Overview

- Recent years have seen a rise in popularity of Massive Open Online Courses (MOOCs).
- Prior studies have often been conducted on a single MOOC or single MOOC Domain.
- There is an increased need to understand how learners engage with MOOC resources and their behavior patterns and motivations.
- Factor Analysis allows researchers to examine behavior from both the student and activity level.
- Students did not exhibit much “shopping” behavior in the courses analyzed.

MOOC Courses

- The data were collected from four courses offered by the University of Pittsburgh on the Coursera platform.
- Three of the four classes were offered multiple times, for a total of 10 sessions.
- Each offering lasted 6 or 7 weeks.

Participants

- The data were collected from 297,736 enrolled learners and 132,324 who performed at least one activity (active learners) (42% ± 15% of a course).
- Three types of activities were considered: Watching Lectures, Taking Quizzes, and posting on the Forums.
- 32,131 learners submitted a demographic survey (10% ± 4% of a course).

Methodology

- We only considered activities for which at least 1% of active learners participated (80% of all activities).
  - For example, in a course with 10,000 active learners, any activity used by less than 100 learners was removed.
- We removed 20% of course activities through this step.
- Factor analysis was used to group course activities (PCA with Varimax).
- Regressions were used to examine individual differences in factor behavior.

Factor Analysis

If students are “shopping” weekly:

- If students are choosing by activities:

  - In three of the Four courses, type of activity is stronger than the weekly structure of the course.
  - Two of the courses show early lecture activity as a factor.
  - Two of the courses show early quiz factors as separate from later ones.
  - One course showed weekly activity patterns.

Factor Graphs

Stability by Offering

Individual Differences

- We selected two offerings within the Health Sciences domain.
- Each student was assigned a factor score for each factor extracted.
- For Clinical Terminology, the average score of weekly activities was used for comparison.

Conclusions

- Factor analysis enables researchers to answer questions about the course structure.
- Most of the courses had a similar activity patterns: Quiz, Lecture and Forum factors.
- Only one course exhibited weekly activity patterns.