DEVELOPMENT OF ONLINE MATERIAL FOR VIRTUAL TEACHING/LEARNING OF A COURSE ON FUNCTIONAL DATA ANALYSIS WITH MOODLE

Ana M. Aguilera, M. Carmen Aguilera-Morillo, Francisco A. Ocaña and Mariano J. Valderrama
Department of Statistics and O.R. University of Granada, SPAIN
aaguiler@ugr.es

Currently, most universities offer a wide range of online courses which are taught on the web through a virtual learning environment such as Moodle. The goal of virtual teaching is to provide access to those people who would not be able to attend a physical campus, for reasons such as distance and flexibility. In virtual education, the protagonist of the teaching/learning process is not the instructor but the student who takes responsibility for his own learning through a proactive and participatory attitude under the guidance of the teacher-tutor. To be successful students need to be highly motivated and be able to learn on their own without much direction. This is achieved by replacing the face to face classroom activities with materials suited to the objectives and skills that students must reach in connection with the course. Thus, online higher education can operate according to the same academic standards as traditional education and can provide degrees that will be recognized around the world. In this paper we present the online material developed for a course on *Functional Data Analysis* in the virtual *Master in Applied Statistics* at the University of Granada in Spain.

The orientation of this course is very practical and its development is intended to enable the student is capable of performing the statistical analysis of a real functional data set. The teaching is developed on the platform Moodle offered by the virtual learning center at the University of Granada. The teaching methodology we use is based on *learning by discovery* whose basic principle is *the teacher should not do what students can do by themselves*. To achieve it the students have in the Moodle platform the following materials and resources for each topic:

- Didactic guide with the syllabus and all the information related to the course.
- Notes of the theoretical contents in both PDF and HTML format (SCORM).
- Examples of real data applications carried out by using appropriate statistical software.
- Self-learning tutorials: guides for independent work with a series of activities (readings, short questions, application exercises, web search,...) that students will do based on the resources provided by the teacher to learn for themselves.
- FORUM and CHAT where the students must discuss their responses and questions related to the activities proposed in the self-learning tutorials.
- Self-assessment quizzes and evaluation activities.
- Other learning resources as reading material, real data sets, and links to outside resources.
- A notice board for up-to-date course information
- E-mail that allows personalized communication between teacher and students.

REFERENCES

Camacho-Pérez, S (2009). Guía didáctica "Planificación de la docencia universitaria por competencias y elaboración de guías didácticas". Vicerrectorado para la garantía de la calidad, Universidad de Granada.

J.O. Ramsay and B.W. Silverman (2002). Applied Functional Data Analysis. Springer.

J.O. Ramsay and B.W. Silverman (2005). Functional Data Analysis, Second Edition. Springer.

Rice, W. H. (2006). Moodle E-Learning Course Development. PACKT, Publishing.

In C. Reading (Ed.), *Data and context in statistics education: Towards an evidence-based society. Proceedings of the Eighth International Conference on Teaching Statistics (ICOTS8, July, 2010), Ljubljana, Slovenia.* Voorburg, The Netherlands: International Statistical Institute. www.stat.auckland.ac.nz/~iase/publications.php [© 2010 ISI/IASE]