Course signals at Purdue: Using learning analytics to increase student success

Title, Authors, Source, Year

Title: Identifying At-Risk Students Using Machine Learning Techniques: A Case Study with IS 100

Author: Arnold and Pistilli

Source: https://www.researchgate.net/publication/254462830_Course_signals_at_Purdue_Using_learning_analytics_to_increase_student_success

Year: 2012

Summary:

This paper discusses the effectiveness of the use of the early warning system course signals (CS) to provide real time feedback to students on their performance. This system was specifically designed for first years new to university to improve retention rates. CS uses predictive models to measures the student's potential success and provide meaning feedback. The algorithm utilises four components to measure potential success including performance which uses the percentage of points earned in a course to date; the effort the student put in measured by blackboard (virtual student environment) and compared to the students' peers; students' prior academic history such as high school grades and SAT scores; and lastly students characteristics such as age, residency and number of credits attempted. The result from implementing this system shows that there has been increase student success in individual courses and therefore resulted in an increase of retention to university as well. By having one additional course which utilised the CS system after 4 years, increased retention rate from 69.40% to 87.42%.

Why did I read this paper?

I read this paper to see the effectiveness a early warning system has on student retention rate.

Personal view:

In my opinion I thought this was an okay paper but didn't answer questions I was hoping to learn about which were the methods used to classify students "at risk" level. I found it interesting how students had free access to view this data though, allowing students to be more proactive with their learning. This could lead to certain students getting more stressed to be able to see how they are doing overall so easily.

What problem does this paper address?

The paper looks at the problem of how to predict how students are performing to increase retention rate and implementing an intervention schedule to intervene early.

Is it an important problem?

This problem is hugely important right now. With class sizes increasing, less personal support can be given requiring systems like these in place to prevent students falling behind. First years have little experience of university life at the start of the degree and with a chance of environment academics can easily suffer. A system such as CS can allow course coordinators to see problems arising early and take the necessary steps to improve the situation.

What is the significance of the result and its solution?

The overall results show that implementing a system, such as CS, can greatly improve students' retention rate. The retention rate increase with a greater number of courses that utilises the CS system.

What are the claimed novel contributions of the paper?

The CS system produces "actionable intelligence" which can help guide students to the necessary resources early instead of lecturers coming in at the last minute.

What previous work is the basis for this research?

The paper "Arnold, K. E. 2010. Signals: Applying academic analytics. EDUCAUSE Quarterly, 33, 1." Described the use of actionable intelligence to allow students to proactively take the steps to find the right resources.