Undergraduate Academic Policy Trends Across Institutions Over the Last Thirty Years

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Full Paper: Undergraduate Academic Policy Trends across Institutions over the Last Thirty Years

INTRODUCTION

MIDFIELD (Multiple Institution Database for Investigating Engineering Longitudinal Development) is a database, made up of multiple higher education institutions across the U.S., which is intended to allow for the easy comparison of the institutions. The MIDFIELD database includes data from the late 1980's until present, which encompasses the SAT/ACT scores, students' GPA and major for each semester, students' attained degrees, year graduated, and other pieces of data. However, in order to better understand the differences across institutions, an understanding of academic policies should be conducted and connected to the database. In this effort, we aim to investigate academic policies in engineering programs to find the trends and changes across multiple years. The findings will lead to the development of a complete database of American academic policy information that shall be available in the future for other researchers to use for academic purposes. By connecting this information to a database like MIDFIELD, researchers can identify how the graduation rates, retention rates, student demographics and other data collected by MIDFIELD is affected by the changes in institutions' academic policies. In this project, we highlight academic policies based on two different aspects: matriculation models and good standing policies among institutions. Therefore, the purpose of this paper is to highlight the process and the components of the policy summaries and to answer the following research questions:

How good standing policies differ within and between institutions using longitudinal data?
What are the different matriculation models in institutions which offer engineering degree?
How different are the engineering education matriculation models among institutions?

BACKGROUND

Academic Literacy refers to the basic skills and information that can help students navigate their undergraduate system. While being academically literate is an important factor for undergraduate success, these kinds of literacies remain obscure to many students, especially those who are historically underrepresented (i.e. racial underrepresentation and those who are socioeconomically marginalized) [1, 2]. As an example, students in one study reported that they lacked the requisite literacy, but university's expectation was that they know about the rules of participation before entering the system [1]. Although these studies may appear to be outdated, we see the same experience happening for the students who are enrolled in undergraduate studies recently. One of the university expectations is that all newly admitted students internalize and accept an institution's policies shortly after admittance to the university.

While many studies have investigated the impact of different teaching techniques and strategies, very few have focused on exploring the influence that these regulations have on students' ability to succeed. One possible reason for the lack of studies is the ambiguousness of academic rules and regulations across different institutes. For instance, Brawner, et al. [2] examined the nine big public schools in the United States over a period of 17 years, specifically looking for the many similarities across the academic regulations and rules. However, even with the lack of studies in this area, some studies have reported the impact of these policies of students. For example, one policy that has remained the same over these years is the threshold for GPA. According to Brawner, et al. [2] the required GPA for nine public universities in the southeastern United States was 2.0 for graduation. However, students in early stages of their undergraduate studies will remain in good standing even with lower GPA. Extreme variations in Students' GPAs during their time at a university may result in suspension or even expulsion. While policies of forgiveness also exist, they are not very clear. In addition, another study has shown that the policies related to the courses that students are required to take in their first year can impact students' success [3]. The unclarity of the policies may result in students' failure. Given how important these policies can be, many researchers have started analyzing and comparing academic polices from the past. Ohland and Long [4] discuss that examining matriculation models, sharing the record data and merging data is critical to address important questions related to higher education including the way students maneuver through respective required engineering curricula as well as what policies stand in their way toward graduation. In addition, other studies also examined matriculation models in an attempt to shed light on questions such as when students can declare majors and the population distribution of students in each major [5-7].

In keeping with the aforementioned academic research, in this study we specifically compare changes in matriculation models and policies and requirements for academic good standing for freshmen using 30 years longitudinal policy records. We also investigate the changes and trends in policies for first-year engineering students across institutions over time. Information on trends like this could help prospective policy-makers and researchers develop new rules and regulations and give them the ability to compare these policies with those of other institutions. They will be able to connect these findings to academic data to draw conclusions to determine the success rates of various changes in academic policies.

METHODS

We gather institution academic policies either through direct communication with a representative of the institution or through the institution's official online catalog repository. We use NVIVO (a data collection software optimized for manual input and sorting of qualitative data) to sort relevant information into 150 different nodes; each node pertaining to a specific policy of our interest.

The codebook has been refined over the course of two years, to produce a concise yet comprehensive list of nodes that are relevant to the data collection and eventual trend-finding specific goals. The codebook is used to ensure the consistency among institutions analyzed by MIDFIELD researchers by providing a common structure of policies to be examined for changes and trends over time. Every institution analyzed is done using the most recent version of the codebook to guarantee consistency amongst institutions. Finally, we construct a policy summary that combines the information gleaned through the coding and categorizing process. The policy summary can be divided into 13 different subcategories. The overview subcategory discusses the number of catalogs covered for the specific institution, a brief description of the institution, and the approach to documenting its policies. The summary section indicates the term type for the institution and whether there have been any changes since the late 1980s. The next three subcategories focus on students' admission into the engineering program. This includes different sections that focuses on either the admission of first year domestic students, transfer students, or international students. The sixth subcategory focuses on the engineering matriculation model. The next three categories are the readmission, grading, and the academic progress and good standing policies. The tenth subcategory covers the engineering progression which includes common engineering coursework and cooperative education (co-op) experience. The next subcategory covers financial aid which covers merit scholarships, standards for retaining them and any statewide scholarship opportunities that may or may not be covered by the institutions' catalogues. The last two subcategories cover disability policies which includes accessing accommodations and other policies which can not be included in any of the subcategories mentioned above (e.g. foreign language requirements, campus residency, miscellaneous privileges) will be placed in the miscellaneous polices section.

Being able to compare how the policies change, across both time and location, is a significant piece of information that will help to inform analysis derived from the MIDFIELD database. For the purposes of this paper, we compared policies describing each institution's matriculation models (the processes each institution has established for the advancement of students in their respective engineering programs) using codebooks covering the span of the past thirty years. We also looked at the academic policies for remaining in academic good standing at the same universities.

RESULTS

The universities selected for this study were chosen for having the most comprehensive data currently in MIDFIELD. These were the first schools to volunteer information to the MIDFIELD database and as such are the most comprehensively analyzed institutions at this juncture in time. While the MIDFIELD database will continue to grow, at the time of this publication our researchers are most intimately familiar with the policies of those 11 schools.

The differences in matriculation models has been categorized into six categories as per Orr et. al. models as illustrated in Figure 1 [8]. In the first matriculation model, students are required to complete a formal First-Year Engineering (FYE) program prior to declaring an engineering major. Qualified students in the second matriculation model are admitted directly into a specific engineering major. In the third matriculation model, students are enrolled as undesignated engineering major for a period of time prior to applying to specific engineering programs after meeting a set of departmental requirements. Some students are admitted directly into the university rather than to the engineering department. Students in this matriculation model are required to complete two years of coursework in the arts and science and are advised to take specific coursework to apply to the engineering department once they satisfy the general education program (PGE) requirement for the specific major. The fifth category is the Mostly Common First Year where students declare an engineering preference and are advised by advisors within the engineering department. Students in this matriculation model enroll in their preferred major once they complete their math, science, and their engineering introductory coursework. The last matriculation model is the general study program which is designated for students who applied to an engineering program but are rather admitted to the university since they have not met the specific program admission criteria. Students in this category are then enroll in a general study program where they can reapply internally to the engineering program once they passed certain criteria designated by the department.

Schools without a First Year or Introduction to Engineering Program are not likely to place an emphasis on standardized, required engineering courses for all engineering majors, and schools that have some kind of required First Year or Introduction to Engineering Program are more likely to have science and math courses required for all engineering students instead.

Over time, there is a slight, definitive trend in universities converging in the academic good standing requirement to the 2.0 GPA by analyzing the corresponding policies from 1988 to 2018. The requirements for all institutions for maintaining Academic Good Standing have gotten more difficult over time, as evidenced by the Average GPA by year, (plotted in dashed lines on Figure 2 below).

There is a possibility of a light trend towards raising the GPA or maintaining it over time. The majority of data points to a 2.0 GPA as a possible standard for first year students. While the number of schools in this sample may not be representative of all institutions in America, for this population group, 2.0 seems to serve as a common minimum GPA for first year, with 73% of the schools in our study requiring a minimum GPA of 2.0 at the end of the thirty-year period. The average minimum GPA of the population is 1.94 at the end of the thirty-year period from which the data sample was collected. It has increased steadily over the course of the thirty years of MIDFIELD research. The median GPA increased to 2.0 as more schools used 2.0 as a standard GPA, and the standard deviation has decreased significantly over the same time period as the data becomes more normal and more schools move towards a 2.0 standard.

For most institutions, our team found that the observed changes typically involve higher academic standards across the board. This is most visible in quantitative data like that in Figure 2 but is also reflected in the qualitative policies set forth by each institution, holding students to higher standards as time progresses. These increasing academic standards have accompanied more clearly defined policies over time. With a few exceptions, schools have become more standardized with their catalogs, and have become more responsible with publishing relevant catalog information every year.

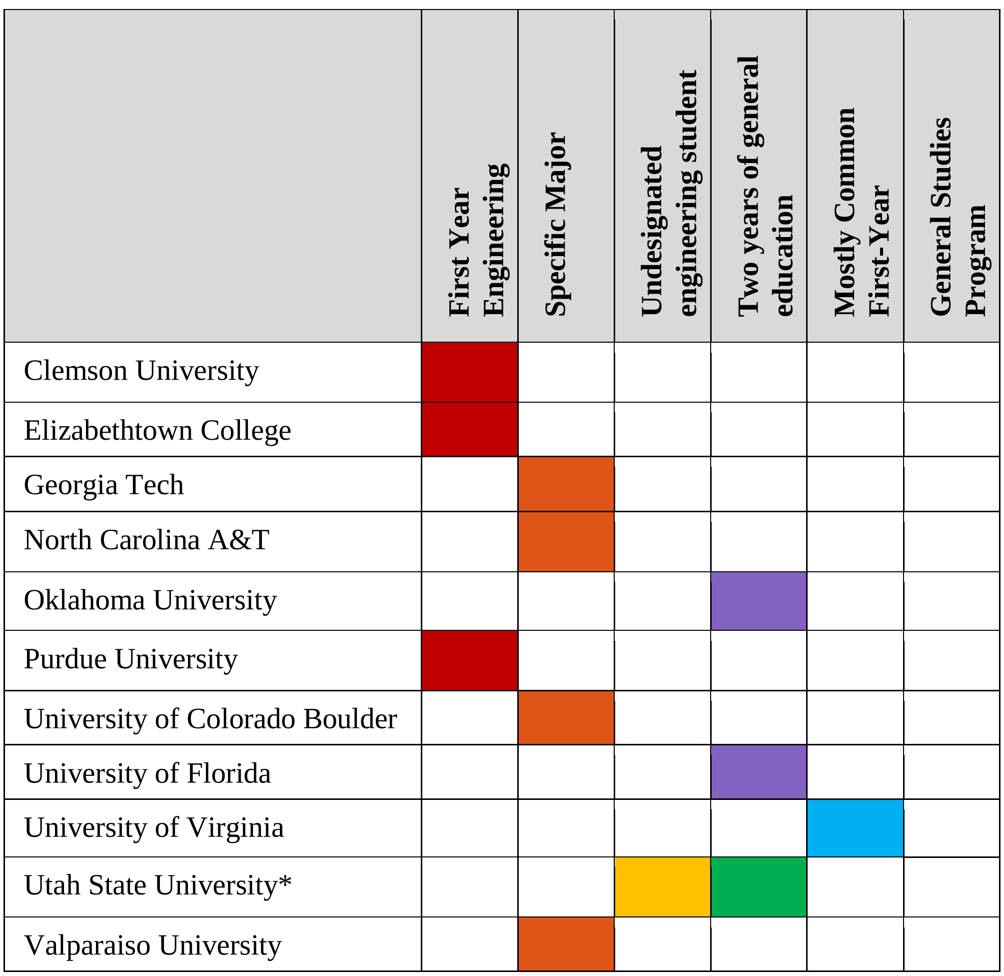

Figure 1. Matriculation Models Among institutions, 1988-2018

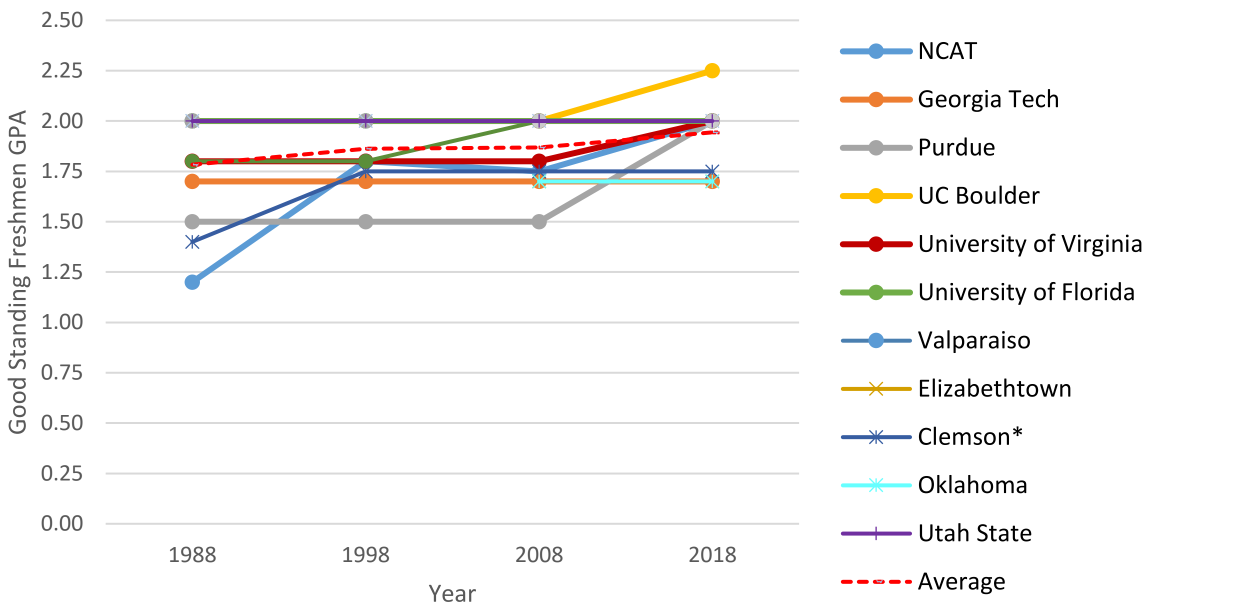

Figure 2. Minimum Good Standing GPA for Freshmen over Time

*Clemson 1988 data is for students with up to 20 hours, first-year students at all other institutions are classified as Freshmen with up to 30 hours. A Clemson student with enough credits to classify as a sophomore in 1988 would still be considered a Freshman at all other institutions.

CONCLUSION

The MIDFIELD policy project intends to consolidate policy summaries for all institutions partnering with MIDFIELD. The intent is to create a database for future academic researchers that comprises academic policies in American engineering programs to find trends across multiple years. This resource will create more depth to the data analysis as researchers can correlate between specific institutional policy changes and the impact it has on students' attraction, retention, and performance. In this specific study we found that the institutions present in our sample move towards a standard trend of 2.00 over time for GPA for academic good standing for freshmen (where a freshman is considered to be a student with less than 30 credit hours). While this is not conclusive as the database is continually expanding as new schools are added, these trends suggest that academic institutions are getting increasingly more stringent with the academic expectations they put on their students.

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