

Advice from a First Year

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Full Paper: Advice From a First Year Student

Abstract

Much attention is paid to the transition from high school to college. Students who have recently gone through this transition may have some of the best advice to offer in-coming first year students. With this in mind, 152 students completing the second course of a common first year engineering program were given team assignments (for a total of 42 teams) asking them to provide approximately 6 pieces of advice for next year's first year students. Major advice offered by the students included the following themes: time management, utilizing resources, hard work, preparation (the importance of which may be emphasized by the "flipped" class format), teaming (which may have arisen due to the team-nature of the first year program projects), class attendance, social activities, self-care, and persevering through lower grades. These recommendations were then provided to first year students the following fall.

Background

There is a myriad of research on increasing success among first year engineering students. However, little of this research has focused on what the students themselves would offer as advice to incoming first year students. One 2006 Study by Foor et al., asked 215 undergraduate students across three institutions "What advice would you give a freshman or high school student considering your major, or engineering in general, at your institution?" 175 of the interviewees were "upper division" students, with more than 60 credit hours. These students offered the following advice: choose and prepare for your major, network and get involved, building relationships with peers, establishing relationships with faculty, getting involved with student activities, assume academic responsibility, and persevere.¹

A 2008 study by Romkey surveyed 226 Canadian first year engineering students near the completion of their first year, including follow up interviews with five students. The study found that 56% of the students did not feel adequately prepared for university academics. Factors affecting the challenge of transition to college included: workload and pace, independent learning and time management, lack of individual attention and care, peer influence and competition, teaching style, lack of social life, effectiveness of learning, scheduling and class hours, and evaluation.²

Assuming academic responsibility may be among the most difficult transitions high school students face in the first year of college. In fact, American high school students spend about 30 hours in class per week and 5 hours per week studying; while college students spend approximately 15 hours each week in class and are expected to study about 30 hours.³ Although this 2:1 ratio of hours studying to hours in class may be typical for most college students, the demands of engineering programs are even higher, requiring better time management. But not all students enter college with the same study skills and discipline. In fact, many first year students do not put in adequate study time until their first quizzes or a midterm, when they realize they must do a lot of work to catch up.⁴ However, the transition to college affects all aspects of life. The goal of this

research was to hear, from the students themselves, what advice would be useful for first-semester engineering students.

Methods

Students completing the second course (ENG1102) of a common first year engineering program at Michigan Technological University were asked to complete an assignment offering advice to next year's first year students. ENG1102 is the second of a two-class series. It teaches introductory 3D solid modeling, as well as applies MATLAB programming to a semester-long project. ENG1102 (and its predecessor class) are taught in a flipped class format. This group assignment was completed through the students' semester-long design project groups. Each group was asked to provide one power point slide with approximately 6 pieces of advice for next year's first year students. This reflection assignment was given to two sections of ENG1102 (one comprising 51 students, and another comprising 110 students). Students worked in teams of 4 on the assignment, resulting in a total of 42 team submissions.

Emergent coding techniques were utilized as heuristics to determine themes within the student advice. As described by Saldana (2016), patterns within the coded data may emerge due to the frequency of occurrence, but they may also emerge from similarities, differences, sequence, correspondence, and causation.⁵ Codes were developed by consensus among the researchers after reading through all the data. These codes were then used to categorize and discover themes.

Each assignment was independently coded by the researchers using the initial codes developed by consensus. As the assignment required student teams to turn in pieces of advice in Power Point format, all the teams arranged their advice as distinct bulleted points on slides. Each piece of advice was coded for identified themes. All differences in coding were resolved by discussions among the researchers. Coding category definitions were adjusted based on consensus among the researchers.

As two-cycle coding is recommended for qualitative researchers⁵, a second coding cycle was utilized with the revised codes. The data was revisited by the research team to ensure interpretive convergence was reached among researchers. After all of the data was coded, an analysis was performed to identify themes within the data.

Results

The following codes emerged within the data as a result of the qualitative analysis, in order of prevalence:

- Time management, keeping up with homework, being aware of due dates
- Use your resources (faculty office hours, learning centers, asking for help)
- Work hard, harder than high school
- Come to class prepared, don't procrastinate
- Communicate with your team and teaming strategies
- Go to class, don't skip
- Get involved on campus with orgs/social activities and make friends
- Self care: sleep, de-stress, hygiene, healthy eating

Time management

The theme of time management includes keeping up with homework, being aware of due dates, and general comments about managing time. Time management was a theme mentioned by 95% of the teams (42 out of 44). Many of the teams offered multiple pieces of advice relating to time management, resulting in 59 total pieces of advice with regards to time management.

Advice with regards to time management pertained to organizing/scheduling work throughout the day, making note of due dates in calendars and planners, as well as staying on top of homework and studying. Time management advice also acknowledged the transition in the way time is spent in college. One team advised “In college, you spend less time in classes and more time doing homework than high school, so plan accordingly.” Another team advised students “Every hour you are in class, spend at least three hours out of class studying/doing class work.” This 3:1 ratio is high even in higher education settings, but consistent with engineering faculty expectations.⁴ Comments on not procrastinating were included within time management. As one team put it “The key to literally everything in college is time management. And yes, a lot of your peers are procrastinators too. That’s why college is hard. So master time management and you’ll be ahead of the game.”

The work of Romkey (2008) revealed time management to be a challenging factor in the high-school to college transition of first year engineering students.² Time management was also included as part of assuming academic responsibility in advice from upper division students in the work of Foor, et al., 2006, demonstrating that, regardless of year in schooling, time management remains a significant factor in academic success.¹

Resources

The theme of resources includes advice on utilizing resources available to help students succeed, especially faculty office hours, peers and learning centers. This category also specifically included comments advising first year students to ask for help. Utilizing student resources was mentioned by 66% of the teams (29 out of 44), some of which offered multiple pieces of advice with regards to using resources. This resulted in 42 total pieces of advice with regards to using resources.

As team advised “Use your professor’s office hours. They do want to see you succeed.” Yet another team wrote “Visit the learning centers, they can help you with more than you think!” Another team suggested “Make study groups with your classmates and friends for each class.” Foor et al., 2006, also found advice from upper division students promoting the building of study group relationships, as well as developing relationships with faculty.¹

Hard Work

This theme includes comments pertaining to working hard, in particular working harder than high school. Hard work was mentioned by 55% of the teams (24 out of 44). As some teams mentioned hard work more than once, there were 33 total pieces of advice on the

topic. As mentioned by one team, “Be prepared to work much harder than you did in high school and embrace the challenges.” In fact, this underlying theme of not being in high school any more and having to assume academic responsibility was also found in the work of Foor et al., 2006.¹ Work load and the level of difficulty of course material were also found to be a challenging factors in the high-school to college transition of first year engineering students by Romkey (2008).²

Preparation

The theme of preparation includes comments regarding coming to class prepared, as well as not procrastinating. Preparation was mentioned by 43% of the teams (19 out of 44). There were 22 pieces of advice with regards to procrastination. This theme may have emerged due to the “flipped” format of the first year program in the study. In this format, students are required to watch videos, do rereading and complete assignments before coming to class to actively and collaboratively complete additional work. As one team put it, “Try to do prelesson assignments and readings for all classes as much as possible.” The transition to flipped classes may be particularly hard for first year students, who are already in great transition with regards to their study skills and time commitment.

Teaming

This theme includes teaming strategies, especially communicating with one’s team. Team was mentioned by 34% of the teams (15 out of 44). Teaming was mentioned in a total of 18 pieces of advice. This theme may also have emerged due to the structure of the first year program courses. In the institution of the study, in both first and second semester engineering courses, students work in teams of four to complete semester design projects. In the word of one team, “Always communicate to your team members, and if you disagree talk it out”. This advice demonstrates the importance of teaming in Michigan Tech’s first year engineering courses.

Attend Class

This theme includes comments advising students to go to class, or those advising against skipping. Class attendance was mentioned by 32% of the teams (14 out of 44). Overall, 16 pieces of advice addressed attending class. As one team advised, “Go to all your classes, you never know what you’re going to miss in class.” This theme showed up in the work of Foor et al, 2006 within the microscopic time management advice about assuming academic responsibility provided by upper division students.¹

Social Activities

Comments along this theme addressed getting involved on campus with organizations or social activities, as well as making friends. Social activities were mentioned by 30% of the teams (13 out of 44). In total, 17 pieces of advice pertained to social activities. When it came to making friends, one team advised “Go out and make friends. Do not just sit in your room all day long. Most people don’t bite, I promise.” Another team advised “Join a club or extracurricular.” In fact, lack of social life was found to be a challenging factor in the high-school to college transition of first year engineering students in the work of Romkey (2008). However, this was mainly due to there being less time available for social activities.²

Foor et al., 2006, also found advice from upper division students promoting getting involved in student organizations, as well as making friends within your major.

¹Although, this friendship-building advice from upper division students seem more targeted at building relationships which promote academic success than building a social network. This may be due to the fact that upper division students are more likely to have established social networks on campus and may have forgotten the initial loneliness experiences by first year students.

Self-Care

The theme of self-care includes comments pertaining to sleep, de-stressing, hygiene, and healthy eating. Self-care was mentioned by 23% of the teams (10 out of 44). Many of the teams mentioning self-care offered multiple pieces of advice on this topic, resulting in 18 total pieces of advice on self-care. In the words of one team, “Take Care of yourself. Make sure you’re getting enough sleep. When you don’t sleep, you hurt your performance which means you have to spend more late nights getting your stuff done and pull your grades up, which only makes you loose more sleep. Don’t get caught in the cycle.” Or as another team stated, “...keep up with hygiene and find different ways to stay healthy.” This theme was absent from the advice from upper division first years provided in the work of Foor et al.,¹ as well as from the advice from first year engineering students summarized in the work of Romkey.² However, the advice included here is from first year students, who are closer to the transition from home. For most first year students, college is the first time in their lives they have no parents present to enforce bedtimes, regular meals, and even regular showers, on a daily basis. Thus, the work of taking care of ones’ self seems to be a significant part of the college transition.

Lesser Common Themes

Several other lesser common themes emerged in the analysis as follows:

- Lower Grades: including warnings to students that they may not earn a 4.0, as well as assurances that it is okay to fail. (4 teams or 7%). The theme of persevering through disappointing grades was also found in the work of Foor et al., 2006.¹
- Morning Classes: Two teams (or 5%) specifically warned students against taking 8 am classes.
- No Phone: Two teams (or 5%) warned students to 2 stay off their phones during class
- Clothing Advice: Two teams (or 5%) offered clothing advice. One advised students bring at least one set of dress clothes to college, while another advised a good winter jacket (the University is in a location known for ample snow).

Conclusion

Themes which emerged in this study, which corroborate other research^{1,2} include: time management, utilizing resources, hard work, class attendance, social activates and persevering through lower grades. New themes that emerged from this research include: preparation (the importance of which may be emphasized by the “flipped “class format), teaming (which may have arisen due to the team-nature of the first year program

projects), and self-care. Self-care may be particularly hard to do with the time demands placed on engineering students. Further research could explore the self-care habits of engineering students and whether they are tied to academic success.

This assignment has become a part of the ENG1102 course, and the resulting advice is presented at the start of each course period the following fall. Follow up research could examine whether incoming students actually heed or value this advice. Additional research could also explore teaching incoming students time management, as well as a more structured introduction to available resources.

References

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