Subject: Methods and aspects of using Information and Communication Technology in teaching and learning Geography

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Abstract

In the framework of the global development tendencies, taking into consideration the speed of scientific innovations in our days, as well as based upon the prospective of EU integration of Albania, it is demanded the consolidation of the new reality of the Albanian Education, in compliance with the EU Education curricula and key competences. One of the necessary ways that supports the approximation of the Albanian Education with the EU education developments and with EU education key competences is the priority of application and integration of Information and Communication Technology in teaching and learning. In these last years in the Albanian schools are made successful steps ahead to install and apply the technological infrastructure and the methods related to it in teaching and learning, as well as in training of human capacities. One of the school subjects in which use of ICT methods have been widely applied lately is Geography. In this subject there are huge possibilities and various aspects of using ITC in teaching and learning. Use of ICT methods in teaching and learning Geography include: searching and orientation related to geographical regions/countries; searching in internet for different geographical information; elaboration and presenting of materials by using electronic programs; finding, adoption, elaboration and use of different map images; building and presenting different graphics and tables; exchanging different materials and information among group members through e-mail-s; presenting different geographical phenomena and events through two or three dimensions graphical animation; using LCDS method in teaching and learning; etc. ICT in teaching and learning Geography can be used either in transmission of new knowledge, or in the elaboration of the learnt information. Through SWOT analysis there are treated the strengths, the weaknesses, the opportunities and the problems that may arise during the application of such interactive methods in teaching and learning Geography.

*Keywords***:** *Use of ICT in geography*, *interactive teaching and learning methods*, *aspects, electronic means and devices*.

Importance of using Information and Communication Technology in teaching and learning

The Globalization tendencies and the speed of technology developments in developed countries all over the world and especially in EU countries have defined as a necessity the formation of students skills to use Information and Communication Technology as a key competence of their school curricula. In almost all EU countries ICT (Information and Communication Technology) has become an integrated part of school curricula. It prevails as a method in teaching and learning process, as well as it is considered to be a very important means in fulfilling successfully the education process objectives. In some developed countries the massive use of ICT has brought as a result the application of new forms of distant learning and E-learning. Use of ICT is not only foreseen in the curricula demands, but also organizations like International Society for Technology in Education (ISTE) and UNESCO have prepared standards packages for teachers in using ICT.

In the framework of these developments, the prospective of EU integration of Albania demands the creation of a new teaching and learning reality in Albania in compliance with the curricula and the key competences of EU countries in the field of education. One of the important ways to lead the approximation process of the Albanian education towards the contemporary tendencies of development of EU countries in the field of education standards, besides other ways and

forms, is to put as a priority of the Albanian education the application and integration of ICT in teaching and learning.

Related to implementation of ICT in teaching and learning, during last years, in the Albanian schools are taken important actions to create the infrastructure needed to apply ICT in teaching and learning, as well as for the training of human resources to cope with the new developments.

Although the use of internet is expanded in the greatest part of the country, the application of technology and the integration of ICT in learning and teaching have become a reality in only a number of schools and in some of the school subjects. This reality exists mainly in Tirana and in the schools of the big urban centers of the country.

One of the subjects where ICT (Information and Communication Technology) is applied and has shown vast opportunities in application is *Geography*.

Importance of application of Information and Communication Technology in Geography

Currently, the demand to apply ICT in learning and teaching Geography comes as a result of the influence of various factors:

1. Obligation to meet with the standards of the school curricula;
2. Contemporary mission of Geography (as a school subject) to meet with the nowadays standards by realizing a comprehensive inclusion of all the students in an interactive and dynamic teaching and learning process;
3. Request, desire and obligation of the school and of the teaching personnel to cope with the students interests, by substituting the mere narrative and theoretical treatment of the knowledge with applicative, concrete and dynamic methods that are proved to be attractive for the students;
4. The continuous aim of teaching and learning process to raise the students capacities and to improve their understanding by transferring the contents into a long-term memory;
5. Necessity to create a sustainable scientific formation in Geography, abilities to think in a critical way and for the solution of the problems, as well as to adopt individual civic attitudes related to different issues and phenomena, especially having to do with different Geographical issues related to environment, culture, demography, economy development, etc. In this way Geography helps students to develop independent initiatives and projects and at the same time it has a direct impact on the civic education of the students.
6. Interdisciplinary formation of students. Use of ICT in Geography encourages and develops inter-disciplinary skills. Some of them are digital reading and writing skills, skills in mathematics, in foreign languages, in different computer programs, etc.
7. Working in a team spirit and method demands to consult a variety of sources and use of ICT is, of course, an essential means towards the sources.
8. Autonomy of students in teaching and learning process is related a lot to use of ICT (by helping so in defining the role of the teacher and of the student in the class).

Main and direct factors that affect in applying an interactive and contemporary teaching & learning process at school

Developing an interactive teaching/learning process in our schools currently *depends directly upon*:
1. Qualification degree of human resources/teaching personnel;
2. Premises at disposal and the access offered by the school on every day basis.
3. Level of equipping the school with the necessary digital means, devices and instruments;

Despite the attempts made so far in Albania, the three of the up-mentioned conditions are not fulfilled in a proper standard and it is needed investment in order to maximize this process of teaching and learning, by making it a normal and organic process that happens every day.

Means and devices currently used to develop a digital teaching & learning process

Means, devices and instruments used so far to realize a digital teaching and learning process in our schools *are as follows*:

- PC/Laptop
- Beamer
- CD/DVD/USB
- Video-s and other electronic materials prepared by teachers & students (in word, excel, power point, media player, movie maker, etc.), animation of different geographical phenomena, other virtual didactic materials, etc.
- Smart Board-s, have been recently used in some high schools of Tirana, or in some schools of few big urban centers, at a time that in European countries such devices are considered to be very commonly used during the teaching and learning process at school.

It should be emphasized that using such means and devices in teaching and learning process encourages an active understanding, independent thinking and skillful actions of the students.

The changes deriving from the application of Information and Communication Technology during teaching and learning process in Geography

Developing digital lessons through making use of digital means helps not only in creating sustainable knowledge, but it also defines a new role of the teacher during the lesson. Unlike the traditional lessons where the teacher serves as a data bank, pours information into the students and considers the "chalk" and the "blackboard" as a teacher's property, in the interactive lessons, the students play an active role, while the teacher plays the role of the facilitator. The comparison between a traditional lesson and an interactive one brings to light obvious changes such as:

Traditional lesson			Interactive lesson (using electronic devices)		
Means to be used	Roles		Means to be used	Roles	
	Teacher	Student		Teacher	Student
Text-book; Maps; Atlas; clusters; White/black board; chalk; different templates;	- Directs the class during the lesson; - realizes the pedagogical objectives; - Explains in theory the planned topics; - uses maps, the atlas, clusters, prepared by the teacher himself/herself, -uses chalk, the black-board and the text-	- Answers when the teacher asks him/her to do so; -reproduces the information taken from the text-book and from the teacher explanations; - it is assisted by the teacher to come to conclusions in relation to the theoretical explanation given during the lesson; - It is used only the map or the atlas to define geographical	Computer/Laptop Projector CD/DVD/USB Smart Board Text-book; Maps; Atlas; Video-s; Materials prepared electronically in word, excel, power point, media player, movie maker, etc.; Animation of different	According to the situation plays the role of: -moderator; -consultant; -trainer -manager; - During the lesson the teacher realizes objectives put forward to be achieved for the three levels (low, middle and high), as well as he/she involves in the process all the students;	- Plays an active role during the lesson; - After watching the virtual presentation of a geographical event or phenomenon he/she is able to define himself/herself the reasons and consequences, or to judge independently upon the ways to solution. - Is able to prepare clusters himself/herself to present reasons and consequences of a certain geographical event or phenomenon.

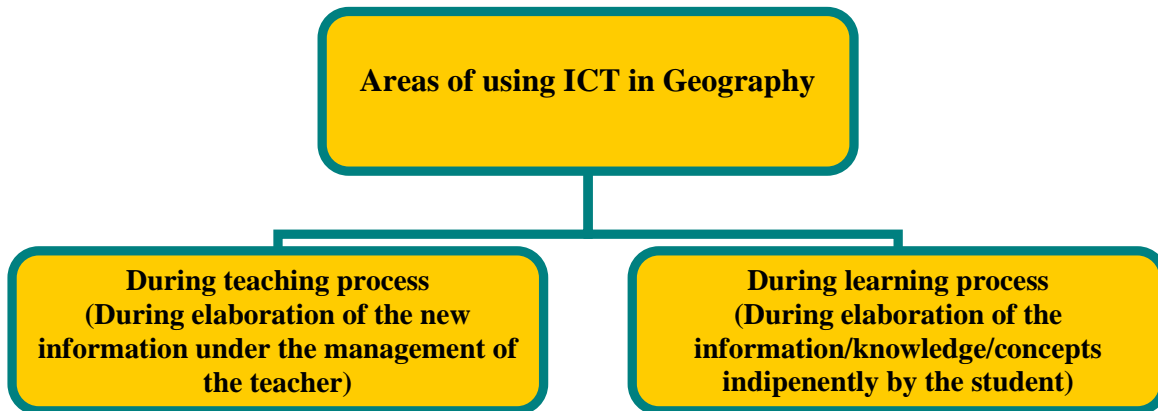|	book as didactic means	position of different countries/regions	geographical phenomena; Virtual projects; Clusters; Flipchart; backboard; chalk; whiteboard; markers	- Motivates the students and treats together with them in an interactive way the topic of the new lesson by making use of: Video-s; materials prepared electronically in word, excel, power point, media player, movie maker; animation of different geographical phenomena, virtual projects, maps, the atlas; - orients and suggests for the materials/ sources to be used ; - Make use of clusters, etc.	– Becomes an innovator by preparing and presenting himself/herself electronically certain ideas, messages, projects through , CD, DVD, leaflets, posters, etc. addressed to their peers (related to environment, culture, demography, economy, society, etc), expressing individual/collective attitudes. - Is advised to consult different sources, not to become dependent from text-book information and is prepared how to keep a critical attitude; - is motivated, is encouraged to be confident and to have self-esteem; - Works in a team; etc.

Some potential aspects of application

Information and Communication Technology can be applied in various aspects while teaching Geography. Some of these aspects include:

- Searching and orientation related to the geographical position of a region or a country that is subject of study (such as by using Google earth, etc.);
- Searching in internet related to different geographical information;
- Making use of different computer programs such as word, excel, power point, media player, movie maker, etc. to treat and present ones views and information related to the subject treated in the lesson;
- Searching, finding, adopting, elaborating and using the images of different maps (for example by making use of Photoshop, etc.);
- Drawing of different charts and tables;
- Exchanging different materials and information among members of students groups (while working in groups and developing different projects) through e-mail-s;
- Presenting different geographical events or phenomena through two or three dimensional graphic animation;
- Use of LCDS (Leaning Content Development System) in teaching and learning;
- Using Smart Board;
- Etc.

Areas of using ICT in teaching & leaning Geography

Using ICT and interactive methods of teaching and learning helps in realizing high standards in teaching and learning Geography.

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       │   During teaching process │       │   During learning process │
       │  (During elaboration of the│      │  (During elaboration of the│
       │ information under the      │       │ information/knowledge/concepts│
       │ management of the teacher) │       │ indipenently by the student)│
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1. Elaboration of the new information under the teacher's management.

During the teaching process ICT is mostly used in three main directions including: topics that are in need of a detailed and contemporary treatment of the concepts and phenomena; topics that are in need of a concise treatment; and topics of a high level of difficulty to be understood by all levels of the students and for phenomena that need illustration.

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 │ Topics that are in  │  │                     │  │ Topics of a high    │
 │ need of a detailed  │  │ Topics that are in  │  │ level of difficulty │
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 │ treatment of the    │  │ treatment           │  │ all levels of the   │
 │ concepts and        │  │                     │  │ students and for     │
 │ phenomena           │  │                     │  │ phenomena that need  │
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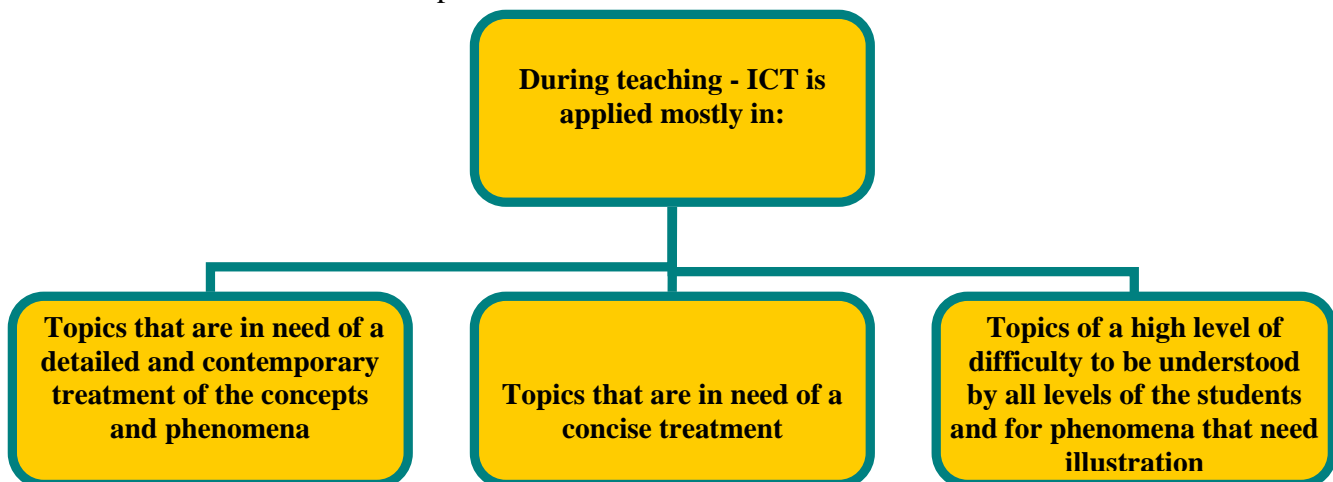
Information and Communication Technology gives vast opportunities to teachers and students to illustrate, to materialize and to introduce the new information as simple and as clear as possible in nearly all the topics treated in the subject of Geography during the three years of the high school (during gymnasium), especially in Earth Science, in Geography 11 (the Regional Geography), in Geography 12 (studied in the 12th grade), in the Climatic Changes Module and in Geography and Global Problems Module.

For example the use of ICT is very successful and necessary to deal with some very difficult topics of "Earth Science", where the students have difficulties in the perception and in understanding of some geographical phenomena, or they find difficulties to perceive the movement of space bodies under real circumstances. Using ICT helps students to understand topics of Chapter 1 of the "Earth Science" – Sun System and Earth as a Planet- such as: Sun and the origin of Sun System, the Planets, Circulation of the Earth round the Sun, Earth Shape, Revolving of the Earth round its axis, etc); of Chapter 2 – Cartography, especially the subject:

Geographical Coordination, of Chapter 4, especially the subjects: Tectonic Plates; Wind activity, Permanent snow, water flows, etc., and to make such topics clear, easy and understandable. The students become able to analyze such events if treatment of such topics in the class is done by means of ICT through:

- Ñ Introduction and elaboration of new information through power point, media player, and movie maker
- Ñ Presentation in the form of graphic animation with either two or three dimensions of different geographical events or phenomena;
- Ñ Use of LCDS;
- Ñ Use of Smart Board;

In Geography 11, Geography12 and in Geography of Global Problems, despite the up mentioned forms for developing interactive lessons it is important as well to apply Google Earth for the geographic position of the region, to search in internet on physical, demographic, economic and social characteristics of certain countries subject of studying, to adopt and elaborate different images for preparing maps by making use of Photoshop, etc. Another important aspect is presentation of the elements of natural and cultural heritage of different nations and regions. When the teacher has planned to introduce the new information through the methods of contrast and comparison it is crucial for the students to participate by presenting the information by making use of tables and charts.

So, use of ICT during the treatment and elaboration of the new information is an added value to apply a fruitful interactive relation during the lesson resulting in:

- **a.** A concrete and comprehensive treatment of the new information;
- **b.** The teacher takes the role of the moderator or of the consultant during the lesson, while the students feel motivated and an organic part of the lesson. Through this role the teacher becomes a source of motivation who encourages the students to carry on researches or independent work related to the topics;
- **c.** Achievement in realistic and a natural way of the foreseen teaching objectives in three levels.

2. Processing/elaboration of information/knowledge/concepts by the students:

In Geography during the lessons of revisions, the practical works, thematic assignments and curricular projects, the teaching and learning process becomes interactive and innovative if the students are encouraged and directed to make use of ICT. By making use of such competences it is applied in a comprehensive way the process of creating sustainable knowledge in Geography, modern skills and individual attitudes on different geographical events and phenomena.

During learning - ICT is applied mostly in:

- Curricular projects
- Revision lessons
- Practical work
- Thematic Assignments
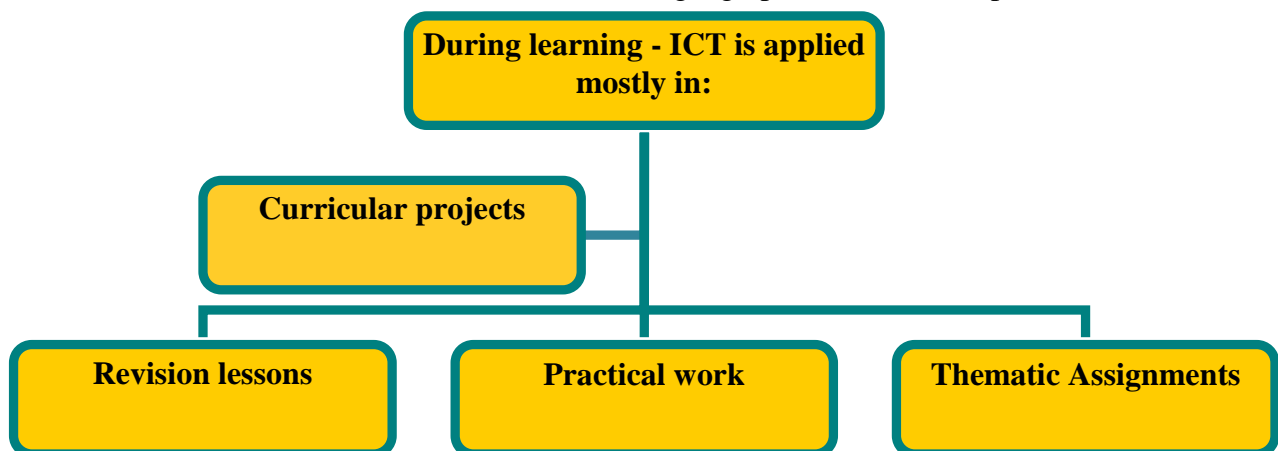
a. Revision lessons in Geography

Using of ICT in developing the revision lessons formats such kind of lessons in a quite different way compared to traditional schemes. On the contrary it turns such lessons in comprehensive and motivating lessons. It is avoided the by heart reproduction of theoretical passages and it is encouraged the interactive learning though analysis, questions, discussions and use of ICT. It is needed a pre-planning from the part of the teacher by dividing the class into groups. Each group is assigned to treat different topics of the chapter. To develop such lessons it is used the method known as "you are the expert" by encouraging and directing the students to carry out analysis and to come into conclusions, either in an individual way or/and in their groups. This method at the same time motivates and makes active everyone in the class, including all the levels of students. After working in an independent way at home and make use of all the suggested resources, each student prepares his/her product electronically on the assignment given in the group. The group members prepare a group presentation with the participation of all group members and present it during the revision hour. At the end of each presentation it is taken the feedback and it is discussed by all the students. The teacher also makes known to the students the evaluation forms/methods.

b. Practical work in Geography

Use of ICT in developing practical works in Geography prepares the students with skills in research work, in finding and in making use of maps and images in a qualitative way, as well as in building up skills to make thorough analysis and comparisons through different graphics or/and tables on geographical, demographic, economic or social events and phenomena. So during this lesson of practical work, the students are not only focused upon just filling in the draft-map provided, but also they are orientated to work upon comparison and analysis of the graphics, tables and maps that they have elaborated themselves, based on the instructions of the teacher and then they come into conclusions as a result of the analysis and of the comparison of such a data treated in the graphics, tables and maps.

c. Thematic Assignments in Geography

Since the thematic home-works aim at being focused only upon one detail or aspect of a geographical event or phenomena, the use of ICT makes such a detail or aspect simpler or more understandable. Encouraging the students to prepare the thematic assignments in a digital way enhance the knowledge of the students beyond the theoretical material treated in the text-book. This becomes efficient especially in treating in details geographical events or phenomena explained theoretically in the text-book, at a time that in a current situation it is needed quite more research to understand the topics in a sustained and comprehensive way. For example in the text-book of Geography 11, in the lesson treating the Sub-Saharan Africa, it is mentioned the high number of persons having AIDS (especially children). A Thematic assignment given to the students especially for this problem would encourage a further and detailed search of the students on data, reasons, consequences, measures taken, etc. Or, if in a certain place have happened sudden elevation slippage, the students are encouraged to prepare an independent work on the reasons of the event. This thematic assignment will make the students search and go beyond the knowledge and information treated theoretically in the text-book. Thematic Assignments, are recommended either to individuals or/and to groups of students involving all the levels of the students by being very cautious not to exclude anyone. The product is prepared at home and is presented in the class electronically. The evaluation of such thematic assignments creates an impact in creation of the team-work spirit and a spirit of competition to reach higher results.

d. Curricular projects

There are a lot of possibilities to use ICT in Geography especially for the preparation and presentation of Curricular Projects. Curricular Projects are an obligatory aspect of the curricula of the high schools, so by realizing such an obligation in a high standard needs by all means to teach the students the proper competences on ICT. This is necessary because:

- Developing curricular projects requests by students to have searching and selecting abilities in order to properly use the source materials;
- Developing a project encourages the reflecting and creative abilities of the students very much needed to analyze and make a synthesis of the facts and materials during their individual or group-work.
- Realizing a project cultivates at the students the interest on high standards in presentation of the work done.
- Through use of ICT it is encouraged each student to go beyond the frame-work of the theoretical information offered in the text-book by making use of some points of view. It is cultivated the culture of keeping a critical and individual attitude and there are offered solutions for different geographical events/phenomena.
- The group-work to prepare such projects creates interactive relations among the group members in relation to different reference material brought by each one. It also encourages to each one the need to become professional in using the ICT methods and devices.

Depending on the topics, the project is divided into two phases and in each of the phases, the group members can gather, elaborate, analyze and present the information and their conclusions by making use of their competences and skills in ICT.

Conclusions

Importance and opportunities of application of interactive teaching/learning methods and ICT in our schools are evaluated properly if we make use of SWOT Analysis:

Strengths	Weaknesses
1. Enhance the interest on Geography, Such a subject becomes dear and easy for the students. Even students who so far haven't shown any interest in the subject will be part of the process just due to the interest for ICT devices and methods. Such forms of teaching and learning enhance the interest of nearly all the students on the subject and issues treated; 2. It is created sustainable knowledge for all the levels of learning; 3. Encourages interpersonal skills, able to negotiate to raise the performance of the group; 4. the teacher plays the role of the instructor, consultant, trainer, or manager of the teaching and learning	1. The digital means and devices should be present and installed in each classroom ready to be used in each lesson. Having only one PC present and installed in only one or two classrooms of the schools, or sometimes installed only in the headmasters offices do not help with the process; 2. It is needed a proper preparation, professional and managerial skills from the teacher. Such a preparation makes a big difference between the teachers who haven't taken any computer qualification, or who due to the age do not have interest to be involved in ICT training and application; 3. When it is realized a group work the evaluation of the individual contribution of the students by the teacher is not easy. If the

process; 5. The students are motivated, so it is reduced the anxiety from school and the school drop outs by offering possibilities to all to share opinions; 6. There are exchanged ideas, arguments and experiences; 7. It is encouraged the role of leader and the role of the expert among students;	students are divided into groups based upon the preferences of the students themselves it may happen that any of group members may remain passive and at the end may be evaluated for a contribution that is not given by him/her; 4. It can create anxiety or stress for those students who do not posses any computer skills at all; 5. If the process is not well managed, it may cause waste of time and the lesson may be turned for some students into a "cinema show" and it may hinder the teacher to achieve the teaching and learning objectives;
Opportunities 1. Adoption of the Albanian Education Process to the speed of scientific innovations and to the EU standards of teaching and learning. 2. Inclusion and training of all the students in using ICT (even those students who do not have such possibilities in their homes.)	**Threats** 1. There are needed relatively expensive initial investments by bringing difficulties in equipment of each school. This will result in creating regional gaps and differences.. 2. Exaggeration in using the ICT without any defined criteria will lower the interest for the text-book and for the teachers speech;

Recommendations

Application in Geography of the interactive methods is an imperative of the time in order to realize a qualitative and productive teaching and learning process. In order to realize such a process it is needed:

1. Investments and further financial and professional support by the Ministry of Education and Science, as well as by the local authorities for the teachers of geography in order to set up the proper classrooms and to provide the necessary training.
2. Investments and further financial and professional support by the Ministry of Education and Science, as well as by the local authorities in providing the proper technological devices in every classroom and accessible by all.
3. Organizing of different competitions or events in the country or in the regions, in which to be presented pieces of work/projects produced either by individuals or by groups, in order to create certain standards and to create the possibilities of exchanging experiences among students, teachers, schools and regions.

Literature

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