

Abstract

One of the challenges of research on Technology for Human Learning (THL) and the competency based pedagogy is the personalization of learning. This customization begins with the design of educational systems, applying the strategies defined to monitor and assist the learner in his learning by evaluating his knowledge, skills and detecting and analyzing errors. In this respect, formative evaluation is the process used to capture data on the strengths and weaknesses of a learner during a learning period. These data, to be useful, must be objectively analyzed so that they can be used to manage the following sessions. Data mining is a field at the intersection of statistics and information technology (databases, artificial intelligence, learning etc) whose goal is to discover "interesting" knowledge structures from a set of data. Following our research work on evaluation process and THL, applied to e-learning systems [2] [3] [4], we discuss in this paper a learning cycle with feedback loop integrating formative evaluation followed by the application of data mining algorithms after each learning session. We experimented with a set of tests, the exploration of learners' errors, obtained from a self e-learning by doing tool for the algorithmic domain. We particularly present, in this work, the results given by the application of the C4.5 algorithm for classification and the A Priori one for association rules deduction. These two algorithms were executed via the tool Weka after a data preparing process integrating a relational algebra calculation and format adjustment actions to get adequate input data for Weka algorithms. The results given by these experiments have proved interesting knowledge to complete the learner's profile and facilitate decisions about further learning / teaching / tutoring particularly in the case of distance education