Facial Authentication within Moodle Lessons

Francisco D. Guillén-Gámez, Iván García-Magariño
and Silvia Prieto-Preboste

Department of Computer Engineering and Industrial Organization
Faculty of Technical Sciences. Open University of Madrid (UDIMA)
Carretera de La Coruña, KM.38,500, Vía de Servicio, nº 15
28400 Collado Villalba, Madrid, Spain.

Abstract

The research arises from the necessity of knowing the degree of students' perception about biometrical facial authentication within distance education in order to check whether students are who they claim to be while they participate in lessons within the Moodle Learning Management System (LMS) platform. With the use of this technology within e-learning, a new path of opportunity just opens to verify the lack of fraud when students carry out their activities using the platform.

Keywords: E-learning, Moodle lesson, facial authentication, online learning, analysis of perceptions.

1 Introduction and background

Thanks to the use of new technologies in education and communication within distance education [7], the learning platform Moodle [3] has permitted the integration of a wide range of online resources, such as the completion of questionnaires, concepts in glossaries, contributions to the forums, or creation of lessons, which is the one we will focus on.

The lessons allow instructors to present information to learners in small units, assess what they learn, and based on the quality of their achievement, branch out into additional review of material or move on to the next level. In other

words, the lessons module gives the opportunity of designing lessons that control the learning path very closely, guide learners step-by-step, and allow learners to advance only if a sufficient mastery has been achieved. Students of e-learning environments often complain about the lack of feedback they usually have in conventional classroom settings [1]. In Moodle, almost all modules are designed in order to allow teachers or course participants to provide feedback in qualitative or quantitative ways. Furthermore, students can repeat the process if the instructor permits multiple passes through the lesson [3].

In our research, facial authentication has been merged with e-learning within the Moodle platform. Our attention will be focused on the best renowned articles about the acceptance of facial authentication within Moodle tools.

For instance, Costa, Alvelos & Teixera [2] evaluate the percentage of use of the different kinds of Moodle activities, such as forums and questionnaires, and the extended tools like Wikis and Blogs. In addition, Kakasevski, Mihajlov, Arsenovski et al. [6] present an analysis of students' perception about different Moodle modules such as lessons, forums or glossaries. The aim of this questionnaire was to collect preliminary impressions of the system, and concerns about the user interface. In comparison to these works, the difference is that our research focuses on assessing whether the experience has been positive for the students when they are facial authenticated within Moodle lessons.

In relation to facial authentication, the Smowl tool [9] was applied as facial authentication software for research development. It consists in capturing students' photos for its subsequent verification. Smowl was inserted when the student used to insert content in glossaries and to do tests of the different lessons of the course. In this way, there are numerous researchers that use the webcam of students' computers or laptops in their methods for the extraction of images of them. Along these lines, there are works as the ones from Pattanasethanon & Savithi [8] or, for instance, those from the researchers Grafsgaard, Wiggins, Boyer et al. [4] from North Carolina State University.

The purpose of this work emerges from the article Guillén-Gámez & García-Magariño [5] where the investigation is just about the experience with glossaries and tests. On the contrary, this present work will integrate and focus on Smowl within Moodle lessons, and therefore, how this plugin will affect students´ perceptions.

To accomplish the project, the questionnaire of table 1 was designed in relation to the perception of students when using face-based authentication in their Moodle lessons. The questionnaire was filled by students from Master Degree on Education and New Technologies of the Open University of Madrid (UDIMA). The questions were replied within a seven-point Likert scale.

	Question
1	Do you think it is appropriate to apply facial authentication in a Moodle lesson when it is an evaluated activity?
2	Is it a positive experience the one you have had with lessons and facial authentication?

Table 1 Questions of the questionnaire

2 Moodle lesson activity with facial authentication

This activity was performed following the module lessons of Moodle. This module was chosen because it allows instructors to design activities that need students to be more time on the platform and have a more complete experience of facial authentication.

The topic of this Moodle lesson was the New Media Consortium (NMC) Horizon Report 2013 Higher Education Edition, about emerging technologies on education, so that the students can learn and analyze relevant aspects and parts of this international report.

The activity had two types of pages: (1) pages of contents, which included texts, schemes and images about the main topic, and (2) pages of questions where the students had to answer questions about what they had read or visualized before. Although Moodle lessons allow instructors to configure different routes of learning in which the student can choose between different ways, in this case a simple and linear design was chosen, in which every page was followed for another one without any more alternative options. Questions' pages are scored and added to the student's cumulative grade.

The average time students spent doing this activity was thirty minutes. Once finished, students had to answer the question about their experience with facial authentication.

3 Results of the analysis and conclusions

In this experience, 60 students replied the questionnaire and the results are presented in Figure 1. It is noticeable that there are quite positive average values. A general view of the analysis, having in mind a Likert scale, shows that the average grade related to the two questions is 6.27 for the first and 5.98 for the second, out of 7 points. Thus, the students think that facial authentication is appropriate for Moodle lessons when these are used for evaluation, in the range between *agree* and *strongly agree* in average. In addition, they considered as a positive experience the one they had with facial authentication and Moodle lessons in the grade of *agree* in the Likert scale in average.
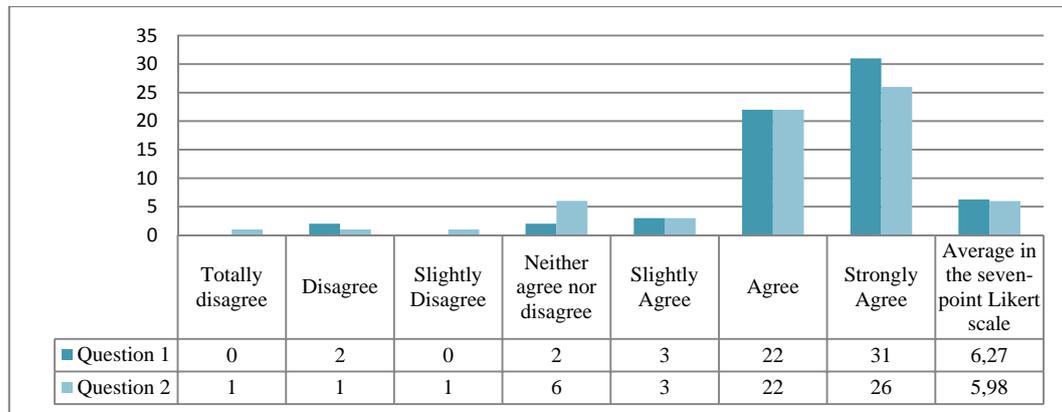
	Totally disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree	Average in the seven-point Likert scale
■ Question 1	0	2	0	2	3	22	31	6,27
■ Question 2	1	1	1	6	3	22	26	5,98

Figure 1 Results of the questions

In conclusion, the students perceived as appropriate and positive the application of facial authentication in Moodle lessons, grounded on their experience.

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