# Dropout vs. Time to Degree: The Existing Tension between Retaining and Graduating 'At-Risk' Students in a Timely Manner

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## ABSTRACT

Students' dropout and delayed graduation have been serious issues in higher education. Especially, the dropout rates are high, and time-to-graduation is longer than usual in computing programs. Higher education institutions are under pressure to retain at-risk students and helping them to graduate in a timely manner. In this work, we show the need for flexibility in terms of recommending courses and offering additional classes (or sessions) to retain and graduate at-risk students.

## CCS CONCEPTS

• Social and professional topics ~ Computing education programs.

## KEYWORDS

Student success, Students' dropout, Time to a degree, Graduation and retention rates.

## 1 INTRODUCTION

The two major issues in higher education are students' dropping out of college, and students' not graduating in a timely manner. Around 50% of college students in the United States leave the college without completing their degree program, and 41% of students do not graduate within six years [1, 2]. Institutions are failing to keep students in the college and helping them to graduate within six years. However, these issues are hard to attain at the same time for the at-risk student population. In this paper, we define 'at-risk' students as the ones who have high likeliness of dropping out. Institutions have been using various innovative applications to address these issues. The issues of student dropout and taking longer than usual to graduate are due to many reasons. One of the possible factors could be the order of courses taken by students' and the program curriculum. Currently, most programs use curricula that were developed based on personal experiences rather than the facts backed by the data. There is a need to (i) provide course recommendations for the at-risk student population and (ii) redesign curricula based on students' historical course performance data to reduce program dropout rates.

## 2 PROPOSED SOLUTION


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The proposed idea of course pathways (student-centered path generator) determines whether it is possible to recommend the right set of courses to avoid dropout and at the same time helping them to graduate in a timely manner.

The working of course pathways consists of two components: (i) historical data analyses and; (ii) course recommendations. This model is trained based on historical data. Initially, we analyze students' historical data to determine the dropout term of IT students after enrolling in the program. Then we backtrack the data to determine a set of courses students took in the term when they dropped out. We check if they received any grade less than C (2.0) or withdrawn from any course. Again, we check if they retook failed or withdrawn courses in their previous terms, and their Grade Point Average (GPA). Based on the grades and GPA, we define likeliness of dropping out for each student in our model. The mechanism of course recommendations is based on the curriculum analysis.

## 3 RESULTS AND DISCUSSION

We consider IT student cohort at a large public university and compare the course pathways generated by student-centered path generator for at-risk students who have medium and high likeliness of dropping out, and students who are on track in their program. We found that the number of terms required for at-risk students to graduate (min 10 terms) was greater than their counterpart (min 8 terms). This is due to the consideration of additional classes and sessions and more flexibility in recommending courses. We think these additional classes are required for at-risk students to stay in college and graduate.

We argue that students' dropout and trying to graduate students in a timely manner are two separate issues in the case of at-risk students. Higher education institutions should first try to retain at-risk students and later think of graduating them. Retaining at-risk students is not an easy task but it is possible with the help of student-centered systems.

## REFERENCES

[1] N. R. Center, "Time to Degree - 2016," 2016, Completions, National, Postsecondary, Signature Report , 18 September 2016. [Online]. Available: https://nscresearchcenter.org/signaturereport11/#Sig11-Intro-4. [Accessed 29 May 2019].

[2] B. Burns, "College Wasn't Designed Around Student Success. Here's How to Fix It.," EdSurge, 2 April 2018. [Online]. Available: https://www.edsurge.com/news/2018-04-02-college-wasn-t-designed-to-help-students-succeed-here-s-how-to-fix-it. [Accessed 29 May 2019].