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Structure And Performance Assessment In Traditional Face-To-Face And Blended Learning Statistics Courses

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Abstract

In recent years the number of higher education institutions offering blended learning courses has increased notably. Blended learning is understood as the combination of traditional face-to-face teaching with online and distance learning. During the 2012-13 academic year, for the first time, the Information and Documentation degree course at the University of Barcelona included a blended learning format in its course in statistics. The blended learning course combined biweekly face-to-face classes and online work between sessions. This study describes the organization of the blended course in comparison with the traditional face-to-face course and presents preliminary data on student assessment, the use of educational resources, and the academic results obtained in the two enrolled groups. A questionnaire was administered to the students attending the face-to-face mode, and semi-structured interviews were conducted with students enrolled on the blended course. The use of teaching resources was assessed on the basis of students' participation in the virtual campus. The results highlight the challenges and opportunities presented by the two approaches; they show that a blended format allows flexible use of time and resources and enhances the teaching and learning process. The data also emphasize the importance of the figure of the teacher in both face-to-face and blended modes.

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Introduction

Inevitably, teaching and learning in higher education have been transformed by the arrival of new computer-based technologies (Newman, Couturier & Scurry, 2004) and by the opportunities they provide for addressing the needs of society in the twenty-first century. Blended learning emerged in the late 1990s as a term to refer a new approach in education that mixes traditional face-to-face instruction with online learning (Garrison & Vaughan, 2008). Since then, the universities that have incorporated blended learning into their courses have expanded enormously (Arabasz

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& Baker, 2003).

During the academic year 2012-2013, a blended learning course in Statistics was offered for the first time as part of the degree in Information and Documentation at the University of Barcelona. The aim of the present study is to describe the organisation of the blended as well as of the traditional face-to-face courses and to present preliminary data regarding student opinions, the use of educational resources, as well as the academic results obtained by the respective groups.

Method

Blended mode

Four students followed the blended course.

Structure of teaching: Students received a fortnightly, face-to-face session of an hour and a half duration in the semester that ran from September to December.

For each teaching unit, students were provided with a study guide outlining the organization of the course and including required and supplementary reading activities to be performed in the intervening two-week period. Every two to three days, the lecturer sent a practical problem to the virtual forum that students were expected to resolve and submit via the virtual campus within a period of two to three days. The face-to-face lectures focused primarily on resolving questions concerning the content of the subject and providing explanations about key elements in each unit. In both environments (face-to-face and virtual), students had access to various resources related to the specific elements of each teaching unit.

Learning assessment: The students sat two practical tests: the first in the middle of the semester and the second at the end of the semester (both accounting for 55% of the course grade). The delivery of three problems solving practical questions (22.5%), participation in the forum to resolve problems (10%) and an individual assignment (12.5%) completed the evaluation system.

During the last month of the semester, semi-structured interviews were conducted with students enrolled on the blended course in order to determine their level of satisfaction with the organization of the course, their opinion of the workload and of the course in general.

Face-to-face mode

Sixty-one students followed the face-to-face course.

Structure of teaching: Students received lectures twice a week in sessions lasting an hour and a half, in the semester that ran from September to December. The lectures were divided between theoretical and practical sessions (52.27%), practical problems (37.5%) and computer sessions (10.23%). In the virtual campus, the students were provided with access to a wide range of educational materials (slides, videos, problems and solutions and recommended websites of interest).

Learning assessment: Students took three practical tests at different points during the semester (accounting for 60% of the final course grade). Additionally, they were required to submit three problem activities (22.5%), participate in the development of a glossary of terms based on the keywords of the subject (5%) and conduct a group assignment (12.5%).

At the end of the semester a questionnaire was administered in order to assess their opinion of the workload that each of the elements of assessment represented and of the benefits of attending classes.

We analysed the log files of students on both study modes in order to assess the items that had been used most by the two groups.

Results

Blended mode

Three of the four students enrolled attended all the sessions and completed all the assessment activities satisfactorily (Average: Grade B). Their log files showed that the forum, followed by the consultation of slides and the required readings were the most frequently used resources in the virtual campus (Figure 1).

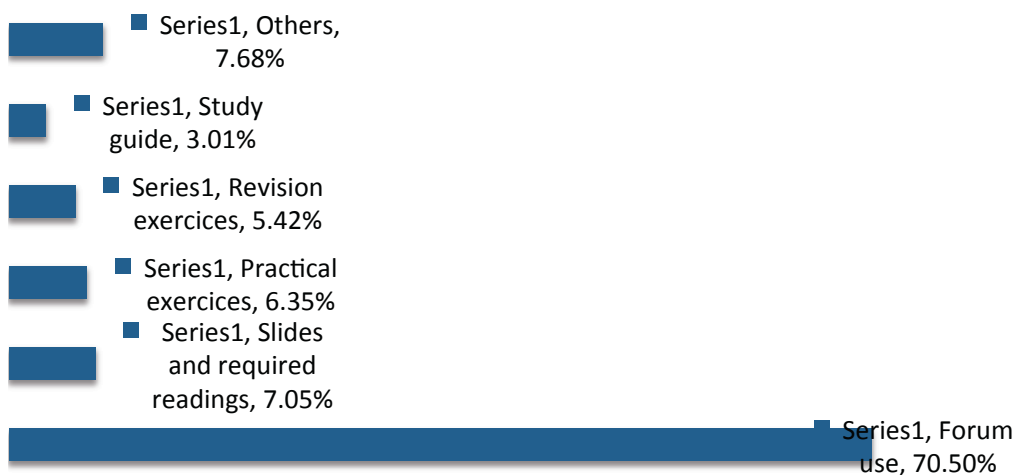


Figure 1. Use of teaching materials in the blended mode

The data obtained from the interviews suggest a high degree of satisfaction with the course. While perceived as a challenging subject, the organization of the course and the feedback provided allowed the students to monitor their progress:

" ... I started off quite apprehensively, wanting to do the course but a little scared [...] The practical sessions are going well, the exam too ... because my background is in the arts you know [...] ... Well, now I more or less understand what a correlation is, what a variable is ... And without having to take private lessons or anything like that."

As for the workload, the students acknowledged that it was heavy; nevertheless, they believe that it would be useful to increase the number of practical sessions so as to reinforce certain points taught on the course:

"Yes, but in the same way as the exercises are a way of studying, the practical sessions are also a tool for studying, which will also help us get through the exam."

Finally, students greatly appreciated attending the face-to-face class each fortnight. This seemed to serve as a milestone around which they could organize their own, independent work:

"No, no, because on that day you also see what is important. On that day, you know that what they tell you is really important. That also helps a lot."

Face-to-face mode

The questionnaire was completed by 77.05% of the students. The average grade obtained by the group members was 7.03 (SD = 1.28). Of the students 34% claimed to have attended more than 50% of the lectures. The consultation of slides and the required readings in the virtual campus, followed by the practical exercises and participating in the glossary were the most frequently used resources in the campus virtual (Figure 2).

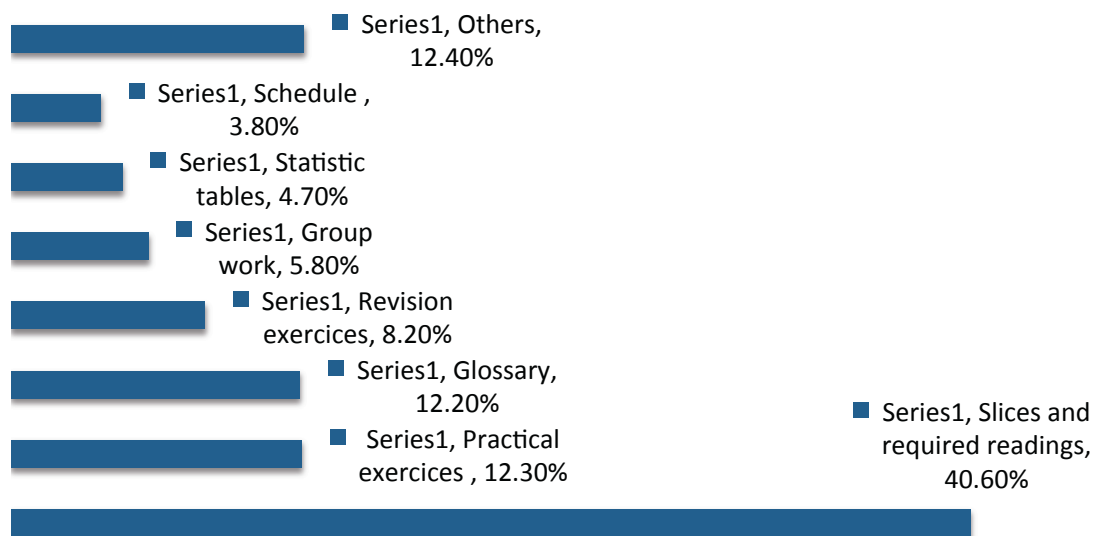


Figure 2. Use of teaching materials in the face-to-face mode

The data show that the students considered the course workload as being moderately heavy (on a scale of 1 to 10 points: mean = 6.80, SD = 1.89). They believed that attendance facilitated their assimilation of course contents (mean = 8.45, SD = 2.14), allowed them to plan their study of the course better (mean = 7.79, SD = 2.61), enabled them to be aware of their level of understanding of course contents (mean = 7.96, SD = 2.17) and facilitated the exchange of experiences with their peers (mean = 8.00, SD = 1.96).

Conclusions

- The blended mode, although involving only a small number of students, was assessed favourably, while students assimilated the course contents satisfactorily. The importance attached by students to the face-to-face sessions as well as to the use of resources in which they can interact with the lecturer and other students is worth stressing. Students considered the workload to be heavy, but recognised that it was necessary in order to make effective progress in the course.
- Students enrolled on the face-to-face course consider attending class to be very important; yet, our data show that the number of students attending the face-to-face sessions was very low.
- The results highlight the importance of the figure of the lecturer both in the face-to-face and blended learning modes.

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