U of S SoTL Cluster Charter

Using Learning Analytics to Assess Learning Outcomes in Large Classes

Description/Background (include purpose and need):
Over the past five years, an informal group of faculty and staff from the Department of Biology and the GMCTL, led by Jim Greer and Ken Wilson, have attempted to use a learning analytics approach to assess learning outcomes of students in Biology 120. This is a very large course at the University of Saskatchewan with over 1700 students enrolled each year. It is taken by students in the Colleges of Arts and Science - as a core component of programs or as a science elective, Kinesiology, Agriculture and Bioresources, Education, and Engineering. It is a required course for entrance into Nursing, Medicine, Dentistry, Pharmacy, and Veterinary Medicine. Thus, improving students’ success has the potential for impact across the entire campus.

During offerings of the class between 2012 and 2017, several changes were made to delivery of material and student assessment. We also cooperated with the University Library to offer Structured Study Sessions, led by Peer Mentors. Crude assessments suggested mixed results, in terms of the impact of the changes on student success.

The focus of this SoTL Cluster is to bring together a broader group of faculty who have the expertise to critically assess the large set of data accumulated. Drs. Mousavi and Squires are experts in assessment, evaluation, and measurement. Their involvement will allow a thorough analysis of the impact our class modifications have had on student outcomes. They also have the expertise on how to frame our findings in an educational context.

We feel that we are sitting on a very rich set of data, but unless it can be examined using the appropriate tools, we will keep referring to anecdotal evidence from individuals. We are dedicated to completing the analysis with the goal of publishing our results in the appropriate education-related journals. The formation of this SoTL Cluster will be crucial in bringing together the necessary talent and resources to reach this goal.

Cluster Lead: Vicki Squires, Department of Educational Administration

Members of the Cluster:
Amin Mousavi, Faculty, Department of Educational Psychology and Special Education
Jim Greer, Faculty, Office of the Vice-Provost Teaching and Learning
Ken Wilson, Faculty, Department of Biology

Goals and predicted timeline (specific Deliverables/Milestones) bullet point please:
Reviewing the Biol 120 Data Sets from 2012-17: October – November, 2017
Examining impact of instructional supports on student performance: December, 2017 – February, 2018
Instructional interventions
Structured study sessions
Formative assessments
Targeted advice strings

Comparative analysis of impact across interventions: March. 2018
Use data to construct an intervention strategy and implement strategy for Spring/Summer session 2018
Conduct analysis of impact of implementation: July – September, 2018
Write report and an article, and present results at conferences: October, 2018 – June, 2019

**There is potential for a second stream of research such as predictive modeling that could be run through this cluster group.

Envisioned process (specify how the group will function; e.g., frequency and types of meetings, how you will monitor milestones,):
1. monthly meetings will be held to discuss progress
2. meetings at the end of each term will be used to update the members on data collection, and review any suggestions for subsequent interventions in the class.
3. In April, construct an intervention strategy for the Spring/summer session of Biology 120, based on our analysis of the data.
4. Implement the strategy, assess impact, and write final reports and an article.

Financial (specify how funding will be spent, can be high level criteria and processes for allocating funds rather than a specific budget; note any additional or matching funds):
We have secured a graduate student stipend from the Department of Biology ($17,000 per year, renewable for up to two years).
Funding supplied to this SoTL cluster will be used to help support the graduate student’s research project - for example to help cover conference travel for the student. Additionally, monies may be spent on presentation materials such as posters.
We anticipate having a day-long workshop at the end of the first year to reflect on progress being made and discuss opportunities to explore going into the second year. For this workshop and possibly one or two other working meetings over lunch, funds may pay for lunch.

Scope (Focus):
In Scope: (what is the intended focus of the Cluster)
The members of the cluster intend to focus on how past course manipulations impacted student success in Biol 120. We will develop analytical approaches to assess the student results accumulated over the past five years, using internal controls to determine the effectiveness of the manipulations.

Not In Scope: (what will NOT be included in the focus of the Cluster; limits on expenditures may be included here or in the Finances section.):

Constraints, Assumptions, Risks and Dependencies of Note
**Constraints**

We are largely working with past data, so limitations within the data set may limit the impact of our findings. These will not be known until initial phase of analysis is done.

Each of the team members have other teaching, research, and administrative commitments at the UofS. This may affect the amount of time that each can contribute to the cluster goals.

**Assumptions**

A successful team-focused atmosphere can be maintained, and that the appropriate data can be shared effectively.

Sufficient data connections exist to allow for internal controls in our analytic approaches.

**Risks and Dependencies**

In general, the risks of this SoTL Cluster project are quite low. We have the data, collected under appropriate guidelines, with ethics approval. Thus, the only risk will be our ability to develop a thoughtful and rigorous approach to investigating the data and later publishing the results of our analysis.

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**What in-kind support would benefit your project?**

Over the past five years, some members of the cluster have worked, in conjunction with GMCTL, to map our data on to the incoming student demographic database. Continued access and support to do this would significantly improve the proposed findings of this study. This would require time contributions from GMCTL staff. Once our analyses are complete, support from GMCTL in framing the work for publication in an appropriate peer-reviewed journal would also help.