INITIATIVES FOR ENHANCING THE GEOMATICS EDUCATION IN EGYPT: E-LEARNING IN ENGINEERING PERSPECTIVE

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تعتمد الفلسفة الأساسية للدراسة المقترحة لتطوير الدراسة التعليمية لعلوم الجيوماتكس في مصر على التعرف على احتياجات المجتمع.
وسيتم ذلك من خلال تعزيز بدأت المناهج الدراسية الحالية من أجل التوصل إلى المعايير الدولية ، بالإضافة إلى إعداد شهادة الدراسات العليا الأولى فى مصر في هذا الأتجاه داخل قطاع الهندسة في مصر.و يتتحقق تقديم الدعم ونقل المعرفة للمجتمع من خلال وحدات اضافية تدريبة خاصة. هذا ويعد المجهود قيمة المضافة للبيئة التعليمية المصرية هي التي تتيحها المساهمة دورات عالية الجودة لإثبات جدوى التعليم الإلكتروني كوسيلة للتعليم في مصر ، لا سيما بالنسبة للمهنيين وبالنسبة للناس في المناطق النائية. ويمكن أن يتم التوصل من خلال توفير قاعدة لمرحلة ما بعد التخرج درجة علمية في القياس على E-LEARNING/ON تطبيق نموذج التعليم الجامعي. هذا الإنجاز هو المقدمة من خلال تبادل الخبرات مع بعض الجامعات الأوروبية والتي لديها معرفة واسعة في هذا الاتجاه.
من خلال هذه المقالة ، القائمة الجيوماتيكا الوضع التعليمي في مصر هو وحلل ، والأهداف والأنشطة الحالية ويتم توضيح المزايا الرئيسية لأبرز التوجهات المقترحة.
في ضوء الجهود التي بذلت مؤخرا ، فإنه يتوقع أن يحصل المستمر لرفع مستوى القياس خطة التعليم. بالإضافة إلى ذلك ، سوف مهندسين مؤهلين وخبراء في مجال القياس تكون قابلة للتطبيق للسوق بعد دراستهم للدورات صقل.

ABSTRACT

The basic philosophy of the proposed study relies on the Development of Geomatics educational studies in Egypt to recognize the society needs.

This will be initiated by enhancing the recent curriculums in order to reach the international standards, in addition to setting up the first postgraduate degree in Geomatics direction within the Engineering Sector in Egypt. The essential technical support to the surrounded society can be fulfilled within extra special training modules. An added value to the Egyptian educational environment is offered by contributing high quality courses to demonstrate the usefulness of e-Learning as a mean of education in Egypt, particularly for professionals and for people in remote areas. This can be reached by providing a base for post-graduate scientific degree in Geomatics applying an e-Learning/on campus education model. Such an achievement is presented by exchanging experiences with some of the European universities that have wide knowledge on that direction.

Through this article, the existing Geomatics educational situation in Egypt is analyzed, the current objectives and activities are clarified and the major advantages of the proposed directions are highlighted.

In view of the recent efforts, it is expect to get continuous upgrading to the Geomatics education plan. In addition, qualified engineers and experts in the field of Geomatics will be applicable for the market after their studies to the refined courses.

KEYWORDS

Geomatics; Education; Decision Support System; Egypt; E-Learning

INTRODUCTION

There is no doubt that learning is a vital part of everybody's life, where education will remain the crucial role for developing many human being capabilities. Nowadays, the trendsetter learning direction is oriented to the acquisition, analyzing and presenting the basic classification of the human mind. The hierarchy of this classification is categorized into five stages. These include: (1) data that represents "the facts", (2) information or "useful data", (3) knowledge that present the "application of information", then (4) understanding the application and finally (5) reaching the wisdom stage or "evaluated the understanding". Certainly, the information systems in general and the Geomatics sciences in particular, represent the best model of the above classification. [1]

During the last decades, the growth in the development of the information systems using Geomatics has increased tremendously. In general, the answer of how one can direct the new generation to these directions, still needs to be defined? At the same time light needs to be shed on how one can re-qualify the graduates' skills? Solving these problems need, a new flexible way that enables the graduates to manage this trend of technology. Herein, an overview of an experience with the education of the surveying engineering department is going to be presented and the new educational programs will be highlighted.

E-Learning presents a viable solution to Egypt's needs to meet future requirements in higher education. Recent nationwide investigations about Egypt readiness for large-scale e-Learning deployment revealed encouraging results, along with significant government initiatives provided to support infrastructure for e-Learning. Egypt's experience with the e-Learning such as the Global Campus project, HEEPFE, Higher Education Enhancement Project, MEDA and Tempus projects pave the way for high quality education through e-Learning. [2]

GEOMATICS AS DECISION SUPPORT SYSTEM

The term Geomatics is an acronym formed by "Geo" that means the Earth, while the term "matics" refers to the information. The field of "Geomatics" encompasses the acquisition, storage, analysis, dissemination, and management of geographically referenced information for improved decision-making [3]. It embraces the subjects of geodetic reference systems, Global Positioning System (GPS), astronomy, Geographical Information System (GIS), photogrammetry, Remote Sensing (RS), Land Information System (LIS) and cartography, as well as traditional surveying. Geomatics provides effective decision support through its database management capabilities, computer graphics, artificial intelligence and cartographic visualization. This supports analyses of "what-if?" scenarios for strategic planning and tactical management subject. Geomatics and Decision Support Systems (DSS) are mechanisms that can be used to provide managers with information needed to make sound resource management decisions.

These valuable analytical and decision support tools are used in a wide range of public and private enterprises to explain events, predict outcomes, and develop strategies for managing resources.

In general, the components of Geomatics are Data, Hardware, software, Methodology and well-trained personnel. The human being that trained to deal with this technology is

the most significant factor to satisfy the success of this organization. Therefore, this vital factor of Geomatics has to be focused on.

NEED AND IMPORTANCE OF GEOMATICS EDUCATION IN EGYPT

Egyptian education society have a wide range of skills to manage the Geomatics trend, the recent situation still needs more effort to fulfill the Society requirements. This is mainly, due to the gaps occurring between the existing educational courses with their aids form one side, and the considered necessary strategy to be followed in order to reach the International standard.

Enhancing the Geomatics education in Egypt has many goals that it aims to achieve such as generating different and advanced fields of specialization in Geomatics, creating and mastering various systems for research and learning, enriching and supporting the community though providing cutting edge solutions for its problems, focusing on gaining knowledge and developing thinking abilities and scientific research, emphasizing on the importance of information as a tool for decision making and the importance of GIS and RS as tools for analysis in environment and physical planning applications, creating new educational approaches through various visions and ways of using modern methods and tools in the practical and theoretical field, gearing the university's resources towards improving both society and the environment, enriching and supporting the Egyptian community though producing new generation of Egyptian planners and engineers with modern technology skills, multidisciplinary outlook, and well prepared to overcome the challenges that face the development, continuous development, evaluation and documentation of the academic performance according to scientific methods, providing both research and technical consulting services for the welfare of society and last but not least communicating with the Arab world via exchanging and sharing practical experience in the field of information system.

Among many trials, the Surveying Engineering department, Faculty of Engineering-Shoubra, Benha University has been adapted to fill this gap.

Since 1963, the Surveying Engineering Department "SED" has been established as a unique and specialized department for surveying and mapping sciences, focusing on improving and evolving the surveying educational process in a way that keeps pace with international scientific trends. This was attained through developing the study programs, curriculums, and the practical training processes.

Recently, the main targets of the SED was to create scientifically and practically qualified graduates to fulfill the newly and arising requirements of labor market. During the last few years, many changes and improvements have been done to achieve the above aims.

Nowadays, SED orients its effort to the Geomatics approach hand in hand with the other surveying directions. In brief, our challenge is to highlight the Geomatics educations and their benefits to the surrounded society by improving the students' skills and raising their capabilities to the international standards.

OVERVIEW OF E- LEARNING IN GEOMATICS EVOLUTION THROUGHOUT THE WORLD

The world was first introduced to e-Learning in the middle of 19th century; but it is towards the end of the 20th century that the actual expansion took place (table 1). E-Learning will experience a larger development during the 3rd millennium. [4]

Table (1): Historical and synthetic overview of distance learning evolution throughout the world.

Year	Country, Continent or organization	Main event
1840	Canada	First offer of distance learning course
1890	United States	Launching of distance learning by EducationDirect
1970	UNO	Proposal of a new type of University by U THANT, General Secretary of United Nations.
1972	Canada	Creation de la Tele-university in Québec
1990	United Kingdom	Foundation of UNIGIS International, that lead distance learning in Geomatics
1993	Europe	Foundation of EUROPACE, aiming to creation of European virtual University.
1997	Africa (Kenya)	Creation of African Virtual University (AVU)
1998	United States	University of Southern California launched an online graduate certificate program in GIS as a collaborative enterprise with the UNIGIS (link) International Network
1998	United States	Opening of ESRI Virtual Campus (http://www.esri.com/)
2000	France	Launching of digital or virtual campus of Francophonie movement
2000	Amsterdam (Netherlands)	Launching of international virtual University of GIS by UNIGIS
2002	Tunisia	Creation of Tunis virtual University (UVT)
2003	Japan	Opening of Global virtual University of UNO
2004	Sweden	Launching of Lund University Master's Program in Geographical Information Science (LUMA-GIS)
2006	United States	Launching A new distance learning graduate program in Geomatics Engineering – Purdue University
2008	United States	University of Southern California launched an online Masters of Science degree

ENDGEOS - WHY?

SED has been cooperated with the Higher Education Enhancement Project Fund (HEEPF) to enhance and develop the Geomatics studies.

HEEP is a part of the loan agreement, dated April 2002, between the Egypt and IBRD, to support and finance priority areas of project. HEEPF goal is to support improvements

in the quality, relevance, and efficiency of higher education institutions HEEPF procedures are based on cooperation and competition among participating departments, faculties and Universities /Higher Education Institutions [5].

HEEPF approved and funded a promising project for setting up number of modern guidelines in which students shall resume their specialized studies. These directions are focused on the information technology trends and oriented toward the Geomatics Studies; where the enhancement of the recent curriculums that are directed to the Geomatics is being sought. In addition, a new postgraduate degree in Geomatics is offered.

Finally, the establishment of a special technical unit, which provides a short, medium and long practical training in Geomatics directions, is intended. Such a unit will carry out the technical requirements of the surrounded society.

The project entitled “Engineering development of the Geomatics educational courses based on the society needs - ENDGEOS”

ENDGEOS OBJECTIVES

ENDGEOS is seeking for achieving the goals of the higher education strategy, which comprised of three main phases; enhancing the undergraduate studies, modifying the postgraduate researches and serving the surrounded society.

Within the undergraduate phase, the following goals have been achieved [6]:

- Develop, evaluate and document the academic performance according to scientific methods.
- Provide extraordinary B.Sc. studying programs.
- Graduate an active and creative engineer who is professionally distinctive and has the ability to deal efficiently with the world’s technological advances.

While, for the postgraduate phase the following goals achieved

- Unique programs for post graduate studies.
- Qualify researchers to deal with information in a scientific and methodological way.

Finally, the surrounded society has been served by

- Providing both research and technical consulting services for the welfare of society.
- Communicating with the Arab world via exchanging and sharing practical experience in the field of information system.

ENDGEOS STAKEHOLDERS

- The Engineering Students "Civil, Architected and Surveying" within the Egyptian Universities and the Surrounded Societies "Arabian and African Countries".
- The Engineering alumnae "Civil, Architected and Surveying" within the Egyptian Universities and the Surrounded Societies "Arabian and African Countries".

- The Engineering Staff "Civil, Architected and Surveying" within the Egyptian Universities and the Surrounded Societies "Arabian and African Countries".
- The Geomatics Society "Authorities, Organizations, Ministries".

ENDGEOS ACTIVITIES

In general, the above objectives are achieved by evaluating the recent situation [7], exploring modern scientific and practical equipped standard program, and then relating the above two steps to corresponding international standard.

Within the undergraduate phase, the following phases started:

– Re-structure the under graduate Geomatics courses by changing the contents of the existing courses and adding new ones.

– Enhance the education process by applying the modern resources, methodologies in education and evaluation method.

– Design of the Geomatics programs to fulfill the society needs.

Figure (1) and Figure (2) represent the distribution of these directions and represent a quantitative comparison between the recent and the proposed undergraduate curriculums.

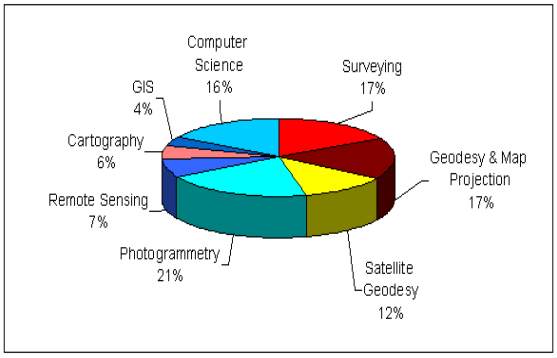

Fig. (1): Recent courses that related to the Geomatics direction

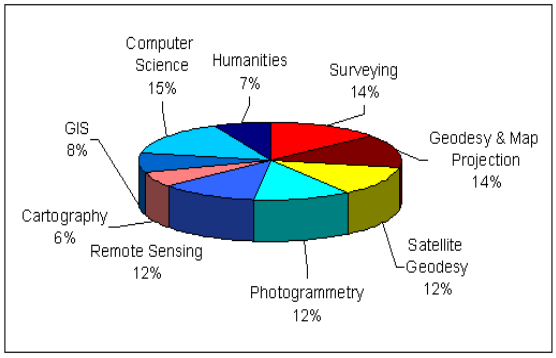

Fig.(2): Proposed topics for improving the undergraduate syllabus

Some remarks from the above distribution can be extracted, where

- The percentage of the field surveying, geodesy, map projection and GPS is adequate “since we still need to graduate a surveying engineer who should has enough knowledge on these fields, and to be qualified to deal with the related theories and applications”.
- Balancing the photogrammetry with remote sensing schedule should be taken into consideration where more considerations should be directed into RS analysis and applications.
- Cartographic share still needs more attention and care to cover new disciplines such as digital cartography, color theory, visualization concept.
- GIS courses should have a revolution on many levels. This includes the theories, applications and the new trends “web-based applications, enterprise solutions...”
- Computer Sciences needs to be directed to the logical part (concept, analysis) and application part as (Data Base, programming Languages), where we need to

deal with the new trends in programming "web based applications, visual languages…"

- New courses in human resources disciplines such as presentation, communication and negotiation Skills must be offered.
- More attention should be directed to the project management, business administration and marketing topics.

By executing the above steps on SED's curriculum, it was extracted that the quantitative ratios for most of the existing schedule are suitable for the Geomatics programs "with very slight changes". More effort directed to the qualitative issues.

Moreover, some soft wares packages were designed and customized to facilitate the difficult concepts as well as basic surveying problems calculations, geo-referencing, transformation problems.

Also, complete digital courses were implemented in order to cover different subjects like (Remote Sensing, Geographical Information Systems, Satellite Geodesy and Global Positioning Systems, Cartography, Database, Geo-referencing and coordinate systems, etc…) to be a seed of e-Learning technology.

During the project period, the self-education trend was encouraged through tutorial, help of packages, standard training material.

For better exam evaluation, the concept of Computer Based Test "CBT" was implemented as our own engine to support large network has been customized. In addition, after the study of the standard courses design for higher education; the section of comparison of assessment methods [8], the distribution of marks modified to distribute over projects on teams, seminars, presentations, oral exams, assignments and quizzes through the semester.

To enhance the postgraduate targets, the evaluation of the society's needs has started, defining the corresponding degrees abroad and classifying the candidates with their scientific backgrounds (herein, the situation is completely different from the undergraduate one, where the students are coming with different backgrounds).

Since Egypt did not have such a program, it started to benefit from the experiences of others to create this degree.

The first step to establish such program started by scanning the syllabus of some universal programs (i.e. Red Land -USA, Graz- Austria and LUND - Sweden …etc.), to help putting standard contents that fit with the Egyptian and the Arabian environments.

Moreover, the administrative rules, which have to be followed, in order to get the accreditation from the Egyptian Universities supreme Council, were defined [9].

The detailed structure of the two novel degrees were designed. One is diploma in Geomatics that includes the crucial of theories and applications of Geomatics tracks. Moreover, the sophisticated studies of such tracks get through a program of master in Geomatics. Each program contains one academic year "2 semesters" with 24 credit hours (18 hours, which represent the major courses + 6 hours for the elective topics).

The next figures represent the general schema of the postgraduate schedule, where

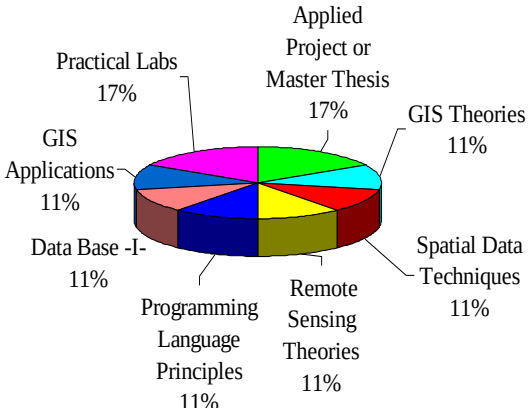

Fig. (3): The Proposed schedule for the mandatory courses

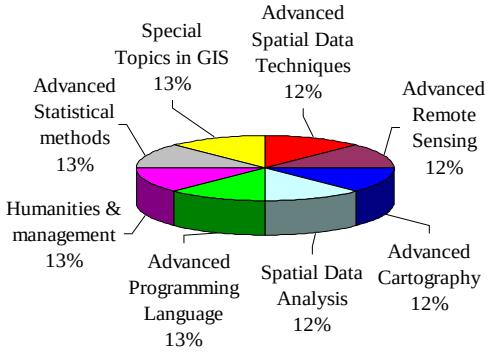

Fig. (4): The Proposed schedule for the elective topics

Figure (3) represents the percentageof the distribution of mandatory courses, where 55% is oriented to the theories, basics and principles and 45% is oriented to the practical and applications. Figure (4) shows the proposed distribution for the electives, where 100% of these topics is oriented to practical applications.

Society service in different fields represents one of the most important objectives in this project. The efforts were directed to the surrounded society for improving their way of thinking and how they can deal with the available resources. This is because; Geomatics represents a very important track for different applications.

The exertion was directed to:

– Establish the Geomatics unit for preparing the necessary implementing re-qualifying programs.

– Continue education and training for the Geomatics users.

The training unit is going to provide these services along “short, medium and long” courses.

To achieve this target, i.e. the training unit, the following steps were done:

- Establishment of a lab prepared with a very powerful hardware, presentation and media tools, of Computers, Data Show, the related Geomatics software and different sources of data.
- An intensive cooperation with great vendors is implementing for supporting the project with trainee and practical experiences. The standard training materials that designed by the inventors of the software packages are followed.

The training approach directed into different disciplines, herein, has four main directions, the spatial data topics, the programming concept, the database rules, and the applied on-shelves software tools.

Figure (5) represents the different training issues, where they have four main directions, the spatial data topics, the programming and the database rules, the applied software tools and the related practical experiences which will highlight within the applied projects.

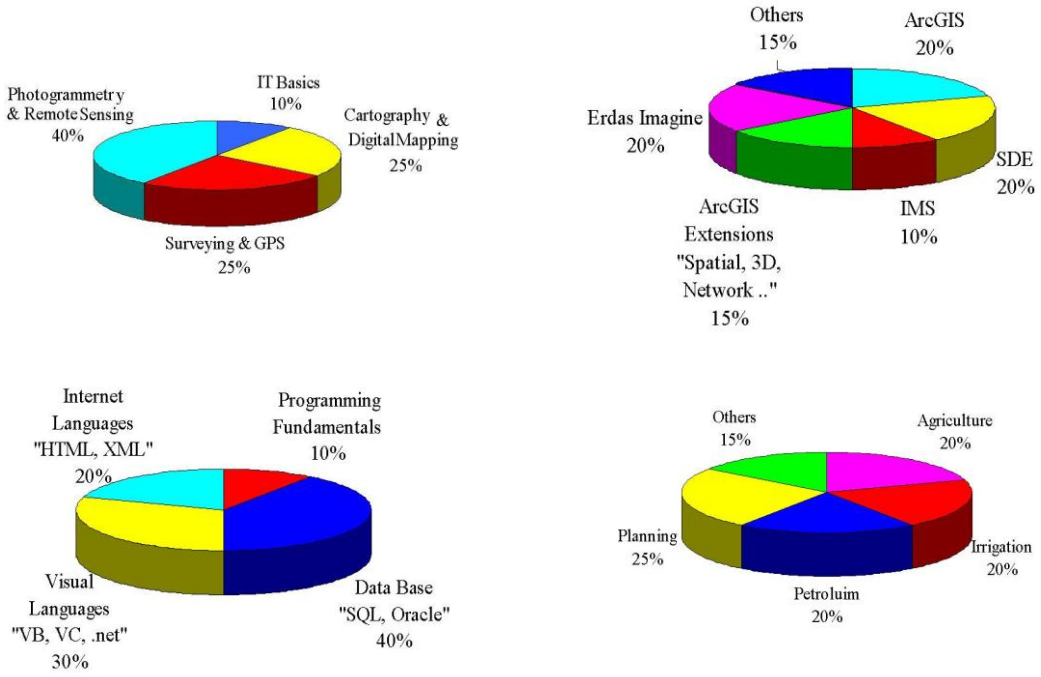

Fig. (5): Different training issues

Experts from different universities in Egypt and abroad provide all the above activities with very positive comments.

ENDGEOS OUTCOMES

During the period of the project, the fulfillment of the main requirements of the proposal was achieved, where the new special B.Sc. studying programs were provided. Also, the first Geomatics Novel degrees in Egypt "Diploma and Master in Geomatics" were achieved. Finally, a Geomatics unit equipped by the latest innovative technology was established.

Furthermore, 2000 training hours in different Geomatics direction for about 400 trainers "undergraduates, graduates and staff members" were offered

As a positive impact to the society, the project succeeded to re-qualify 50 engineers to share in one of the national projects "Automatic registration of the Egyptian Cadastral rural properties".

ENDGEOS FEEDBACK

1. Applicability of Improved Educational Programs to the Surveying Engineering students at SED – Faculty of Engineering – Shoubra - Benha University.
2. Applicability of Developed Educational Courses to the Surveying Engineering Students at SED – Faculty of Engineering – Shoubra - Benha University.
3. A waiting list requests the new graduated Programs to the Engineering alumni "Civil, Architected and Surveying", although it is not approved yet from Supreme Council of Universities

4. Means for the Training Programs Intended for Engineers, and Subsequently the Corresponding Educational Programs. As Ministry of Communications, Egypt requested for along term trainings. Also, Gulf States such as Kuwait, Oman, and Kingdom of Saudi Arabia usually request such trainings in Geomatics.
5. Increasing the Number of Qualified Trained Engineers in the Field of Geomatics, where the project trains engineers for Real Estate Taxation Authority.
6. Applying the CBT Exams on paper based manner at the Faculty of Engineering, Faculty of Education, and College of Nursing since 2006 till now. A positive impact was observed through the increasing number of requests for the package.
7. Regular questionnaires through the life time of the project for the whole activities, staff workshops, students training, graduate training, testing CBT Exams, lectures through new teaching style and the educational aids, have been created. And the results were positive all over the whole activities.
8. Another perspective was to get external expert peer reviewers, nationally and internationally to evaluate the outcomes of the projects. Nationally, Prof. Dr. Othman Abu Beih- Ain Shams University, Prof. Dr. Mahmoud ElNokrashy- Azhar University, Prof. Dr. Ahmed Shaker-Benha University, Prof. Dr. M. Shawki ElGhazali-Cairo University. Internationally, Prof. Hans Sünkel – Graz University of Technology -Austria , Prof. Ulrik Mårtensson – Lund University - Sweden. Some valuable words " To conclude, we consider the proposed Diploma and Masters' programs to be of excellent quality, of high priority for higher education in Egypt, very relevant in respect of increasing demands on the job market for such competence, well structured and covering relevant theoretical and practical aspects of Geomatics- Mårtensson". "The program looks very ambitious and focuses on many aspects in latest developments – Sünkel"

WHICH SERVICES CAN ENDGEOS OFFER TO THE ARABIAN SOCIETY?

Due to the significance of this technical direction inside Arabian organizations it is noticed that the existence of that development contributes to the arising of Geomatics users. In addition, new generations of professionals can be prepared.

Moreover, ENDGEOS outcomes will give the chance for scientific researches that will contribute in increasing the existence of Arabian society in this market.

ITEP "A FURTHER STEP FOR DEVELOPMENT"

The sustainability of ENDGEOS and the continuation of the development guarantee through ITEP project. ITEP is one of TEMPUS - JEP projects where a six partners of [Lund University, Lund, Sweden – Benha University, Benha Egypt – Alexandria University, Alexandria, Egypt – The Royal Institute of Technology (KTH) Stockholm, Sweden – International Institute of Geo-Information Science and Earth Observation (ITC), Enscheda , the Netherlands – General Organization of Physical Planning (GOPP) Cairo, Egypt] mutual the participation of the project entitled "**I**ntegration of environmental aspects and modern **T**echnology (GIS and RS) and Pedagogic **E**-learning in Egyptian higher education with special focus on **P**lanning".

The fundamental objective of TEMPUS "Trans-European mobility schema for university studies" is funding projects between higher education sector in EU and its 26 partner countries to facilitate university modernization, mutual learning between region and peoples and understanding between cultures. TEMPUS promotes the "People to People" approach; its added value lies in its promotion of international and regional co-operation, which generates better communication and new networks of personal and professional contacts between the academic world of the EU and the Arab countries. One type of TEMPUS actions is Joint European Projects "JEP" that aims to increase cooperation and network building between actors in higher education in EU member states and partner countries, and help the higher education sector propagate its knowledge outside academic institutions. Projects can support universities within the principles of the "Bologna Process"

ITEP is orientated to set up E-Learning pedagogic trend and provide new on line program to GIS and RS for environmental and urban planning applications that will be possible to be conducted remotely by the individual partners. This tendency will help for better understanding to the effect of human activities and its influences to the environment.

E-LEARNING STRATGEY

The primary goal of applying blended e-learning instructional strategies and technologies to help students develop lifelong learning skills including self-directed learning skills (e.g., taking the responsibility for learning), reflective learning skills (e.g., knowing technical rationality, reflection-in-action, reflection-on-action, reflection-for-action and action research), problem-solving and other high-level metacognitive skills, and techniques of using of Internet and other information and communications technologies (ICT) in building their knowledge. It should be noted that self-directed learning is our natural process of psychological development driven by the globalization of production, social justice and cohesion, and modern educational settings and policy; and that upskilling and reskilling in the form of self-directed lifelong learning enables nations, business and individuals to meet diverse global economic needs, to decrease unemployment and underemployment, and to enhance social cohesion. Gibbons emphasizes that self-directed learning must be congruent with the natural life of experiential learning asserted by and that all-round development is needed under proper educational settings and beyond personal, social and technical domains. So that, learners become self-motivated and reflective learners who are competent in managing learning, self-assessment, and applying what they have learnt in solving problems [10].

In short e-learning aims to ensure that people's knowledge and skills match the changing demands of jobs and occupations, workplace organization and working methods, build an inclusive society which offers equal opportunities for access to quality learning throughout life to all people, and in which education and training provision is based first and foremost on the needs and demands of individuals, foster individuals' capabilities and talents, and to cater for the diversity of learner goals in the form of self-paced and self-directed learning and finally support lifelong learning and promote good citizenship by welfare and/or market oriented policies in a balanced view of appropriateness and cost-effectiveness.[11]

ITEP OBJECTIVES

- The project aims to introduce the eLearnning model as a means of education in Egypt in the field of planning and the environment, particularly using GIS and remote sensing as tools [12].

  E-learning is naturally suited to distance learning and flexible learning. E-Learning pioneer Bernard Luskin argues that the "E" must be understood to have broad meaning if e-Learning is to be effective. Luskin says that the "e" should be interpreted to mean exciting, energetic, enthusiastic, emotional, extended, excellent, and educational in addition to "electronic" that is a traditional national interpretation. This broader interpretation allows for 21st century applications and brings learning and media psychology into the equation. In higher education especially, the increasing tendency is to create a Virtual Learning Environment (VLE) (which is sometimes combined with a Management Information System (MIS) to create a Managed Learning Environment) in which all aspects of a course are handled through a consistent user interface standard throughout the institution. A growing number of physical universities, as well as newer online-only colleges, have begun to offer a select set of academic degree and certificate programs via the Internet at a wide range of levels and in a wide range of disciplines. While some programs require students to attend some campus classes or orientations, many are delivered completely online. In addition, several universities offer online student support services, such as online advising and registration, e-counseling, online textbook purchase, student governments and student newspapers [13].
- Through the project a formalized teaching and learning system will be provided, that is specifically designed to be carried out remotely by using electronic communication. This can be defined as the convergence of the Internet and learning, or Internet-enabled learning. It uses network technologies to create, foster, deliver, and facilitate learning, anytime and anywhere. This technology is the delivery of individualized, comprehensive, dynamic learning content in real time that aids the development of communities of knowledge, linking learners and practitioners with experts. Moreover, this phenomenon of delivering accountability, accessibility, and opportunity allow people and organizations to keep up with the rapid changes that define the Internet world.
- This led to an indirect objective which is ensuring the development of lifelong learning. Lifelong learning, also known as LLL, is the "lifelong, life wide, voluntary, and self-motivated" pursuit of knowledge for either personal or professional reasons. As such, it not only enhances social inclusion, active citizenship and personal development, but also competitiveness and employability [14].
- Contribute high quality courses to demonstrate the usefulness of eLearning as a means of education in Egypt, particularly for professionals and for people in remote areas.
- Provide Egyptian organizations that participate in the consortium with the necessary instruments and experience to be able to meet the education needs that they are facing in the near future.

- Develop pedagogic courses with flexibility in the learning process and learning pace for student and other employees groups that prefer to study at a distance or that are not full time students.
- Testing different learning models in an international environment and evaluate how they can be used to optimize the learning process for different kind of students. As it is understood that the concept and methods of teaching differ in the six partners that the project intends to cover and that the teaching style, together with the way of interaction between student and teacher is equally different.

ITEP STAKEHOLDERS

- Undergraduate students and Post-graduate students
- Practitioners in urban and rural development planning and management of environmental issues.
- Trainers from General Organization of Physical Planning "GOPP".
- Engineers and planners who currently work in market and need to update their knowledge and improve their skills.
- Authorities and decision makers.
- Egyptian academic community.

ITEP ACTIVITIES

To achieve the above objectives, the following activities are implemented:

- Introducing e-learning model as a means of education in Egypt, particularly for professionals and for people in remote areas through the ITEP project where a work shop for E-learning is conducting in Faculty of Engineering Shoubra, Benha University, Cairo, Egypt.
- Train trainers and educate educators in eLearning concepts to assure long term sustainability of the developed courses and provide a basis for the development of other courses in the future.
- In the start up process of the project a study will therefore be set up to capture and describe the differences between different teaching styles in different countries. This done by exchanging both teachers and staff from LUND and KTH universities of Sweden as EU universities and Benha and Alexandria as Egyptian universities for a shorter period (one week). During these mutual exchanges, students attended lectures and practical exercises and describe their impressions in a report. The teachers also attended different teaching situations and describe their impressions. Additionally they will also give lectures of their own, and the local students give feedback on this. The results from students and teachers analyzed by the workgroup and the analysis result summarized in a guideline or Best Practice document that disseminated internally and externally during public workshops.
- Provide a base for an e-Learning post-graduate program in GIS by developing pedagogic courses that integrate environmental aspects in physical planning process using new technology (GIS and RS) to address the needs of the current development trends in Egypt and developing appropriate course curriculum for courses that can be applied in both European and Egyptian partners. The courses

prepared in the form presentation slides, video recording, lecture notes, interactive presentation, practical exercises, theoretical exercise, on line quizzes, and evaluation process is accomplished by passing the assignments and theoretical exercises through the course then final on line exam; some courses provide projects on group as a part of evaluation.

- Improving accessibility and dissemination of course contents, by translating some parts of the courses into Arabic language and with the help of the e-learning models. The project aims increase dissemination to students that are less acquainted with English language, which is often the case for students already professionally active.
- Improve interaction between academic staff, practitioners and decision makers. By bringing together academic staff from Benha and Alexandria Universities and practitioners from GOPP; the courses will include concrete planning and environmental issues in theories and practices from the local and regional perspectives and also enhance the link between academic staff and decision makers in Egypt.
- Establish an electronic laboratory working on providing reliable e-learning system in both Benha and Alexandria University.
- Launching the ITEP website (www.itep-edu.org) that provides the online program.
- Selecting the candidates' students, and starting testing the program that is going with great success.

ITEP OUTCOMES

Within ITEP project, satisfying the main requirements of the proposal and gain the following outcomes, were achieved:

- Wider communication and cooperation between the EU and Egypt in the academic field.
- Recognition and improvement of e-Learning model in the academic system in Egypt.
- Increased use of modern tools in the planning process and providing higher quality and better relevance of planning outcomes.
- A full set of e-Learning courses with the specified focus and an introduction course on how to become a successful e-Learning student.
- Increasing the environmental awareness among planners and practitioners

ITEP FEEDBACK

1. A pre-course construction evaluation was a part of the project to investigate differences and similarities in teaching and learning styles in Egypt and Europe. One part of this was an on campus evaluation by five Egyptian and five Swedish students done on campus in Egypt and in Sweden. The duration of each evaluation session was about one week, i.e. the students visit each others universities and participate in the campus teaching. These students provided with a set of questionnaires and evaluation criterion to use as instruments during their stay. Then groups of ten students traveled and work together, and a special

focus for them was to highlight pedagogic differences and depict how these are affecting the "average" student's learning process. This evaluation from student's perspective serve as a guidance for what pedagogic concepts that may be the most successful when developing the five courses in the project, both for eLearning courses and campus courses since it will provide information on how students work and what strategies they use to assimilate the subjects that are taught.

2. Another perspective was teacher evolution to the educational process, where Egyptian and European staff together evaluate the similarities and differences between teaching styles, as a conclusion, the material, method of teaching almost the same, the difference was observed regarding number of students , infra structure and different cultures.
3. Selecting candidate students to join the e-learning courses in order to test their with this style of learning. This resulted in selecting 18 candidates with different backgrounds, skills, careers and various degrees ranging from B.Sc., M.Sc. to Ph.D. students. Most of the candidates' students acted very well with promising attitudes and results.
4. Running the first course at Alexandria University with more large number of students "50 students" and the result was also optimistic and gives positive impacts.
5. Alexandria University is taking steps to run these courses on its Post Graduate programs specially that Alexandria University already transferred its postgraduate programs to credit hours systems.
6. Also, Benha University can benefit from the infrastructure by offering professional training programs "modules/sub-modules" to the graduates and to organizations that need such a technology.

CONCLUSIONS

- Improvement of the recent Geomatics educational programs, and exploitation of modern scientific and practical techniques in order to help and qualify students for developing their skills and raising their capabilities to the international standards have been achieved.
- Establishing new degrees in Egypt; "diploma and master in Geomatics".
- Offering services, technical and scientific consultations for the neighboring community, through re-qualifying the existing capabilities of their teams and improving them with the help of the practical training programs offered by the mentioned trials.
- Providing specific training tracks to the teaching staff and the assistants for improving their skills, capabilities and efficiency by using modern devices, equipments and process.
- Creating a high quality atmosphere within the University by means of laying specific programs for promotion, improvement, exploited available skills and capabilities, as well as evolving them.

In sum, our projects are directed to a wide scope; the entire community "students, graduates and the staff members" and to the surrounded society for improving their way of thinking and the way they can deal with the available resources. Likewise, the paper

asks for more emphasis to be directed towards undergraduate studies, where e-learning could be applied gradually to specific courses. In doing so, both students and society will benefit. The former is to benefit through enhancing and encouraging self learning while the latter through the deduction in traffic congestion as a result of remote education.

Finally some questions are to rise; will the time come for Egypt's universities to depend on e-learning whether at the undergraduate or postgraduate level? Will Egyptian universities be equipped with the latest technology to fulfill and facilitate e-learning needs? And above all will staff-members be prepared to use edge cut technology in education?

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