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## **Integration of GIS Projects with Curricular Projects, Their Use in Geographical Studies**

### **Abstract**

**G**IS projects are very in use recently. All effectiveness of them is how it is learned, used and implemented. Of course through them can be done well planning, different designing and can be goaled good results. GIS projects are used as curricular projects and of course as a good method of learning about GIS technology. Curricular projects aim to provide solutions to situations where students must be committed extensively including the knowledge gained in their education. These projects are really original. GIS projects are part of the curriculum projects except the used information is intended to be geographically referred. These projects enhance the ability of information management. GIS projects are part of the university curriculum at the University of Tirana in the Department of Geography. This is presented as a case study at this Department.

*The paper aims to focus the importance of using GIS projects in geographic studies during university academic years and beyond, as a method to elaborate new knowledge and to practice them. Projects are more interdisciplinary and all-inclusive subjects enabling the examination of a wide variety of geographical problems. The period of time and the role of the lecturer are essential during GIS project application. The lecturer occupies a special place not only in its technical supervisor but methodologically as well. Depending on the topic chosen by the student may be included more than one professor in order to use properly the gathering of information and its correct processing by issuing a geo-referencing product (mostly) map.*

*GIS projects remain the main trends in the realization of an original research paper where information technology is extensively involved and where geography students find themselves best.*

**Keywords:** GIS Project; Curriculum Project; Geographical Studies; Geo-Referencing Product-map.

## 1-Introduction

We live in hectic times and this puts educational system in front of challenges which must be carefully faced in order to bring out the individual's best potentials. New scientific knowledge along with technologic evolution has grown individual's requests towards educational system. The everywhere found ICT returned strongly these last ten years has rendered the pupil and student's sources of information easier and larger, growing information and reasonableness offered in schools. Curricula projects for students are part of their deepening into the subjects and beyond. The GIS projects are also part of the curricula projects and those beyond subjects. Their special feature is the wider use of ICT and computer software related to geographic information that will be both processed and studied. Let us have a wider glimpse on the general area and let us stop especially on students that study geography fields.

## 2- Interrelation of Curricular and GIS Projects

GIS projects are a special form of curricular projects. Basic curriculums expect pupils to gain basic and technologic knowledge from subjects, to become efficient and to create their own views for different problems they aim to treat while they put into practice such projects, whereas projects beyond subjects and GIS projects expect these elements to be concrete and improved, shaping new individuals with geographical referred knowledge. Pupils and students take initial knowledge when they treat problems in curricula found in schools, colleges, universities. Later on from them it is required to deepen their knowledge through different projects both curricular and GIS project, and to improve their abilities or hold their own views.

Among skills expected to be improved during practicing with such projects are: communication skills, practicing skills in technology and put in use the information acquired, managing information skills, skills in solving difficult issues, in being critic and creative, in being ethical, in team work, and so forth. Through ICT it is required from teachers and professors that pupils and students gather more electronic information, to process, save, analyze it, and solve problems with the help of electronic devices and software (as the case of GIS through Arc INFO software, and so forth.) Through ICT could be possible the work done with the help of digital devices and so forth. In 2010, IZHA, MASH cited that: "An indication of forming their own views and attitudes in young people is when they discuss, esteem and debate over various issues and problems». (IZHA, MASH, p.103)

By means of these projects, young ones are required to bring an original work by their own that passes the stage of organizing the curricular information or from any other source. In this moment the skills in managing information are clearly seen. The curricular project for discussion of new knowledge is to be found by teachers and lecturers. This could happen in high schools where during the three years each pupil is involved in such projects around 18 classes. Moreover, the curricular projects can be part of managing the gained knowledge. Thus, pupils and students take part directly in curricular and beyond curricular projects. The same can be true as to GIS projects. What about the time these projects will take? Curricular projects can be developed from schools' head offices and two of them

can be found in subject plans of the teachers. They take from several days, weeks, months and, in most cases, a full academic year. Currently GIS projects are developed as projects during college curriculums in some universities dealing with Earth and Informatics sciences. They are part of the literal subject curriculums, of the course assignments, of the diploma themes that must be covered by students by the end of Bachelor university system, part of the micro theses of Scientific Master systems, or even part of themes covered by those who want to master a doctorate in Geography Department in the University of Tirana (in our case study). We have taken seriously its study in this department because GIS projects, as highlighted above, are already available also in departments of other Universities.

That is why in academic teaching plan of the study program «Bachelor-Geography» is included a subject entitled «Project in GIS», where students widen up and create their own project, which often is the basis of their themes in diplomas and other course assignments. This subject is developed as curricular project to acquire knowledge, so the students are more efficient technically at the same, through projects and in solving certain problems. Good knowledge about GIS is acquired also in subjects such as: SIG Basics, Elements of Maps, Thematic Maps, in Bachelor in full-time and part-time systems, and the subject Geographic Information Systems-Geographic Analysis, in the system of Scientific Master (see Tab.1). Generally these are individual projects and their evaluation is accompanied with scores of a course assignment, becoming part of a final report which in turn plays a fundamental role in evaluating the student for his work. Thus, evaluation in GIS projects differs from curricular subject projects where evaluation of pupils in pre-college education is realized assessing each one individually with one grade, according to the guide book on grades and assessment (IZHA, 2010), (assessment as part of group assessment in 80% and 20% as part of individual assessment, in project assessment) (IZHA, 2010, p.123). GIS projects are considered successful nowadays in students that study Geography. Their application is becoming more and more practical because so many problems need solution and the information is based geographically on real geo-references.

### **3-GIS Projects as a Methodology and Efficient Technology in During University Years**

Through GIS projects, the students are trained with knowledge and technological mastery. GIS technology is exactly what is taught better by applying it. So in specific disciplines, GIS theory is combined with students' own applications. Independent work and also with projects, make it possible that students exercise and find solutions to various situations associated with a geo-referring system. A good lecturer would ask his students to develop a project independently. A GIS is a database, which allows students to work on data presented in the map. To work with a GIS, students need Soft GIS (GIS laboratory exists in the Department of Geography, UT equipped with hardware), data, and trainers (lecturers in our case).

Maribeth Price, states that since 1969, where Laura and Jack Dangermond, created ESRI-in (Environment Systems Research Institute), as the first in geospatial connotation of different characteristics in the tables, the 'industry' of Arc / Info-s has

never stopped developing and already accounts about 90% of nowadays GIS market. So the importance of GIS applications today in the field of technology is increased (Price, 2010, p 3). In geographical studies, it is an inherent part of geospatial study of phenomenon and occurrences as a part of regional, physical, and human geography. In the 5 handling issues of geography (position, location, human-environment interaction, movement, region) the role of spatial positioning is always present and important. The nowadays integration of GIS projects to geographical science is becoming stronger, becoming one of the main sources in decision-making, planning and solving environmental problems, or those with human nature and region. GIS projects can be small when they include a student, or medium and large when the treated issue involves more participants and a company. GIS curricular projects, are considered small in university programs, including a student or a small group of students who work with possible problems that they are able to respond within the managing possibilities of a project.

### ***a- Creating and Managing a GIS Project?***

Models of GIS projects are numerous, but generally have some common steps:

1) Determining the scope of the project and its objectives, for an issue that should be studied.

2) The methodology that should be used (defined collection of data and the need for different extensions). Here a specific question is made and must be responded or what product (map) we want to produce.

3) Evaluation of the data and other data needs potential sources of their collection and their integration.

4) Evaluate of the accuracy of the analysis and the accuracy of the project. It is always necessary to assess the validity of the results.

5) Presentation: This phase includes providing the results of the research to an interested audience. It may be in the form of a report, a map in the format of a poster, in the form of an article in a magazine etc.

A well organized project would help and avoid unnecessary and excessive hours of a research. To realize the above stages, it is often needed to develop a proposal project, especially when the community must include a budget. General schemes include: Introduction, objectives, methodology, data sources, and work plan, budget.

### ***b- Case Studies of Geography's Students in different Study Programs***

The first case study: Maps created in Master of Science Program. It is created the natural heritage map of the Municipality of Liqenas. This map has applicative values and it is more than an evidentiary map with a special theme: the evidence of the natural heritage objects in a certain area (municipalities of Liqenas) (Micro thesis: Muslli, 2012, p.15) (see Fig. 1).

The second case study: There are two maps of Lezha's municipality about land use in 1980 and 2010. In these maps, the skills of technological use are being increased, going to a comparative phase of the selected issue. Here are presented two maps of the same area in different time periods comparing the use of land in Lezha's municipality (Micro thesis: Gjecaj, 2012, p 31) (see Fig. 2 and Fig. 3).

The third case study is the creation of a thematic ethnographic map, where popular outfits are identified in the geospatial scope in the district of Durres (Micro thesis: Lila, 2012, p. 53) (see Fig. 4).

The last case study is: a map created in the third program study in doctoral school. The map is intended to provide a solution to a problem using Arc Info technology. Manipulating and using geographic analysis, answer is given to the question being reflected in the map 5 (see Fig. 5).

#### **4- Conclusions**

Technological developments have created the need to expand their applications in various forms even in the form of tangible projects in order to equip young people with the knowledge, skills and attitudes. Curricular project in its forms is an efficient pedagogical technique applied in our schools and universities. GIS technology through GIS projects is seen as a positive methodical form in providing new knowledge in terms of its technology as well as its use in solving issues related to Earth Sciences, as the information that is provided as a geo-referencing product-map. In the Department of Geography, Faculty of History and Philology, University of Tirana, there is a GIS laboratory, and the responsible lecturers, make possible the teaching of this technology. To fulfill this mission, in the university curriculum of the department, is made possible the establishment of specific subjects related to this technology. Now the students are able to realize the applications of GIS projects in all stages of research, starting in the tasks of the course, in the topics of Bachelor system diploma, Masters and Doctoral School Scientific Programs. Despite the potential difficulties, GIS projects have been successful, especially for students with inclination towards computer science.

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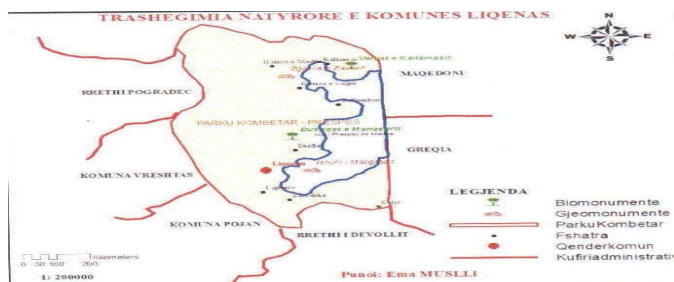
**TABLES**

**Table 1:** GIS in university curriculum in Department of Geography, UT, (full-time system)

| Nr. | Subject   | Credit | Total | Lesson | Sem. | Exercise | Practice | Duty course | Semester                       |
|-----|---|--------|-------|--------|------|----------|----------|-------------|--------------------------------|
| 1   | Elements of cartographies                             | 5      | 60    | 30     | -    | 30       | -        | 1           | Viti 1;<br>sem. 1;<br>Bachelor |
| 2   | Thematic cartography                                  | 4      | 45    | 30     | -    | 15       | -        | 1           | Viti 3;<br>sem. 2;<br>Bachelor |
| 3   | Bases of GIS  | 4      | 45    | 15     | -    | 30       | -        | 1           | Viti 3;<br>sem. 1;<br>Bachelor |
| 4   | Systems of geographic information-geographic analyzes | 4      | 48    | 12     | -    | -        | 36       | 1           | Viti 1;<br>sem. 2;<br>MSHK.    |
| 5   | Project in GIS  | 4      | 45    | -      | -    | 45       | -        | 1           | Viti 3;<br>sem. 2;<br>Bachelor |

**FIGURES:**

**Figure 1:**



**Figure 2:**

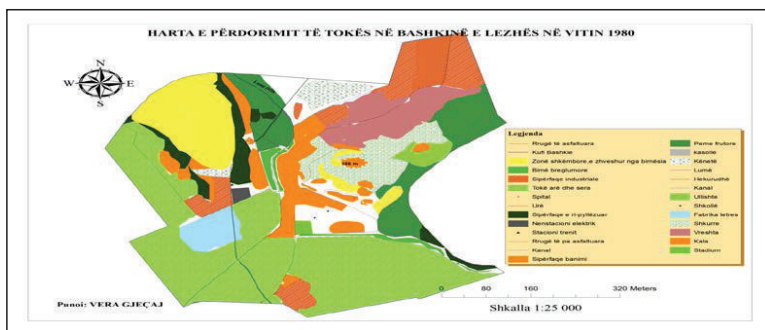


Figure 3:

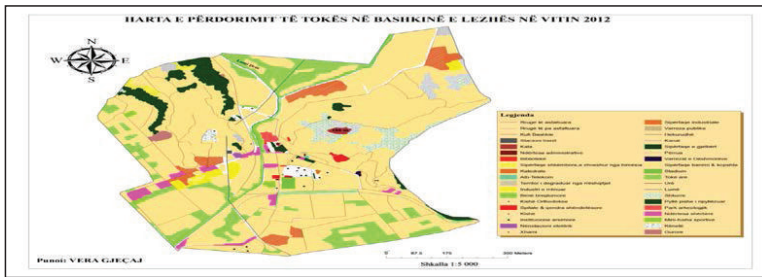


Figure 4:



Figure 5:

