E-ASSESSMENT TOOLS USED IN A B-LEARNING COURSE IN PHARMACEUTICAL SCIENCES POST-GRADUATE COURSE

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Abstract

The Faculty of Pharmacy (FFUL) in collaboration with the e-Learning Lab of the University of Lisbon (ULisboa), Lisbon, Portugal have developed a blended learning Postgraduate Course in Advanced Cosmetology in recent years. This study is based on the evaluation of this course, specifically of two of its online activities that were complemented with a face to face session of the second and third editions of the courses. Moreover, we present the results of the satisfaction survey, which is based on the E-learning in Capacity Building Check (ECBCheck) benchmark. The results show that in case of both activities the complementarity of online activities with face-to-face laboratorial practice had a significant positive effect on participants’ final results. The satisfaction survey also revealed that participants were quite satisfied in both editions.

Keywords: B-learning, Pharmacy, e-assessment tools.

1 INTRODUCTION

Online learning has increased its relevancy as a solution for providing the required training for in service professionals, therefore, all over the world, higher education institutions are investing in developing partially and fully online courses. Taking part of this international tendency, the Faculty of Pharmacy (FFUL) in collaboration with the e-Learning Lab of the University of Lisbon (ULisboa) Portugal have invested in the design and implementation of a blended learning postgraduate course in Advanced Cosmetology in recent years. This course is addressed mainly to professionals working for cosmetology and dermatology companies but also for professionals from other related areas, as well as, Pharmaceutical Sciences students after assessment of motivation letter and curriculum vitae.

This course has been presented in three editions: the first one occurred in 2016 with 49 trainees and 54 hours, the second edition was in 2017 with 56 trainees during 80 hours and the third edition took place in May-July 2018 with the participation of 60 trainees for 35 hours. Nevertheless, all editions presented the same three components based organization: theoretical, practical and laboratory. The courses were carried out according to a blended learning approach in which the theoretical-practical part ran on the MOODLE platform of the ULisboa. The platform permits the use of dynamic and integrative tools of various technological resources, therefore it is an efficient tool for teacher-trainee, trainee-trainee and trainee-content interaction. The laboratorial component was a face-to-face intensive course that took place in the laboratory of the FFUL at the very end of the course. The main goal of these courses was to train specialists in subjects related to cosmetic products: from regulation, formulation, stability, manufacturing to testing.

Changes have been made throughout the three editions to improve the scientific and pedagogical quality of the course, as well as, for promoting the updates of the contents. All the changed elements were defined based on the results of the satisfaction survey, which was applied at every edition of the course after the conclusion of its activities. The satisfaction survey was developed by the e-Learning Lab of the ULisboa and it is based on the ECBCheck benchmark checklist [1].

The teaching strategies were based on three essential pillars:

a) Integration of participants into the course environment through a short and simple presentation activity that aimed to introduce trainees into the learning community and familiarize them with the communication and interaction tool (Forum) that should be used during the course.

b) Construction and evaluation of theoretical, practical and laboratory knowledge where the objectives of the course, as well as, the skills to be acquired and/or developed were defined; where videos with supporting presentations in pdf were presented and complementary
documents were made available. The acquired knowledge was applied and evaluated through quizzes with automatic feedback. The feedbacks integrated scientific explanations and additional documents allowing the trainees to deepen their understanding of the subject.

c) Interaction and information sharing among participants for stimulating social learning and knowledge co-construction: open discussion forums were made available in each module and each discussion were led by the course’s professors.

In this course, online activities took place in the Moodle platform through quizzes in which and for each subject, were included several explanatory videos. This type of e-assessment is very important because it allows automatic and immediate feedback, permitting the trainee to understand the correct answer and to answer questions immediately [2, 3, 4]. In addition, the course has other activities that allow interaction among the trainees and between them and the professors.

2 METHODOLOGY

During the several editions of this course, different tools and activities have been applied to assess participants’ knowledge. The e-assessment tools implemented in the two last editions were:

1 "Technical Notebook of a Cosmetic Product (PIF)" - which is a mandatory regulatory requirement on the part of the person responsible for placing the Cosmetic Product on the European market. It is a document with some complexity and difficult to implement in an online course.

2 "Virtual Emulsion Factory" - is an exercise transversal to one specific theme of the course that obliges the trainee to reflect on the cosmetic product from legal requirements, development, manufacturing, quality control, stability, claims to label and placing on the market.

These two online activities were used to assess the learning concepts previously taught in online modules and were also evaluated in face to face sessions.

In this way, a video was created for the “Technical Notebook” where all the steps and elements that should be included in it were explained together with the respective complementary documentation and checklist. All together, these were discussed and evaluated in a face-to-face session. This activity was optional and was implement in both editions of the course.

Regarding the ’"Virtual Emulsion Factory", it was a sequential mandatory activity, developed in a specific module. The presented elements and questions included all the themes taught in that specific module. The knowledge of the trainees was evaluated through quizzes with automatic feedback. Besides this theoretical component, based on a practical example of producing an emulsion (cream) in a virtual factory, trainees were requested to fabricate products during the face-to-face laboratory session of the course. This activity was only carried out in the second edition because this specific subject was not addressed in the third edition.

Moreover, the satisfaction survey based on the ECBCheck was used to evaluate the quality of this course. This instrument comprises the following dimensions: (i) requirements; (ii) guidelines for the target audience; (iii) program content; (iv) course design; (v) multimedia design; (vi) the technology; and (vii) general evaluation and review. After the courses concluded, the satisfaction assessment questionnaire was sent by email to all course participants. The questionnaire was composed of three parts: in the first part, we collected data on trainees characteristics: age, gender, academic level and professional occupation; the second part focused on the evaluation of the satisfaction with the course; and the third part contained open questions related to adequacy of the course format as: Would you participate in a blended-learning course again?; Do you think that the obtained results would be different in a face-to-face learning environment?; Would you reenrol in this course again?; Would you recommend this course to others? In this last section, there was also a space to freely express opinions and suggestions for improvements on the course. Answers were registered on a 5-point-Likert scale ranging from “very dissatisfied”, “dissatisfied”, “neither”, “satisfied” and “very satisfied”.

3 RESULTS

The characterization of the sample (trainees) was carried out based on the sociodemographic data collected, namely with respect to age, sex, country of residence, academic training and profession.
The answers to questionnaires were provided by a total of 71 trainees with an age range between 20 and 67 years old (Figure 1).

Most of them were female, 80% and 88% for the second and third edition, respectively (Figure 2), from different places of residence: Portugal, Angola and Greece. Most of the participants were pharmacists (55% on the second edition and 43% on the third one). The rest of the group presented a quite diverse professional background, even though always linked to cosmetology (e.g. quality and regulatory affairs technician, chemical engineer).

The implementation of the “Technical Notebook” and the “Virtual Emulsion Factory” practices aimed the full success of the processes of technical and pedagogical innovation in courses taught online.

Despite the “Technical Notebook” being optional, almost half of the trainees (48%) performed the online activity. Although the number of trainees is different, the results show that this activity present low impact and support from the trainees as shown on Figure 3.
During the face-to-face session, a checklist related to this topic was developed to complete and evaluate the apprenticeship. The results show that the trainees who completed the online activity had an average final rating of 85%.

All trainees completed the "Virtual Emulsion Factory" online activity and obtained the average rating of 80.42%. This activity is a quiz with eight questions concerning the development of a formulation and production of a facial cream. Figure 4 shows the results obtained by the trainees in each completed question.

The production of an emulsion (cream) in the laboratory (face-to-face) session empowered trainees to deepen their knowledge of this subject with satisfactory results (>90%).

In both cases, the results show that the face-to-face component had a significant positive impact on trainees’ final grade. These online activities were very complex and differentiated activities and the trainees were not accustomed to performing this type of tasks. There has been a need to complement this learning was accomplished in face-to-face sessions.

These findings are in line with Liu et al. [2] in their systematic review on blended learning in health professions found according to which the blended approach has a consistent positive effect and it appears to be more effective or, at least, as effective as pure e-learning or traditional face-to-face learning. The success of the blended approach in this course lies in the inclusion of face-to-face learning in the online course. In these specific two editions, it was essential for trainees’ success that they could put their knowledge acquired online in practice during the face-to-face sessions.

Not only the final grades, but also trainees’ satisfaction with the course is reflected in their answers to the satisfaction survey: 99% affirmed that they would enrol in this course again. Regarding the recommendation of the course most trainees would recommend the course to colleagues. The results showed that the trainees had high satisfaction rates in all dimensions of the questionnaire (mean...
values ≥4.24 in the second and ≥4.08 in the third edition measured on a 5-point scale). This evaluation was confirmed also through the comments and suggestions made in the open-ended questions.

Although our results are not conclusive and there is a strong need for further research, this study has a significant contribution to the discussion about new ways of e-assessment tools and the importance of the blended pedagogy.

4 CONCLUSIONS

We can conclude that the blended pedagogy has fulfilled the following achievements: transmission and application of concepts, interaction and sharing knowledge and successful formative evaluation. The inclusion of these two new online activities did not achieve the expected results. However, the face-to-face teaching was very successful and it allowed to overcome the previous results.

It is also important to highlight that the quality evaluation framework for online courses is an important element for quality assurance in online education, as a means of increasing recognition of the value of fully online or blended training offers.

Quality evaluation helps in continuously improving the scientific and pedagogic quality of online courses, providing in this way, courses that better meet the learners’ needs.

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REFERENCES


