Identifying Trigger Events in MOOCs

observing & predicting deviations from the prescribed learning path

Daniel Davis
d.j.davis@tudelft.nl
Claudia Hauff
Geert-Jan Houben

TU Delft
Web Information Systems Group

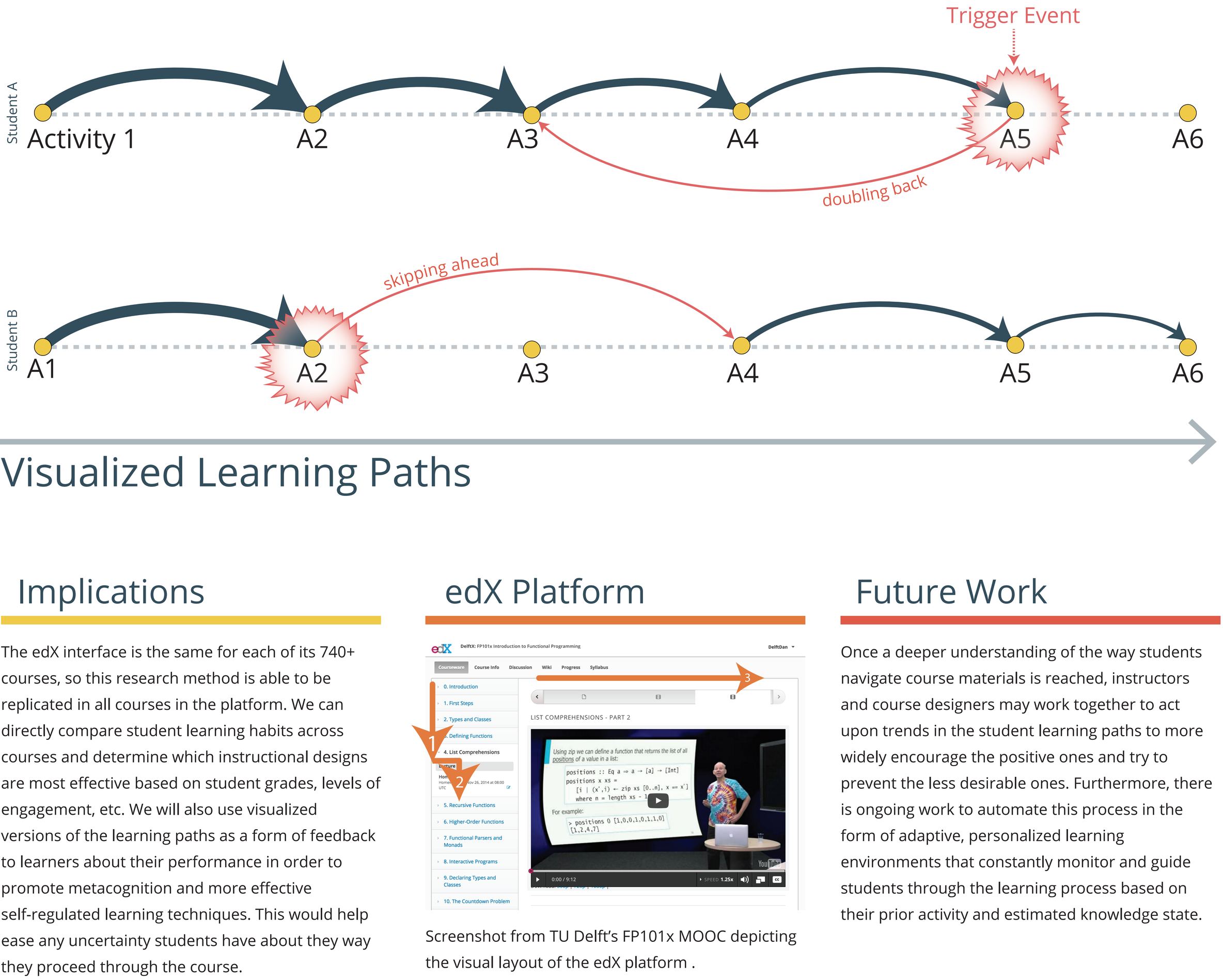
Massive Open Online Courses (MOOCs), frequented by millions of learners, are developed on top of platforms such as edX and Coursera that log every minute detail of every learner's action in the platform. Our research focuses on the question of how to improve learning in such environments, through an analysis of the technical choices made in these platforms. The edX platform design presents a linear learning sequence to the students, often building scaffolded knowledge from activity to activity and week to week. This research aims to uncover whether or not students follow this implied learning path. The results will have major implications for both course design and learning platform user interface design.

RQ_1 To what extent does the design of the MOOC platform affect the way students navigate through course content?

RQ_2 Do students follow along the prescribed learning path as implied by the course design?

RQ_3 Are there specific events that trigger students to deviate from the prescribed learning path?

RQ_4 What is the relation between a student's learning path and other attributes such as pre-existing knowledge, personality, success in the course, etc.?



Implications

The edX interface is the same for each of its 740+ courses, so this research method is able to be replicated in all courses in the platform. We can directly compare student learning habits across courses and determine which instructional designs are most effective based on student grades, levels of engagement, etc. We will also use visualized versions of the learning paths as a form of feedback to learners about their performance in order to promote metacognition and more effective self-regulated learning techniques. This would help ease any uncertainty students have about they way they proceed through the course.

edX Platform

Screenshot from TU Delft's FP101x MOOC depicting the visual layout of the edX platform .

Future Work

Once a deeper understanding of the way students navigate course materials is reached, instructors and course designers may work together to act upon trends in the student learning paths to more widely encourage the positive ones and try to prevent the less desirable ones. Furthermore, there is ongoing work to automate this process in the form of adaptive, personalized learning environments that constantly monitor and guide students through the learning process based on their prior activity and estimated knowledge state.

Sponsored by the Leiden · Delft · Erasmus **Centre for Education and Learning**

DELFT DATA SCIENCE