

## Project Proposal: Summer 2018

### I: Project Overview

For the summer of 2018 Robert Reynolds will design and build a website that connects High School Students and Advisors to Post-Secondary Institutions nationwide. This website will enable students to create an academic profile online with transcript, test scores, essays, and more in order to give schools a complete picture of them as a student and person. It will also give schools the opportunity to personalize their presence in order to attract the type of students that would be a good fit culturally and academically.

In the end, students and schools alike will be able to search for each other using criteria filled out - test scores, essays, survey questions, etc - and find a good match for application. From there, the tool will provide easy access to connect, enabling video chat, virtual tours, and other forms of communication to create a more dynamic and effective bridge between the student and school.

### II: Project Motivation and Context

#### Post-Secondary Education in the United States

From 2000 to 2016, total undergraduate enrollment in the United States increased 28%, from 13.2 million students to 16.9 million. (NCES, 2018) Extending the time frame back further, as shown in Figure 1, we can see that the trend until recently has been a consistent increase over time in the enrollment of

undergraduates. (Maciag, 2013)<sup>1</sup>.

According to the Bureau of Labor Statistics, 69.7% of 2016 high school graduates enrolled in college in the fall of 2016, which is the highest amount since 2009 (BLS, 2017).

The reason enrollment continues to rise is not a mystery - the number of jobs requiring at minimum an associate's or bachelor's degree also continues to rise. (Carnevale, Smith,

Strohl, 2014) Figure 2 showcases job growth based on degree attainment, where we can see that from 1990 to 2012 the job market for students with at minimum "some college or associate's degree" grew 41% to 82% and students who did not attend college saw the job market decrease by 14%. (Carnevale, Smith, Strohl, 2014) As of 2010, people with a high-school diploma or less made up 36% of the job market, 18% had some college but no degree, and the remaining 44% had at minimum an associates degree. (Carnevale, Smith, Strohl, 2014)

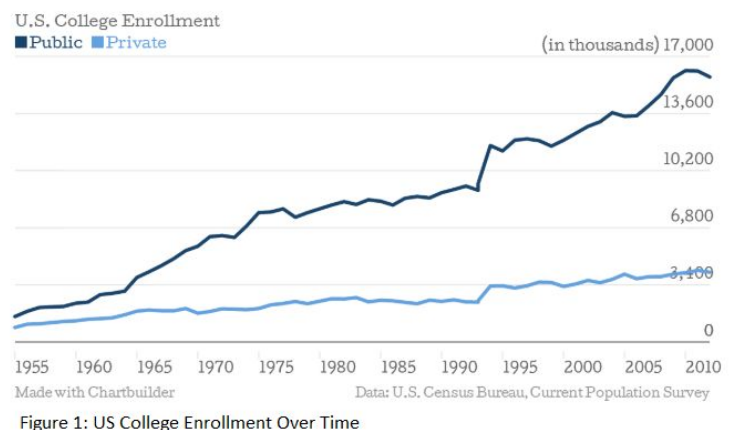


Figure 1: US College Enrollment Over Time

<sup>1</sup>While there is a noticeable dip in 2010 that extends to 2016, it is theorized that the downturn in the economy is the leading factor, and statistics are showing that as the economy is improving the enrollment numbers are continuing to rise. (Maciag 2013, NCES 2018)

Based on this data, the importance of getting a post-secondary degree is continuing to increase in importance, which is why many students continue to explore a college or university education. Unfortunately many of these students do not obtain a degree. Each year, roughly 30% of first-year students do not return to the same institution for their second year, with \$9 billion spent educating these students. (Aulck, Velagapudi, Blumenstock, West, 2017) And overall, around 40% of students do not complete their bachelor's degree within 6 years. (NCES, 2016)

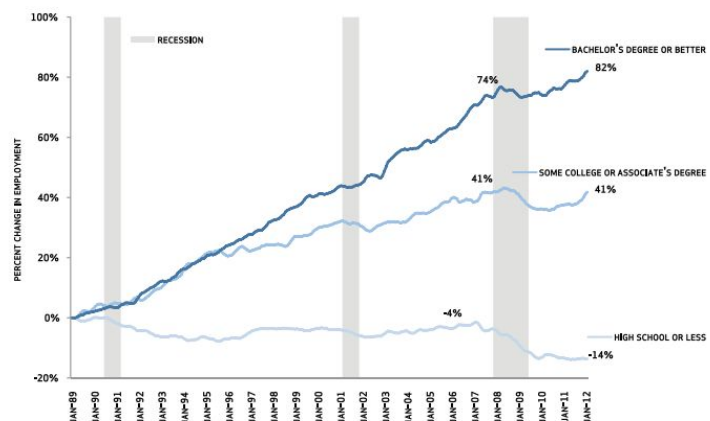


Figure 2: Job Growth by Degree

There are many reasons students decide to drop out of school - familial issues, cost, academic performance, culture. (Leonhardt, 2005) While some reasons are out of the control for the student or school, many of them can be prevented. For example, cost, where schools can begin enabling students to understand the financial requirements for that school, to culture, giving a 360-degree view of the campus and student life, to academic performance, finding a school that matches well with the academic prowess of that student.

### How Students Choose Colleges

Studies over the years have looked at multiple aspects of how students decide where to go to college. A study by Hossler and Gallagher broke it out into three distinct phases - deciding whether to go to college, searching for colleges to apply to, and choosing the college to attend (Hossler, Gallagher, 1987). This project is focused on the final two phases.

On the search aspect, students generally have two approaches to finding what they would consider a 'good fit.' The first is a sociological approach - educational aspirations for that student, academic achievement of significant others, familial culture, and social culture. (Hossler, Braxton, Coopersmith, 1989) The second approach is more econometric - the cost of education and the value long term it will provide (Hossler, Braxton, Coopersmith, 1989).

A key point in the search is finding a college that is at a high level a good academic fit. In many cases the very first statistic students look for is what type of test scores and GPA is generally required to become a student at that school (Nora, 2004, Hayes, 1989).

As students narrow down their choices for either application or attendance, psychosocial factors begin to play a larger role. Activities like college tours become more valuable to find a good fit because students are more likely to attend and then succeed if they were on a campus where

they felt 'welcome, comfortable, capable, safe, supported, happy, and most of all, accepted' (Nora, 2004). During the final choice phase, these college tours are the most impactful resource for students in finding the college they want to attend (Smith, 2006, Danner, 2000).

The question then becomes *how* do students get and colleges distribute this information effectively. With the explosion of the internet at the turn of the century, the internet became potentially the most valuable tool students could use in finding information about a school (Smith, 2006). This is potentially a dangerous paradigm change for schools, as they have less control over what information a student gets about them (Hossler, 1999). A 2006 study found that students' use of the internet was becoming significant as visiting faculty pages and taking virtual tours gave students the most information in their search (Hendricks, 2006).

The studies done in 2006 were completed at the advent of social media before it began to take off to the levels it is at today. In 2009 another study was done, finding that high-school students had begun to use Facebook more to connect to colleges and administration officials (Anderson, 2009).

### **Current Tools Today**

As we explore the landscape as it lies today, there have not been any major enhancements. The College Board has a direct marketing tool for colleges that leverages the pre-test survey students take before the SATs, but that doesn't really help students find colleges, only the other way around. It also only has 1,100 schools compared to the 4,300 total schools nationwide. The College Board also created an 'interactive' search for students where they can answer some simple questions about the school they want to attend, but at the end of it finds schools based only on a very basic location prompt, the school size, and whether it is a 2-year or 4-year school. After completing the survey, I had 219 schools, with all being considered a 100% match by The College Board. When I opened up one of the schools, it gave me an e-mail address I needed to reach out to, and that was the way to connect.

The other tool that appears on Google is a similar search from Peterson's, which gives similar results with similar prompts. After that, it is mostly just articles and blogs describing how to find schools. This is, for an 18-year-old student, overwhelming. Even more so if they are the first person to attend college in their family or they are lower-income, as the other resources they have may be non-existent.

This project will create a free tool for students, where if it ever ran in production would charge a nominal fee to colleges because students should not be forced to pay to find out where they are going to school.

### III: Project Scope

This project will be leveraging the MERN Stack - MongoDB to store student and college data, Express / Node on the back end, and React to generate the dynamic front-end. The goal will be for a student to be able to register and create a profile with things like a transcript, test scores, and even taking a survey. From there, they can search for schools using any criteria they want, find a school, and immediately chat or call or attempt to schedule a meeting with them

On the school side, allow them to also create and cultivate their profile, giving them control over the information available. They can search for students using grades, tests, and survey answers to find students, and similarly request a meeting with students they are interested in.

#### III A: Backend

On the backend this project will leverage packages like Passport to handle authentication / user registration, Express-Session to maintain authentication for a user as they continue browsing pages, and Mongoose to connect to the MongoDB.

#### III B: Front-End

On the front-end this project will leverage packages like Axios to handle the API requests, React-Redux to simplify maintaining state throughout the components, and Bulma to make design / CSS quicker to work with.

Robert Reynolds is still evaluating tools to showcase Chat, Video, and Scheduling functionality, and has not yet determined what tools he will use to develop those parts of the project.

### IV: Project Deliverables

June 24th: Weekly Checkpoint 1

July 1st: Weekly Checkpoint 2, Intermediate Milestone 1

July 8th: Weekly Checkpoint 3

July 15th: Weekly Checkpoint 4, Intermediate Milestone 2

July 22nd: Weekly Checkpoint 5

July 29th: Final Project, Final Presentation, Final Paper

### V: Project Task Schedule

Task	Target Completion Date
Wireframes and outline of functionality for students, advisers, and colleges	6/24
Non-Functional Skeleton Website Built For Tool	6/27
API Creation and Testing for Student Side of Application (Register, Login, Create Profile, Answer Survey)	7/1

<b>MILESTONE 1 - Showcase Wireframes, Non-Functional Pages, and API's (Using Postman)</b>	<b>7/1</b>
Functional Student Side of Application, allowing a student to register, login, create profile, answer survey, upload test scores, essays, and transcript	7/8
API Creation and Testing for School Side of Application (Create Profile	7/12
Functional School Side of Application, allowing a school to create a profile, enter information about their school	7/15
<p>Allow students to query schools based on School Name, Student Size, and GPA / Test Scores, and view the school's profile</p> <p>Note: I will create a couple of dummy schools for "students" to search through. While APIs exist from CollegeBoard with much of this data, the ideal end state would be schools filling out their own information for students. This may change for final project.</p>	7/15
<b>MILESTONE 2 - Allow classmates to register / login, create and edit their profile, and search for a college</b>	<b>7/15</b>
Allow schools to query students based on GPA, Test Scores, and specific survey answers	7/22
Create communications channels for schools and students to connect (Ideally 3 of 3 Below)	7/22
Ask to Schedule a Call Functionality	7/22
Video Chat Functionality	7/22
Chat Functionality	7/22
<b>FINAL PROJECT - Allow classmates to request a conversation with a college, and showcase a college reaching out to a student. Showcase video and chat functionality.</b>	<b>7/29</b>

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