



Geographical Information Systems in Higher Education Studies in Spain. Challenges for a new generation of students after the Bologna Agreement

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In recent decades, the use of Geographic Information Systems (GIS) by public and private institutions is increasing. In Spain, the use of this technology started in the 1980s, mainly by public administration, with universities playing a relevant role. As a consequence, private corporations, which traditionally used Computer Aided Design (CAD), necessarily adopted these new tools.

GIS teaching in the Higher Education study plans of various disciplines has become consolidated. University degrees in Geography, the first science using spatial information technologies, have been powered, and curricula reflect the importance of GIS to obtain a degree. In fact, 60 per cent of the subjects involving SIG are included in the Geography Curriculum. On the other hand, Engineering, Geodesy and Photogrammetric study disciplines have less than 10 percent. However, most users and technicians are self-taught or have been formed after the university. Some voices are claiming for the development and implementation of new study plans devoted to develop a professional group of GIS specialist, out of Geography plans. In the context of the EHEA, a student-oriented approach that implies new models of teaching and learning, students are trained to develop independently, but the historical concept of University as an independent, critical and available by to everybody institution is sacrificed by the Bologna agreement.

From the literature review and surveys based on interviews to students, experts, professional GIS employees and teachers of GIS at the Universities, it can be concluded that despite the progress made after the emancipation of Geography as a university degree course independent since 1993 in Spain, advances are not significant, and training of students to fill gap areas must be stressed. The only way to get this is by increasing the teaching hours for GIS in Geography Degrees, enabling them to acquire a solid knowledge that will succeed in labour demand, as well as in an increasing in material resources (equipment, software, library resources, etc) favouring the implementation the Geography as a science and the GIS as a tool.