GETTING UNIVERSITY STUDENTS TO FINISH WHAT THEY STARTED: DESIGN, TESTING AND ITERATION OF AN APP TO PROMOTE STUDENT RETENTION IN HIGHER EDUCATION

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Abstract

University student dropout is an issue of concern worldwide; lecturers, administrators and governments alike aspire to see students complete their degrees. Within academic literature, student retention has been conceptualized as a function of engagement (with engagement meaning investment in a particular learning institution and culture). In the literature, it is also known that students tend to copy the behavior of their peers: if a student’s friends leave, that student may be more likely to leave; if a student’s friend’s stay, then that student may be more likely to stay too.

Aiming to reduce the dropout rate in our institution, we developed an App that highlights student activities, fosters social connections, and aims to make it easier for faculty and staff to communicate with students. We tested the App’s impact on student retention by asking: Would highlighting positive engagement and retention behaviors as well as promoting community building through the use of an App positively influence student persistence rates within a small US university? Answering this question was and is both easy and hard. Quantitatively, dropout rates are easy to measure. However, the behaviors that lead to those dropout numbers are often influenced by a series of human interactions, so qualitative data was also collected. Specifically, a design-based research framework - an iterative framework well-suited for ongoing technological innovations, and improvements - was employed. Both quantitative and qualitative data were collected through surveys, focus groups, interviews, user data, and institutional metrics.

Initial results have been promising. During the first two weeks of the fall 2018 term the App was used 14,990 times by 911 distinct users with the total undergraduate enrollment being just under 1,300 students. A small increase in fall to spring semester student retention has been measured; in our current stage of research we are aiming to measure to what extent the App may have had an impact on this potentially positive development. This presentation will showcase the App, overview our data on the relationship between the App and retention, and discuss our developing features and versions of the App.

Keywords: Student retention, student persistence, student engagement, higher education, educational apps.

1 INTRODUCTION

Higher education student retention has long been an issue of ongoing concern; student dropout may have adverse social and economic consequences [1], [2]. Yet, even over the past several decades, a solution to student dropout has proved elusive [3]. While scholars have long known that engaged students are more likely to persist in their studies than disengaged students [4]–[6], no practical guidance has been developed for the practitioners in the field as to how to engage real students [7], [8]. That is to say, the vast majority of the numerous undergraduate student engagement theoretical frameworks developed over the past forty years have never been empirically tested [8] due to their complexity. In fact, the theoretical constructs underpinning the theoretical models such as social and academic integration [9] are of little utility to the college and university administrators unless they can be operationalized in some manner [10]. Another barrier to translating theoretical model into practice is that college administrators tend to focus on engaging real life learners attending their institutions, while the theoretical model tend to discuss ways to engage a generic learner that represents statistical averages of the student bodies. What is needed is a student engagement program incorporates students own voices [11].
In our specific bid to address the problem of student retention at a local university, we used the resource available to us – technology and technological development expertise. We asked the following questions:

1. What do students themselves identify as barriers to their own engagement, and what affordances may help them to engage?
2. What technological resources might we draw upon to address the identified problems?

In this paper we describe our iterative, design-based research project in which we deeply understood student needs, developed an app to meet those needs, and continued to refine the app. It was seen that the app was able to measurably impact the dropout rate at the institution.

2 THEORY

Retention is one of the strongest indicators of student success [5], [12]. The theoretical framework providing the relationship between student engagement and retention was first offered by Tinto [4] in 1975. Tinto’s theory of student departure, widely adopted by many scholars [3], [7], suggests that colleges and universities consist of interconnected academic and social systems [9]. The notion of social integration largely represents the extent to which an individual student is able to plug into the broader learning community of their institution and form meaningful connections [4], [5], [13] while academic integration is largely a function of the extent to which an individual student is aware of and able to access various student support resources and information [5]. Both systems have an important role to play in student success. It has been theorized that student’s integration in one of the systems may facilitate integration into the other system [4] – simply put, if a student feels at home on campus they may do better academically or if a student is doing well academically they are more likely to form meaningful connections.

While theoretical framework identifies various areas of need that student engagement intervention must address, the specific shape that an intervention should take would depend both on the target population of students as well as the larger context of the ecology of learning. The intervention has to be tailored to the needs of the real-life students [8] and grounded in the voices of the real students and their struggles [11].

3 METHODOLOGY

So as to meet the stated theoretical objectives, as well as address practical concerns, this study utilizes Design Based Research (DBR) methodology [14] to scaffold the process for the development of the student engagement mobile application. DBR is an iterative process that is intended to contribute to the body of knowledge by producing potentially generalizable findings that are theoretically sound, yet practical so as to work in authentic, real-life settings. Consistent with the DBR methodology, this present work utilizes multiple iterations. For each iteration, the researchers postulate theory-derived design principles that inform the process for gathering the stakeholder input for each iteration. This input viewed through the lens of the available theory is then used to formulate design propositions, which are a set of high level of objectives. The design requirements constitute product specifications that the product development team will use to guide their work. Following the deployment of the resulting product, the research team gathers feedback from all stakeholder that is used to inform the next phase of the iterative process.

3.1 Participants and Setting

The research project took place at a small Catholic liberal arts university located in the Midwest. With a total undergraduate full-time equivalent enrolment of just over a thousand, the university maintains a 71% fall-to-fall retention rate and a 60% six-year graduation rate. The fall-to-fall retention rate indicates the percentage of first-time freshmen who remained enrolled at the institution throughout the academic year and then returned to continue their studies the following fall. The six-year graduation rate indicates the percentage of first-time freshmen who attain their degree at the institution in the six years following their arrival on campus. The university has a strategic goal to increase freshmen fall-to-fall retention rate to 90% - a goal which the university intends to achieve by enhancing the undergraduate student experience on campus through improved social and academic integration.
3.2 Data Collection

The researchers collected both the qualitative as well as quantitative data on students. Namely, data was collected through observation, semi-structured interviews, focus groups, and group level assessment [15]–[17] exercises.

4 LITERATURE REVIEW

Student retention is intrinsically linked with student engagement—meaning that students who are engaged are more likely to be retained than their non-engaged counterparts [3]–[5], [7], [18]. Over the past five decades the understanding of student engagement has grown significantly—researchers have come to recognize that individual student’s engagement is determined not only by student’s intrinsic characteristics but also by their institutional environment as well as the interaction between the students individual characteristics and their institutional environment [7], [19]. In the meantime the modalities of student communication have evolved dramatically with advent of technology—the majority of today’s students prefer texting and other forms of mobile communication to face-to-face contact [20], [21]. Social media platforms provide numerous opportunities for engaging today’s students [22]–[24].

5 RESULTS

This paper covers several iterations of an ongoing project to create a student engagement application. Each of the phases is outlined below in detail, including the design principles, design propositions, design requirements, and stakeholder feedback.

5.1 Iteration 1: Getting to Know You

The transition to college life is a challenging experience for the incoming students as they are struggling to adjust to the rhythms of college life as well as accultimating to the new academic, social, and cultural norms, all the while dealing with the issues that are typically associated with the transition to adulthood [25]. For these reasons, it is not surprising that this tumultuous transitional period in students’ lives is also associated with the highest risk of attrition [26]. Based on the results of the needs assessment the team has focused on developing a technology based intervention that was aimed to help students to establish social connections on campus in a way that felt safe to them.

5.1.1 Design Principles

Prior to commencing work on this project, the team has conducted numerous focus groups with students at Mount St. Joseph University. One of the predominating themes emerging out of these focus groups was that the students were having hard time forming new connections on campus. Based on this feedback, the main focus of this iteration of the project was on the social integration [9] of the incoming students. We wanted to make it easy for students to find their “tribe” on campus.

5.1.2 Design Propositions

We conducted additional semi-structured interviews [15] with undergraduate students concerning their experiences forming social connections on campus. Students identified numerous practical challenges they encountered in the process. Students discussed the social awkwardness of trying to reach out to peers in class while not knowing their names. They shared with us that it is “easier” to connect with peers on the social media rather than in a face-to-face conversation. They also identified the need for the environment to provide the feeling of safety and security to all those involved. Based on this feedback we have identified the following design principles: 1) students need to have a way to quickly and easily find their peers, without compromising the feeling of safety and privacy of the individuals, 2) we need to ensure that all information provided goes through a validation process to ensure that all of the individuals are who they claim to be, 3) we need to thoughtfully integrate social media platforms.

5.1.3 Design Requirements

Based on the information available the team developed a set of the design requirements. They consisted of the following key components: 1) students had to have an easy way of knowing who were other students in their classes, 2) the platform had to provide for an opportunity to promote connections between the students on popular social media platforms, 3) students would be able to see
only their classmates – not other students in the classes, 4) students wanted to be able to see pictures of their peers in order to “match a name to the face”, yet 5) they wanted to be able to control their image, and 6) all content needed to be approved in order to prevent inappropriate content sharing.

5.1.4 Reflection

Overall, the initial, minimally viable product (MVP) was well received by a group of students invite to test out the platform. Students liked being able to see who was in their classes and look up the contact information of their peers. Having experienced the ability to quickly look up peers students wanted to be able to also see what events were taking place on campus.

5.2 Iteration 2: What is Here to Do?

Based on the initial feedback, the research team moved on to integrating an event feed. Again, based on student interviews we learned that students generally did not plan event participation weeks in advance – typically they made decision to attend a particular event on a spur of a moment. Hence the app needed to provide a real time view of what one can do on campus from now on. Secondly, students wanted to be able to filter the feed by event type. Finally, the students wanted replace outdated bulletin boards with display screens that would be synchronized to the app.

5.2.1 Design Principles

The main design principle for this iteration was to provide technological support for ad-hoc decision making by the students regarding event attendance. We recognized that the event feed needed not only notify students of the basic event information such as title, location, and time of the event but also provide students with a more in-depth view of what the event is all about. We wanted students to get a feel for what the event was likely to be like and thus provide with insights on a broad range of topics related to the event attendance – ranging from what one should bring to the event and whom to invite.

5.2.2 Design Propositions

We conducted numerous semi-structured interviews [15] with undergraduate students regarding how they make decisions as to whether or not attend a particular event. From the interviews we learned that students made decisions regarding the event attendance largely based on whether a particular student saw themselves fitting in at the event as well as general availability. Students did not plan their event attendance far in advance – most of the time decision to attend an event was made hours if not minutes prior. In fact, we learned that students were very reluctant to commit to event attendance and they prefer to make an impromptu decision to attend right before the event begins. They felt that their schedules as students are subject to change and they wanted to avoid the sense of guilt they would feel if they agreed to attend but then could not make it.

5.2.3 Design Requirements

Students must get a good understanding what the event is all about through the inclusion of multimedia components such as event poster as well as images from prior events. Digital display boards throughout campus must be synchronized with the app

5.2.4 Reflection

Students enjoyed the addition. Student life surveys indicated that since the addition of the event feed and digital display boards increased awareness of the events on campus as well as attendance of the events. It was estimated that across campus, attendance at student events increased by approximately 30%.

5.3 Iteration 3: Social Media is so Awkward

At this point in time the student engagement app has become a staple of student life on campus. Over 99% of the incoming freshman class was actively utilizing the app. The researchers conducted a number of events to gather incoming student perspectives on how the app was working for them. While the overall feedback has been very positive, students suggested that they wanted on app messaging be added to the platform. Effectively, students were advocating that a closed social platform be added to the app in order to promote communication between friends. This finding was contradictory to the results of the initial interviews conducted as a part of the needs assessment exercise where students indicated that the popular social media platforms are the best way to
communicate. However, students now appeared to suggest that friending someone on a social media platform in order to ask for homework help was awkward. They wanted an educationally themed social media platform that would be explicitly focused around learning – similar to the LinkedIn’s focus on career connections (as opposed to social ones).

5.3.1 Design Principles

We aimed to establish academically themed social media platform to enable students to connect with each other for academic purposes. The use of this dedicated platform allows students to form academic connections without the “baggage” that is typically associated with connections on other popular platforms. The group chat functionality provides users with the ability to form virtual study group and facilitates building learning communities. Additionally a single point of assistance called university helpdesk was built into the app to provide one stop for all student support.

5.3.2 Design Propositions

During this iteration we sought to: 1) add closed social networking with group chat functionality to the app. 2) add University Helpdesk feature for live chat with the school, and 3) enable targeted push messages to students based on class/group memberships.

5.3.3 Design Requirements

The system has to provide an engaging academically themed closed social network environment that facilitates learning and group work. University Helpdesk feature provides one stop service for all student needs.

5.3.4 Reflection

The addition was well received by our students with over ten thousand messages exchanged by students on the platform during first few months of the operation. Students liked the separation between the social and academic paradigms – they indicated that they would still exchange messages on social media platforms for more personal communication, while utilizing the institutional social network platform for academic communication and group work. During the first few months in operation thousands of messages were exchanged on the platform.

5.4 Iteration 4: How do I Make Appointments Here

Students liked being able to get in touch with their peers easily through the familiar paradigm of social media and mobile platforms. Having enjoyed enhanced communication with peers, students suggested that the existing paper and pencil process of scheduling advising and tutoring appointments with various student support offices was challenging. They expressed an interest in being able to schedule all appointments through the app.

5.4.1 Design Principles

Promote students’ academic integration by making it easy to schedule advising, tutoring, and other student support appointments through the app. By making access to critical student support resources easier we hope to improve students’ academic integration which is known to improve student retention.

5.4.2 Design Propositions

The scheduling of the appointments has to be easy and intuitive. Students need to complete the process in one stop. Individuals with whom the appointment is made must have all information concerning the student potentially relevant to the appointment provided to them.

5.4.3 Reflection

This iteration is still in development and has not been released to students as of yet, but we anticipate that the tools being developed in this iteration may prove helpful in affording students opportunity to engage with the university community.
6 CONCLUSIONS

Design based research provided scaffolding to support iterative development of a complex student engagement product. The resulting product was well received by the students. During the first two weeks of the fall 2018 term the App was used 14,990 times by 911 distinct users with the total undergraduate enrollment being just under 1,300 students. While the university saw a small increase in the student retention rates during the time that the app was in operation the increase in the retention cannot be entirely attributed to the operation of the app. The app has also potential to increase institutional understanding of the students experience and direct targeted interventions in the future based on this improved understanding. One of the major limitations of the present work is the lack of the impact evaluation of the effect of the app on student retention. Further analysis of the meta-data generated by the system may reveal additional insights into how students are retained. For instance, network analysis of the student connections may enable the institution to understand the impact of dropout of a particular students on others who were in the student’s network [10].

REFERENCES


