UNIVERSITAT POLITÈCNICA DE VALÈNCIA | IN-RED 2024 X Congreso de Innovación Educativa y Docencia en Red

Congreso In-Red 2024
UPV, 11 - 12 de julio de 2024
Doi: https://doi.org/10.4995/INRED2024.2024.17038

Interactivity videos for teaching planning in the distance education university

Montserrat Hernández Solís

Business Economics and Accounting Department. Faculty Economics
National Distance Education University

How to cite: Hernández Solís, M. (2024). Interactivity videos for teaching planning in the distance education university. En libro de actas: *X Congreso de Innovación Educativa y Docencia en Red.* Valencia, 11 - 12 de julio de 2024. Doi: https://doi.org/10.4995/INRED2024.2024.17038

Abstract

The educational video is a pedagogical tool widely used in learning methodologies, not only at a distance method and applicable to all educational levels. Several authors have pointed out in recent years the usefulness of ICT in teaching and learning environments (Salinas). As an example, we can mention the increase of the use of this resource in the offer of training and information, the opening of new tutoring possibilities, the elimination of space and time barriers, the facilitation of personal work, collaborative work and self-control learning, in addition to improving interactivity and flexibility in learning.

Over time, university higher education has been incorporating these technologies and has faced the challenge of transforming the traditional face-to-face classroom into a virtual class using various multimedia tools and new teaching resources that are not traditional written materials (texts and study guides). In this evolution towards digital education, the development of the Internet and its ability to integrate a set of multimedia materials of a diverse nature (web conferences, video conferences, chats, videos and audios or electronic mini-videos) has been crucial.

In this line, within the Master's Degree in Insurance Law that is taught at the Faculty of Law of the UNED, belonging to the Commercial Law Department, and is applied to a subject called "Elements of actuarial calculation". I have carried out the gradual incorporation of explanatory mini-videos with interactivity applied to teaching, so as to ensure the students have effective and positive help to facilitate them in their learning and, in this way, obtain a better academic performance.

Keywords: *Distance Education; educational video; multimedia tools; academic performance; virtual learning environments.*

1. Introduction

Virtual learning environments are based on the application of information and communication technologies, called ICT, as an instrument that teachers have to be able to transmit the knowledge of the subjects that make up the curricula of the different educational levels, but mainly applied in university training processes. ICTs take multiple forms, as indicated by Salinas (2004), such as tele-training, e-learning, online teaching, among others. And these technologies applied to teaching are improving in their development of applicability as the telecommunications of the country in question are doing, as well as by the needs of society.

As a result of the health crisis that began in China in January 2020 and spread throughout Europe and later to the American continent during the spring of 2020, educational centers have had to adapt, practically overnight, to the use of new technologies that never Before, face-to-face teaching centers had used, not even used by semi-face-to-face centers, in order to continue offering a minimum of content to their students, which had traditionally been face-to-face and due to this health crisis have become virtual. (Simonson et al). Tools such as Google Hangouts, which have infinite advantages as they are supported by Google applications. Another is Skype, which is presented as a leading technology in the market for Internet calls and group video calls, given that it has unbeatable audio and image quality; Meeting Burner, which is a videoconferencing service that allows you to record sound and a connection at the same time with up to ten users; Tiny Chat, which allows a video chat, having as a novelty that it allows its integration with the most used social networks worldwide, such as Facebook or Twitter; Join me, which allows you to make video calls with up to three participants, you can share the screen, upload files and talk through chat; Classroom, a free blended learning platform, integrated with the Google App for Education suite or Zoom Cloud Meeting, which is a video meeting service that allows you to establish conversations with colleagues, get together with friends and share a personal moment together. New ICTs that have not been created ad-hoc for these times but whose use and employability have skyrocketed in recent months.

Table 1. *New tools used for the generation of Virtual Learning Environments*

Source: Own source

And it is precisely these technologies that can be used through distance learning as virtual learning tools. It is a teaching and training methodology that makes use of a series of applications that combine audio recording together with image visualization. It is called e-learning.

2. Information and communication technologies (ICT)

Despite the variety of ICT for the generation of existing virtual environments, as previously mentioned, these new methodological tools applied to teaching are not exempt from problems. ICTs cause changes in the way teaching is imparted, in the two-way communication mode between the teacher and the student, the type of education that is intended to be offered, that is, if it is face-to-face or non-face-to-face, the academic certification that the student will receive for this training, the technological training of teachers and students for the use of these technologies, the space and time available for both parties, etc.

And not only this, it is also necessary to take into account specific psychological aspects of the teacher and student in regard to the motivation that they have for the use and use of these new multimedia tools, their specific training needs, the economic resources of that you have for the acquisition of the computer material that you need to be able to follow the training through new technologies, such as the acquisition of a personal computer, webcam for video calls or webconferences, Tablet or similar device, prior contracting of a service of internet for the connection to the data and others (Morado et al). Therefore, it can be said that not only is a technological transformation necessary for the applicability of these ICTs, but also a pedagogical/emotional transformation.

ICT-based virtual learning environments must be attractive, they must allow interaction between both parties, educational, flexible, not static, so that students feel the figure of their teacher and their peers, even if they are virtual, as close, since the feeling of closeness decreases the frustration or the feeling of loneliness that the student has due to the lack of physical contact with classmates. Various studies have shown (De la Fuente, Solís and Pra, 2013) that visualizing the teacher's image when teaching generates an effect of closeness with the student, thus reducing academic failure, measured by the grade obtained. by the student in the ordinary call. And therefore virtual spaces must have content that is attractive, explained in clear language, using bright colours, images, videos with or without interactivity, in order to generate a positive effect on the students who use these technologies.

According to Prensky(2010) and Keegan(1993), students can be classified as digital natives based on a series of characteristics that define them. The following table 2 shows the characteristics that identify both natives and non-natives.

Table 2. *Characteristics digital and non digital natives*

DIGITAL NATIVES	NON-DIGITAL NATIVES
Immediate and clear information	They do not consider that the information is clear
Attraction to new processes and challenges	They do not feel motivated by virtual spaces
Preference of the visual to the written	They prefer traditional written texts
Better yields when working in a network	They yield more with the traditional face-to-face master class methodology
They feel emotionally satisfied and rewarded when online work goes ahead	They get frustrated when online work doesn't go ahead. Instead of helping them improve, it sinks them
They prefer to train in a playful way through the Internet	They prefer to train with traditional teaching techniques

Source: Own development

2.1. The interactive mini video applied to teaching

Of all the virtual tools shown, in this work we have focused on interactive videos applied to teaching, using a series of programs for their elaboration, such as the educational platform of the UNED articulated through Inteca, for the elaboration of explanatory mini videos and that allow a visualization at the same time as a bidirectional communication with the students thanks to the online chat, and the Camtasia software to be able to introduce interactivity to the videos.

Educational videos, as indicated by Pascual (2011), have a series of characteristics, such as their short duration, which does not exceed five minutes, which serve as reinforcement for the learning of certain key concepts of the subject, the presentations that are they use must be minimalist and interactivity is introduced through Camtasia 7.0. This program is characterized by the fact that closed multiple-choice questions are introduced in each of the mini-videos that the student has to answer as the video is viewed. If the indicated answer is correct, the video continues to play. If the chosen answer is not the correct one, the program indicates the reason and indicates what the correct answer should have been.

The main goal of the work is to study the usefulness of the interactivity of videos for the learning of subjects at the University level, that is, if this interactivity helps in learning in a more optimal way than if the video lacks it. The basic idea that underlies this approach is that the student does not have a passive position in watching the video, but rather pays all his attention to be able to answer the questions that are asked.

2.2. Sample

To carry out this study, we have worked with students of a subject of the Master in Insurance Law, called Elements of Actuarial Calculation, for the 2022/2023 academic year. The sample is made up of 27 students, students with a clear legal component in a quantitative subject.

In order to collect all the necessary data for the investigation, a questionnaire consisting of 17 questions has been prepared, which are indicated below. It has been valued discreetly on a Likert scale from 1 to 5, with 1 being the lowest value and 5 the highest value.

General questions:

1. Did you find the explanatory mini-videos interesting?
2. Do you prefer them with or without interactivity?
3. Did you find it easy to find it in the virtual course?
4. Did you find the duration of the mini-videos adequate?
5. Did you find that the content is appropriate to the content of the topic?
6. Have you found that there is an adequate number of mini-videos in the virtual course?
7. Has this multimedia material helped you in your study?
8. Do you think it would be necessary to add other complementary multimedia material for teaching, such as webconferences?
9. Has the study made it easier for you to view the mini-videos?
10. Has the use of this multimedia material saved you study time at home?
11. Would you consider it interesting to introduce more interactivity to the mini-videos, so that the student participates more actively while viewing them?

The specific questionnaire was prepared for the research, consisting of 17 questions, some of which referred to each of the mini videos presented for viewing (6) and the rest (11) had to do with the format of the mini videos and general aspects.

The group of 27 students was randomly divided into two subgroups: one of 14 students and another of 13 students. The former was presented with 6 short interactive videos on issues and concepts related to the subject already studied throughout the course. The other subgroup watched the same videos, but without including the interactivity. All of them had to answer all the questions (17), regarding the content explained or described.

The second analysis carried out is referred to the questionnaire regarding the assessment made by the students of the mini videos presented. Specifically, the evaluation of the videos is compared on a Likert scale (1-5) (dependent variable) and whether they have presented interactivity (independent variables). The aim is to analyse the null hypothesis of the existence of some type of linear relationship between both variables from a simple linear regression.

3. Results

The result regarding the value The sigma value is significant in terms of independence. Its value, (0.11) indicates that the null hypothesis can be accepted, and, therefore, that the students' assessment of the mini video is not influenced by whether or not it presents interactivity.

Considering the first battery of questions, the number of correct answers greater than 4 (out of six possible) was compared through cross tables between students who viewed the video with interactivity and those who did not have this functionality.

Table 3. *Cross Answers*

		4 Hits	5 Hits	6 Hits	Total
Interactivity	No	9	10	3	22
	Yes	5	7	4	16
Total		14	17	7	38

Source: Own development

In the table 3 it is observed that the number of students with correct answers in the lower section (4-5 correct answers) is higher among those who have viewed the mini-videos without incorporating interactivity. However, in the upper section (6 correct answers) the opposite occurs: the students who have viewed the videos with interactivity are more than those who have done so without incorporating this feature.

The specific survey questions that were circulated among the students are shown below.

- Visual quality of the mini videos.

-Sound quality of the mini videos.

-Duration of the videos.

-Mini videos used for the practical part.

-Clear explanations of the mini videos.

-Can master classes be substituted by mini videos?

In almost all the questions answered, it is observed that the students who worked on the videos with interactivity got better scores than the students who watched them without interactivity.

4. Conclusions

The study does not seem to be conclusive when it comes to determining whether the incorporation of interactivity in educational videos allows better results to be obtained compared to conventional videos, although it is observed that in the high range of correct answers the students who worked with the interactive mini videos have a small advantage over the others.

In addition, the correlation study through simple linear regression analysis is not definitive either to certify that interactive videos have added value compared to those that do not have that functionality.

On the other hand, it seems that the students who took the test with interactive videos value this type of tool better in almost all the items presented than those who took the test with videos without interactivity.

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