USING GOOGLE FORMS AS AN ON-LINE EVALUATION SYSTEM IN CARDIOVASCULAR PHYSIOTHERAPY

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Abstract

Background. On-line platforms are not usually used in students’ evaluation at the university context. Technological innovation in matters of Information and Communication Technologies (ICTs) has allowed the creation of new environments which offer the possibility of developing new evaluation experiences. Thus, they enable the fulfilment of different activities, as evaluating university students. This study aims at presenting the on-line evaluation system based on Google Forms applied to Cardiovascular Physical Therapy.

Methods. An on-line evaluation system based on Google Forms was proposed for the subject Cardiovascular Physical Therapy (University of Valencia, Spain). This evaluation system was used to determine the knowledge of physiotherapy students regarding the subject in five different moments during the semester. In total, five tests about cardiac physiotherapy and vascular physiotherapy, including clinical exploration and treatment, were created. All tests were designed and created by the teachers, and finally performed by the students.

Results. This abstract presents the innovative teaching methods we used in Cardiovascular Physiotherapy. We used the on-line platform Google Forms in order to assess the knowledge of students towards the subject. Five evaluation tests, including multiple election questions, were designed and created by the teachers. Firstly, the on-line platform was used at baseline to assess through a questionnaire the previous knowledge of students about Cardiovascular Physiotherapy, as well as sociodemographic variables. Tests were available for students at Google Forms, and were about cardiac exploration techniques (electrocardiogram, exercise tolerance testing…), cardiac rehabilitation (phase I-III, continuous and interval training…), ischemic peripheral arteriopathies (exploration and physiotherapy treatment…), exploration and physiotherapy treatment of venous insufficiency… and complex lymphedema therapy. Students performed each on-line test in one session at the university, with a total of five sessions during the semester. Each session data were extracted from evaluation forms and qualifications were immediately assigned to all students. Additionally, questions were immediately solved after each test, thus students had immediate feedback and therefore they could know their results and mistakes.

Conclusion. On-line platforms as Google Forms can be used in formal education programmes based on formative evaluation in Physiotherapy students. This kind of on-line platforms offer a quick access to evaluation data, personalized testing and a possibility of interaction with information, and therefore it is an open and flexible process which demonstrates that this on-line platforms are useful as a tool for students’ evaluation.

Keywords: physiotherapy, on-line platform, teaching, innovation, information and communication technologies.

1 INTRODUCTION

BACKGROUND. On-line platforms are not usually used in students´ evaluation at the university context. However, the Information and Communication Technologies (ICTs) have been incorporated to teaching processes as new resources during the last years [1]. Technological innovation in matters of ICTs has allowed the creation of new environments which offer the possibility of developing new teaching and evaluation experiences. Thus, they enable the fulfilment of different activities [2].

ICTs are a set of processes and products derived from new tools, information basis and communication channel related to the quickly-digitalised information storage, processing and transmission in large quantities. The main features of these technologies are interactivity, immediacy, innovation, high quality of the image and sound, digitalisation and variety. They have an important role
in the teaching and learning process in European universities (European Higher Education Area),
regarding the innovation in the way we create and transmit the knowledge and regarding the
continuous training throughout life [2].

The evaluation by other means than traditional ones has been possible because of technologies.
Therefore, technology contributes importantly to the decentralisation of learning types and to the
knowledge construction [3].

The inclusion of innovative educational interventions during the teaching and learning process, not
only during the initial training, but also in the permanent one is possible [4]. It should be pointed out
that within the framework of the European Higher Education Area, one of the essential university
challenges is to incorporate and integrate new Information and Communication Technologies to the
teaching [5].

It is important to control a series of variables when using on-line resources, as [6]: the way in which
contents are presented, the role of the professor and students, the synchronic and asynchronous
communication tools used, the organizational aspects, etc. Thus, Internet is used as a means and as
a resource for the teaching fulfilment.

Universities must become flexible and develop integration means of Information and Communication
Technologies (ICT) in the education process. It implies some changes in the teaching and learning
canons towards a more flexible model. It would be in our interest to place ourselves in the innovation
process field to understand these changes and their effects, as well as the possibilities which involve
the changes and technological progress to the teaching and learning systems [7].

The use of ICTs in higher education provides teaching quality improvement with many advantages,
such as the access from far areas, time flexibility, some space to develop teaching and learning
activities or the possibility of interacting with the information by different agents participating in these
activities. The main advantages the use of ICTs bring to the teaching and learning process are:
breakdown of time-space barriers, possibility of interaction with the information, usefulness as a
support tool in the learning process, flexible and open training processes, communication
improvement between the different teaching and learning agents, more personalised training, quick
access to the information and complementary activities of learning support.

In this way, the progressive incorporation of the ICTs into university teaching in the last few years has
allowed for the improvement of the didactical resources creation, access and distribution like learning
objects [8]. Learning objects can be defined as little units of interactive content whose most important
feature is the possibility of being easily reused. They can incorporate any type of format (printed, web,
multimedia, word, etc.) according to the needs of the course, as well as other additional elements. [9].

This study aims at presenting the on-line evaluation system based on Google Forms applied to
Cardiovascular Physical Therapy.

2 METHODS

An on-line evaluation system based on Google Forms was proposed for the subject Cardiovascular
Physical Therapy (University of Valencia, Spain).

Regarding its structure, Cardiovascular Physical Therapy is an obligatory subject in the 3rd year of the
Physiotherapy Degree, which has a study load of 6 ECTS credits at the University of Valencia, Spain.
Regarding its structure, it is divided in 30 theoretical classes and 12 practical classes, which are
organised in two general thematic blocks: heart disease and peripheral vascular diseases.

The evaluation system was used to determine the knowledge of physiotherapy students regarding the
subject in five different moments during the semester.

All students were informed about this project and accepted to participate. Informed consent was
obtained from all participants.

To accomplish this activity, several tests about cardiac physiotherapy and vascular physiotherapy,
including clinical exploration and treatment, were created by means of the platform Google Forms. In
total, 5 tests were designed, reviewed and finally presented to the Google Forms platform. These
tests included different types of questions about the content of the subject. All tests were finally performed by the students in different sessions.

3 RESULTS

This paper presents the innovative teaching methods we used in Cardiovascular Physiotherapy. We used the on-line platform Google Forms in order to assess the knowledge of students towards the subject.

Five evaluation tests, including multiple election questions, were designed and created by the teachers. Firstly, the on-line platform was used at baseline to assess through a questionnaire the previous knowledge of students about Cardiovascular Physiotherapy, as well as sociodemographic variables, as shown in Fig. 1.

![Previous knowledge test about Cardiovascular Physiotherapy and sociodemographic questionnaire test.](image1.png)

The first test at Google Forms was about cardiac exploration techniques: electrocardiogram, exercise tolerance testing, Bruce Protocol, arterial pressure, etc.

The second on-line test included questions about cardiac rehabilitation: phase I, II or III, continuous and interval training in heart disease, particularities for heart transplantation, heart failure, etc.

The third test was about ischemic peripheral arteriopathies: exploration and physiotherapy treatment, circulatory superficial massage, analytic and global kinesiotherapy.

The fourth test included questions about exploration and physiotherapy treatment of venous insufficiency, venous thrombosis, etc.

Finally, the fifth test was about lymphedema, complex lymphedema therapy and manual lymphatic drainage.

Fig. 2 shows the first on-line test at Google Forms about cardiac exploration techniques.
Fig. 2. First on-line test at Google Forms about cardiac exploration techniques.

Fig. 3 shows the answers’ sheet of students to the fifth test about lymphedema, complex lymphedema therapy and manual lymphatic drainage. The date and hour of the test is present at the sheet, in order to confirm if all students performed the test at the same time.

Students performed each on-line test in one session at the university, with a total of five sessions during the semester. Each session data were extracted from evaluation forms and qualifications were immediately assigned to all students. Fig. 4 shows qualifications’ sheet of students of one of the on-line tests.
Additionally, questions were immediately solved after each test, thus students had immediate feedback and therefore they could know their results and mistakes. This feedback was important in order to improve their knowledge and therefore to assimilate contents.

4 CONCLUSION

On-line platforms as Google Forms can be used in formal education programmes based on formative evaluation in Physiotherapy students. This kind of on-line platforms offer a quick access to evaluation data, personalized testing and a possibility of interaction with information, and therefore it is an open and flexible process which demonstrates that this on-line platforms are useful as a tool for students’ evaluation.

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