Learners’ activity in MOOCs from a psychometric perspective

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Learners’ activity is typically described through the proportions (videos viewed, assessments taken). These measures are simple and intuitive. However, by aggregating the information per learner, we lose information on how a learner interacts with individual units of content.
Research Design

Aim
To model each interaction of a learner with a unit of content.

Item Response Theory
considers the interaction as influenced by a latent learner property and a latent unit property.

Explanatory variables
are video or reading and a module order.

https://www.coursera.org/teach/YOUR-COURSE/analytics/export
>70,000 Learners

>2,500,000 Interactions

course_progress.csv

3 courses
In cross-validation
Results

Learners complete **video lectures more often than reading assignments.**

*Hint! Include reading assignments in video lectures.*
Results

We have detected three groups of learners: **majority** with **decreasing** activity, and **minorities** with **flat** and **increasing** activity.

The minorities perform better and with a lower number of attempts in summative assessments.

*What next?* To add explanatory variables (background, motivation, interests).
The proposed approach allows **predicting learners’ activity** for the rest of the course based on only one-week activity data with **>85% accuracy**.

The proposed approach can be used for dropout predictions.
Summary

1. Learners complete video lectures more often than reading assignments. ▫ Hint! Include reading assignments in video lectures.

2. We have detected three groups of learners: majority with decreasing activity, and minorities with flat and increasing activity. ▫ The minorities perform better and with a lower number of attempts in summative assessments.

3. The proposed approach allows predicting learners’ activity for the rest of the course based on only one-week activity data with >85% accuracy. ▫ The proposed approach can be used for dropout predictions.
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When and why digital learning does (or does not) happen, and how online courses do work?

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