

SELF LEARNING MINI-VIDEOS THROUGH INTERNET AND MOBILE TELEPHONES: A HELP TO THE STUDENT IN THE BOLOGNA PROCESS

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Abstract

We have developed a new teaching tool based on mini-videos (short-duration videos) for self learning that uses an electronic blackboard. These mini-videos cover the basic topics of undergraduate statistics courses. This way of e-learning can be applied to other subjects and it is based on the philosophy of "I work (the lecturer)", "You work" (the student) and is within the paradigm of European Higher Education Area (EHEA). It has several and relevant advantages for the lecturer and for the student. The self learning mini-videos are the natural evolution of the recording of the lectures, although with a radically different characteristic: the short length (5-10 minutes); therefore they can be easily handled in Internet and can be reproduced in any portable multimedia player or shared through Bluetooth.

Keywords - Mini-videos, mobile telephones, electronic blackboard.

1 INTRODUCTION

In the new paradigm of the European Higher Education Area (EHEA) within the Bologna process, the lecturers are considered agents that create work environments to stimulate the students. Romero et al. [1] state that lecturers should generate resources and facilitate a good context for learning, but it is the own student the one that it is learning. Moreover, Behar and Grima [2] and Batanero [3] agree that the main factor for learning is the willing of learning and the effort to achieve it. Nobody can learn by ourselves! (Juárez [4]). It is clear that the students are the key part in this process. However, the lecturer can and must help him/her, facilitating and guiding his/her autonomous learning.

In order of achieving the above, we propose using a new teaching tool based on mini-videos for self learning that uses an electronic blackboard. The way to reach this concept has been through an evolution from the recording of a whole lecture, across producing videos for exercises and finally ending with the concept of mini-videos.

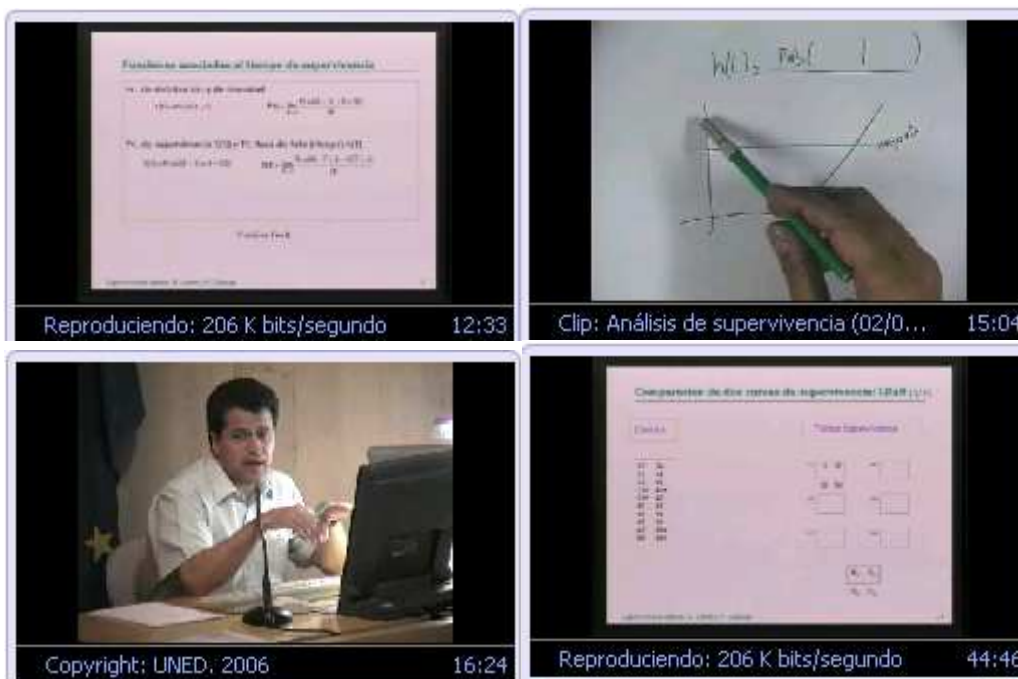
1.1 Recording of a whole lecture

The first experience of the authors in this field was by Letón in [5] with the recording of a class of Survival Analysis done for the Learning Distance National University (UNED). The technology employed was two video cameras: one to record the drawing done in an ordinary paper (document grabber) and another one to record the lecturer.

In Figure 1 four snapshots are shown, where it can be seen that the explanations of the lecturer is interspersed with the document grabber and exercises to be done by the student as homework.

This experience was very rewarding for the author and very easy to do because the main effort was the preparation of the slides, since the recording was done in one go. The main inconvenient of this experience was that it was a bit tiring for the author as he was talking 67 minutes without a break. Another inconvenient was that the final video was difficult to handle in terms of size, and trying to find a specific topic within the video was also difficult.

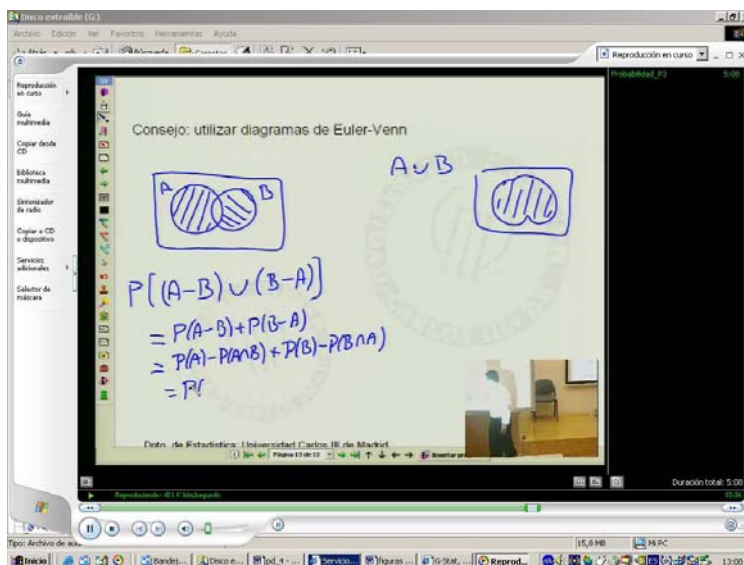
Figure 1: example of a recording of a whole lecture



1.2 Videos of exercises

Due to the success of the previous experience and the advantages of the new technologies, the author decided to extend the experience to record some videos of exercises with shorter duration (15-20 minutes), so he coordinated, in 2007, an innovative learning project with some colleagues of the Department of Statistics in the University of Carlos III of Madrid (UC3M). The technology employed was the electronic blackboard as it can be seen in Figure 2.

Figure 2: example of a video of an exercise solved



The project was valued by the students as a very good tool for them to study the subject. Some of their remarks were:

- "Congratulations for the activity. It is a very original idea".
- "A very good idea to revise at home. Great initiative"
- "A good help to study for the exam".
- "I am very thankful to the lecturers because of their great effort".
- "It is a great idea and I would like that the theory classes were also recorded".

The results of this project were published in [6].

1.3 Mini-videos

The coordinator of the former project decided to go one step ahead and introduced the concept of mini-videos (videos of short duration: 5-10 minutes) with the topics of a theory class. He coordinated two innovative learning projects with some colleagues of the Department of Statistics in UC3M.

The first one was carried out in 2008 and consisted in 71 mini-videos with a length of nearly 10 hours. Due to their short duration, the mini-videos can be easily handled in Internet and can be reproduced in any portable multimedia player or shared through Bluetooth, as it can be seen in Figure 3. The second one was done in 2009 and consisted in the development of an open-access web-page with the former mini-videos in different formats: streaming, 3gp and mp4. This home-page it is also shown in Figure 3 and can be accessed in this url: <http://163.117.132.198/minivideos/>.

Figure 3: mini-video in a mobile telephone and web-page



2 DESCRIPTION

The mini-videos are based on the philosophy of "I work (the lecturer)", "You work" (the student). They are constructed with the help of minimalist slides that are filled out with the help of the electronic blackboard.

2.1 Underlying philosophy

The success of the "learning to learn" approach will be based if lecturers and students accept, understand and assume the philosophy: I work, you work. If both work, in class and outside the class, the "learning to learn" approach will succeed, but if one of them do not do it, it will failed. This philosophy is part of the mini-videos and brings several advantages for the student and for the lecturer.

The main advantages for the student are:

- He/she can choose the time, the place and the rhythm of learning.
- He/she has a comprehensive material.

- He/she can re-enter in the subject whenever he/she wants.
- He/she can prepare easily the continuous evaluation.
- There is a real possibility of distance learning.

The main advantages for the lecturer are:

- Planning can easily be done.
- The lecturer can be more proactive
- The lecturer does not have the sense of time oppression.
- It helps to strengthen the contact with the student.
- It helps the implementation of continuous evaluation.
- The coordination between lectures and practical sessions is optimal.
- There is a real possibility of distance learning.

2.2 How to design them?

Nowadays it is not clear what is the best method to be used for the lecturer to transmit his/her knowledge. We have gone from the blackboard to the slides in a very short time, without being able to assimilate properly their advantages and disadvantages. We asked the students which is the best method for them and the answer was: in a class of theory they prefer slightly the blackboard (44%) to the slides (38%) or to a mixture of them (18%), but in a exercise class they prefer without a doubt the blackboard (88%) to the slides (4%) or to a mixture of them (8%).

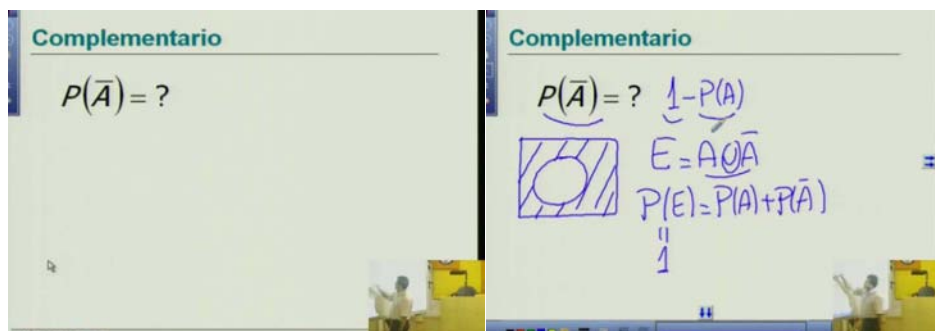
The usual slides that we will call maximalist slides are the ones that have all the information. They are perfect for studying after class but they are not designed to be used in class, because they bring a very passive attitude for the student. Even if the lecturer does an explanation on the blackboard, the student disconnects because he/she thinks that whatever is not in the slide is not important.

The slides that we propose are minimalist slides. A minimalist slide is an incomplete slide and sometimes an empty slide. They are not self-explanatory. They force the lecturer and the student to work with them, thinking and filling (in that order) them.

After using minimalist slides in theory lectures, the percentages of preferences change completely: now they prefer minimalist slides (80%) to blackboard (1%) and to maximalist slides (19%).

The mini-videos are constructed with the help of minimalist slides. Some examples of minimalist slides can be seen in Figure 4 and 5. In Figure 4 it is shown an empty minimalist slide and filled it with the help of the electronic blackboard.

Figure 4: one example of minimalist slide



In Figure 5 another example of minimalist slide is shown, it illustrates, in an intuitive way, the Central Limit Theorem (the picture was taken by the coordinator of the mini-videos project in the exhibition “Experiencing Mathematics” in Madrid (2006). This slide is used to illustrate a simple process that give rise to the “bell curve”: balls are dropped from the top and pass through a series of pins until they hit the bottom.

A key point in the recording is the way of speaking and acting, see for example [7].

Figure 6: another example of a minimalist slide



2.3 How to use them?

We suggest that mini-videos should be used for the first time together with a printed copy of the pdf file of the minimalist slides. Using these slides the student can follow the explanation of the mini-videos filling them. For this method to be successful, the lecturer has to encourage the student to see the mini-videos. This can be a difficult task at the beginning, because there are certain things that can not be said (even can not be thought). Some pieces of advice for the lecturer are:

- Do not say: "because I do not have enough time to explain this topic, you have to see it by the mini-video".
- Do not say: "As we have mini-videos the classes of theory are suppressed because they are not necessary".
- Do not explain topics not included directly in the subject, and then rushing in the main topics saying that the information is on the mini-videos.
- Do not mention the word mini-video all the time.

3 RESULTS

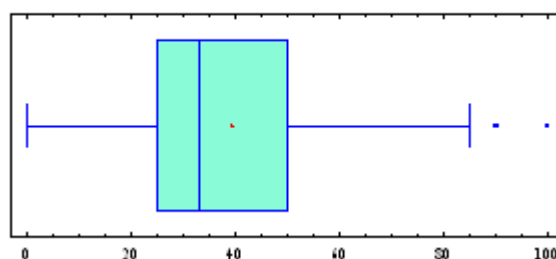
We have conducted a survey, asking the students about the mini-videos. There were two main questions:

- Do you think that the mini-videos are useful?
- What percentage of theory are you willing to study by yourself with the help of the mini-videos at home, in order to gain time for doing exercises in class?

The answer to the first question was 98% and the answer to the second question had a mean of 40% and a median of 32% as can be seen in Figure 7 with the help of a Box-Plot.

Figure 7: Graphical results

Box-and-Whisker Plot



The remarks of the students have been:

- "It gives you the possibility of seeing the lecture more than once, so you can fix the concepts".
- "They are enjoyable (because they are mini). It helps the understanding, Great idea".
- "It seems to me one of the solutions to Bologna, better than rushing in the class of theory and leaving the exercises to be done at home".
- "The length is good, longer will be excessive and shorter will not be useful".
- "Great ... you can revise the theory, and I do not think that they will substitute to the attendance of the classes, because the classes are enjoyable".
- "It looks to me a good idea, especially if it is not possible for you to come, so you can catch up at home...".
- "The mini-videos can generate absenteeism, but they are a good option for people who are not able to come to class".
- "The mini-videos are a very good tool, which should be extended to the rest of subjects".
- "The best innovation I have ever seen".
- "I am very grateful for the effort done by the people involved in this".
- "They facilitate to follow the subset at your own rhythm and when you want".
- "The colleagues that are lagging behind can straighten up".

The remarks of the lecturers have been:

- "Good idea and good work".
- "I have been delighted. Great idea and very intuitive".
- "Congratulations for the work done!! They are very didactical".
- "I will vote for you for the award Goya!! And for the Oscar too!!".
- "Thanks to the group. Very interesting"

4 CONCLUSIONS

We think that mini-videos are very helpful in the "learning to learn" approach. Due to the success of this project in terms of visits to the web-page of the mini-videos, shown in Figure 8 where it can be seen the location of the more than 10000 visits to the web-page with 16 countries on it and more than 35 cities in Spain, we hope to extend the project to other countries using a future English version.

Figure 8: 10000 visits in 16 countries



References

- [1] Romero, R.; Ferrer, A.; Capilla, C.; Zunica, L.; Balasch, S.; Serra, V.; Alcover, R. Teaching statistics to engineers: an innovative pedagogical experience. *Journal of Statistics Education* 3 (1) (on-line) **1995**.
- [2] Behar, R.; Grima, P. La Estadística en la Educación Superior. ¿Formamos pensamiento estadístico? *Ingeniería y competitividad* **2004**, 5 (2), 84-90.
- [3] Batanero, C. Didáctica de la Estadística. *Grupo de investigación en educación matemática*. Granada, **2001**.
- [4] Juárez, E. Curso: aprendizaje basado en problemas ABP. Plan de formación del profesorado 06/07. UC3M. Brain Trust Consulting Services, **2006**.
- [5] Letón, E. *Análisis de Supervivencia*. Vídeo en la plataforma de TeleUNED en <http://teleuned.uned.es>. Teleactos 2-Jun-2006 (67 minutos), **2006**.
- [6] Letón, E.; Durbán, M.; Cascos, I.; Torrente, A. Vídeos docentes como estímulo a la evaluación continua. *Mathematical e-learning*. Universitat Oberta Catalunya, **2007**.
- [7] Tamariz, J. *Los cinco puntos mágicos*. Producciones mágicas Tamariz, Madrid, **2005**.