Using easily accessible aggregate LMS and SEoT data to evaluate learning design, learner engagement and perceived course value

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1. Introduction

- Educational institutions maintain large volumes of information about learners, learning, and teaching, but it is rarely used to evaluate relationship between these data.
- Goals of learning analytics (LA) are “understanding and optimizing learning and the environments in which learning occurs” – LA can leverage ‘big educational data’.
- Most LA research has focused on individual learner performance and Learning Management System (LMS) data. We seek to extend beyond these two areas.

2. Theoretical Framework

- Community of Inquiry theoretical framework: – effective virtual learning environments support social, cognitive and teaching ‘presences’.
- We focussed on online learning environments and teaching presence, as manifested in design of the educational experience.
- Explored relationships between course design elements, learner activity and learner perception of course value.

3. Research Questions

- Can course-level aggregate data be used to evaluate relationship between four dimensions of course engagement: course and assessment structure, online activity, and perceived value? (see Figure 1).
- If so, what are the relationships between these dimensions?

4. Method

- Data Source = all undergraduate online courses offered by one faculty in a large university during a single academic term
- Data from course weeks 2-12 only (first and last weeks not prototypical)
- N = 26 courses, Mean # students per course = 35 (SD = 18.3)
- Measured correlations between the four dimensions of course engagement

1. Three measures of online activity
   - Overall average time in course site per student per week, in minutes (M±SD: 168±97);
   - Average time spent on course content pages per student per week (736±49);
   - Average time spent on peer interaction activities per student per week (discussion forums and chats; 63±45).

2. Two measures of course design
   - Number of learning modules (7.5±3.1) reflects instructor choices to structure course materials into smaller more manageable units;
   - Number of discussion topics (20.4±17.0) shows the number of different discussion threads established by the instructor.

3. Assessment structure, operationalized as the weight of two components of the final grade (N=11 courses)
   - Tests, including final exam (37±24%); and
   - Effort Based Activities, e.g. required participation in discussions (14±16%).

4. Perceived value (N=20 courses with SEoT scores)
   - Single item from institutional SEoT scores, 5-point Likert: “Considering everything, how would you rate this course?”

5. Results

- Work in progress. Results are preliminary, data lacks statistical power, and correlation is not causation. Yet…
- This study demonstrates that course-level aggregate data can be used to evaluate relationships between elements of learning design, learner engagement and learner satisfaction. Specifically, results suggest that the following are associated with increased perceived value of online courses:
  - Time spent on peer interaction activities, particularly in discussion forums
  - Greater weight for effort-based assessments
  - Course structure, particularly the organization of online courses into sequential learning modules
- Future work will seek to expand this analysis to additional courses across topics and faculties, and will add online focus groups to get to the explanations behind the numbers.

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