A Matter of Priorities: Effects of Increased Opportunities for Extracurricular and Non-traditional Learning Experiences on Student Time Management and Attitudes

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Abstract

Many schools are emphasizing non-traditional and extracurricular learning experiences for undergraduate engineering students. These include activities such as incorporating service-learning projects into the classroom, involving students in design competitions (e.g., solar car, formula car races), and promoting involvement in traditional campus organizations. Often this emphasis is in response to changes in ABET requirements, desires of future employers, and needs to improve student retention. What are the effects of emphasizing these sorts of activities on student attitudes and time management decisions? We examine the influences on students' priorities for allocating their time and their perceptions of the relative importance of available activities, especially traditional coursework. We present data relating key personality and motivational factors to patterns of student social involvement, organizational commitment, academic performance, and work habits and attitudes. Implications for educators and potential cost-benefit trade-offs for particular student subpopulations are also presented.

Introduction

Today's engineering undergraduates, like their predecessors, are confronted with the relatively heavy demands on their time necessary to master the academic fundamentals of their disciplines. In addition, it seems that they are exposed to an ever-growing array of opportunities and expectations to engage in university-sponsored extracurricular activities. These activities are promoted as avenues to foster the development and demonstration of social, communication, and leadership skills. University administrators count among their major missions the recruitment and retention of students and may see promotion of student activities and organizations as an effective path to meeting enrollment goals. Conversely, grade inflation, initiatives to reduce credit hours required for degrees, disparities between faculty and student expectations for time spent on course work, and technological advances that reduce the need for actual class attendance all contribute to a perception among at least some students and faculty that traditional coursework may be waning in perceived importance.

Casual observations and anecdotes about how students divide their time between traditional course work and other worthwhile activities motivated us to examine more systematically what our students are doing with their time and what the costs and benefits of emphasizing extracurricular activities might be. In this paper we outline some of the issues of student time

management and discuss some of the empirical data we have obtained that characterizes our students.

A recent meta-analysis (Robbins, Lauver, Le, Davis, Langley, & Carlstrom[1], 2004) of predictors of student academic performance and retention has highlighted the importance of study skills and academic goals as well as psychosocial variables such as achievement motivation and academic self-efficacy. Bailey and Spurlock[2] (2004) explored some of the issues of multiple priority work environments and the implications of time management pressures during college on work habits employed on the job. They suggested that students' social involvement through extracurricular activities builds social capital that may be beneficial for accomplishing students' academic and career goals. Other scholars (e.g., Berman[3], 2002; Heaney[4], 2001; Fricke & Shenhar[5], 2000) have examined the complex effects of multiple priorities on the behaviors and performance of workers and managers. Both academic work and extracurricular activities offer students opportunities to develop habits that may or may not be adaptive for the workplace they enter upon graduation. Students must make choices about the time and effort they allocate to their various courses and their extracurricular activities and we are interested in learning more about what influences those choices.

Model Components

There are numerous sets of variables that one could include in models of engineering student time management. We chose to measure general intrinsic and extrinsic motivational constructs in the context of college matriculation. We wanted to determine if there were any obvious, first-order differences in intrinsic or extrinsic motivation or amotivation (lack of motivation) to attend college that could be used to predict broad academic performance and organizational engagement. We based our extrinsic motivation measures on motivational constructs (Deci & Ryan[6], 1985; Ryan & Deci[7], 2000) which allow for some mixed types of extrinsic motivation that constitute essentially an ordered set ranging from purely extrinsic (external regulation) to almost intrinsic (extrinsic motivation integrated). For our purposes, we concentrated on the three most extrinsic categories: external regulation which emphasizes the nature of explicitly external consequences; extrinsic (introjection) which emphasizes internal consequences like guilt; and extrinsic (identification) that incorporates the role of personal values.

We also measured subtypes of intrinsic motivation based upon Vallerand, Pelletier, Blais, Briere, Senecal, & Vallieres[8] (1992). They proposed the subtypes of intrinsic motivation to know, intrinsic motivation to accomplish, and intrinsic motivation to experience stimulation.

In addition, we selected six other personality traits to measure that seemed highly relevant in this context: need for cognition (Cacioppo & Petty[9], 1982), organization (International Personality Item Pool[10], 2001), activity level (International Personality Item Pool[10], 2001), social connectedness (Lee & Robbins[11], 1995), social assurance (Lee & Robbins[11], 1995), and generalized self-efficacy (Schwarzer & Jerusalem[12], 1995). Need for cognition refers to the need to think, learn, and analyze. Organization refers to one's tendency to plan, control, and order one's available resources to accomplish one's goals. Activity level refers to one's tendency to busy oneself with many tasks. Social connectedness refers to the degree to which students feel they are connected to their peers on campus. Social assurance refers to the need for reassurance

from others that one belongs to a group. Generalized self-efficacy refers to the tendency to believe in one's capabilities to accomplish tasks, achieve goals, deal with problems, and overcome obstacles.

Determining reliable and definite causal links in multivariate, dynamic, and adaptive contexts such as this is very difficult without experimental manipulations. However, with large samples (larger than ours) and careful measurement, plausible linear structural equation models could be developed that may usefully characterize aspects of the problem. Here we introduce only a simple model as a starting point.

Based upon our exploratory findings presented here, we propose that higher scores on activity level, organization, need for cognition, and intrinsic motivation to know as a reason for attending college, will be associated with both higher GPA and a greater emphasis on academics over extracurricular activities. In contrast, higher scores on extrinsic motivation – external regulation, extrinsic motivation - introjection, (that is attending college because of a sense of obligation), intrinsic motivation for stimulation, amotivation (lack of motivation), and social assurance will be associated with lower (though not necessarily "low") academic performance and an emphasis on extracurricular activities over academics.

Method

Questionnaires were supplied to approximately 200 students at a state-supported midwestern engineering school. Student officers of numerous campus organizations were contacted for permission to present the questionnaire to student members at regular organizational meetings in the fall semester of the 2004-2005 academic year. Organizations that could not conveniently accommodate the questionnaire administration at a regular meeting were supplied with access to an on-line version that members could complete individually within a few days following the meeting. Respondents completed informed consent forms prior to completing the questionnaire and received debriefing sheets when they were finished. Although essentially a convenience sample, we believe the respondents are essentially representative of the students who actively participate in organizations on this campus. Characteristics of the sample are discussed in greater detail in the Results section.

The questionnaire itself consisted of five sections. The first section solicited basic demographic information such as academic major, class, gender, place of residence, and ethnicity. Respondents also were asked to indicate their current cumulative grade-point-average (GPA) by marking one of five half-point range GPA categories ranging from "<2.00" at the low end to "3.50-4.00" at the high end.

The second section solicited information about their participation in the organization for which they completed this survey including leadership positions held and other organizations to which they belonged. This section also asked them to report how many hours per week they devoted to specific activities including extracurricular organizations, in-class attendance, course work outside of class, and work for which they are paid. They were also asked to report the number of academic credit hours in which they were currently enrolled.

The third section measured aspects of intrinsic and extrinsic motivation to attend college through 28 items consisting of possible answers to the question "Why did you go to college" provided via a five-point rating scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree.

The fourth section included the 56 items comprising the six personality construct measures mentioned previously: Organization (10 items), Activity Level (10 items), Need for Cognition (10 items), Social Assurance (8 items), Social Connectedness (8 items), and Generalized Self-Efficacy (10 items). These items were measured using the same five-point rating scale as the motivation items.

The final section consisted of 26 statements about participation in extracurricular activities that respondents endorsed on a five-point rating scale ranging from 1 = Very Rarely to 5 = Very Often. This set of statements does not comprise a scale at this time although future work may allow a scale to be developed from some of the items. Specific items for which results are reported in this paper will be described in the results section.

Results

From the 154 fully completed questionnaires, we selected only the 115 undergraduates with sophomore, junior, or senior class standing for analysis for this paper. We did so because here we want to compare the students with relatively high GPA's (at or above 3.5 on a 4.0 scale) with the remainder of the sample. Self-reports of cumulative GPA from fall semester freshmen students are not as reliable and tend to be skewed toward the high end. We split the sample into two groups: higher GPA (3.5 or above) (n= 62) and lower GPA (below 3.5) (n=53). There were 27 respondents who reported a GPA between 3.0 and 3.49 and 22 who reported a GPA between 2.5 & 2.99 with 4 reporting a GPA below 2.5. Our sample reports somewhat higher cumulative GPA's than for the overall student body: the average undergraduate GPA on campus has varied between 3.0 and 3.2 across semesters from 1999 through 2002 (the last year for which data were available to us) with a slight upward trend. Over 97% of our sample majored in an engineering, physical science, or computer science discipline. Approximately 68% of our sample was male.

Personality and Motivation Results

What are some of the personality and motivational variable differences between the higher GPA group and the lower (note – not "low") GPA group? Both groups scored approximately the same on measures of intrinsic motivation (to accomplish), extrinsic motivation (identification), generalized self-efficacy, and social connectedness. From this we suggest that none of those variables will help explain how organizationally active academic high achievers differ from academically typical organizationally active students.

Although not statistically significant ($p > .05$) in this sample, the higher GPA group had higher scores on intrinsic motivation (to know) and need for cognition, and lower scores on social assurance, extrinsic motivation (external regulation), amotivation, and intrinsic motivation (stimulation).

The higher GPA group scored significantly higher on organization, activity level, and significantly lower on extrinsic motivation (introjected) as shown in Table 1. Note that the mean scores are reported on the five-point item response scale even though the scales themselves comprise multiple items. This convention allows for a somewhat more immediate interpretation of results and already reflects the necessity for reverse scoring negatively worded items.

Variable	Group (GPA)	Mean	SD	Mean difference (Lower-Higher)	95% C. I. of the difference LL----------UL	Sig. (2-tailed)
Organization	Lower	3.19	.63	-.24	-.47 -.00	.047
	Higher	3.43	.64			
Activity	Lower	3.58	.67	-.29	-.53 -.04	.021
	Higher	3.87	.65			
Extrinsic Motivation (Introjected)	Lower	3.74	.83	.37	.03 .71	.035
	Higher	3.37	.99			

Table 1. Selected personality and motivation scale mean scores.

Activity Participation Results

Table 2 presents a selection of the more interesting results from items asking about participation in extracurricular activities. The higher GPA respondents report that they are enrolled in more academic credit hours, spend more time in class, and spend more time on course work outside of class. Although they also report spending somewhat fewer hours on extracurricular activities, this difference is, statistically speaking, not significant. Thus these data do suggest that the higher GPA group is working harder on their academic performance even while devoting about the same amount of time to extracurricular activities as the lower GPA group. The lower GPA respondents report that they are more likely to miss class to meet their extracurricular commitments, are less likely to reduce their efforts in activities to raise their academic performance, are much less likely to plan to pursue a graduate degree, and are more likely to believe that their courses are easy enough to justify spending more time on extracurricular activities. The lower GPA group dislikes instructors' practice of including class participation as a grading component in courses much more than the high GPA group. (This may seem counterintuitive to some readers as this practice essentially allows weaker students to raise their grades just by showing up for class; however, in the context of the other results, we suspect they may resent having to show up for class more than they appreciate the grade subsidy.)

Perhaps the most interesting (though not surprising) result is that the lower GPA respondents would be much more likely to hire a job applicant with "a below average GPA who had been involved in many university extracurricular activities than someone who had an above average GPA who had not been very involved in such activities." One possible interpretation of this is that the lower GPA group attaches greater significance to the job application enhancing effects of extracurricular participation over academic performance. While faculty may believe (or wish) this not to be the case, given that the lower GPA group (below 3.5 – not necessarily poor

students) constitutes the majority of graduates, their higher representation in the workplace may validate the lower GPA group's view of the significance of this tradeoff.

Variable	Group (GPA)	Mean	SD	Mean difference (Lower-Higher)	95% C. I. interval of the difference LL----------UL		Sig. (2-tailed)
Hours spent in activities	Lower	10.44	9.09	2.06	-0.92	5.04	.174
	Higher	8.39	6.93				
Credit hours	Lower	14.02	2.70	-1.29	-2.14	-0.44	.003
	Higher	15.31	1.87				
Hours spent on courses outside of class	Lower	15.23	7.56	-4.16	-7.56	-0.77	.017
	Higher	19.39	10.33				
Hours spent in class	Lower	13.90	4.31	-1.8	-3.22	-0.41	.012
	Higher	15.71	3.27				
Miss class due to activity commitment	Lower	2.17	1.34	0.44	0.03	0.86	.036
	Higher	1.73	0.89				
Reduce effort in activities to get better grades	Lower	2.72	1.06	-0.64	-1.04	-0.23	.002
	Higher	3.35	1.12				
Plan to pursue advanced degree	Lower	2.60	1.49	-0.82	-1.38	-0.25	.005
	Higher	3.42	1.54				
Courses easy enough to have time for activities	Lower	2.42	1.01	0.576	0.21	0.94	.002
	Higher	1.84	0.98				
Prefer no class participation in grade	Lower	3.28	1.55	0.88	0.33	1.43	.002
	Higher	2.40	1.44				
Would hire applicant with low GPA	Lower	3.81	1.02	0.83	0.44	1.22	.000
	Higher	2.98	1.08				

Table 2. Selected activity participation results.
(Note: Means above 5 are in units of hours or credit hours; others are for 5-point ratings)

Discussion

These results should be interpreted with caution as they are obtained from a limited sample and via a single methodological approach. However, they do raise some questions and provide data useful when considering the influences on student time management.

It seems clear that, among engineering undergraduates who are active in extracurricular activities, there are a few key personality traits like organization and activity level that differentiate the highest academic achievers from the next level of performers. In addition, attitudes regarding the relative importance or attractiveness of academic work over extracurricular activities may differ markedly between the organizational members performing at the highest academic level and the rest of the membership. This may be important for organizations to consider as the best students as measured by GPA may not be the ones who are most dedicated to an organization's success even if they may be the most competent to perform organizational duties. It is important to remember that the vast majority of the students who participated in this study reported GPA's of 3.0 or above on a 4.0 scale so we are not discussing personality, motivational, and attitudinal differences between poor students and good students but rather the differences between (1) the somewhat below average to somewhat above average students (the middle 40%-50% of the overall student population) and (2) the best students (the top quartile or so).

Although much more research is needed, it may be that findings like these, when validated, elaborated, and refined, could be used to structure counseling programs for students so that academic programs and extracurricular activities can be better matched in both type and workload to students who fit particular profiles. Presumably institutions want to retain capable students who are motivated mainly by opportunities for success in organizational activities compared with the relatively demotivating (for them) experiences they have competing academically. At the same time, engineering institutions must always ensure that course work remains sufficiently rigorous to produce capable graduates. The cost to the academic reputation of an institution and its graduates must be weighed against the value of enhanced extracurricular opportunities and the potential for improved reputation of graduates regarding skills and experiences obtained from outside the classroom.

We need more data to characterize student (and faculty) views on these issues, but we would like to identify three opportunities for future research suggested by these findings. The first question that needs greater study is whether students feel greater pressure to multitask when they have the opportunity in the classroom. In other words, if they are listening to a lecture, do they feel they should really be trying to get some other work done at the same time? Do instructors perceive student multitasking in the classroom as a growing problem? If they do, are instructors changing how they conduct class to counteract that behavior?

A second research question worth pursuing involves the dynamics of student and faculty expectations for course workloads. If some students feel they have too much to do outside of class and begin to pressure faculty for less demands from coursework, will other students respond to the lighter load that may result by taking on even more extracurricular activities?

A final research question related to these findings that deserves some investigation is the nature of the need for more students to work for pay during their undergraduate years. How will students who need to work prioritize their time when they have to choose between coursework and extracurricular activities? What factors will influence those choices?

In conclusion, we believe that there are meaningful differences in some personality and motivational variables (e.g., organization, activity level) between high academic performers and the more average students. Promotion of extracurricular activities for engineering undergraduates might be more effective if some of those personality and motivational differences between the "elite" academic high achievers (the minority) and the larger group of more average students could be better understood. Some types of organizations may tend to match those traits and needs more closely than others and could possibly improve recruitment and retention with a less negative impact on time devoted to course work. However, many additional research questions must be answered to fully understand the effects of these variables (and others such as financial need to work) on student time management.

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