

"ONGOING PROBLEMS IN THE TEACHING OF GIS."

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The systems of geographical information are powerful tools to analyse that information which refers to the land. Therefore, several professionals, who currently handle this kind of information, are willing to learn how to use some of the mentioned system so as to apply it on its own working field. On the other hand, the Public Administration with its territorial competences (Catastro, Urbanism, Land Planning, Environment, etc..) pushes the use of this type of programmes, considering that they can provide a set of improvings for the managing they usually develop.

All these factors have promoted a demanding of "teaching" about GIS and a great part of this trend has addressed to Universities. The Laboratory of Experimental Cartography and Territorial Information Systems (LECTIS) of the UPV in collaboration with the Basque Institute for the Public Administration, has been organizing "The Graduation on GIS" for three years (post- graduation course) and this has allowed us to find out the main problems we are facing now (finantial, administrative, studies planning, economical...etc), and this has been done according to management and students.

The method which has been developed to determine the main problems.

The organization of a course on GIS sets up a lot of questions and problems of different kinds. Among all, there are some specifically important to achieve success in developing them. Therefore, the main aspect to outline, as a basis for study is just to find those main factors. Nevertheless, this is not an easy and clear task. We expose now the methodology we apply for the course whis has been organized in our lab.

Firstly, we have considered that a course on GIS can be focused on a given professional category (engineers, geologists, geographers, ..etc) or, on the contrary, it may have a general approach. This point leds us to a first level of considerations related to the contents of the subjects to be taught.

Secondly, we have considered the final level the participants should achieve in that course, no matter how they start off. This may condition, as we will see, such aspects as: the type of computers, programmes to be used, the amount of theoretical and practical contents, and the setting of practical classes to be made.

As a third question, it has been valued the possibilities of students participation to whom the course is addressed. It consists of seeing the whole hours which may compound the course and the calendar trough which the hours will be used for classes.

The fourth problem refers to evaluate the level of possibilities which are offered by the academic centre (where the classes will take place, that in our case, is the Exp. Cartography Lab). On the other hand, we will study the level of the teachers involved . All this is situated in technical & economical contexts.

Finally, we check the student's opinion, in order to know as a final conclusion for future courses, the results obtained thorough the former planning.

The Orientation or the focus approach of the course

A postgraduate course raises from the needs of a particular group when a new working device appears. Moreover, it can be originated from a social demand more or less generalized facing the appearance of a new working tool too.

When we refer to GIS both circumstances meet, which can make the approach to be thoroughly differentiated. The questions to be made are:

- * Who uses a GIS?
- * What is it used for?
- * What kind of training they possess?

All those questions must go in accordance with other whose contents is more economical. How many participants are willing to attend this course? Is there a marketing study made?, etc...

Generally speaking, it can be assumed that those courses which are most specialized have a minor demand and they can result of interest to a great number of professionals.

According to the main course orientation, a number of problems arise and so they must be studied through what it will be exposed next.

The Level we expect to achieve

This level is attached to the orientation of the course. If the level must be very high , all the subjects to be studied will be very wide and the required equipment for it, most expensive. If the course has been focused on a wide way , the nature of the students will be very heterogeneous (technicians, computer assistants or professionals, humanists..),and they will have several levels of training with respect to all subjects related to GIS.

The solution to all this goes through the inclusion of optional subjects, to be able to equal all the different levels and so as to achieve the minimum established goals. It is obvious that this influences the economical cost of the course in a direct way.

Other conditionning element to acquire the level is the high cost of the computers acquisition and programmes. As a solution, our lab. sets up some kind of collaboration sponsorings and carry out professional assignments with the involvement of the students. This, lower, in some way, all the investments we develop.

Some government institutions as the "Basque institute for the Public Administration", participate for those grants. Finally, another problem to outline is the high cost devoted to practical classes, specially if we wish that the ratio students/ machines do not go further than 2.

The student's possibilities

In our case, as it is in other courses of GIS, half of the students work for the public administration or for private companies, which are in relation with the subject, this leds us to the limmited attendance in the classroom. That is to say, that the course must contain a precise number of hours but it can not loose more than a minimum of these hours. Our solution for it was solved by organizing the classes in the afternoons and evenings and limiting the course to a maximum of 250 HS.

The Possibilities of the College

The acquisition of all we have already exposed, sets new points to deal with ; of the type: is there a number of good qualified teachers in the scene where the course is organized? do they dispose of material and economical means in order to develop it normally?, how many students can be enrolled for?

As usual, the answer to this, passes through the solution of financial aid for the course. The inexistence of teachers enough qualified in the setting of the course, is mainly an economical problem, as any other teacher can be taken from any other place. The material to be used will be as actual as the economical resources permit it to be.

Continuing Evaluation

The students' opinion must be measured on the "thermometre" of which is going on along the development of the course. Taking into account that we are dealing with a post-graduation course, (which means that all who apply for it have some university training or degree), so the students can be providing, through the making of questionnaires, some ideas or opinions that can solve immediately, likely mistakes or errors, and so that the efficiency of the course can be evaluated and at the same time this can serve as a good criticism to improve the course on the whole in the years to come.

Final Conclusions

The organization and development of a course on GIS, as we have exposed, originates a number of problems from the precise moment that it is decided to whom is the course addressed to. The success of the course on GIS, according to our experience of other courses already organized, goes through the following steps:

- To fix up some realistic & achievable objectives
- To include some "optional" contents which allow to level the knowledge grading of the students entering the course.
- To obtain the sufficient economical aid without focusing the contents on one GIS only.
- To encourage and analyse continually the students' opinions.
- To have specialized teachers owing a high level of actualization in GIS subjects.