic milieu, which is often compounded by the additional challenges these changes elicit. As a student moves from high school to college he/she is channeled through the high school highly structured daily schedule of planned activities. Upon entering college, the same student is now in charge of creating and implementing their own schedule that is typically different each day, may include night classes, and also has free time throughout the day. In addition to time management, other changes that potentially add to transition frustrations are: different teaching styles from high school teachers, walking across campus and going from building to building as opposed to walking though hallways of the same building, being the best student back home is different than competing with all the top students at the university, etc.

Previous studies indicate that a student's first semester success can lay the groundwork for engineering program completion and/or degree attainment [15 & 16]. Therefore, appropriate support systems must be activated during the very first interaction students and their families have with the university. Several positive outcomes have been realized when students and parents are provided time with members of the university community who will continue to work with the first year students. Examples of positive outcomes are:

- Students develop more realistic expectations for their upcoming year that translates into lower frustration levels for ideals unrealized [17],
- Participating in educational exchanges increase student/parent perceptions as relative equals by the university, and are therefore more likely to become engaged in ongoing open communications [18],
- Early awareness of campus resources strengthens and developing a student's potential to persist through a four-year college program [19].

Given the three outcomes listed above, it can be hypothesized that a freshman program that attends to these needs of the students will assist in creating a more successful academic transition experience.

OUR STUDENTS

Across the country it is not uncommon that over 40% the first year students will not graduate. Why? Are the kids failing because they do not have the ability or because they do not have the interest? This is not an easy question to answer if you look at one student. Each person is an individual and there are always people that do not fit the norm. However, if you analyze the group as a whole and look for common strengths, weaknesses, academic backgrounds, social problems, issues or trends, you can group or stereotype the typical engineering student into some of these basic areas:

- Good high school student, high GPA, top 10% of class,
- High standardized test scores such as SAT,
- Advanced High school curriculum, 4 -5 years of math, at least one year of chemistry, physics and biology,
- Typically involved in some type of high school activity, such as academic clubs, band, or school government,
- High school teachers and advisors all highly recommend the student,

- Has at least one scholarship,
- Has at least one honor or award for her/his service,
- Not uncommon for the student to be a leader, not a follower. Thus, not impacted as much by peer pressure,
- Typically does not have a history of disciplinary problems, with authority, drugs, alcohol or legal issues,
- Highly motivated,
- Very common that the student had a summer job.

Thus, the typical engineering student is the best thing you could ask for in the classroom. So why do we typically have the best freshman students and a lower retention rate then programs with lower quality students?

To answer this question, all you have to do is look at what the other programs on campus have in the form of student support services. What you will find, is other programs will have intervention activities for all types of academic and non-academic transition issues. That is the rest of campus is ready for and expecting various problems that lead to failure and has strategies in place to deal with them as they arise [28 – 32]. One way of summarizing the differences is, the rest of campus expects their students to fail and need help thus they have programs to help the students and these programs increase the retention. In engineering we do not expect our student to fail, because they have never failed in the past and have always been good students. So we just assume they will always continue to be good students. However, some degree of transition problems including academic failure during freshman year is very common, and in most cases, guaranteed. What is important during these periods of failure is how the engineering student responds to their experience. Maybe this is the fundamental problem, OUR STUDENTS DO NOT KNOW HOW TO DEAL WITH FAILURE.

WHAT IS FAILURE BY HIGH SCHOOL STANDARDS

In this two year study, a survey was conducted with University of Pittsburgh freshmen engineering students and upper classmen engineering students. The questions asked were developed to get an understanding of how the students cope with academic failure. The numbers of engineering students that participated in this study are listed in Table 1.

The first three questions of the survey are related to the engineering students' high school academic experiences:

- What was the lowest grade percentage that I considered to be acceptable in high school?
- What percentage of my high school classes did I receive unacceptable grades?
- My unacceptable grades during high school caused emotional strain.

The average high school grading scale as provided by the students was the typical 90, 80, and 70% grade percentage ranges for an A, B and C: However, this varied greatly between schools, making it difficult to define a standard grading scale. This actually plays a vital role in the freshmen engineer's psyche since many engineering classes are not based on a traditional grading scale from their high schools, but are based on a college academic curve.

TABLE 1 – NUMBER OF ENGINEERING STUDENTS.

STUDENTS	GENDER		
	M & F	M	F
	# OF STUDENTS		
FRESHMEN (W/O HONORS)	723	433	158
FRESHMEN HONORS	155	114	35
SOPHOMORES	90	71	19
JUNIORS	48	36	12
SENIORS	46	35	11
TOTAL	1062	689	235

Using scores of 95, 85, and 75 to correspond to a 4.0, 3.0 and 2.0 in a standard 4.0 system used in college, the results from Question #1, see Table 2, illustrate the students' personal high school academic performance expectations. The typical lowest grade acceptable by the freshmen students correlates to a low B grade. Thus, in high school a grade of 80% would be considered a failure by these students. The table also shows that the expectations are somewhat based on gender as the females students generally had slightly higher grade score. The table also shows that this value is somewhat constant as all of the students surveyed from freshmen to seniors had similar values when they left high school.

Question #2 asks what percent of courses did the students have issues with in high school. As shown in Table 2, the students did experience some issues in high school and the level of disappointment was approximately 12%. This is a very low percentage. By considering a low B grade to be failure, the students receive mostly A grades, and rarely endure any level of failure. The table also shows that this belief of failure is somewhat based on gender, as the female honor students have a case with the highest percentage of academic issues, but overall the women have a lower percentage than that of the male students. The table also shows that this number is somewhat constant as all of the students surveyed from freshman to seniors had low values for when they left high school.

Question #3 was asked to get an understanding of how the engineering students felt about issues they developed while they were taking their high school courses. (A typical 1 – 5 scale was used, with a value of 1 students strongly disagreeing while the value 5 correlates to the students strongly agreeing). The results shown in Table 2 reflect a neutral response and that the students endured a relatively small degree of emotional strain from unacceptable grades during high school.

TABLE 2 – ENGINEERING STUDENTS' ACADEMIC EXPERIENCE DURING HIGH SCHOOL.

CLASSMEN	QUESTION #1			QUESTION #2			QUESTION #3		
	GENDER			GENDER			GENDER		
	M & F	M	F	M & F	M	F	M & F	M	F
	(QPA)			(%)			(SCALE 1-5)		
FRESHMEN (W/O HONORS)	2.76	2.71	2.83	12.55	13.07	11.54	2.09	2.00	2.30
FRESHMEN HONORS	2.86	2.87	2.83	11.18	10.24	14.38	2.08	1.97	2.53
SOPHOMORES	2.77	2.72	2.97	12.02	13.57	6.32	2.73	2.52	3.59
JUNIORS	2.81	2.78	2.92	8.09	6.86	11.67	2.54	2.47	2.75
SENIORS	2.66	2.59	2.90	11.11	12.86	5.00	2.40	2.42	2.33
AVERAGE	2.77	2.74	2.85	12.07	12.08	10.49	2.16	2.13	2.54

The value 1 correlates to the students strongly disagreeing while the value 5 correlates to the students strongly agreeing.

The data shows that while the students are in high school, there is a high level of academic expectations placed upon them whether it is directly or indirectly. Thus, do the results for these behaviors actually set an unrealistic standard that assumedly can be transferred into their collegiate careers which is virtually unachievable leading to inevitable overwhelming emotional strain and become the cause of failure?

WHAT IS FAILURE BY UNIVERSITY STANDARDS

The next three questions of the survey are related to the engineering students' collegiate academic experiences:

- What is the lowest test grade that I consider to be acceptable in college?
- What percentage of my classes during my freshman year did I receive unacceptable test scores?
- Dealing with my unacceptable grades during my freshman year is causing emotional strain.

When the students begin their collegiate freshmen year in engineering, their preconceived expectations of academic excellence continues until the first round of exams. At this time, most students are introduced to their first true encounter with academic failure. The results from Question #4, as shown in Table 3, show that the freshmen students' lowest acceptable collegiate grades are approximately C+ grades. The table also shows that the expectation is not based on gender as both the male and female engineering students have basically the same GPA values. The table also shows that these values are generally consistent throughout the different collegiate levels.

To further assess the engineering students' academic expectations, Question #5 asks what percentage of courses the engineering students had issues with during their freshmen year. The overall results that are shown in Table 3 show that the engineering students received unacceptable grades in approximately 36% of their freshmen courses. The table shows that the responses are basically consistent between genders, and throughout the collegiate levels. This is three times the value reported during high school.

In order to get an understanding of how the engineering students felt about their academic performance, Question #6 was asked with the same aforementioned scale with values ranging from 1 to 5. The overall results shown in Table 3 reflect that the students are experiencing more levels of emotional strain induced from their personally unacceptable academic performance then they did during their high school years. The table also shows that in each collegiate level, the female students had even more emotional issues with their unacceptable grades than that of the male students.

A significant drop can be seen in the students' academic expectations from high school to college as the lowest acceptable grade drop from low B to approximately C+. The percentage of classes that the engineering students received unacceptable grades increased from 12% to 36%. This is a significant difference, especially when considering that the standard for unacceptable grades was lowered, yet the percentage of classes with unacceptable grades increased; if the standard remained at a low B, the percentage of unacceptable grades would increase even more.

Every semester the faculty from engineering, mathematics, physics, and chemistry schedule all the exams so they are all within a given window, but make sure there is not a conflict. That is we make sure the students have enough time to study so they do not have any excuses. After every round of exams faculty get together with the advisors and provide them with a list of students that had an issue with an exam (below a C). This allows the faculty and advisors to provide intervention before the next exam.

TABLE 3 – ENGINEERING STUDENTS' ACADEMIC EXPERIENCE DURING THEIR FRESHMAN YEAR.

CLASSMEN	QUESTION #4			QUESTION #5			QUESTION #6		
	GENDER			GENDER			GENDER		
	M & F	M	F	M & F	M	F	M & F	M	F
	(QPA)			(%)			(SCALE 1-5)		
FRESHMEN (W/O HONORS)	2.31	2.31	2.34	37.81	38.00	37.80	3.38	3.28	3.68
FRESHMEN HONORS	2.60	2.60	2.56	32.64	31.14	36.01	3.14	2.88	3.96
SOPHOMORES	2.35	2.37	2.28	34.48	35.51	30.56	3.69	3.60	4.06
JUNIORS	2.29	2.31	2.23	33.11	33.71	31.00	3.43	3.40	3.55
SENIORS	2.44	2.39	2.60	31.56	31.43	32.00	3.31	3.17	3.80
AVERAGE	2.36	2.38	2.39	36.30	35.60	35.55	3.37	3.24	3.73

The value 1 correlates to the students strongly disagreeing while the value 5 correlates to the students strongly agreeing.

We have also found the students that are failing are typically not the same student. That is the kid that fails a chemistry test is not necessary the same kid that fails the physics test. If you look at additional historical data, we have found that approximately 40% of the freshman class will actually get a grade below C on one of the first tests. Of this group approximately 60% will fail only one test, 30% will fail 2 tests and 10% will fail more than 2 tests. This number is in agreement with the data supplied by the students.

But what is the students' definition of failure? Some students define failure as a grade of "F", but many have a much different concept of failure. Remember these students have always received good grades; they have never failed anything before, and typically have always received grades of A and B. Thus, if you expand the definition of failure to include any student that received a grade below a "B" in anyone of the freshman classes, this now impacts over 75% of the freshman class. The students are also taking courses such as electives that use writing assignments instead of tests to measure performance. .Anyone that has ever taught an honors course can tell you these students panic when they get an "A-" on a test. Thus, add the writing grades and honors students into the mix and count any honors student that gets a grade of "B" or lower and you will find that over 90% of the freshman class feels like they failed something. And if you talk to the remaining 10% you will find that they are feeling pressure that they have never felt before.

We attempted to measure this by asking the freshman if our seminar mentoring program was helping them adjust to the transition issues between high school and college. We asked the students if they experienced one or more of the three transition issues and if so did their mentor help with this transition. Table 4 shows the results for the 2 years of the study. The first column titled "Issues" is the percent of students that stated they experienced transition issues, in the three different areas. The second column titled Helped is the percent of students that stated their mentors helped them with these issues.

TABLE 4
STUDENTS THAT EXPERIENCED PROBLEMS AND THE MENTORS HELPED WITH THE SOLUTION

Academic		Family		Personal	
Issues	Helped	Issues	Helped	Issues	Helped
96%	88%	70%	42%	90%	66%
96%	79%	66%	31%	86%	51%

The results show that 96% of the students are feeling the pressure of academic performance. Thus, the concept of over 90% of the freshman class believing they are failing is supported by the student responses. The positive result is the students felt our intervention programs are having a large impact on helping the students. In fact if you ignore the Academic issues and only analyze the Family and Personal issues, for these two years, 93% and 89% of the students stated they had issues with at least one of these transition areas.

This data supports the findings of researchers studying other college majors, in that students' emotions play a major part in their first year retention, and that intervention can have a big impact of helping the students through these issues.

Thus, it you look at the big picture, you can safely conclude that the entire freshman class is dealing with stress from what they believe are poor grades, or questioning their ability by the end of the first round of tests. And for the vast majority of these students they have never had to deal with this before, and they do not know how to deal with failure.

The reason for why they are failing must eventually be addressed, but at this point it is not the important concern. The issue is you have a large group of students all questioning their ability, they are in panic mode and they do

not know what to do, other then quit and find a different career. Thus, maybe part of the curriculum should be teaching students how to deal with failure.

WHAT DO THE STUDENTS THINK?

The Freshman Program staff understands the need to address the various transition issues, but do the students understand the importance of addressing this concern? To understand what the typical freshman is thinking, we asked the students what they thought. In the introduction to engineering course, we grouped the students into teams of two and had them conduct a survey among their fellow students. They could ask any question they wanted so long as they questioned a first term student and it addressed an issue they thought was important. They had to survey at least 30 students with 50% being male and female. They then have to compile the survey and present it in a graph using Excel. Thus, the assignment was a spreadsheet application, but we were also looking at what they surveyed and not just how they presented the data. We collected over 500 surveys.

We sorted the various survey questions into common topic areas we came up with the top 10 issues that were of most interest to the incoming freshman during the first four weeks of the semester, they are:

1. Do you feel as though you get enough sleep?
2. Has high school prepared you well for college?
3. Do you feel safe on campus?
4 Have you entered into any new romantic relationships since you've been here?
5 Do you feel as though partying gets in the way of schoolwork?
6 Do you exercise more or less than you did while in high school?
7 Are you homesick?
8. Do you like your campus food options?
9 Do you feel more susceptible to doing drugs/alcohol now that you're in college?
10 How confident are you in your time management skills?

The obvious observation is the students do not appear concerned with academic issues, but are concerned mainly with personal transition issues. Once we collected these top 10 questions, we asked these questions to the entire freshman. The summary of this survey are listed below.

70% of the students stated they were not getting enough sleep
66% of the students felt high school prepared them for college
94% of the students feel safe on campus
24% of the students have made new romantic relationships
22% of the students believe partying is getting in the way of classes
46% of the students feel they get the same exercise
19% were homesick
57% of the students were happy with the food
41% of the students feel the pressure to do drugs and/or alcohol
47% of the students are confident with their time management

After the first round of tests we modified these questions to see what they wee now thinking, their results were:

- 46% agree that they will need tutoring this term.
- 65% agree that having a romantic interest will impact their academic performance.
- 51% agree that help is made readily available to them (academic & personal).
- 35% are neutral when asked if high school prepared them well for college.
- 53% agree that classes are tailored for everyone, regardless of race or gender.

These results show that the students have limited life experiences and many times rely on past success to assume future performance. At the beginning of the semester they thought their high school background would be enough to be successful, with little concern about academic failure. After the first test the students thought they needed tutoring and no longer felt their high school background was enough. The same issue was found regarding the impact romantic interactions would have on their academic performance. Yet when told this very same information at the start of the semester they were not willing to believe it. Before the first tests they were basically unconcerned with the academics, and all their major concerns were with personal issues. But after the first round of tests, 96% of them all of a sudden were in panic mode because of their grades. It is because of this action that we believe it is important to provide continuous advising and intervention activities.

COPING WITH FAILURE

The next two questions of the survey, listed below, are related to the engineering students' coping with their personally unacceptable collegiate academic performances:

7) This emotional strain during my freshman year is painful enough that it is almost causing me to quit.
8) My lack of experience in dealing with poor test grades is making it difficult to cope with the poor test grades that I received during my freshman year.

Since Question #6 shows the engineering students are experiencing an increased level of academic induced emotional strain, Question #7 was asked to evaluate their ability to cope with academic failure. This question also

uses the general scale with values from 1 to 5 discussed above. The average response to this question is a 2.0 for both genders and was the same answer for students from the freshman to senior year. That is they did not agree with the statement. The results show that even though the students felt a certain emotional strain they generally were not ready to quit. Thus, despite this being the largest level of stress the students have experienced, they are not ready to quit.

To further evaluate the engineering students' coping abilities, Question #8 asks about their ability to cope with the relatively new experience of academic failure. The average response is a neutral score of approximately 3.0 for both genders. This shows that the students are having a reasonably difficult time adjusting to the new concept of academic failure.

The interesting results from question 8 was the data showed that upper classmen had a harder time adjusting to this new experience during their freshmen year than that of the current freshmen students. It is believed that these students have developed a more realistic view on grades based on their college experience and have more insight as to the impact failure had during their freshman year.

The next three questions of the survey are related to the support that the engineering students used to help cope with their personally unacceptable collegiate academic performances:

9) To help cope with this academic stress during my freshman year, I am seeking help from a university provided source, e.g., professor/T.A./tutoring.
10) To help cope with this academic stress during my freshman year, I am seeking help from outside a university provided source, e.g., my classmates.
11) To help cope with this academic stress during my freshman year, I am seeking academic or non-academic advising/counseling.

TABLE 5 – ENGINEERING STUDENTS COPING WITH THEIR FRESHMAN ACADEMIC FAILURE.

CLASSMEN	QUESTION #7			QUESTION #8		
	GENDER			GENDER		
	M & F	M	F	M & F	M	F
	(SCALE 1-5)			(SCALE 1-5)		
FRESHMEN (W/O HONORS)	1.94	1.94	2.01	2.70	2.63	2.84
FRESHMEN HONORS	1.63	1.51	2.09	2.43	2.17	3.14
SOPHOMORES	2.33	2.31	2.39	3.06	2.83	3.94
JUNIORS	2.13	2.09	2.27	3.28	3.26	3.36
SENIORS	2.16	2.06	2.50	2.87	2.89	2.80
AVERAGE	1.94	1.92	2.09	2.72	2.61	2.98

The value 1 correlates to the students strongly disagreeing while the value 5 correlates to the students strongly agreeing.

The results in Table 6 show that the engineering students generally do not take advantage of the academic support system placed by the university. The table also shows that the engineering students receiving academic support is not gender specific since there are cases with more male students seeking academic help than female students and vice versa.

To obtain a further understanding of what academic support that the freshmen students seek, Question #10 asks the students if they receive help from their fellow classmates. The results shown in Table 6 reflect that the engineering students received a reasonable amount of help from networking with other classmates. The table also shows that the female students received even more academic help than that of the male students. The table also shows that the results vary significantly between the different academic levels.

To continue evaluating the freshmen engineering students' sought after academic support, Question #11 asks if the students sought some type of counseling. The results in Table 6 show that the engineering students receive a very low level of counseling support regarding academic issues. For most of the academic levels from freshman to senior, the female students received counseling more than the male students. The table also shows that the different academic levels have values that vary significantly.

The results from Table 6 indicate that the freshmen engineering students do not take advantage of all the resources available in order to support their recovery from their academic issues. The results from the table also reflect that the students are generally getting their academic help from other students, which are also experiencing the similar academic issues creating the "blind leading the blind" effect. The overall results from the table, shows that the female students seek out more academic help than that of the male

students. The table values also show that the engineering student sought counseling less than any other resource.

TABLE 6 – ENGINEERING STUDENTS SEEKING RESOURCES TO COPE WITH THEIR FRESHMAN ACADEMIC FAILURE.

CLASSMEN	QUESTION #9			QUESTION #10			QUESTION #11		
	GENDER			GENDER			GENDER		
	M & F	M	F	M & F	M	F	M & F	M	F
	(SCALE 1-5)			(SCALE 1-5)			(SCALE 1-5)		
FRESHMEN (W/O HONORS)	2.64	2.56	2.91	3.405	3.28	3.705	1.895	1.865	1.98
FRESHMEN HONORS	2.22	2.105	2.555	3.065	2.875	3.665	1.735	1.75	1.69
SOPHOMORES	2.55	2.36	3.28	3.27	3.17	3.67	1.80	1.71	2.11
JUNIORS	2.67	2.74	2.45	3.48	3.40	3.73	1.48	1.46	1.55
SENIORS	2.29	2.37	2.00	3.13	3.09	3.30	1.63	1.58	1.80
AVERAGE	2.56	2.46	2.84	3.34	3.18	3.64	1.83	1.78	1.89

The value 1 correlates to the students strongly disagreeing while the value 5 correlates to the students strongly agreeing.

STORY TIME

Before you can discuss failure with the entire freshman class, you must wait until the entire class has a common issue. That is you must wait until they fail. We have found that if you try and discuss this issue before the student fails the typical student does not listen. Why? Because they have never failed before and as such assume you are talking to the other kids and not them. So we wait.

After the first round of tests, the freshman program kicks in with seminars on study skills, stress management, time management, successful strategies, and we start tutoring during the day and at night. To make this happen we offer special evening seminars, we have special tutoring sessions at night in the resident halls or in our tutoring area and we have a "Big Brother/Big Sister" type program where upper class engineering students meet weekly in groups of 15 or less with the entire class and discuss successful strategies from the student point of view.

The great thing about engineering students is they are problem solvers and they will listen, but first they need a reason to listen, and the first round of tests typically provides this reason Thus, if you assume the problem is our students do not know how to deal with failure, then before you do anything, you need to go back to the beginning and fix that deficiency. Sounds like a kindergarten issue, so let's solve it the same way we would in nursery school. Therefore we have "Story Time" to get their attention, where we read a children's story and discuss what the story means. Story time is a very powerful learning environment. It is a non threatening delivery method that allows every student to use their own experiences to relate to a common issue.

The story we read is called Jane and the Dragon by Martin Baynton. Basically the story takes place in the time of kings and knights when dragons fly around and the knights must defend the people. The story is about a little girl that wants to be a knight The problem is girls cannot be knights. Jane asks her parents, the king and the knights themselves to help her but she fails and no one listens to her. Finally the court jester comes to her aid and provides her with the basic equipment she needs, such as armor and a sword. Jane starts practicing and puts in the study time and lab time needed to learn the skills. Then opportunity strikes and when no one else is there to help the dragon kidnaps the prince and Jane jumps into action and goes to rescue the prince. She follows the dragon to his cave and battles him in a life and dead battle that ends in a draw. In the end Jane and the dragon become friends and she returns the price home and she is rewarded and she becomes a knight.

We use the story to relate too many of the issues the students are dealing with after they fail. Obviously the first is rejection and embarrassment. Jane was rejected and embarrassed by all the important people, family, faculty, advisors and her peers. The students also feel this same issue. They are afraid to tell anyone and feel like everyone is laughing at them. They also feel like they have let everyone down by their actions. The story shows how Jane worked through these issues and did not let them stand between her and her goal. She was not afraid of the setbacks in fact it made her more determined to follow her dream.

However, Jane needed help from someone. In her case it was the court jester. So we ask the students who their court jester is? We remind them that everyone has someone in their past that helped them get to where they are today and not to be afraid to ask that person for help. We encourage the students to discuss their feelings with their court jesters and we remind them that their parents also had to deal with failures many times

Jane used to watch and listen to the knights so she could learn their trade. So we remind the students to follow the same path, talk to upper class students and join the various student organizations where they can learn from the

successful students that have walked in their same footsteps. The secret to success is to emulate people that are successful. This is a powerful concept we use to encourage the students to get involved with other students and student organizations.

Having the desire and tools by itself was not enough for Jane to become a knight, she had to spend hours practicing so when the time came to be a knight she was ready. The same can be said about engineering, every hour spent on homework is time well spent.

However, no matter how much time and energy Jane spent on practicing she could not become a knight until she faced her deadly enemy the dragon. During the battle a number of times the dragon could have killed Jane but he did not. Why? So we ask the students what is their dragon? For many it is Physics, Mathematics, Chemistry, Writing, or Computer Programming. So did the test kill them? No. Could the test of been harder? Yes. What is the moral of the story? Well the dragon did not kill Jane because he wanted her to pick up her sword and keep attacking. The dragon was testing her desire and willingness to return to the battle. The same goes with the students and their coursework. The faculty is not trying to kill them but to inspire them to succeed.

By the end of the battle Jane and the Dragon were best friends. That is something what was once an enemy now became allies. The battle taught them to respect each other and to trust one another. The same can be said about knowledge. The same materials they are struggling with in the classroom with become the tools of their trade in the future, and they will learn to respect each science and the value it adds to engineering.

In the end Jane returns to become a hero. The same people that made fun of her in the beginning now respect her. Thus, do not let your present conditions predict your future possibilities.

CONCLUSION

What we tell the students is just basic common senses information. It is the same thing every teacher, advisor, engineer and friend has told them in the past. But this time it means something because this time they experienced pain before the lesson. The story also brings the entire class together as a group. The students no longer feel alone but now they are part of a group.

Before the story the students are afraid to talk about their future or their short comings. After the story it is very common after a quiz or test to hear students talking to each other and you will hear something like “Well looks like I need to pick up the sword and go back into battle”. It gives them a common reference point and provides security against the bumps they encounter during their journey through engineering.

One measure of success has been seen the last 2 semesters during the graduation talks given by the top student. In each case the student has made reference to the importance of their freshman year and the life lessons they learned. Each has stated that like Jane there were many dragons they had to fight but they made it. Both students stated that the Jane and the Dragon story was the most important lesson they learned in the freshman year.

What we have learned is to increase retention, you must reduce the failure rate, but before you can reduce the failure rate you must teach students how to deal with failure and how to learn from their mistakes.

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