Time to Assess Learning Outcomes in E-learning. Overview of a European Multilateral Project

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TIME TO ASSESS LEARNING OUTCOMES IN E-LEARNING. OVERVIEW OF A EUROPEAN MULTILATERAL PROJECT

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Abstract

From January 2014 to December 2015, the TALOE (*Time to Assess Learning Outcomes in E-learning, ref. 543097-LLP-1-2013-1-PT-KA3-KA3MP*) consortium is working on a European project focused on developing a web-based platform to help teachers and trainers decide on the e-assessment strategies to use in their online courses. Following the ALOA (Aligning Learning Outcomes and Assessment) model, the specific goals of this project, funded with support from the European Commission, are the following:

1. To research and select innovative e-assessment practices that take advantage of the use of technology.
2. To develop a web-based tool to relate learning outcomes and e-assessment strategies.
3. To test the implementation of the tool with real case studies.
4. To distribute and disseminate the TALOE tool among the communities of stakeholders.

In this paper we will present an overview of the project and the already achieved results, specially the selection and analysis of e-assessment practices and the first steps in the development of the web-based platform, where teachers will describe the learning outcomes of the course and the TALOE platform will then provide an e-assessment strategy that is consistent with the course.

Keywords: e-assessment, online education, learning outcomes.

1 BACKGROUND AND CONCEPTUAL FRAMEWORK

The world has been experiencing rapid transformation in education area and mobility, cooperation and development of quality relating to methods of assessment; these are crucial subjects that raise many questions. Effective assessment drives learning efficiency as the growth of e-learning technologies drives e-assessment. The use of technological tools to facilitate assessment is still a challenge [1]. This growth of using e-learning reinforces the need to improve learning and supports the idea that it is important to define a strategy to ensure that the selection of assessment methods responds positively to the objectives and outcomes of the course programme. This will facilitate a clear evaluation of competencies, skills and knowledge acquired during the learning or training.

Assessment is a crucial process in education. To be valid, assessment should be consistent with the intended objectives of learning activity. This is easily said than done. The learning process is very complex in all its components: the clear definition of the intended student learning outcomes, the definition of adequate leaning activities, the selection of assessment practices that address what is expected from the students.

The use of e-learning in learning and assessment brings an additional level of complexity to the process. TALOE intends to provide a practical web solution to some of these issues, based on tools developed previously.

Learning outcomes (LO) have been widely adopted in education with different roles. Their early adoption in Europe is associated with vocational training. LOs were used to describe the competences of the individual after the training, with the goal of improving the dialogue with potential employers. The adoption of LO in higher education (HE), in Europe, is associated with European policies with impact on national policies and on higher education institutions (HEI) and are usually interpreted as what a student is expected to be able to do as a result of a learning activity. There are different roles or applications for the LOs:

- A descriptor of the qualifications acquired for improving mobility and employability of individuals.
- A descriptor in processes of recognition of prior learning for improving access to education institutions and validation of competences.
- A criteria for quality assurance systems and accreditation processes of HEI.
- A structuring role in educational systems, used as descriptor used in qualification frameworks at international, national and sector levels.
- A structuring role at the institutional level, used as a multi-level descriptor in programmes inside the institutions.
- A communication tool between teachers and learners, as a descriptor of the goals of a course or unit.

Learning outcomes are also becoming fundamental for structuring the standards and guidelines of quality assessment of HE and continuing education (CE) institutions in Europe and worldwide. In this context, the assessment of learning outcomes becomes a crucial process for the educational system. It should be a major concern of educational institutions to ensure that assessment of student learning is being guided by what they should be learning, i.e. assessment should be consistent with the intended learning outcomes.

Concerning e-assessment, it is considered that is a critical part of e-learning, the same way assessment is critical to traditional learning. The general concept of e-assessment is herein broadly defined as using technology for assessing students learning.

Furthermore, the impact of information and communication technologies (ICT) on education has to be taken into account. The use of ICT applied to education, e-learning etc. has been increasing and its use creates new opportunities for teaching, learning and assessment and has huge potential as an answer to some of the current challenges of education. The change to the digital media has impact on the availability, reusability, accessibility and cost of learning resources, complemented by the communication and networking potential of the Internet that takes education to a global level. The application of ICT in education and in particular in assessment is a subject of great discussion. Some of the issues related with the use of e-learning in assessment are related with validity and reliability of the process.

In terms of linking LOs and assessment, it is believed that this should be explicit. Several authors defend that students tend to determine what they learn by looking at the assessment tasks. If there is no consistency between the LOs and the assessment, the students will learn the wrong things.

For the definition and description of Learning Outcomes, TALOE uses a template developed during project VIRQUAL (http://virqual.up.pt) [2].

For the alignment of Learning Outcomes and e-assessment, TALOE has adapted and developed another tool, the ALOA model [3]. The ALOA model was developed from the concept of *alignment* defended by different authors [4][5][6][7]. In the term *alignment*, what is defended is that the LOs of a course or unit should be used to define the teaching and learning activities (TLAs) and assessment tasks (ATs). 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 ones expressed in the LOs statements. This is the main principle that supports the ALOA model.

The first component of the ALOA conceptual model is the Learning Outcomes. The second component of the ALOA model is the assessment methods. Based on the work of Brown *et al*. [8], six general categories of assessment methods were identified, each with subcategories, to integrate the model. Each category was then matched to specific e-assessment practices.

Alignment is the relationship between the two concepts, LOs and assessment methods. In terms of the ALOA model, a course is aligned or consistent if the description and classification of the LOs and the assessment tasks match.

The TALOE project will create a practical web based tool, based on the ALOA model, to help teachers to decide on an e-assessment strategy for their courses or modules. The tool will incorporate real e-assessment practices that address complex learning outcomes and that may provide solutions to specific assessment issues of the teachers.

2   TALOE PROJECT: TIME TO ASSESS LEARNING OUTCOMES IN E-LEARNING

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), which 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 [4] to establish the link between the LOs and general assessment methods. The ALOA model also proposes different scenarios of application that allow the model to be used to verify the consistency of the courses or to propose new assessment strategies that are linked with the LOs statements of the course or module.

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 intends to materialize the application of the ALOA tools to the specific context of e-learning. The main goal of TALOE is to develop a web-based platform 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 will describe the learning outcomes of the course or module and the TALOE platform will analyse them and provide an e-assessment strategy that is consistent with the set of intended learning outcomes.

To be able to develop the practical tool the TALOE consortium will develop and achieve the following specific goals:

- Research and select innovative e-assessment practices that take advantage of the use of technology
- Develop a web-based tool that is easy to use by the stakeholders
- To test the implementation of the tool with real case studies
- To distribute and disseminate the TALOE tool among the communities of stakeholders

The following partner institutions form the TALOE consortium:

- *Universidade do Porto* (Portugal) (coordinator)
- *Gábor Dénes Főiskola* (Hungary)
- *Sveučilišni računski centar Sveučilišta u Zagrebu (SRCE)* (Croatia)
- *Innovate4Future – Center for Advanced Educational Solutions* (I4F) (Romania)
- *Università degli Studi di Padova* (Italy)
- *European Distance and E-Learning Network (EDEN)*
- *European University Continuing Education Network (EUCEN)*
- *Hariduse Infotehnoloogia Sihtasutus (HITSA)* (Estonia)
- *Universidad Nacional de Educación a Distancia (UNED)* (Spain)

The starting point has been focusing on defining the e-assessment component of the TALOE platform. It is expected that a minimum of 10 innovative and effective e-assessment practices are described and classified to be integrated in the platform. The assessment practices are selected based on pre-defined criteria by involved partners and discussed with stakeholders during the first dissemination event. As a next step, a web-based platform is being developed. This intends to be a tool or service that assists faculty/teachers/trainers in the definition of an e-assessment strategy for their courses or modules. The user will provide the learning outcomes of the course or module and describe them using the tools of the platform. These descriptions will be analysed automatically by the web-based platform. As a result of the analysis, the user will obtain a strategy of e-assessment practices that may be used to assess the specific learning outcomes of the course or model.

Furthermore, the usability of the platform will be tested with a minimum of 6 pilot case studies. Cases can be any type of learning experiences that have specified learning outcomes. It is expected that the cases selected are diverse and representative of a variety of learning contexts. Real users will conduct the implementation process with a member of the project team following the process. The process will

be documented, analysed and a combined report will be prepared. From the combined analysis of the results it should be possible to obtain an improvement plan for the e-assessment platform.

3   E-ASSESSMENT PRACTICES: SELECTION AND ANALYSIS

During 2014 the project was at a stage where the activities were targeted at identifying and defining selection criteria for innovative and effective e-assessment practices. Instead of listing different methods the focus is on things that trigger a shift in what is actually assessed, how it is assessed and discard practices where the only aspect which is "innovative" is the method itself. These shifts can be generally described as follows:

- A shift from the testing of discrete, de-contextualised elements of knowledge and skill to the assessment of more holistic, complex activities using knowledge and skills in problem-solving or authentic tasks.

- A shift from highly standardised and controlled testing methods which result in quantitative scores and where assessment is strongly separated from teaching and learning to a more diverse range of assessment methods, resulting in qualitative descriptions or judgements and where assessment is often integrated with teaching and learning and may involve students as active participants.

- A shift from identifying and categorising underlying ability or 'intelligence' and ranking student performance in relation to their peers to identifying and describing achievements according to relevant criteria and standards.

In order to identify suitable criteria matching these shifts it became evident that the emphasis had to be placed on concentrating on more general approach starting with the assessment type. This means eliminating criteria associated with "norm-referenced assessment" practices and focusing on criteria which characterise "criterion-referenced assessment" practices, i.e. casting aside situations where assessment is based on making judgements about people (e.g. ranking students based on distribution of scores) and instead concentrating on judgements about performance (e.g. assessing the extent to which learning outcomes are met). And only then considering other aspects such as the assessment methods which might be deemed innovative (using concept maps, wikis, portfolios, learning analytics, simulations etc.). Based on the above and following the Standards and Guidelines for Quality Assurance in the European Higher Education Area [9], an initial list of criteria for identifying innovative assessment practices was drawn up:

- Be designed to measure the achievement of the intended learning outcomes and other course/programme objectives;

- Be appropriate for their purpose, whether diagnostic, formative of summative;

- Have clear and published criteria for marking;

- Where possible, not rely on the judgements of single examiners;

- Assess more holistic, complex activities using knowledge and skills in problem-solving or authentic tasks;

- Use a diverse range of assessment methods, resulting in qualitative descriptions or judgements;

- Integrate assessment with teaching and learning and involve students as active participants;

- Identify and describe achievements according to relevant criteria and standards;

The results of this task, e-assessment practices, consisted in the collection of 18 cases of assessment of online courses from different institutions around Europe, mostly from the project partners. These case studies were analyzed by the partnership in terms of classification under two perspectives: these were classified in terms of learning outcomes definition and in terms of the assessment modes used to verify these learning outcomes. The case studies classifications were also revised by the partnership during a second round.

The goals of this work were to obtain examples of case studies that can be used as a showcase of current practice and also as testing material during the second year of the project. Since these case studies are available to the partnership these can be scrutinized during the tuning of the web-tool. Another results refers to the ALOA model with integration of E-Assessment practices, which was developed on a second stage of the research component where the consortium developed an extension of the ALOA model to include the e-assessment practices described in the case-studies.

This outcome generated the list of e-assessment methods to be considered in the web-tool. The relationship of these methods with the different types of learning outcomes was defined based on the revised Bloom Taxonomy and on the alignment theory of Anderson *et al*. [4].

4   WEB-BASED TOOL

The main goal of TALOE is to develop a web-based platform to help teachers and trainers decide on the e-assessment strategies to use in their online courses. The main idea is that a teacher will describe the learning outcomes of their course or module and the TALOE platform will analyse them and provide an e-assessment strategy that is consistent with the intended learning.

This "Web-based e-assessment platform" addresses the second main objective of the project. The partnership has produced a first version of the web-tool that is ready to test the first functionalities of the intended platform. Due to the complexity of the ALOA model it was decided to simplify the tool procedures during a first phase of testing it. The first phase addresses only the simplest forms of knowledge. It is intended that partners test the web-tool until the project meeting in February 2015. The development and consequent testing will be done in phases of complexity of the definition of the procedures relating learning outcomes and assessment methods. This is an extra effort to achieve consistency of the web-tool performance and simplicity of procedures by potential users. A second deliverable, "User guides of the e-assessment platform", is being developed for the partners that will test the web-tool until next phase of development is initiated.

The TALOE tool will be available online and open to contributions from every teacher.

5   CONCLUSIONS AND PLANS FOR 2015

The second year of the project plans to focus on the two remaining objectives of TALOE:

- To test the implementation of the tool with the set of collected case studies and with other case studies from other courses;
- To distribute, to disseminate and to explore the TALOE web-tool among the communities of stakeholders.

During the first part of the year it is intended to review the existing deliverables as a function of the evolution of the testing of the web-tool. Following the testing of the web-tool by the partnership, the plan is to adapt the web-tool to the decisions. It is relevant to consider the increase of the accuracy of the tool, the interface with users, the cultural diversity, the language issues and the scope of users. After that adaptation and improvement the web-tool will be tested on a wider scale using the networking and the partnerships established. Some organizations and experts will be directly contacted and invited to cooperate in this testing. The final phase, envisaged for the last quarter of the year, will be dedicated to reach a larger audience in terms of dissemination and of exploration of results.

Some activities are related with dissemination and exploration like:

- Collection of related news to be published on the project and partners' websites and in social networks
- Contacting directly stakeholders that are related decision makers, accreditation organizations, qualification bodies and quality assurance agencies
- Elaborating three newsletters and leaflets that will be distributed via the partners' lists and via the engaged organizations
- Publication of papers in conferences and in journals with the results arising from the project implementation
- Organisation of a conference with an intended European audience aiming at presenting the web-tool.

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