

Proposing Assessment Methods for Different Learning Outcomes: Project TALOE

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It is presented a conceptual model that aligns Learning Outcomes (LO) in Education with assessment strategies based on e-learning. The research problem was made taking into account three areas of research: Assessment, Education and e-Learning. The work managed to verify to what extent e-assessment methods may be used to measure intended Learning Outcomes of Engineering courses. The study was planned to facilitate the curriculum design, the teaching delivery planning, the recognition of e-learning courses and to improve definition of assessment tools. In general terms, the approach chosen was to develop a model that matches various common assessment methods to measure the achievement of the main Learning Outcomes (LO) in the field of engineering. This means that it should be possible for a teacher to define the intended LO of the engineering course and, considering this definition, to write proper and possible adequate assessment methods. The work done in the study proposes a conceptual model ALOA (Aligning Learning Outcomes and Assessment). ALOA was used to describe the Learning Outcomes and the proper assessment and to achieve alignment between these two components of the educational process. The implementation of the model was done defining a web based tool that allows teachers to obtain suggestions for proper assessments in accordance with the type of LO.

The problem may be defined as “To what extent assessment methods may be used to measure intended the achievement of LO in education?”. The model for the alignment of intended LO in EE was developed from the concept of alignment defended by different authors. In terms the alignment component, what is defended is that the LO of a course or unit should be used to define the teaching and learning activities, ensuring these will address the same LO. The same applies to the assessment tasks. To ensure the validity of assessment in relation to what is intended from the course, it is necessary that the outcomes measured by the assessment tasks are the same as the intended ones. The initial step to approach the problem was to identify and define the different components of the problem: the two variables, intended LO and assessment methods; and the link between them that is the alignment question.

The main tool used for developing this conceptual model was the revised version of Bloom’s Taxonomy. This tool, designated in this paper as matrix rBloom is in fact an alignment matrix for LO, teaching and learning activities and assessment. However, for the current research project the adopted matrix assumed distinct functions: describe and classify the LO in a way that facilitates comparison between different levels and different sources; describe the assessment methods and e-assessment tasks; align the LO with the assessment methods.

Another issue was concerned with identifying and selecting the assessment methods to integrate the model. Early exploratory research in this field revealed some obstacles to reach the intended goal. Most of the published papers related with assessment descriptive case studies of the implementation of one particular type of assessment. Literature reviews on assessment were not focused on specific methods or strategies but on logistical or pedagogical issues. It was not possible to find a systematization of e-assessment methods that would contribute to answering the second research question or to derive it from. These reflections on e-assessment led to more profound reflections on the nature of assessment and the research on this subject took some steps back some steps back. It was necessary to systematize some knowledge about assessment. The work of Brown, Bull and Pendlbury was of great help for

producing a working list of general assessment methods, adapted from the work of Brown et al. For the purpose of this research and specifically for the development of the model, six general categories of assessment methods were identified: Multiple choice questions (MCQ), Short answer questions (SAQ), Essays, Practical case, Problems and Reflective practice^{[1][SEP]}.

The conceptual model ALOA, proposes the alignment of assessment with LO by overlapping the rBloom matrixes produced and looking for matching cells. Even though this is an apparently simple procedure, several issues were found related with the application of the model.^{[1][SEP]} When matching Bloom's matrixes of LO assessment and LO, it is possible to look for a match for each individual cell or to look at the general matrix and look for the best match possible. Complexity rises when it is considered that for one individual LO one might have not only one assessment method but also a combination of methods. On the other hand, one might have a combination of LO that might have a match on one single assessment method or a combination of assessment methods. Both situations occur at course level, when we have several LO that are assessed in a single essay. Also we might have a single LO that will be assessed using a test and a practical case. The model ALOA is prepared to answer these and other questions.

Facing this scenario a project, Time to Assess Learning Outcomes in E-learning – TALOE (<http://taloe.up.pt/>), intends to promote the internal consistency of online courses. The project is financed by the European Commission for the years of 2014-15 (Ref. 543097-LLP-1-2013-1-PT-KA3-KA3MP). It uses an existing tool called the ALOA model (Aligning Learning Outcomes and Assessment). This tool highlights the connection between the intended learning outcomes and the assessment strategy used during a course. It uses the revised version of Bloom's Taxonomy to establish the link between the LOs and general assessment methods. It is a fact that not all assessment methods are valid for each type of the learning outcomes. The ALOA model provides tools for linking learning outcomes and assessment tasks. The TALOE project materializes the application of the ALOA tools to the specific context of e-learning. The web-based platform was developed, tested and implemented to help teachers and trainers decide on the e-assessment strategies to use in their online courses. The rationale of TALOE is that a teacher/trainer describes the learning outcomes of the course or module and the TALOE platform analyses them and provides assessment tools that are consistent with the set of intended learning outcomes.