The Alchemy of Helping Freshmen Turn Dreams into Reality

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Abstract

Freshmen bring with them a multitude of habits based upon their high school experience. Freshmen seldom question the transferability of learned habits and assume they will apply equally well to the university environment. Consequently, the “Ready, Fire, Aim” philosophy best describes the student’s mentality as they embark on the academic rigors of college life.

This paper describes an “Academic Resolution Exercise” instituted in the Freshman Engineering Technology seminar. It is specifically designed to teach freshmen how to establish, monitor and accomplish academic goals essential for them to successfully transition to the significant academic demands of a higher education institution. Ultimately, the results of this exercise enhance the probability of students succeeding academically in their critical first year. Their success, in turn, assists the university’s student retention rate.

Introduction

Freshmen are often ill prepared for the scholastic demands of an engineering or engineering technology program. They frequently learn the hard way that the study habits and techniques used successfully in high school are insufficient in the demanding college atmosphere. In addition, for many, it is the first time that they are managing their time and responsibilities without the aid of their parents.

In business and industry, setting and charting goals has long been recognized as an effective business practice. According to Jeffery Mayer, author of Setting and Achieving Your Goals, “When you know what you want, and have created a plan to get you there, everything else falls into place.” It is always advantageous for students to learn what will be expected of them in industry.

Suggested in the paper is a method that empowers professors to have an influence on the habits of freshmen. Freshmen will be expected to set goals, assess their progress, and hold themselves and their team members accountable. The process required to implement the given method will teach students some of the fundamentals of project management such as setting specific, realistic, and measurable goals.
Concept Development

This exercise was first implemented at the University of Pittsburgh at Johnstown during the 2002-2003 school year. It was repeated, with modification, during the 2003-2004 year. In both cases the exercise was conducted in the second semester of the freshman year. The exercise was not implemented during the first term in order for students to obtain an understanding of what is expected of them in a college atmosphere.

The exercise, conducted in the context of student teams consisting of three (3) freshman Engineering Technology students, begins with a simple statement of personal academic aspiration of each student for the semester. Students are given the freedom to write any scholastic goal that they have. The process of formulating and writing a goal often is a benefit in and of itself. The student will be far more aware of it. The specific goal itself is not important to the process. The goals will vary per the individual; one student may be striving to achieve a 4.0 while another may set a goal of simply passing a difficult course.

Instruction then follows on what constitutes a valid and authentic goal and how it must be articulated in the form of four specific elements: realistic, specific, measurable and written, and completion date. This is often the most difficult step for the students to grasp. The students are instructed that a goal is realistic if it is achievable within the time frame allotted. An example of an unrealistic goal is one that requires the student to study 20 hours a day. The elements of specific and measurable goals require the most interaction from the professors. An example of one students’ initial goal was, “Don’t be so lazy about school”. This goal is too broad; it was not clear to what the student is referring. Following feedback from the professors the student re-wrote his goal to say, “I will arrive 5 minutes before the start of all classes.” Following review the students are able to re-state their goals in measurable terms. In industry, measurable goals are an oft used technique for the management of projects, tasks, and even personnel. Without the measurability of a goal it is difficult to assess the level of accomplishment. Examples of measurable goals are: 1) Do homework, skip only one assignment per class 2) I will get 7 hours of sleep a night. 3) I will do assignments the day they are assigned.

Once the students rewrite their aspirations so they conform to an authentic goal, it is advisable that the seminar professors review the students’ rewritten goals and offer comments on their measurability prior to moving to the next step. The tendency remains for students to use terms like “do better” or “do more”.

The final goals are presented to the other team members who scrutinize and validate each goal, again ensuring they contain the four specific elements: realistic, specific, measurable and written, and completion date. Each team member signs an “Academic Resolution Worksheet” authenticating his or her input and the process of accountability commences. Goal accountability is the responsibility of the team members. Each team sits together at the weekly freshman seminar. The first ten minutes are devoted to each team member discussing the progress or lack of it they made on each goal during the previous week. Students assign a “percentage” to each goal indicative of how thoroughly they performed the goal for the week. For example, if a student’s goal was to complete all homework before watching TV, they may assign a 60% saying that they held true to the goal only that percentage of the time. A copy of an Academic
Resolution Worksheet is attached in the Appendix. Encouragement and chastisement occurs naturally in the teams adding a serious dimension to the exercise. This process keeps the students focused on their goals. Knowing that each week their progress will be reviewed with their peers prevents them from ignoring the goals they have set.

Having the freshmen work in teams is a benefit in many ways. Accountability is certainly the focus of this exercise, however, it also helps new students become integrated in to the program and build alliances. By having students focus on goals they are able to see that their peers are often struggling with many of the same issues they are. According to Thomas Quick, author of Successful Team Building, “People want to work well together, to support one another, because they identify with the team.” (2)

Analysis and Findings

The findings from the students’ weekly assessment portion of the Academic Resolution Worksheet showed steady progress. For the three weeks that progress was collected, an increase in goal achievement was observed (Figure 1). The small increase in percent progress is perhaps due to the difficulty of changing bad habits over a short period of time. While the progress is small, 4%, it shows that students were, for the most part, doing what they had earlier defined as needed for success.

![Figure 1: Goal Achievement](image)

Following each term, students were solicited for feedback on the process. A scoring system of 1 low to 10 high was used throughout.

The first question asked the students was, “When this Academic Resolution Exercise was presented to you in January how familiar were you with what constituted a valid goal i.e. the four specific and essential elements of a goal?” A graph of the response can be seen below in Figure 2. With an average score of 6.5 on the 1 to 10 scale, students are relatively split between being familiar or unfamiliar with what constituted a valid goal.
“Did you find it easy to modify your initial goal statement to make it conform to the four specific elements of a goal?” was the second question asked on the questionnaire. Figure 3 graphs the response. The students had a 7.4 average score for this question meaning that the majority found it relatively easy to modify their initial goal statement to make it conform to the four specific elements of a goal. The outcome of this question was interesting to the professors who felt that the students did not easily accept goal measurability. Much feedback on goal writing was given by the professors. It is felt that perhaps the students found it easy to modify the goal statements due to the efforts of the professors helping them with the revisions.

Question three asked, “Was it valuable to have another person(s) to which you had to be accountable for reviewing your goals each week in seminar. Figure 4, pertaining to this question
can be seen below. With an average score of 6, students again were split on whether it is valuable to have another person(s) accountable for reviewing the goals each week in seminar. A possible reason for the relatively low score is that some of the goals are personal in nature and may indicate giving up embarrassing habits.

The fourth question asked, “Having defined your goals, did you follow them in your attempt to accomplish them during the semester? As Figure 5 shows, the average response was 7.4, meaning that most students followed their defined goals in their attempt to accomplish them during the semester.

Question 5 asked, “Assuming you worked diligently to accomplish your goal(s), do you think this exercise helped you do better academically this semester than the previous (fall) semester?
With an average score of 6.8, a number of students indicated that they did feel the exercise helped their academic performance for the semester. Please refer to Figure 6.

![Figure 6](image)

Q5: Assuming you worked diligently to accomplish your goal(s), do you think this exercise helped you do better academically this semester than the previous (Fall) semester?

![Figure 7](image)

Q6: Will you use the knowledge gained and results obtained from this exercise during the remainder of your undergraduate education?

An increase was noticed in the survey scores between the 2002 values and the 2003 values. Please see Figure 8. For each question asked, the values improved for the year 2003. Several
items can be attributed to the trend. One reason could be that the experience gained in 2002 helped refine the process of introducing the concept and advising throughout the semester in 2003. This exercise continues to be used yearly in the freshman class. It is felt that further refinement of the process will yield continuing improvement in the data.

The students were also asked to openly comment on the process. One unexpected benefit that students commented on was the increased exposure and contact with engineering professors. As freshmen, their schedule is dominated with classes from different disciplines such as math, chemistry, and physics. The feedback made it clear that the freshmen appreciated the connection to the Engineering Technology department.

Conclusions

Students have received this exercise favorably and, at the end, attributed the exercise to their increased academic success. Since many of the goals dealt with old bad habits the authors acknowledge that students must continue working on their goals, longer than one semester, to truly see students break the habits and fully attain their goals.

In general, the feedback received was positive and encouraging. While it was clear from the analysis that some students did not embrace the exercise, the average values per question strongly indicate that most students in the class benefited.

An unexpected benefit cited by students involved interaction with professors they normally would not encounter until later in their college life. During the evaluations, one student stated that the contact with the professors helped in his decision to remain in Engineering Technology. This exercise continues to be used during the second semester freshmen year.
Bibliographic Information


2) Quick, T., “Successful Team Building”, American Management Association, NY, NY, 1992

Biographical Information

AMY MILLER Amy Miller is an Assistant Professor of Mechanical Engineering Technology at the University of Pittsburgh at Johnstown. She earned a M.S. degree from University of Pittsburgh, Main Campus, and a BS in Mechanical Engineering Technology from the University of Pittsburgh at Johnstown. She joined the faculty at UPJ in 1992 after 10 years with a leading manufacturer of railroad freight cars. During her time in industry, she served as a Design Engineer, Manager of Design Engineering, and Manager of Engineering. In addition, Amy worked hand in hand with the CEO as the person charged with the implementation of the Strategic Plan for Johnstown America Corporation. She also served as the Patent Liaison.

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ROBERT MARTINAZZI is a professor of Mechanical Engineering Technology at the University of Pittsburgh at Johnstown. He possesses a B.S. Aerospace Engineering from the University of Pittsburgh and a M.S. Mechanical Engineering from Carnegie Mellon University. He is a registered professional engineer in Pennsylvania. His interests include engineering economics, management and leadership development. He has worked as project engineer for Armstrong World Industries and is retired from the United States Marine Corps Reserves, after attaining the rank of Colonel. He is active with both ASEE and FIE conferences and has served as a peer reviewer for ASEE and The Engineering Economist.
### APPENDIX

**ET FRESHMAN SEMINAR**

**ACADEMIC RESOLUTION WORKSHEET**

**Team Member 1:**
- Goal 1:
- Goal 2:
- Goal 3:

**Team Member 2:**
- Goal 1:
- Goal 2:
- Goal 3:

**Team Member 3:**
- Goal 1:
- Goal 2:
- Goal 3:

**How well are you living up to your goals? Insert percentages below.**

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