

Leveraging xAPI in a Corporate e-Learning Environment to Facilitate the Tracking, Modelling, and Predictive Analysis of Learner Behaviour

Authors : Libor Zachoval, Daire O Broin, Oisin Cawley

Abstract : E-learning platforms, such as Blackboard have two major shortcomings: limited data capture as a result of the limitations of SCORM (Shareable Content Object Reference Model), and lack of incorporation of Artificial Intelligence (AI) and machine learning algorithms which could lead to better course adaptations. With the recent development of Experience Application Programming Interface (xAPI), a large amount of additional types of data can be captured and that opens a window of possibilities from which online education can benefit. In a corporate setting, where companies invest billions on the learning and development of their employees, some learner behaviours can be troublesome for they can hinder the knowledge development of a learner. Behaviours that hinder the knowledge development also raise ambiguity about learner's knowledge mastery, specifically those related to gaming the system. Furthermore, a company receives little benefit from their investment if employees are passing courses without possessing the required knowledge and potential compliance risks may arise. Using xAPI and rules derived from a state-of-the-art review, we identified three learner behaviours, primarily related to guessing, in a corporate compliance course. The identified behaviours are: trying each option for a question, specifically for multiple-choice questions; selecting a single option for all the questions on the test; and continuously repeating tests upon failing as opposed to going over the learning material. These behaviours were detected on learners who repeated the test at least 4 times before passing the course. These findings suggest that gauging the mastery of a learner from multiple-choice questions test scores alone is a naive approach. Thus, next steps will consider the incorporation of additional data points, knowledge estimation models to model knowledge mastery of a learner more accurately, and analysis of the data for correlations between knowledge development and identified learner behaviours. Additional work could explore how learner behaviours could be utilised to make changes to a course. For example, course content may require modifications (certain sections of learning material may be shown to not be helpful to many learners to master the learning outcomes aimed at) or course design (such as the type and duration of feedback).

Keywords : artificial intelligence, corporate e-learning environment, knowledge maintenance, xAPI

Conference Title : ICKDDM 2019 : International Conference on Knowledge Discovery and Data Mining

Conference Location : Paris, France

Conference Dates : December 30-31, 2019