Student & Instructor Success Analytics Objectives and Strategy, 2020

Student and Instructor Success Analytics is a program in UW-IT's Academic Experience Design & Delivery (AXDD) unit. Its mission is to improve the student and instructor experience through online tools and analytics powered by cutting-edge data science. Each calendar year, we recount the past year's accomplishments and discuss our objectives for the upcoming year.

Executive summary

In 2019, AXDD made significant strides towards meeting our three key objectives. We built strong partnerships across the three UW campuses and beyond (Objective 1), which, in turn, enabled us to more effectively deliver new tools and data science for improving student success (Objective 2). We have also made progress in developing the infrastructure needed to support our analytics program and have reprioritized our efforts to accommodate 2020's objectives. Building on the successes of this past year, our objectives for 2020 are: (1) to provide learner data and predictive analytics to improve student success among Educational Opportunity Students (EOP), underrepresented STEM students, and other vulnerable students (2) to improve and Integrate our current products and prototypes, and (3) to continue to develop and refine our analytics infrastructure.

Reflecting on our 2019 Objectives

Our first objective of 2019 aimed to build partnerships across UW's three campuses and beyond. This past year AXDD spearheaded a productive tri-campus student success quarterly meeting, engaged in valuable knowledge sharing with three peer institutions (U of Michigan, Penn State, and U of Minnesota), and initiated collaborations with analytics teams at Panopto and Instructure. At UW Seattle, we have developed strong partnerships with the Office of the University Registrar (OUR), the Office of Minority Affairs & Diversity (OMA&D), Student Life, CIRCLE, Undergraduate and Academic Affairs UAA), and the Office of the Provost through regular meetings and collaborative student success efforts. These partnerships have been crucial in supporting our second objective, discussed below.

Our second objective was to deliver new tools and data science for improving student success. In 2019, we launched Prereq Map, prototyped and piloted Beaten Paths with advisers, and began prototyping early-warning features for OMA&D. Demonstrating our ability to deliver predictive analytics was also a key element of our second objective. Fueled in part by a 2019 Amazon Catalyst Grant, we have been developing a predictive model to identify students who are at risk of leaving UW. Finally, we have delivered several insightful data science reports to our campus partners.

Our third goal for 2019 was to begin developing dashboards from an in-house Learning Records Store (LRS). A re-prioritization of our LRS use cases shifted our focus from dashboard development to enabling data science efforts for supporting student retention initiatives. Our 2020 objective has subsequently been recalibrated to address this reprioritization.

Objectives, 2020

1. Develop and Deliver Predictive Analytics to Improve Student Success Among Educational Opportunity Students and Underrepresented STEM students

Enable OMA&D advisers to discover at-risk students

In 2019, AXDD and OMA&D began a partnership that aimed to increase EOP student retention. Powered by our predictive models, our goal is to develop an early-warning system for OMA&D by the end of 2020. In order to achieve this goal, we will meet monthly with EOP advisers to get feedback on early-warning and additional features, pilot the features during spring and/or summer quarter, and launch in Autumn 2020. Following the release, we will conduct research in order to understand how advisers are using these features. Specifically, we will investigate how these features have changed their existing workflows and what new workflows have developed as a result. This research protocol will be developed in 2020 and the study will commence in 2021 after advisers have used the features for two quarters.

Partner with Engineering and other STEM programs

In order to support all underrepresented STEM students across their academic journey, we aim to partner with STEM programs to learn about existing retention efforts, demo the tools we are providing OMA&D, and determine if there is a potential for collaboration. By the end of 2020 we aim to have a plan in place to support retention efforts in STEM programs, if feasible.

2. Improve and Integrate our Current Products and Prototypes

Determine how to best integrate our apps with existing tools

Students use myriad tools for academic planning, and the tools and their workflows vary across a student's academic career. In 2020, AXDD will conduct research to discover how students use academic planning tools to support their workflows. Research and recommendations will be complete by the end of the year.

Improve Prereq Map to better serve the academic planning needs of UW students

Pivot is an advising tool which visualizes the level of competitiveness of majors in addition to displaying the median grade students made in key courses. We aim to surface Pivot's insights in Prereq Map in a manner that is easy to understand and fits into the academic planning workflows of students. Similarly, Prereq Map will also surface additional insights from Beaten Paths, a prototype that shows when students typically take courses during their academic careers. A functional prototype will be completed by the end of 2020.

3. Develop and Refine the Infrastructure Needed to Drive Our Analytics Engine

We are currently in the process of developing a Learning Records Store (LRS) that will collect fine-grained learner data from various online tools (e.g., Canvas). We have designed a reference architecture with several peer universities and industry partners and have made progress on the initial phases of LRS development. The objective for this year is to have the infrastructure in place to feed the analytics engine for our EOP student success predictive model.