AC 2010-160: GREAT ENVIRONMENTS FOR STUDENT SUCCESS

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GREAT Environments for Student Success

Abstract

GREAT is an acronym that stands for Graduate, Retain, Engage, Admit, and Tell. It is an organizing framework that reverse-engineers the process of how students interact with our school. By beginning with the end in mind and working backward, the Purdue School of Engineering and Technology at Indiana University-Purdue University Indianapolis (IUPUI) was able to identify value-creating activities and efficient processes that have a direct and indirect impact on student success in engineering and technology.

The premise for GREAT acknowledges that many of our stakeholders (e.g. students; parents; policymakers; employers) expect us to *graduate* students in a timely manner for success in a variety of post-degree roles. To do this, we must first *retain* students in our programs to degree completion. Because retention is an outcome of engagement, we need to *engage* students through relevant in-class, online, and co-curricular experiences; powerful pedagogies and high-impact educational practices; and meaningful relationships with peers, faculty and staff members, and our business/industry, government, and community partners. In order to ensure student success and to meet the needs of a changing marketplace, we must *admit* better-prepared and more diverse students to our programs. This requires all of us to be able to *tell* prospective students and other stakeholders about the value our programs offer them. Finally, to tell the story persuasively, we need to answer this question: "What value are we creating for students who choose to attend our school, and to what extent is this value differentiated from other institutions or departments offering similar programs?"

The GREAT Environments Task Force placed an emphasis on practices and activities that impact student graduation from our programs. Specific activities were inventoried, analyzed, and evaluated based on the utility and effectiveness of various parts of the process that lead to desired results. The Task Force communicated to and involved other school stakeholders in its important work. Key outcomes included strategies and recommendations to guide implementation efforts to maintain, enhance, or improve school-based activities that contribute to student success.

This paper describes the purposes, processes, and perspectives associated with this planning and improvement initiative. Each component of GREAT will be explained, and examples of best practices and indicators of performance will be identified. How to involve stakeholders in a deliberative, representative, and evidence-based approach to determining present activities and comparing them to best practices on-campus and elsewhere will be discussed. Finally, issues to consider in replicating GREAT Environments in other engineering and technology contexts will be shared.

Introduction

In the GREAT Environments structure, five important components are considered with the ultimate goal of creating a meaningful and effective college experience for all students. Each element of the framework is meant to evaluate important moments in the college progression and build off one another to move students through college in a timely manner.

Initially, when approaching how to investigate areas in the GREAT framework, the task force developed research questions to use as a guide in the exploration. Additionally, best practices were considered for each area. This aided in creating a foundation to build a plan addressing strengths and weaknesses in each component of GREAT.

Graduate

Since the GREAT framework examines school improvement from a reverse-engineering standpoint, graduation is the starting point in the process. Increasing graduation rates is a constant struggle for urban universities and many factors were discussed to address issues that currently prevent students from graduating in a timely matter. Urban colleges typically attract a larger population of nontraditional students, and many of these individuals are only part-time students. Thus, many of these individuals take several years before they complete degree requirements. Since graduation rates are major factor in receiving state funding, many campuses feel the pressure of improving these numbers.

The task force created the following questions as a starting point for analyzing the current graduation situation at IUPUI:

- Are students able to enroll in required courses?
- Do students receive effective advising?
- What distinguishes students who graduate from students who do not graduate?
- Where do the students who do not graduate go?
- Where are graduates going following graduation? Working? More school? Lifelong learning? How do we know they are going there and what type of relationship does the School keep with them?
- What attributes do graduates possess?

Many of the graduation-related questions generated by the task force were answerable through collecting and aggregating information. These questions focus on many different points in a student's college experience—advising along the way, attributes that graduates possess, and life after graduation.

When brainstorming about the dream senior year experience, the task force had many ideas. First of all, in the ideal situation, by their senior year, students should know the full-time faculty in their program. Additionally, prior to entering the senior year, some type of stopper should be in place that requires advisors and students to assess progress and conduct a pre-graduation audit. Communication is another key in the ultimate senior-year design and all program faculty and students should know what senior is and about, what graduation is, and what needs to be done to get to graduation.

Throughout their senior years, students should be actively involved with complex cognitive work, addressing the top levels of Bloom's Taxonomy. The senior-year experience should be thought of in a way as a celebration of a student's hard work. Therefore, special points in the year (e.g. applying for graduation, participating in graduation ceremony, picking up diploma)

should be positively framed to express the school's commendation. The task force also felt that by their senior year, students should be aware of the job hunting process, proper interview protocol, and have a well-developed career plan. Finally, some type of exit mechanism should be in place to gather feedback from the graduating students and an invitation to involve students as alumni should be made.

Shea[1] explains that universities have the responsibility to ready students for life after college: "Advising and counseling seniors through the job search process, providing some type of closure on the college experience, motivating alumni relationships, and evaluating experiences are some of the responsibilities institutions have in easing the transitioning process." Many universities involve students in capstone projects and courses as a chance for seniors to showcase all of the skills and knowledge they have acquired over their educational careers[1,2,3].

Bulger, Lindauer, and Jacobsen[4] found that participants benefited from the incorporation of professional development curriculum in a series of courses, and the participants felt such curricular pieces not only readied them but also brought "closure" on their college experience. A 2008 employer survey reveals, "At least three in ten employers give college graduates low scores for their preparedness in global knowledge, self-direction, writing, critical thinking, and adaptability" (p. 20)[2]. After analyzing the survey results and assessing many senior year experiences—programs, courses, activities, and events, Henscheid[2] found a mismatch between many programs assertions and employers experiences. Many programs should evaluate how critical thinking skills are being taught and include service-learning into the senior year experience.

Although much of the responsibility of a successful senior year experience lies on the university, the student must also be accountable for making the most of his/her senior year[1]. Therefore, maintaining student engagement throughout the undergraduate experience is extremely important.

Retain

Before graduation issues can fully be addressed school retention must also be considered—clearly to improve graduation rates, programs must retain students. To initially address the issue of student retention, the task force developed the following questions:

- What campus tools can help the school identify all of our students?
- How can we monitor the enrollment patterns of all students and track retention of first-time full-time students?
- What uniform policies and interventions can be utilized to assist probation students?
- What are the major reasons for student disappearance?
- What are the qualities of a successful senior student that positively influence retention to graduation within 6 years?
- What intervention tools are available to help students before it is too late?
- How does campus accessibility affect student retention?
- What tools/information is available that we are unaware of that can be used?
- What factors and attributes make students more at-risk to not finish?

- To what extent do planning and communication in our course schedules help retention?

Often retention issues can be addressed with simplistic actions. Not only did the task force generate new ideas for improving student engagement, many program representatives shared current practice, thus increasing the awareness of successful initiatives within the school. For example, one program has developed a tracking system that gives a clear picture where each individual student is in their progress towards graduation.

Another department is piloting a communication/intervention strategy that divides students into buckets based on their GPA. Communication strategies and interventions will be employed to help students that are at risk. Other suggestions recommended by the task force includes limiting the number of Fs and withdrawals a student can have, tracking personal information and struggles of students, and treating students like employees. Additionally, focus groups have been planned to obtain student feedback on retention issues.

One study indicates that many factors affect students' persistence in pursuing engineering and science careers: race, gender, parental involvement, socioeconomic status, and academic achievement[5]. In a 2003 article, Lau[6] summarized five major reasons for students dropping out of college:

1. Reasons beyond institutional control: lack of finances, poor student-institution fit, change in personal goals, etc.
2. Institution failed to create a learning environment suitable the student's educational needs
3. Students lacking the ability to manage a normal course load due to limited basic skills
4. Lack of motivation and vision to see the long-term benefit of graduating from college
5. Transitioning from high school to college can be overwhelming

Every program cannot meet the needs of all students. However, a 2004 report on student retention indicates that to improve retention, in addition to program-level analysis, schools must also consider university initiatives: institutional mission, goals, and resources[7]. By linking program outcomes with university strategies, students are more likely to reach educational goals. Tinto developed three principles to evaluate retention efforts. These principles deal with commitment to the students being served, commitment to educate all students, and commitment to developing supportive communities for students.

Awareness of specific issues affecting retention can help administrators develop specific policies and solutions to handle the problems. When improving student retention, Lau[6] suggests focusing on three categories: institutional administrators, faculty, and students. She recommends that institutional administrators increase financial funding, provide more academic and career advising, develop more academic resources (learning centers, freshman-year programs, honors programs), give special attention to managing diversity and multiculturalism, and granting access to ideal physical facilities (dorms, study areas, disabled facilities, career centers, extracurricular group areas). Lau[6] advises faculty to use a variety of teaching approaches in their classroom and to give computer technology, teaching and learning, cooperative learning, collaborative learning, and academic advising special attention. Finally, she emphasizes the importance of student involvement with campus events, student accountability, and student motivation.

Engage

Retention rates will likely increase if students are engaged. Definite overlap exists in retention and engagement efforts. Since student engagement comes from many origins, the college experience must be examined from many angles. When first considering engagement, the task force developed the following research questions:

- What does engagement look like and how can we measure it?
- What are the categories of engagement? (classroom, student organization, campus service activities, undergrad research, campus employment, etc.)
- What does the literature say about which of those categories most influence engagement?
- What classroom environments promote engagement?
- How does living on campus versus off campus affect engagement?
- How do you build the capacity for engagement? How do you sustain this? How do you get faculty involved with this process?
- How are faculty engaged?
- How do we engage faculty in engaging students? How do we reconcile the fact that we have a lot of part-time faculty?

To address engagement efforts, the task force analyzed four specific undergraduate areas: co-curricular activities, advising efforts, communication strategies, and classroom techniques.

Students undoubtedly feel more connected with their school and university if they are actively involved with co-curricular events. However, many challenges block students from experiencing university events, including informing students about activities and scheduling meetings at a convenient time since many students commute from long distances and work several hours a week. Since motivation is a major factor affecting engagement, packaging co-curricular activities with incentives is important to generate student interest. Therefore, whenever developing student organization, school, or program events, the benefits of attending such programs should be promoted to students and meaningful, hands-on activities should be included. Conference attendance and course credit for co-curricular involvement are both ways of increasing student engagement.

Quality and consistent advising is another ingredient in the engagement recipe. Often getting students to visit their advisor can be a difficult task. Ways to encourage student-advisor meetings include course permission, advisor-initiated communication, open advising days, holds, and advisor accessibility. To encourage engagement, advisor can discuss campus activities, internships, international opportunities, research programs, and campus resources during advising meetings. Also, advisors should follow-up with concerns and utilize surveys to gain student feedback on the advising experience.

To improve communication with students, knowing where they are in the pipeline is pertinent. For example, students can be divided into GPA groups, and messages can be tailored to address specific achievements and/or concerns each group is experiencing. Such messages show students that the school is concerned with their overall success in their academic program.

Engaging students in the classroom can be encouraged by utilizing a variety of factors: reasonable amount of group work, real-world problems, frequent feedback/checks for understanding, removing redundancy in program curriculum, schedule of classes, and mapping curriculum.

Each year, the National Survey of Student Engagement[8] collects information from universities across the nation. The instrument looks at many aspects of the undergraduate experience inside and outside of the classroom to identify best practices in undergraduate education. Faculty can use survey results to determine to what extent they implement classroom and curriculum activities to improve student engagement and setting high standards for students. Similar to retention, often the little efforts can lead to a big difference when working with students, such as having a conversation in the hallway or sending a message when a student has missed classed. Overall, survey results can be translated into a strategy or practice to provide better opportunities for students.

Professors at Northern Illinois University redesigned a mechanical engineering course to revolve around a video game. Since video games require a lot of user interaction, they felt this was a solid tool to build student interest. With students playing and writing the program as their homework, Coller and Shernoff[9] found that students were definitely engaged in the learning process. Additionally, Chen, Lattuca, and Hamilton[10] suggest that student engagement and learning is a result of faculty engagement. Giving faculty opportunities for engagement and learning new teaching and learning theories is vital. Finally, faculty interest in, support for, and championship of students and their learning—especially in first-year and foundational courses—has long been documented as a prime ingredient in engaging students and providing them an early platform for success in college[11].

Admit

Admitting better-prepared and more diverse students into the schools is also important in the overall success of any program. Considering this aspect of program success, the task force felt the following areas were worthy of investigation in analyzing the admission process:

- What are the determining factors that cause a student who is admitted to commit attending IUPUI?
- What is the matriculation rate at our peer institutions? What works for them in admitting students?
- What are our admission criteria?
- Why do students apply for admittance to the institution, in general, and to our school specifically?
- How do we get students to commit to our institution?
- Why does our campus sometimes become the second choice?

The task force felt that in addition to reevaluating students by traditional admission methods (SAT scores, GPA, high school involvement), that other areas should be considered in admitting more top students. Sponsoring more K-12 initiatives is not only a great way to complete

marketing for the school, but also it is a great way to spread awareness to students about what qualities are expected of students admitted to engineering and technology programs.

Additionally, the task force felt building relationships with community colleges is also important. Since many students transfer into engineering and technology programs from other colleges, working with these administrators is important in ensuring that the students are more prepared to make this transition. Finally, the task force felt that getting faculty members involved with the admission process was a potentially a worthwhile endeavor. With faculty members contacting direct admits, additional communication lines can be created, and a better relationship can be ignited from the beginning.

Tell

A huge part of admitting top-notch students is telling stakeholders about all that the school and programs have to offer to students. The task force initially interested in the following areas:

- What is the brand value and representation of the school and programs?
- What expectations do people have of our offerings, facilities, affordability, graduation outcomes?
- To what extent are we differentiated from others?
- How do we tell potential students about us?
- What are the recruitment events for campus/school/department? How can we be more visible of these events?

Discussing the *tell* piece of GREAT was an excellent way to share awareness of current initiatives as well as generate new ideas of spreading the message of school value. Currently, some departments are employing Web 2.0 tools to market program details. Also, the school has many outreach programs to the K-12 environment, including Project Lead the Way, Girl Scouts, FIRST robotics, and computer days.

The task force also thought that showcasing successful students was a promising marketing campaign. Featuring these students on the Web sites and sharing personal stories may be a more meaningful advertising attempt. Additionally, posters with student stories can be taken back to their high school to help spread the message of their experiences and successes with the program.

Stakeholder Involvement in GREAT

The Task Force process described above is, indeed, a work-in-progress. Further efforts to collect additional data from our peer institutions, conduct focus groups with segmented student groups within the school (to amplify and expand on concepts uncovered in meetings), and synthesize, summarize, and prioritize recommendations are all activities that will inform the agenda for the coming semester.

In order to have the ideas and action items be understood and implemented effectively, it was important to elicit widespread involvement from a variety of stakeholders to participate in GREAT. The Task Force was co-chaired by the academic and student affairs deans, with

executive sponsorship from the Dean. Representatives from the school's seven academic departments were invited to participate, with an outreach made to the Chairs of each department to nominate individuals with an interest/passion for student success. Furthermore, individuals representing support departments within the school were also invited, so that a true school-wide involvement could be achieved.

By design, the Task Force omitted participation from a few otherwise "traditional" stakeholder groups. Students, industrial advisory board members, and representatives from other academic units or campus departments were purposefully excluded from the Task Force deliberations. This permitted a freer discussion of the strengths, challenges, internal issues, and candid sharing of political and pragmatic realities—all of which could have been impacted had there been the presence of parties from outside the school.

Minutes of Task Force meetings were kept and the summary information was provided as updates at regular intervals and through routine communication channels (e.g. Convocation and Chair's meetings). As the Task Force continues its work, outreach to and input from other stakeholder groups will be sought, in order to seek, validate, and incorporate additional information for improvement purposes.

Replicating GREAT in Other Engineering Technology Contexts

Some key considerations in attempting to replicate GREAT in other contexts include the following:

1. Determine the need
2. Obtain executive sponsorship
3. Invite individuals with an interest in improving conditions for students
4. Ensure sufficient representation from appropriate stakeholder groups
5. Take minutes to track discussions and idea generation
6. Benchmark with other institutions and consult the literature for ideas
7. Translate findings into useful recommendations and prioritize, communicate, implement, and monitor, as appropriate

Conclusion

GREAT Environments is a conceptual way to identify student pipeline issues in higher education. However, its utility goes beyond a catchy slogan. By focusing on a desired outcome—in our case, graduation—and working backward to identify ways to strengthen our process, we have begun what we hope will be an ongoing effort to help students achieve greater success with us. While GREAT has been—and continues to be—an appropriate organizing

model around which to guide our work, it is but one intervention among many (assessment, accreditation, alumni/employer surveys, etc.) that can help engineering technology faculty and administrators effectively serve students.

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