Full Paper: Putting UNIV 101 Back Into the Classroom Where it Belongs

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abstract

The subject of what strategies are most effective to help students successfully make the ease of transition from high school into the first year of their engineering education has been well considered. At the core of the issue is the retention rates that universities desire in order to survive. At Drexel University, due to logistical and budgetary considerations, "first year orientation" courses were historically presented in either large lecture halls, or online. A change in this policy was implemented in the Fall quarter of 2017, whereby 783 first year engineering students were placed into classroom settings for an orientation course, University 101 (UNIV 101). Although UNIV 101 is a university-wide initiative with general requirements, the College of Engineering modified the course content to accommodate incoming engineering students. The average class size was 27 students. Topics taught in the course varied weekly and included: navigating the campus; finding available resources at the University; how to schedule classes; defining what sub-disciplines of study were available in each of the specific engineering disciplines; and interacting with Professors who came into the classroom as Guest Speakers to talk about their research or how they became professors. The courses were taught by Undergraduate Advisors (typically matching the Advisors with their Advisees in the classroom). The results of the Policy change are presented herein. As was anticipated, the students (57% responding) reported an overall positive experience, and the Advisors reported fewer required transactional meetings with the students because their general questions were answered in the classroom. As a result, those transactional meetings between students and Advisors shifted towards more conversations in alignment with the Advising Center's developmental philosophy which is focused on behaviors and long-term planning.

Ten to fifteen deliverables were required of the students during the quarter to assure that they were retaining the information presented. Additionally, students were asked to perform an exercise in reflection at the end of the quarter to compare their actual experience in the course with their initial expectations, and to indicate what additional information they thought should be provided to the next class of incoming engineering freshmen. Student success improved after the quarter (Fall 2017) compared to the cohorts taught by the on-line method of instruction used in the two years prior (2015 and 2016) considering both Failures and Withdrawals. Peer (Student) Mentors were utilized in 5 of the 29 course sections and, as can be expected, student satisfaction scores were markedly higher in these sections. Data supporting these findings is contained within this paper, as well as a recognition of individual historically-recognized factors that lead to students' success, and how the in-class UNIV 101 experience satisfies those factors.

introduction

The ease of transition from high school to college for First Year Engineering Students has been the subject of much research [1], [2], [3], [5]. Much of the focus on "student success" has been centered on student retention and the implementation of actions to encourage such [1], [3], [4], [5]. Due to logistical and budgetary constraints, the Freshman Orientation Course (UNIV 101) at Drexel University was taught in recent years both online and in a lecture hall setting during the Fall term. A review of the course metrics showed that the students in the online classes exhibited

a much lower rate of success than their "face-to-face" in-class student counterparts. In other words, the face-to-face sections produced a lower percentage of "unsuccessful students". For instance, for the total student population of 807 for the 2015 Academic Year, the "unsuccessful" rates for the cohorts were 3.33% (face-to-face) and 8.18% (on-line) respectively. For the total student population of 743 for the 2016 Academic Year, the "unsuccessful" rates were 2.01% (face-to-face) and 11.88% (on-line) respectively. An "Unsuccessful" student was defined as either having a grade of Failure, or a course Withdrawal.

action taken

In the Fall of 2017, the decision was made to place all incoming 783 first year engineering students in UNIV 101 in a face-to-face classroom setting. The average classroom population was 27 students. The in-classroom experience was taught by Undergraduate Advisors, and their individual classes were populated (for the most part) by their Advisees. The realignment of efforts focused on: 1. Weekly Advisor/ Advisee contact to disseminate information and promote dialogue and approachability; 2. Peer Mentorship (in 5 of the 29 sections); 3. Exposure to what engineers do; 4. Exposure to the specific subdisciplines in engineering: 5. Introduction of Faculty Member Guest speakers in the classroom to explain their research efforts as well as how and why they themselves got into the engineering profession; 6. A discussions of career goals; 7. How to navigate the University from a physical and academic perspective (and provide an overview of available resources). These initiatives were noted to be in concert with the goals and recommendations of ASEE and others [1], [3], [4], [5]. Ten to fifteen deliverables were required of the students during the quarter to assure that they were retaining the information presented.

outcomes

A review of the end-of-term metrics revealed that the percentage of "unsuccessful" students for the class of 783 in the Fall of 2017 (3.06%) was nearly identical to those of the previous years' face-to-face percentages of "unsuccessful" students – confirming that the classroom setting offered a more productive student experience than the on-line version. The findings are presented in Figure 1 below.

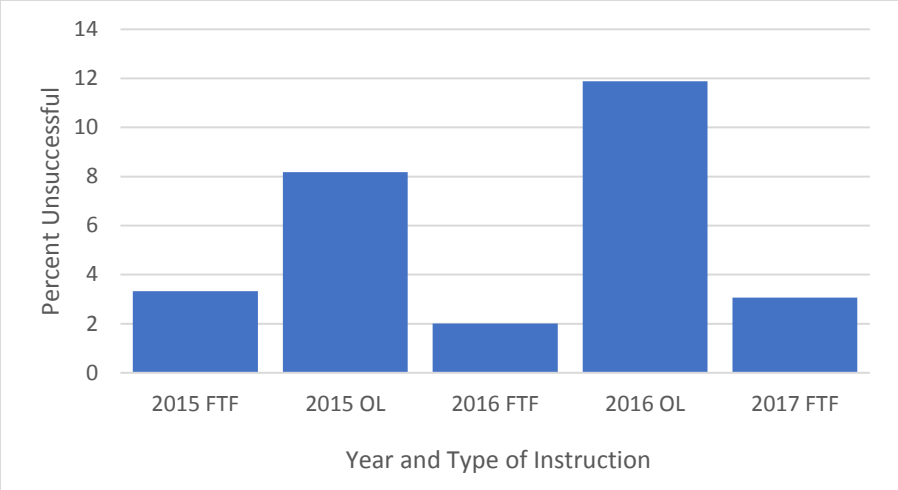

FIGURE 1

PERCENT OF UNSUCCESSFUL STUDENTS IN UNIV 101
ON-LINE (OL) OR FACE-TO-FACE (FTF) BY YEAR

student evaluation survey results

Fifty seven percent of the 783 Fall 2017 engineering students responded to the end-of term survey, which was focused on measuring the success of learning outcomes, as well as collecting feedback on course content and instructors. The responses were favorable and are presented in Table 1 below.

TABLE 1
RESULTS OF FALL 2107 STUDENT SURVEYS

Item Surveyed	Rating Before Taking Class (out of 5)	Rating After Taking Class (out of 5)
Understanding of Course Objectives	2.37	4.07
Able to Identify Goals for Drexel and Beyond	2.71	3.81
Will be Able to Achieve Academic or Personal Goals	2.78	3.88
Understand Choice of Major	3.05	3.98
Understand Curricular Options and be able to successfully register for classes	1.98	4.17
Explore their transition to college life	2.38	3.90
Course had a multi-disciplinary perspective		3.55
Grade Expected		4.90
Course Materials (handouts only)		3.26
Overall rating of course		**3.94**

A reflection of the two lowest rated student responses was performed. It is posited that the "Course had a multi-disciplinary perspective" question may have received a score of 3.55 due to

the fact that the students were paired in classrooms with their Advisors (and therefore, by their majors). This "pairing" of students by major may have been beneficial from a "study-buddy" and social perspective. However, despite the infusion of class discussion of different types of majors in engineering, perhaps the students perceived that the classroom population demographic (plus the fact that the Guest Lecture Professors were also from the students' home Departments) gave them a feeling of being "siloed". This student perception will be addressed in the next Academic Year.

The "Course Materials" question was phrased in the survey relative to the "effectiveness of the Text". The course materials consisted of handouts only. A review of the "comments section" of the survey provided insight into the students' responses. They rated the item low because "no text was used". The survey question will be revised for the coming academic year to ask the students to rate the "course materials" instead of the "text".

The students' evaluation of their Instructors is presented in Table 2 below. Comments including: "accessibile", "enthusiastic", "knowledgeable", "approachable", and "a good resource" were indicators of a productive student experience in the classroom (and hopefully beyond). Comments from the sections having peer mentors were even more enthusiastic - suggesting that this practice should be developed more in the future.

TABLE 2
RESULTS OF FALL 2107 STUDENT SURVEYS

Item Surveyed	Rating After Taking Class (out of 5)
Instructor well prepared	4.77
Instructor attitude	4.83
Timely feedback from Instructor	4.64
Instructor's communication skills	4.77
Overall rating of Instructor	4.66

conclusion

Prior to Academic Year 2017, a First-Year orientation course (UNIV 101) was offered in both on-line and face-to-face formats. A review of the course metrics in regard to students being considered "unsuccessful" or not revealed that the face-to-face sections produced less than half the rate of "unsuccessful" students than the on-line sections. An "Unsuccessful" student was defined as a student either receiving a grade of Failure, or a withdrawing from the course. The transition in 2017 from a combination of both on-line and face-to-face offerings of UNIV 101 to having only face-to-face classroom instruction appears to confirm that the more personal and intimate setting provides a more enriching experience for the First Year Engineering student – as the rate of unsuccessful students remained low (even for a population of 783). Students articulated in their end-of-term course evaluation that they had a positive experience in the course – with the highest ratings being given to the Instructors.

future work

As it is important to monitor, assess and revise the course after each offering, this process will be completed before the next academic year. In the interim, adjustments to the course evaluation survey noted in the "Student Evaluation Survey Results" section of this paper will be implemented. Additionally, it is acknowledged that this study defines student "success" based on their performance in the course only, and an inference is being made between success and future retention in the engineering program. However, additional data will be reviewed on a University level to determine if: 1. Retention continues in the College of Engineering – even if a student changes their engineering major; and 2. If a correlation exists between the level of success a student has in the UNIV 101 course, and the students' rate of retention at the University.

references

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