

Mini-grant Results Report

- **Professor:** Paolo Saona Hoffmann, SLU Madrid Campus
- **Project title:** Application of a writable tablet to enhance teaching, learning, and student engagement.
- **Brief project description:** This innovative technique involved teaching through a tablet, allowing the professor to wirelessly project the tablet screen onto the whiteboard. This pedagogical technology allows for easy movement between programs, from projecting slides to solving problems on the writable screen of the tablet, taking notes on the slides, using other applications (e.g. financial calculator simulator) dynamically, and much more. All notes taken can be uploaded and shared with students through Blackboard site. Additionally, students can participate more actively without needing to move to the front of the class but rather using the professor's, or their own, tablet.
- **Main Results:**
 - a. **Student performance**

In order to assess the students' performance in this experiment, the mid-term test, final exam as well as the final grade in the FIN301 course were compared with the grades recorded in the previous semesters (e.g. Spring 13, SS I 13, Fall 12, Spring 12, SS I 12, Fall 11, and Spring 11). The contents covered and the evaluations used in the previous semesters were similar to those used in Fall 13 when the mini-grant took place. This fact minimizes the biases in the findings.

The average grade observed in the mid-term test in FIN301 during Fall semester 2013 was slightly higher in six out of the seven previous editions of the course. Particularly, the final exam grade and the final grades in the course recorded for Fall 2013 semester were also slightly higher than in previous semesters. Consequently, although the improvement in the students' performance was not substantial, it might be concluded that the application of the writable tablet in the classroom impacts positively the students learning outcomes.

b. Teaching tool

In addition to the comparison of the performance of the students in terms of their average grades, a survey concerning the use of the tablet as a teaching/pedagogical tool was conducted in class. The survey had a response rate of 39%. The findings indicated that for more than 90% of the students it was the first time they attended a class in which the tablet was used as a teaching/pedagogical tool.

Moreover, 45% of the students perceived a difference in their learning using the tablet in class, whilst only 27% of them perceived no difference in their learning process using the table in class instead of the traditional blackboard.

Nevertheless, there were some issues using this technology in class, for instance, it was hard for some students to see properly the slides projected on the TV in class. Concerning this point, it is worth mentioning that the course was taught in a brand new classroom with no projector but TV instead. The TV was not big enough for such size of the classroom. The class was full and the TV was located in a corner of the classroom. Consequently, some students were not able to see properly the contents of the presentations because they sat in the opposite corner of the classroom, far enough as not been able to see clearly the TV. The instructor has planned to book other classrooms with better layouts for future editions of the FIN301 course.

Concerning the app of a financial calculator used by the instructor, most of them thanked this pedagogical tool aimed to learn the procedures in the calculations of practice problems.

c. Major challenges

The major challenge teaching FIN301 with this new pedagogical strategy was the learning by doing process. The instructor just knew theoretically how the tablet worked in class but he never tried it before. It takes a while to get used to the apps, the timing to cover the material, the writing on the tablet, its dynamicity, etc.

Another challenge or difficulty was the classroom itself. Although, as it was mentioned above, the classroom was in a brand new building (San Ignacio Hall, inaugurated in the beginning of the semester) which accounted with a PC for the instructor, internet connection, and TV, but it did not have projector. Therefore, the instructor had to use the TV as a projector and the location of the TV was not appropriate because it was in a corner of the class and only those students sat in front of the TV were able to see all the material better than the other students sat in the other side of the classroom. For that reason, students often asked trivial questions basically because they could not see clearly what was projected on the TV.

d. Overall assessment

The major teaching contributions were: i) it allowed for more dynamic and engaging interaction, as the teacher could move freely about the classroom, teaching from any given point, using the tablet to comment, write notes, move between applications, and involve students in activities such as problem solving; ii) it saved time as all class activity (such as notes written on slides or problems solved) were saved and uploaded to the Blackboard, and were thus accessible for further study.

The learning and technology contributions were also important: i) the use of the tablet increased possibilities for the students' learning by doing; they could see in real time how to use and then try for themselves programs such as the financial calculator simulator used in class; ii) students felt less intimidated since they did not need to go to the front of the class to solve problems on the whiteboard, but could do so by using the tablet from their seats.

The most important lesson learned is to use the tablet in a proper classroom with a projector located right in front of the class; otherwise it might be not beneficial for some students.