

PROJECT TITLE
An Adaptive Trust-based e-assessment system for learning (@TeSLA)

PROPOSAL DESCRIPTION

Subject/Background: Context and State of the Art / Problem and Need for solution / How and Why the project addresses the Problem/Need / How proposal advances State of the Art / What the project will enable/help change / What target Outcome in the Topic is addressed

One of the main issues/shortcomings in on-line education is to ensure an assessment with at least the same guaranties assumed on traditional face-to-face education.

- There are many “tools&resources” to ensure an on-line assessment.
- There is no standard or all-in-one proposal on this topic (teaching&learning + technological aspects).
- Each university or educational institution introduces different tools to solve specific problems.
- It is important to link the teaching and learning process based on assessment with the available tools doing the authorship and authentication as an intrinsic part of the assessment system.
- Do not try to emulate face-to-face assessment

On the one hand the student identity for assessment is based on two key access control elements: authentication and authorship. On that regard, a face-to-face setting is accepted as the best one of the solutions, even though there are evidences that even this system is not completely reliable. However, in recent times, the mobility of students and professionals has increased. Together with the boost of internationalization processes, it leads to a situation where maintaining the face-to-face requirement in the assessment model becomes difficult. Current technology enables a direct translation from face-to-face to a virtual environment, for instance, via teleconferencing. However, this approach completely lacks scalability and quickly becomes unfeasible, especially when we are talking about tens of thousands of students. Therefore, a cost effective compromise must be reached.

On the other hand, the assessment process goes from the beginning to the end of any formative action. Thus, learning activities become checkpoints in a general model that can provide additional information to evolve an educational model.

Mainly in Higher education level, teachers have to do activities to guarantee that competencies are acquired. Students are expected to do activities with a set of learning tools beyond the activity itself (tools may not be visible in a mandatory way). The assessment model have to be adapted in order to provide the guarantee and reliability.

Nowadays teachers have a set of activities to assess competencies but it do not guarantees authorship. The main objective is to provide a proposal for improving the assessment process through the whole degree. This approach supposes an improvement in the teaching and learning processes which focus on the enhancement of the current educational models. At the

same time it is a challenge related with which are the most suitable teaching methodologies, also with new learning tools and resources for the assessment process (i.e authorship in multimedia activities) including teachers feedback and cross curricula assessment.

In addition, universities in general are resistant to wager for a 100% on-line education, and keep relying on face-to-face access control systems traditionally accepted by students (exams, meetings, etc.). This attitude is shared by accrediting agencies, being reluctant to fully on-line alternatives. As a result, such alternatives have not the social recognition or credibility they deserve, especially in higher and lifelong learning education. This lack of recognition causes more and more obstacles for on-line education growth, especially when, today, this model is a real option assumed by citizens, opening new opportunities in a global space, beyond physical boundaries. Therefore, it becomes imperative that educational institutions are able to finally break free from the face-to-face assessment model, while obtaining the approval quality agencies and society at large.

Proposal Outline & Phases of Work: Description of main goal (linked to Program) and specific objectives (linked to Call) / The logical approach of the work / Description of how steps in the work are inter-linked

Our challenge is to define a non-invasive system that is able to provide a quality continuous assessment model, using proportionate and necessary controls to meet the objective pursued: to ensure student identity and authorship without the constraints of face-to-face, but always offering to accrediting agencies and society unambiguous proof of his/her academic progression.

Specific objectives

- To analyse and design the most appropriate activities taking into account both, academic requirements to ensure the learning process and the adaptation to a fully online and cross-curricular assessment.
- To analyse and select the most suitable technologies to ensure user authentication and authoring, such as biometric recognition (keystroke dynamics recognition, face and voice recognition, etc...), forensics, and online monitoring.
- To define new strategies to take advantage of the new proposed framework in the improvement of the educational process (enriched feedback, adaptive learning, formative assessment, personalized learning).

This framework is submitted by higher education institutions (on-line and blended universities) in collaboration with technological companies (security, cryptography and on-line recognition specializations) as well as accrediting agencies presents a solution to these challenge.

When access control systems must be used, the most extended (especially in U.S.A.) are biometric recognition (typing pattern recognition, face and voice recognition, etc...) or on-line monitoring. It is based on a combination of such systems, as well as the assumption that access control in continuous virtual assessment scenario cannot rely only on technological solutions,

but in a system based on demonstrable trust between the institution and its students. Student trust is continuously updated according to their interaction with the institution, such as analysis of their exercises, peer feedback in cooperative activities or teacher confidence information. Evidences are continuously collected and contrasted in order to provide such unambiguous proof.

The dynamic nature of this framework becomes its main characteristic, which sets it apart from other approaches to virtual assessment. The result from each activity feeds a global trust level which is used to automatically decide which kind of controls a student should be subject in future assessments. Students that continuously prove they can be trusted will be subject to less exhaustive controls as they advance through their courses, and vice versa. Therefore, costly control mechanisms, from both a scalability and monetary standpoint, will be applied sparingly, and only on the most problematic subjects.

The proposed framework will:

- be a virtual assessment framework backed by quality agencies and its social recognition.

- implement a set of proportional control measures with the aim of ensuring student identity and authorship up to a degree equivalent to face-to-face education.

- be a combination of different access control techniques, based on the student's behavior and academic production in combination with the adaptation of the educational model.

- be a model based on evidence gathering throughout the duration of the student's academic journey (versus the traditional approach based on one technological solution developed for a specific assessment, i.e. on-line exam). The system collects and processes all the data, generated by different sources, in different moments, ensuring student privacy.

- have a smart database that securely gathers such evidences.

- use all gathered evidences to improve/to evolve the learning experience by means of adaptive techniques.

Large scale pilots:

One particularity of an Innovation Action project is that large scale pilots have to be conducted, involving around 10.000 learners. In this project, pilots will be performed by different project partners. Each of them, according their institution particularities and the defined e-assessment framework, will select which kind of assessment activities, evaluation model and techniques will perform.

Such large scale pilots are mainly addressed to Higher Education students, from different degrees across multiple disciplines. Each partner will choose both the size of the pilot group and the subjects involved in the pilot.

Pilots have to be conducted during the second year of the project, once the e-assessment framework will be defined.

Expected Results:

The expected result will be a high quality European e-assessment framework shared by educational institutions and agencies, that uses technology for ensuring student identity and authorship, with legal legitimacy and respectful of citizen privacy during teaching and learning processes.

This result will impact in the following sense:

1. Students: They will be evaluated through activities attending different kind of assessment model. The assessment process can be done not only at educational institutions but through the net at home.
2. Teachers: They will be able to define and design new learning activities including multimedia aspects and security items for ensuring learning data.
3. Universities: An efficient e-assessment model adapted to their learning environment, for ensuring student identity and authorship under a quality agencies parameters. An online education assessment framework and tools that will open new opportunities in a global space
4. Agencies: An online validation model accepted by educational accreditation agencies in Europe that follows their educational and technological quality standards.
5. Companies: to be discussed. Consultancy and implementation of the model in educational institutions all over the world (exploitation).