

E-learning & Simulation Labs

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4.1 Introduction

Some people may think that e-learning is a luxury. However, we assert that e-learning satisfies the needs of the community and contributes in solving some of its problems, especially in the developing countries. It is a kind of learning that is not restricted to any place or time thanks to the computer and internet. It is considered complimentary rather than a replacement of traditional learning. Nevertheless, there are scientific degrees and certificates that are granted through e-learning study. Believing in the vital role of e-learning, HEEPF has performed a significant role in preparing the educational environment in faculties and institutes through several activities as shown in figure (4-1).

E-learning is a natural advancement of distance learning that initially began in the form of correspondence (regular transfer of printed materials), then through multi-media, next depending on information technology (e.g. audio-video conferences and radio transmission), and finally through the internet which is the subject of the present chapter.

There is more than one definition of e-learning the most acceptable of which is: "learning with the help of information and communication technology so that it is not restricted to any place or time." Despite the differential views of e-learning, the majority confirm that it is complementary rather than a replacement of traditional learning (vis-a-vis learning). Therefore, Blended Learning emerged to blend traditional methods with e-learning. The concept of e-learning has widened to include using all means of modern technology in the educational process.

In order to be fruitful, e-learning has to involve various levels of interaction and participation including: interaction among learners themselves, between learners and teachers, and between learners and the electronic content which preferably includes the use of multi-media. This can be achieved through a virtual learning environment known as Learning Management System (LMS).

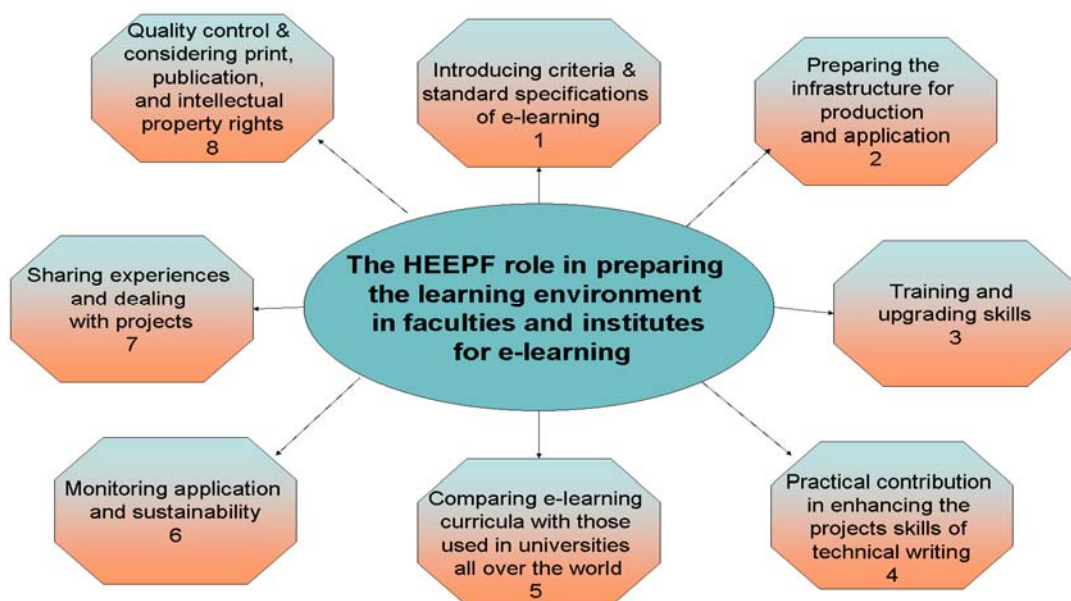


Figure (4-1): HEEPF activities and enhancement oriented towards E-learning

This environment could be uploaded to the internet where it represents the classroom and allows all the kinds of interaction mentioned above through synchronous and asynchronous discussions, e-mail, sending and receiving homework, and administering various tests. Such environment allows both the teacher and students to offer all they have. The teacher offers the educational resources s/he has whether lectures, texts, a multimedia program, video files, motion pictures, or exam questions; students submit their homework and assignments at times fixed by the teacher.

4.2 The place of e-learning in the enhancement priorities

In light of the increasing demand for education, the continually increasing numbers of students, and the paucity of available potentials, it was necessary to include the e-learning system in the higher education enhancement projects. Such system promotes the principle of equal opportunity in education where learning is no restricted to any geographical place or time. It also increases communication and interaction among students through instant forums discussions, e-mail, chat rooms, which develops the team work spirit and enhances creativity. These discussions certainly allow the exchange of views about the presented topics; facilitate teacher access beyond official work hours; give the opportunity to choose the teaching method that suits students (visual, audio, read ...). That is why the enhancement projects embarked on e-learning.

4.3 E-learning and electronic courses developed through HEEPF financed enhancement projects

Although the worldly recognized e-learning was not clear for many of the faculty staff members participating in HEEPF projects, yet many projects developed electronic courses that could be displayed on a screen using the PowerPoint (453 courses distributed on 64 projects) during the four cycles of HEEPF first phase. When calculating the number of courses that were subject to e-learning, they were 213 courses using one of the e-learning management systems (LMS), i.e. Moodle and A-Tutor.

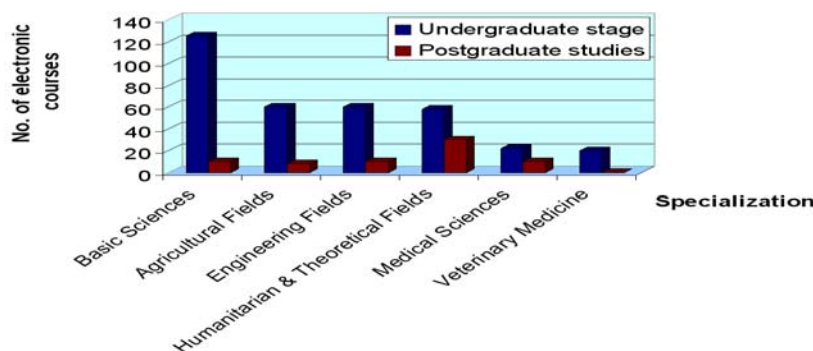


Figure (4-2): A graph of the number of electronic courses produced for the undergraduate and postgraduate stages

The graph in figure (4-2) shows the number of electronic courses produced for the enhancement of the educational process in both the undergraduate and post-graduate stages according to the different theoretical and scientific specializations through HEEPF financed projects during the four cycles.

The graph in figure (4-3) shows the total number of electronic courses produced in all specializations and the number of HEEPF financed projects that produced these courses.

The share of different specializations and universities of electronic courses can be summed up as follows:

- Sciences: (147 courses of which 46 were subject to e-learning systems). Assiut Univ. produced the largest number of courses in sciences. Compared to other universities, Helwan Univ. excelled in the number of courses that were subject to e-learning systems.
- Engineering: about half the number of science courses (72 courses). Cairo Univ. comes at the top with regards to the number of courses that use e-learning systems.
- Information Technology: (7 courses)
- Medical sciences (Medicine, Pharmacy, and Dentistry): (30 courses implemented through 11 projects of which 26 use e-learning systems)
- Agriculture: (78 courses produced through 9 projects of which 23 used e-learning systems)
- Higher Institute for Public Health: (7 courses produced through one project)
- Veterinary Medicine: (23 courses produced through 7 projects)
- Education: (57 courses produced through 5 projects of which 46 use e-learning management systems) The Faculty of Girls had one project which developed 8 courses using e-learning systems.
- Arts: (24 courses produced through 2 projects)

It is worth noting that a number of virtual labs were established through 6 projects developing electronic courses during the four cycles of HEEPF. The number of basic topics that included virtual labs was 100 topics. A good example of these labs is the one established in the Faculty of Sciences, Suez Canal Univ.

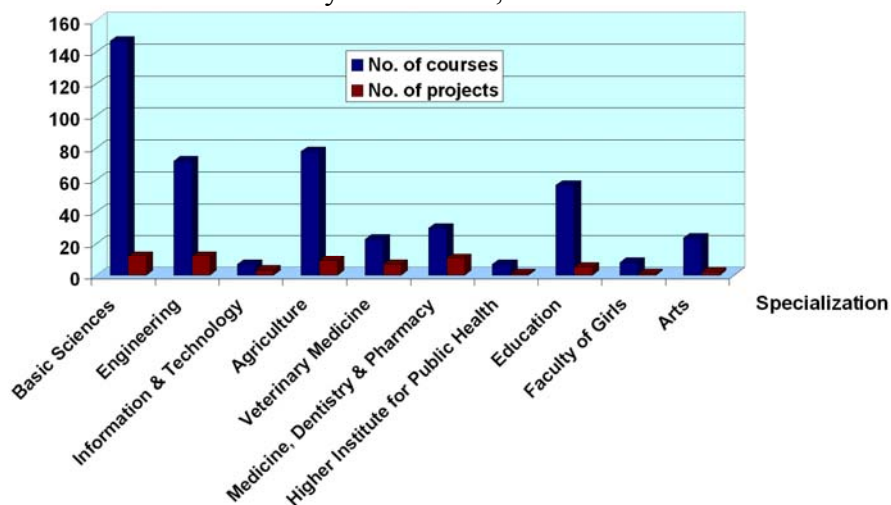


Figure (4-3): A graph of the number of electronic courses and the projects that produced them in different specializations

4.4 HEEPF activities to spread awareness and knowledge of e-learning

Given the need of HEEPF financed projects for experience in the field of e-learning, which is relatively a modern field that needs technical development and continuous training, HEEPF management has contributed in the expenses of training some staff members (e.g. through attending workshops and specialized scientific conferences in this field) in many projects within the context of monitoring and sharing experiences among HEEPF financed projects. The following table shows examples of some training workshops that were organized in this context.

In addition, many financed projects organized training courses to establish the administrative infrastructure of e-learning in universities. For example, project . (A-024-H0) in the Higher Institute of Public Health, Alexandria Univ. held 5 workshops that dealt with different aspects of e-learning and were attended by the faculty staff members and workers in the institute. Four special halls were equipped for the project including a control room, a studio for video taping lectures, and two training halls. The ICDL was adopted as a training curriculum. In addition, two training units were established where 133 staff members and 32 administrative staff were trained on e-learning. The scientific content of 7 training courses was developed for the project (A Preliminary Training Course for Leadership Diploma in collaboration with the World Health Organization). The performance and application of 19 trainees from the Ministry of Health and Population leaderships in different governorates were tested in collaboration with the World Health Organization. Through the project, e-learning was approved as a system in the regulation of the institute and an e-learning marketing program was prepared and implemented. The most important achievements of the project were:

- a) Removing the psychological barrier between the computer and faculty staff members, specially the seniors after training them on using it. In fact, they were the ones who took the decision of e-learning.
- b) The project outputs correspondence with the general trend, the interests of the Ministry of Higher Education, and the Egyptian education initiative of e-learning.

A report of the workshops for e-learning training

	Training Workshop	Date	Place
1	Training on e-learning including introduction, online training and basics of e-learning.	May 2004	Helwan Univ.
2	E-learning Workshop	March 2005	Conference Center- Cairo Univ.
3	E-learning content development	March 2006	Engineering Service Center The AUC
4	Introduction to SCORM	June2006	

4.5 The standards and frameworks of reference followed in HEEPF projects

With the fast progress in e-learning industry, it has become essential to find standard criteria to design and apply the system to ensure its easy operation, handling, accessing, and reuse. Despite the possible challenges, commitment to these criteria, specially those of the accredited institutions, is essential. Therefore, projects managers were made aware of these criteria through training courses. A number of organizations have set basic criteria for e-learning and training such as:

- a) **Advanced distributed Learning (ADL)** on the website www.adlnet.org which is an American governmental organization that searches and develops the features required for e-learning to suit individual needs and turn them into standard criteria.
- b) **Aviation Industry CBT Committee (AICC)** on the website www.Aicc.org.
- c) **IEEE Learning Technology Standards Committee (IEEE LTSC)** on the website www.itsc.ieee.org.
- d) **Educom's Instructional Management Systems (IMS)**
- e) **IMS Global Consortium (IMS)** on the website www.imsproject.org.
- f) **Sharable Content Object Reference Model (SCORM)** is considered one of the most important criteria published by the ADL organization. In fact, it gathers the features specified in AICC, IEEE, and IMS and identifies the specifications of e-learning in an

easily applied way. For example, the scientific content has to crystallize in the shape of a floppy disc that can easily be transferred and accessed. In addition, a number of rules have to be laid down for the sequence of the content of electronic courses to suit students' needs.

4.6 The concepts of e-learning systems followed in HEEPF project

There are many used e-learning systems that all have a management system for the educational process. In addition, they aim at achieving interactivity and allow both the teacher and students to offer what is required of them. These systems vary in efficiency and advantages. But they all allow students to reach the latest information and databases on the internet, and the academic supervisor to introduce self-assessment questions regarding the subjects being taught to get instant feedback from students to identify the level of their activity. They also allow calling and interacting with the academic supervisor or one of his/her assistants in addition to the other different means of interaction through e-mail, chatting, and forums through written text only, audio, or audio-video means.

HEEPF financed projects have been initially given the freedom to choose the e-learning system to use. Examples of such systems are:

- a) **Moodle (Modular Object-Oriented Dynamic Learning Environment)** which is a free software program that can be obtained from the website www.moodle.org and that supports the Arabic language. The **Moodle** is used on a large scale throughout the world. Statistics indicate that there are 21.217 registered sites, that 8.662.444 people use it in the study of 833.596 courses (till the 10th of February 2007), and that it supports more than seventy languages.
- b) **Brihaspati, eCollege, Desire2Learn, Angel, Serco, Sakai, WebCT, Atutor, Blackboard, Scholar360, FirstClass, Edumate, .LRN, Dokeos, Desire2Learn, Top2000 (electronic classrooms), LON-CAPA Start2learn.**

It should be noted that some ready made software programs used in some projects whether to build an e-learning system or to develop the electronic content itself such as Dream Waiver, O Through Ware, Flash, Front Page, Visual Basic, and PowerPoint ..., etc.

4.7 Students' views of the e-learning system

Most students viewed the teacher's role in the e-learning system as different from his/her role in traditional learning. The teacher has turned from a transmitter of knowledge and assessor of students into a designer of the educational process and a scenarist of scientific content. However, they all saw using e-learning at present as a partial solution because of the its non-generalized use in all traditional education courses. E-learning is a means of support to the teacher's role in engaging students in the learning process to gain the skills of self-learning, research, innovation, communication, and team work through study groups on the internet. Thus, we get a well trained graduate who can use the latest technology, compete, and keep pace with the world progress.

Experience has proved that the teacher does not have to be professional in using software programs at all. Rather, s/he has to be motivated and willing to push this process forward. S/he has to collect and organize his/her scientific material in an electronic version (images, written text, video, ..., etc). In addition, s/he has to learn about the great potentials of technology (e.g. motion pictures, simulation, and virtual reality) because his/her chief role is to make scientific material available for it is a property of the educational process, and his/her even bigger role is to organize this material with the help of technicians.

Aspects of print, publication, and intellectual property rights

"Do you have the right to use the scientific materials of others in teaching your course?"

This question has occurred to many of us. To answer such a question, we have to learn about the print and publication rights law. That is, we have to learn what materials we can use and under what conditions.

It is clear from the law that when you use scientific material that belongs to others without their permission and make it available through (e.g. your website or CDs that are given to students), you will be subject to legal questioning. However, you can use scientific content that belongs to others to teach in the classroom or through the internet on the condition that it is not available for all, and so long as this scientific material does not exceed a fixed limit known as **Fair Use Guidelines for Educational Multimedia**.

For example, if scientific material is on a website in which students can log using a username and a password, it is the same as teaching it in a classroom. Therefore, the previous guidelines apply to it. Thus, it is clear that using commercial CDs that contain scientific content and belong to others outside the classroom or for sale is against law, specially if marketing these CDs affects the original product. Moreover, scientific content that belongs to others and is published on the internet has to be protected against copying. Any faculty or institution that trespasses intellectual property rights of others is often subject to questioning.

If you are not sure of something, you can correspond with the owner to ask for permission explaining who you are, the purpose of using this material, and the time of deleting it from the website. You have to keep all such correspondence whether letters or e-mail. As for creating a link on your site to another available site, it is not against print and publication rights. But it is preferable to tell the owner of the site to inform you in case s/he changes its address. The following table shows conditions for the moderate use of multimedia.

Element		Conditions for Moderate Use of Multimedia
Available time		Two years since the beginning of use
Available copies		Two copies (saved on the hard disc)
Available Parts	Video or motion pictures	10% of the original work or 3 mins., whatever is less
	Written text	10% of the original work or 1000 words, whatever is less
	Poems	250 words limited at most by 3 poems or parts of them for the same poet, or five poems parts of which belong to more than one poet from a literary collection
Music		10% of the original work or 30 seconds, whatever is less
Images		5 pictures for the same photographer or artist 10 % or 15 pictures, whatever is less, from a collection of pictures
Database Information		10 % or 2500 fields or cells, whatever is less

The strategic planning unit was assigned by HEEPF management to develop a guide for intellectual property rights for HEEPF financed projects outputs.

4.8 Examples of some e-learning projects

- Figure (4-4) gives examples of some pages of the electronic projects that were implemented in a large number of universities. For example, project . (D-033-L0)

was carried out in the Faculty of Agriculture, Mansoura Univ. to develop agricultural courses to upgrade graduates' skills to satisfy the requirements of the work market. In the field of developing laboratory experiments for the Physics curriculum in the Faculty of Sciences, Suez Canal Univ., the figure presents the homepage of project . (B-097-Q0). It also presents the homepage of project . (A-069-G0) in the Faculty of Engineering, Ain Shams Univ. which developed an accredited program for land information. Moreover, it presents the homepage of project . (A-011-S0) in the Faculty of Education, Tanta Univ. to train faculty staff members in the faculties of Tanta Univ. on designing, producing, and developing their courses through the internet.



Figure (4-4): Examples of some sites of the financed projects that produced electronic courses in different universities

- Figure (4-5) shows the homepage of project . (A-110-K0) in the Faculty of Education, Helwan Univ. which aims at developing a technical diploma in Educational Management using distance learning.



Figure (4-5): an applied model for obtaining a scientific degree through the e-learning system in the Faculty of Education,

- Figure (4.6) shows the homepage of project . (A-105-G0) in the Faculty of Medicine, Ain Shams Univ. which worked on the application of systematic teaching of community Medicine courses. A large number of projects have embarked on using website pages to do a large number of statistics. Project . (A-105-G0) is a good example of activating these procedures as a quality mechanism, as shown in figure (4.7).



Figure (4-6): Some snapshots of the site of project (A-105-G0). It shows the interaction of the project with the surrounding community
<http://com-med.ikalogic.com/>

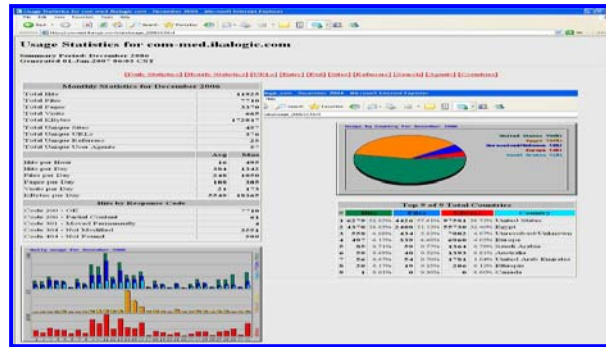


Figure (4-7): Some analytical graphs of the demand on the site of project (A-105-G0) inside Egypt and in Saudi Arabia, Europe, and the U.S.

<http://com-med.ikalogic.com/stats>

4-9 Examples of some simulation labs and virtual experiments

Some projects used virtual labs to emulate reality so that students can perform some experiments, see the results many times on the computer, and be tested. There are some three-dimensional virtual models which students can use instead of real models or samples, such as three-dimensional bones that students can interact with as if they were tangible. Figure (4.8) shows an image of the Physics lab in the Faculty of Sciences, Suez Canal Univ. which project (B-097-Q0) transformed into a virtual lab.

The project was keen on obtaining the negative feedback of students benefiting from such virtual labs to make sure they do not need any help from the lab supervisors, which achieves student autonomy in the performance of practical and simulation experiments. The following are examples of the questions put forward by the project in the questionnaires administered to students:

1. Asking for students' views of planning in the internal site, the external shape of the internal site, the presented topics, the method of username, the absence system on the site, the way of presenting the scientific experiment in simulation experiments, the way of practical and video explanation, and the way of performing the simulation experiment.
2. Asking for students' opinions of the easy performance of experiments, their desire to perform simulation experiments, the extent of their need of staff members, the extent to which students could deal with the system form the first time, and the extent to which they benefited from simulation experiments.



Figure (4-8): The Physics lab in the Faculty of Sciences, Suez Canal Univ. (B-097-Q0)

The production of simulation experiments goes through several stages:

1. **Experiment Analysis:** It needs a special skill of staff members since s/he analyzes the way the experiment works and formulates this analysis into a material the programmer can understand.
2. **Simulation Program Implementation:** it needs staff members' follow-up with the programmer to explain the idea and the way of implementing it; and provide him/her

with the requirements of the simulation experiment, the methods of changing the variables, their limits, and the various invariable elements of the desired materials or phenomena.

3. **Simulation Program Implementation Follow-up:** It needs continuous follow-up with the experiment analyst to reach the final shape of the experiment.
4. **Delivery:** In this stage, the experiment is performed and the steps and results are made sure of.
5. **Finalizing:** After finalizing the production of the experiment, two copies are produced: one for the exam; the other for the teacher of the subject. This job is done by the programmer who uploads three copies of the experiment on the server of the site. Each experiment includes the following: a simulation experiment, theoretical explanation of the experiment, an audio-video explanation of the experiment, the steps of performing the simulation experiment.



Figure (4-9): The imported circulating table (to the left) and automatic multi-level table that was made in Egypt (to the right), and some virtual models of bones made through project (A-070-J0)

4.10 Summary and recommendations

Through HEEP first phase projects, it appears that technology will not replace science. However, the teacher who will be aware of education technology will have the priority in the local or world competition "To 'e' or not to be". Thus, e-learning in the implemented projects was a supplement rather than a substitute of traditional learning. In fact, e-learning is indispensable in solving some problems related to the educational process and keeping pace with world development. Therefore, we have to exert all efforts to turn scientific content into an electronic version that is rich of multimedia. It has also become essential to put these electronic courses in an electronic management system on the internet taking the following into consideration:

1. Training faculty staff members on developing electronic courses in a way that ensures their production and electronic management of the sequences of these courses.
2. Following the international quality rules and specifications when developing electronic courses
3. Encouraging universities on the provision of multimedia equipment in the lecture halls and the use of an electronic management system
4. Using virtual labs to face the deficit in practical experiments models in practical faculties.
5. Extending the establishment of specialized digital libraries as a substitute of traditional libraries

To complete what has been produced during the previous phase and employ it more effectively in the educational process in different universities and avoid repetition in the future plans, HEEP management proposes coordination with the Information and

Communication Technology Project (ICTP), the National Center for e-Learning (NeL), and the projects financed by the Faculty of Education Project and other financing sources like TEMPUS through universities to take the following measures:

1. Setting specific criteria and specifications for the electronic courses that will be produced in the next phase through the National Center for e-Learning, followed by a conference to which different parties are invited to define these criteria.
2. Collecting the electronic courses and simulation experiments produced by different organizations (HEEPF projects, the NeL, e-learning centers in universities, and others) through the Higher Council of Universities, listing them in one **Portal**, and making them available on the internet.
3. Assessing the electronic version of courses according to the set criteria
4. Setting priorities for transforming electronic courses into the electronic version that corresponds to the set criteria in parallel with what will be produced by the e-learning centers in universities in different fields and specializations

After setting priorities, the output of these projects will be effectively publicized in the academic community to benefit from these courses and experiments and avoid refinancing similar projects in this context.

Appendix A: Examples of the Work agenda used in e-learning conferences

Title of Work Agenda	Date	Place
Dr. Sobhy Atalla - Fayoum University - Egypt Computer Assisted Functions Graphics as a tool for enhancement of mathematics teaching in the Egyptian universities	January 2007	Fourth E-Learning Conference at the AUC, Cairo
Dr. Sameh Rehan - Mansoura University - Egypt Using moodle for Teaching solid state engineering (sse) course in mansoura university (mu)		
Dr. Sobhy Atalla - Fayoum University - Egypt A multimedia - enhanced educational software package for a mathematics introductory course in the Egyptian universities		
Dr. Dina El Metwally, Suez Canal University Joint Masters of Health Professions Education. A dream come true!	December 2006	Higher Education Enhancement Conference at the National Center for Research
Dr. Salah Taher, Tanta University Web-Enabled Courseware For Reinforced Concrete Structures.		
Dr. Shawky El-Abd, Tanta University Hospital Networking and Telecommunication in Medical Service and Education.		
Dr. Aly El-Bahrawy, Ain Shams University Enhancing Writing, Analysis and Presentation Skills for Engineers.		
Dr. Fawzy El-Nadi, Cairo Univ. An Egyptian Experiment of the Enhancement of the Quality of Education in Egypt	August 2008	Sadat Academy
Dr.Fawzy Elnady, Cairo University-Egypt "Multimedia and plastinated anatomy" AAVMC Education Symposium , Association of American Veterinary Medical Colleges meeting.	March 2006	Washington D.C., USA
Dr. Hatem El-Bolok, Dr. Manal Ismail , Helwan University - Egypt Enhancing the use of teaching technologies and facilities at Helwan university	January 2006	Third E-Learning Conference at the AUC, Cairo
Dr. Amr Radwan - Helwan University - Egypt E-Learning: From Theory to Practice		
Dr. Mamduh A. El-Messeri, Dr. Gaber Abu-Zaid, Dr. Anwaar A. Arafa - Alex University - Egypt Public health: web based courses.		
Dr. Rasha Sharaf - Helwan University - Egypt Internet Talks Arabic "Satisfying the Needs of Arab E-learners"		
Dr. Sameh Rehan, Mansoura University - Egypt Evaluating an e-Learning experiment to teach an engineering Course to students @ Mansoura university		

Dr. Hany Mohamed Elsheikha, Dr.Hany Marei, Mansoura University - Egypt Enhancement of Veterinary Image-Based Courses education by online multimedia interactive presentations: development and preliminary evaluation		
Dr. M.E.Issa, Dr. S.F.Taher, Dr. N.A.El-Esnawy, Cairo University - Egypt Interactive E-Learning content for reinforced concrete courses using DHTML		
Dr. Fawzy Elnady, Cairo University- Egypt Use of Multimedia Interactive Computer Programs, QTVR Models and Plastinated Specimens in Teaching Anatomy.	May 2005	Oslo- Norway

Appendix B: A report of the electronic courses and e-learning developed by HEEPF projects

First: the Engineering fields

Project .	Course Title	Place
A-011-S0	Mechanic Measurements	Third year, Mechanic Engineering, Faculty of Engineering, Tanta Univ.
A-072-K0	Fundamentals of soil Mechanics	First year, Civil Engineering, Faculty of Engineering, Mattareya, Helwan Univ.
	Structural Analysis 1	
	Geotechnical engineering designs	Third year, Civil Engineering, Faculty of Engineering, Mattareya, Helwan Univ.
	Structural Analysis 3	
A-085- I0	Introduction to Mechatronics	First year, Electrical and Mechanic Engineering, Assiut Univ.
	Mechatronic Systems Design	
	Programmable Logic Controller (PLC)	Second year, Electrical and Mechanic Engineering, Assiut Univ.
	Mechatronics laboratory	Third year, Electrical and Mechanic Engineering, Assiut Univ.
	Introduction to Mechatronics	Fourth year, Electrical and Mechanic Engineering, Assiut Univ.
A-253-J0	Digital Electronics & Accurate Processing EPM204	Second year, Electrical Force, Faculty of Engineering, Cairo Univ.
	Automatic Control EPM306	Third year, Electrical Force, Faculty of Engineering, Cairo Univ.
	Computer Control EPM447	Fourth year, Electrical Force, Faculty of Engineering, Cairo Univ.

	Industrial Control EPM457	A Diploma in Electrical Force, Faculty of Engineering, Cairo Univ.	
	EPM513 Components of Control Systems		
	Digital Control systems EPM635		A Master's Degree in Electrical Force, Faculty of Engineering, Cairo Univ.
	Control of Electrical Machines EPM519		A Diploma in Electrical Force, Faculty of Engineering, Cairo Univ.
	Advanced Control EPM 636		A Master's Degree in Electrical Force, Faculty of Engineering, Cairo Univ.
B-029-k0	Processing, Simulation, & Hidden Systems	Electrical Engineering, Helwan Univ.	
	Pumps & Generators	Mechanic Engineering, Helwan Univ.	
	Concrete Establishments Material Characteristics	Civil Engineering, Mattereya, Helwan Univ.	
B- 070-T1	Fundamentals of electrical engineering	First year, Electrical Force Engineering, Shubra/Banha	
	Basic electronics	First year, Electrical Force Engineering, Shubra/Banha	
	Electrical measurements	Second year, Electrical Force Engineering, Shubra/Banha	
	Power system analysis	Third year, Electrical Force Engineering, Shubra/Banha	
	High voltage engineering (Grounding)		
	Generation & Transmission of electric power		
	Power system Protection		
	Computer applications in high voltage Utilization of electric energy	Fourth year, Electrical Force Engineering, Shubra/Banha	
B-091-L0	Engineering Elements of eotechnical	Second year, Civil Engineering, Mansoura/ Helwan Univ.	
	Elements of Reinforced concrete for Architectural Engineering students	Second year, Construction Engineering, Mansoura/ Helwan Univ.	
	Shallow Foundation	Third year, Civil Engineering, Mansoura/ Helwan Univ.	
	Soil Hydraulics	Third year, Civil Engineering, Mansoura/ Helwan Univ.	
	Irrigation	Third year, Civil Engineering, Mansoura/ Helwan Univ.	
	Deep Foundation	Fourth year, Civil Engineering, Mansoura/ Helwan Univ.	
	Environmental Engineering Geotechnical Engineering B.SC project		
B-096-J0	Reinforced Concrete 1	Second year, Civil Engineering, Cairo/ Tanta Univ.	
	Reinforced concrete 4	Third year, Civil Engineering, Cairo/ Tanta Univ	

	Reinforced concrete 2	Fourth year, Civil Engineering, Cairo/ Tanta Univ
	Reinforced concrete 3	
C-044-T0	Engineering geology and Soil Science	Second year, Construction Engineering, Zaqaziq
	Soil Mechanics I	
	Structural Analysis II	
	Structural Mechanics II	
	1-Foundation I, 2-Computer Aided Analysis of Structures I, 3-Computer Aided Analysis of Structures II, 4- Earthquake Engineering Soil Mechanics I, 5-Structural Analysis II, 6-Structural Mechanics II,7-Foundation I, 8-Computer Aided Analysis of Structures I Computer Aided Analysis of Structures II Earthquake Engineering	Fourth year, Construction Engineering, Zaqaziq
C-096-H0	Desalination	Fourth year, Mechanic Engineering, Alex. Univ.
	Desalination (Advanced Course)	Postgraduate studies, Mechanic Engineering, Alex. Univ.
D-042-L0	Basic Electronics	First & Second year, Electronic Engineering, Mansoura Univ.
	Solid State Electronics	
	Electronics Labs	First, Second, year, Electronic Engineering, Mansoura Univ.
D-147-P2	1-Power Electronics,2-Electrical Power, 3- Microprocessor	Third year, Power & Machine Engineering, Southern Valley
	Computer Architecture	Third year, Computer Control Engineering, Southern Valley
	1- Electrical Drives 2-Power Syst 3-Computer Networks	Third year, Power & Machine Engineering, Southern Valley
	Data Communication Networks	Third year, Communications & Electronics Engineering, Southern Valley
A-045-J0	Advanced Continuum Mechanics	A Diploma & Master's Degree in Mechanic Engineering, Cairo Univ.
	Digital Integrated Electronics	A Diploma & Master's Degree in Electrical Engineering, Cairo Univ.
	Intelligent Control Systems	
	Special Topic: Electronics Cooling	
	Robotics Engineering	A Diploma & Master's Degree in Mechanic Engineering, Cairo Univ.
	Mechanics of deformable solids	
	Mechanical Vibrations	
Oil and Gas Pipeline Design	A Diploma & Master's Degree in Oil Engineering, Cairo Univ.	

Electronic Courses in the field of Science

Project .	Course Title	Place
A-011-S0	Topology	Third year, Faculty of Science, Tanta
A-082-I0	General Chemistry Introductory Organic Chemistry Practical Physics for first term Analytical Engineering for second term General Mathematics (Algebra) Calculus (First part) Differential Calculus in one variable Practical Physics for first term Practical Physics for second term Forthran Language for second term Differential Calculus for second term Introductory Quantitative Analysis Using Computer in Physics	First year, Chemistry, Faculty of Science, Assiut First year, Physics, Faculty of Science, Assiut First year, Mathematics, Faculty of Science, Assiut Second year, Physics, Faculty of Science, Assiut Second year, Mathematics, Faculty of Science, Assiut Second year, Chemistry, Faculty of Science, Assiut Third year, Physics, Faculty of Science, Assiut
C-029-J1	Vibrations and Waves	First year, Physics, Faculty of Science, Fayoum
	Mathematical Logic	Second year, Faculty of Science, Assiut
C-037-K0	1-Internet Application Development, 2-Advanced Application Development using CPBRA- Oracle, -SQL Server, 3-Advanced Database 4-Object Oriented Analysis & Designs 5-Algorithm Design 6-Advanced Artificial Intelligent 7-Compter Network 8-Data Structure and Algorithm using 9-JAVA(DSAL), 10- Internet Working 11-Network Management and Security (NMS)	A Diploma & Master's Degree in Information and Technology, Faculty of Science, Assiut
C-093-Q0	1. Basic Organic Chemistry (2 parts) 2. Separation Chemistry & Chromatography 3. Heterogeneous Organic Chemistry 4. Spatial Chemistry 5. Biological, Organic Chemistry in most people	Third year, Organic Chemistry, Faculty of Science, Suez Canal
	Spectrum Chemistry, Mass Spectrum, Magnetic Nuclear Analysis, Ultraviolet ray, Infrared ray (2 parts)	Third & Fourth year, Organic Chemistry, Faculty of Science, Suez Canal
	Dye Chemistry	Fourth year, Organic Chemistry, Faculty of Science, Suez Canal
	Natural Product Chemistry	Fourth year, Organic Chemistry, Faculty of Science, Suez Canal

		Science, Suez Canal
A-061-P1	Introduction to plant anatomy	First & Second year, Botany, Faculty of Science, Suhag
	Introduction to plant taxonomy	Second year, Botany, Faculty of Science, Suhag
	Introduction to plant ecology	Second year, Botany, Faculty of Science, Suhag
	Introduction to Mycology	Third year, Botany, Faculty of Science, Suhag
	Introduction to physiology of fungi	Fourth year, Botany, Faculty of Science, Suhag
B-035-P1	Heredity	First year, Botany, Faculty of Science, Suhag
	1. Heredity 2. Biology	Second year, Botany, Faculty of Science, Suhag
	Heredity	Third year, Botany, Faculty of Science, Suhag
	Biology	Fourth year, Botany, Faculty of Science, Suhag
B-046-I0	Physical Geology Optical Mineralogy Mineralogy	First year, Geology, Faculty of Science, Assiut
	1-Igneous Rocks. 2-Invertebrate Paleontology, 3-Crystallography 4-Mineralogy, 5-Sedimentary Rocks 6-Metamorphic Rocks	Second year, Geology, Faculty of Science, Assiut
	1- Rock Mechanics 2- Field Geology	Second year, Geology, Faculty of Science, Assiut
	1-Igneous Petrology 2-Micropaleontology 3-Stratigraphy 4-Structural Geology 5-Structural Analysis, 6-Geophysics 7-Hydrogeology, 8-Petroleum Geology 9-Diagenesis, 10-Trace Fossils 11-Geology of Africa, 12-Historical Geology 13-Palynology, 14-Metamorphic Petrology 15-Sedimentary Petrology, 16 Gravity Methods 17-Electric Methods	Third year, Geology, Faculty of Science, Assiut
	1-Ore Deposits, 2-Geochemistry 3-Ore Petrology, 4-Biostratigraphy 6-Sedimentary Rocks	Fourth year, Geology, Faculty of Science, Assiut
	1- Pale ecology 2- Eomorphology 3- Depositional Environments 4- Geothermics 5-Well Logging 6-Photogeology 7- Environmental Geology 8- Sedimentary Basins 9-Sequence Stratigraphy 10-Earth Resources 11-Remote Sensing 12-Subsurface Geology 13-Seismic Methods 14-Magnetic Methods	Fourth year, Geology, Faculty of Science, Assiut

B-048-I2	1- chromatography, 2- Synthesis 3- Spectroscopy 4- Petroleum 5-Polymers	First Term, Organic Chemistry, Faculty of Science, Assiut
B-051-I0	<p>Animal Classification level (1) Embryology</p> <p>1-Properties of Matter level (1) 2-Electricity level (1) 3-Heat and principles of Thermodynamics level (1) Organic Chemistry (Organic) level (1) General Chemistry (Non - organic) (level1) General Chemistry (Inorganic) level (1)</p> <p>General Chemistry (practical _ organic) level(1)</p> <p>Algebra level (1)</p> <p>plant morphology level(1)</p> <p>Practical physics (1st term) Practical physics (2nd term) 1- Biotechnical Analysis 2- Industrial Microbiology 3- Mycetoma Chemotherapy 4-Mineralogy</p>	<p>First year, Zoology, Faculties of Science, Pharmacy, and Medicine, Assiut Univ.</p> <p>First year, Physics, Faculties of Science, Engineering, Pharmacy, Education</p> <p>First year, Chemistry, Faculties of Science, Engineering, Pharmacy, Veterinary Medicine</p> <p>First year, Chemistry, Faculty of Science</p> <p>First year, Mathematics, Faculties of Science, Engineering, Education, Assiut Univ.</p> <p>First year, Botany, Faculties of Science and Pharmacy, Assiut Univ.</p> <p>Second year, Physics, Faculty of Science, Assiut Univ.</p> <p>Fourth year, Geology, Faculty of Science, Assiut Univ.</p>
B-099-P1	<ol style="list-style-type: none"> 1. Experiments on lens and mirror laws (8 experiments) 2. An experiment on identifying the refraction of a prism using a critical angle 3. An experiment on applying Mole's law of Polarization 4. An experiment on measuring the polarization circle of a sugar tube using Polar meter 5. An experiment studying the phenomenon of electrolyte effect 6. An experiment studying all of Newton's spheres using (a travel Microscope) 7. An experiment on light intervention using a prism 8. Fernel's Experiment on Diffraction 9. An experiment on photic fibers 10. Thomason's Experiment on the identification of the qualitative charge of electron 	<p>Practical Physics for Teachers of Physics, Faculty of Science</p>

	<p>11. Milikan's Experiment on the drop of oil</p> <p>12. An experiment on the implementation of Stephen Poltzman's law of radiation</p> <p>13. An experiment on Helzenberg's principle of non-dentification</p> <p>14. An experiment on diagonal movement</p> <p>15. An experiment on cast movement</p> <p>16. An experiment on thermal engine movement</p> <p>17. An experiment on the implementation of gases law</p>	
C-065-I0	Basic Environmental Geosciences & Earth Environmental Systems Environmental weather & climatology Environmental Education1	First year, Biology, Geology & Environment (a new section), Faculty of Education
	Hydrology & Hydrogeology (Hydrosphere) Environmental Education2 Aquatic & Terrestrial plant Ecology(En 204)	Second year, Biology, Geology & Environment (a new section), Faculty of Education
	1- Environmental Geomorphology 2- Principle of animal ecology 3- Soil Resources 4- Environmental Chemistry1 5- Earth observation systems (Introduction to Remote Sensing)	Third year, Biology, Geology & Environment (a new section), Faculty of Education
	1- Aquatic & Terrestrial Animal Ecosystem 2- Environmental Chemistry2 3- Energy & Mineral Resources 4- Natural Hazards & Risk assessment 5- Human Impact on the Environment 6- Microbial & water pollution Policy Regulations and Law for Environmental Protection	Fourth year, Biology, Geology & Environment (a new section), Faculty of Education
	Field training methods in environmental sciences	First to Fourth year, Biology, Geology & Environment (a new section), Faculty of Education
D-078-Q0	Physiology	Preparatory year (Pharmacy & Dentistry) and First year, Biology (Science)
	Pregnancy	Preparatory year (Pharmacy ,Dentistry & Veterinary Medicine) and Second year, Biology & Zoology (Science)
	Pregnancy & Fetus Environment	Preparatory year (Pharmacy) and third year, Zoology (Science)
	Physiology	Second year, Chemistry

		(Science)
	Physiology (in Arabic)	First and third year, Biology (Education)
	Invertebrates & Parasites	Preparatory year (Pharmacy & Dentistry) and first year, Biology (Science)
	Parasites	Fourth year, Zoology (Science)
	Entomology	Third year, Zoology (Science)
D-122-J0	Molecular Biology (1)	First year, Zoology (Science), Cairo Univ.
	Molecular Biology (2)	Third year, Zoology (Science), Cairo Univ.
	Molecular Biology (3)	Fourth year, Zoology (Science), Cairo Univ.

A Report of Electronic Courses and E-Learning in the Field of Information Technology

Project .	Course Title	Place
D-091-I0	1. Modeling & Simulation 2. Geographic Information Systems	Fourth year, Information Systems, Faculty of Information & Technology
	Expert Systems	Fourth year, Computer Science, Faculty of Information & Technology
	Electronic Commerce	Fourth year, Computer Science, Faculty of Information & Technology
	Decision-taking Systems	Fourth year, Information Systems, Faculty of Information & Technology

A Report of Electronic Courses and E-Learning in the Center for Education Technology:

Project .	Course Title	Place
B-029-K6	History of Specialization	Information & Technology, Center of the University Electronic Course Service, Helwan Univ.
	History of Pharaonic Egypt	History, Center of the University Electronic Course Service, Helwan Univ.
	Skills & Applications in Social Systems	Arts, Center of the University Electronic Course Service, Helwan Univ.
	Information Technology	Computer, Center of the University Electronic Course Service, Helwan Univ.
	Swimming Group	Athletic Education, Center of the University Electronic Course Service, Helwan Univ.

A Report of Electronic Courses and E-Learning in the Field of Agriculture

Project .	Course Title	Place
A-011-S0	General Entomology	Second year, Agriculture, Tanta Univ.
	Plant Nutrition	Third year, Agriculture, Tanta Univ.
B-029-K1	Plant Anatomy	Center of the University Electronic Course Service, Agriculture
D-097-H0	1. Introduction to New Energy 2. Wind Energy 3. Solar Energy Systems	Third year, Agricultural Engineering, Alex. Univ.
	1. Biological Masses, Hydrauphotic cells & its applications	Fourth year, Agricultural Engineering, Alex. Univ.
D-126-H1	1- Introduction to all Pollution 2- Biochemical and biological effect of air pollution 3-Diagnosis of air pollution 4-Introduction to water 5- Water pollution 6- Environmental toxicology 7-Introduction to soil pollution 8- Environmental Management	Postgraduate studies, Plant Pathology, Faculty of Agriculture, Alex. Univ.
D-178-Q0	1. Biological Statistics 2. Fundamentals of Plant Growth	Third year, Plant & Agricultural Crops, Faculty of Science, Suez Canal Univ.
	1. Improving Self-crops 2. Improving Hybrid Crops 3. Designing & Analyzing Agricultural Experiments	Fourth year, Plant & Agricultural Crops, Faculty of Science, Suez Canal Univ.
A-066-H0	Principles of agro-ecosystems	First year, Land Section, Faculty of Agriculture, Alex. Univ.
	1-Fundamentals of soil science 2- Properties of collids 3- Hydraulics 4- Soil genesis classification 5- Land reclamation, irrigation and drainage 6- Soil Physics	Third year, Land Section, Faculty of Agriculture, Alex. Univ.
	1-Soils, water, fertilizer, and plants analysis 2- Principles of geographic information system (GIS) & remote sensing 3- Soil chemistry 4- Soil microbiology 5- Soil as a medium for plant growth 6 - Soil fertility and its management 7- Irrigation and drainage of agricultural land	Fourth year, Land Section, Faculty of Agriculture, Alex. Univ.
B-088-L0	Plant Pathology (Fundamentals)	Fourth year, Agricultural Guidance, Plant Protection, & a Public Section (Plant Pathology), Faculty of Agriculture, Mansoura Univ.
	Plant Disease Fighting	Third year, Plant Protection, (Plant Pathology), Faculty of Agriculture, Mansoura Univ.
	Fruit Pathology	Fourth year (Public Section) (Plant

		Pathology), Faculty of Agriculture, Mansoura Univ.
	1. Physiological Plant Pathology 2. Bacterial Plant Pathology	Fourth year (Plant Pathology Section), Faculty of Agriculture, Mansoura Univ.
	Outward Shape of Plants & Anatomy	First year, Public Section (Agricultural Plants) Faculty of Agriculture, Mansoura Univ.
	Physiology Plant	Second year, Public Section (Agricultural Plants) Faculty of Agriculture, Mansoura Univ.
	1. Permanently Green Fruit 2. Falling Fruit 3. Decorative Plant Production 4. Garden Plant Reproduction	Third year, Garden Section, Fruit, Faculty of Agriculture, Mansoura Univ.
	Land Reclamation	Third year, Land, Faculty of Agriculture, Mansoura Univ.
		Third year, Land Economy, Faculty of Agriculture, Mansoura Univ.
	1. Land Maintenance 2. Soil Fertility & Fertilizers 3. Land Morphology 4. Land Nature	Fourth year, Land, Faculty of Agriculture, Mansoura Univ.
	Grain & Legume Crop Production	Third year, Crops, Faculty of Agriculture, Mansoura Univ.
	Sugar & Untraditional Crop Production	Fourth year, Crops, Faculty of Agriculture, Mansoura Univ.
	Fiber & Oil Crops	Third year, Crops, Faculty of Agriculture, Mansoura Univ.
	Fodder & Pasture Crops	Third year, Crops, Faculty of Agriculture, Mansoura Univ.
	1. Guidance Methods 2. Principles of Agricultural Guidance	Third year, Guidance, Faculty of Agriculture, Mansoura Univ.
	Guidance Systems	Fourth year, Guidance, Faculty of Agriculture, Mansoura Univ.
	Liquid Milk Microbiology	Milk Science & Technology, Faculty of Agriculture, Alex. Univ.
D-033-L0	1. Practical Organic Chemistry 2. Practical Biological Chemistry 3. Practical Land Reclamation 4. Practical General Microbiology	Second year, Economy, Crops, Public, Land, Faculty of Agriculture, Mansoura Univ.
	Milk Microbiology (Practical)	Third year, Milk, Faculty of Agriculture, Mansoura Univ.
	Poultry Production (Practical)	Third year, Poultry & Animal Production, Agricultural Guidance, Food Industries, Agricultural Economy, & Agricultural

		Engineering, Faculty of Agriculture, Mansoura Univ.
	Poultry Nutrition (Practical)	Third year, Poultry Production, Faculty of Agriculture, Mansoura Univ.
	Vegetable Production (Practical)	Third year, most sections, Faculty of Agriculture, Mansoura Univ.
		Third year, Agricultural Engineering, Faculty of Agriculture, Mansoura Univ.
		Fourth year, Public Section, Faculty of Agriculture, Mansoura Univ.
	Land Microbiology (Practical)	Fourth year, Land, Faculty of Agriculture, Mansoura Univ.
	Milk & its Products Technology (Practical)	Fourth year, Food Industries, Animal Production, & a Public Section, Faculty of Agriculture, Mansoura Univ.
	Food Industry (Practical)	Fourth year, Public Section, Faculty of Agriculture, Mansoura Univ.
	Milk Livestock Production (Practical)	Animal Production, Faculty of Agriculture, Mansoura Univ.
	Bees & Silkworm Raising (Practical)	Fourth year, Plant Protection, Agricultural Guidance, Rural Development, Public Section, 7 Gardens, Faculty of Agriculture, Mansoura Univ.
	Biological Fighting (Practical)	Fourth year, Plant Protection, Faculty of Agriculture, Mansoura Univ.
	Land Fertility & Fertilizers (Practical)	Fourth year, Land & Public Section, Faculty of Agriculture, Mansoura Univ.
	Soil & Water Analysis (Practical)	Fourth year, Land, Faculty of Agriculture, Mansoura Univ.

A Report of Electronic Courses and E-Learning in the Field of Veterinary Medicine

Project .	Course Title	Place
A-011-S0	Application of Animal Nutrition	Second year, Veterinary Medicine, Tanta Univ.
	Animal, Poultry, & Fish Nutrition & Malnutrition	
C-024-L0	Veterinary Histology	First year, Histology, Faculty of Veterinary Medicine, Mansoura Univ.
	Veterinary Pathology	Second & Fourth year, Pathology, Faculty of Veterinary Medicine, Mansoura Univ.

	Veterinary Radiology	Fifth year, Radiology, Faculty of Veterinary Medicine, Mansoura Univ.
C-061-I0	Animal Pathology (Internal & Contagious)	First term, Animal Pathology, Faculty of Veterinary Medicine, Assiut Univ.
	Poultry Pathology	First term, Poultry Pathology, Faculty of Veterinary Medicine, Assiut Univ.
	Fish Pathology	First term, Fish Pathology, Faculty of Veterinary Medicine, Assiut Univ.
	Animal Surgery	First term, Surgery, Faculty of Veterinary Medicine, Assiut Univ.
	Clinical Laboratory Diagnosis	First term, Clinical Diagnosis, Faculty of Veterinary Medicine, Assiut Univ.
C-068-I0	Meat Hygiene theoretical	Fourth year, Food Health, Faculty of Veterinary Medicine, Assiut Univ.
	Meat Hygiene practical	
A-041-N0	1. Delivery 2. Anatomy 3. Surgery 4. Contagious Diseases 5. Fish 6. Internal Diseases 7. Microbiology	B.A. Current Departments of the Faculty of Veterinary Medicine, Assiut Univ.
B-087-L0	Veterinary contagious Diseases	Fifth year, Internal & Contagious Diseases, Faculty of Veterinary Medicine, Mansoura Univ.
D-075-H0	1. Surgery 2. Parasites 3. Anatomy	B.A. Surgery, Parasites, Anatomy, Faculty of Veterinary Medicine, Alex. Univ.

A Report of Electronic Courses and E-Learning in the Field of Medicine

Project .	Course Title	Scientific Field	Place
A-011-S0	Orthodontics	Dentistry	Third year, Dentistry, Tanta Univ.
	Pharmacology	Pharmacy	Third year, Pharmacy, Tanta Univ.
	Gynecology & Obstetrics	Medicine	Sixth year, Medicine, Tanta Univ.
A-082-I0	Fundamentals of Pediatrics	Pediatrics	Second year, Medicine, Assiut Univ.
A-107-J0	Advanced Life Support	Medical Education	5th,6th & Post Grad Kasr El-Eini Medicine, Cairo Univ.

	Interpretation of Normal & Abnormal Bloods Picture		1st,2nd,6 th , Cairo Univ.
	Interpretation of Heart Sounds		5th,6 th Cairo Univ.
	Fluid & Electrolyte Imbalance		2nd,6th & Post Grad, Kasr El-Eini Medicine, Cairo Univ.
C-014-Q0	An introduction into Health Professions Education 1- The Nature of Student learning and the Learning Environment 2- Curriculum Analysis and Course Design 3- Developing Professional Skills 4- Measuring health Professions Competencies 5- Research Methodology 6- Total Quality Management 7- Program Evaluation 8- Community-Based Education and Problem-Based Learning	Medical Education	Master's Degree in Medical Education, Faculty of Medicine, Suez Canal Univ. - Masterekht
A-060-P1	Using Digital Technology in the Enhancement of the Educational Process in the Pediatrics Department	Pediatrics	Fifth year, Faculty of Medicine, Suhag Univ.
A-105-G0	Introduction to community medicine	Society Medicine	Fourth year, Faculty of Medicine, Ain Shams Univ.
B-120-J0	Evidence-Based Medicine	Pediatrics	Ph.D. Kasr El-Eini Medicine, Cairo Univ.
C-015-Q0	Clinical Skills Laboratory Course	Excellent Medical Education	Child Handicap, Faculty of Medicine, Suez Canal Univ.
C-041-S0	An Enhanced Multimedia learning unit at the ENT Department Tanta University	Otolaryngology	Fourth year, Faculty of Medicine, Tanta Univ.
D-083-H0	1. Physicians Course 2. Nurses Course 3. Natural Remedy Specialist Course 4. Psychological Specialist Course 5. Social Specialist Course 6. Early Speech Intervention Specialist Course	Pediatrics	Child Handicap, Faculty of Medicine, Alex. Univ.
D-156-P1	Gynecology & Obstetrics Course	Gynecology & Obstetrics	Fourth & Fifth year, Faculty of Medicine, Suhag Univ.

A Report of Electronic Courses and E-Learning in the Higher Institute for Public Health

Project .	Course Title	Place
A-024-H0	1. E-learning skills 2. Problem-solving learning 3. Leadership 4. Health Information Systems 5. Health Management & Comprehensive Quality Management 6. Preliminary Health Care & Health System 7. Developing an electronic course	The Higher Institute for Public Health, Alex. Univ.

A Report of Electronic Courses and E-Learning in the Field of Education

Project .	Course Title	Place
A-011-S0	Principles of Racket Games	First year, Athletic Education
	Education Media	Second year, Special Education
	Physiological Psychology	Second year, Education, Tanta Univ.
	Descriptive Statistics & Comparison of Averages Using SPSS	
	Geology	Third year, Education, Tanta Univ.
	Child Curricula	Fourth year, Education, Tanta Univ.
	Electrical Chemistry	
A-110-K0	1. Theories & Processes of Education Administration 2. Education Leadership 3. Human Relations & Education Administration Ethics 4. Using Technology in Education Administration 5. Field Training 6. Methods of Research	Postgraduate Studies (all specializations), Faculty of Education, Helwan Univ.
	1. Principles of Education Supervision 2. Curricula Development & Teaching Upgrading 3. Education Decision-taking 4. Education Administration Psychology	Postgraduate Studies (Education Supervision), Faculty of Education, Helwan Univ.
	1. Technical Development & Performance Appraisal 2. Education Decision-taking 3. School Organization & Education Marketing 4. School Legislations 5. School Sociology 6. Education Administration Psychology	Postgraduate Studies (School Administration), Faculty of Education, Helwan Univ.

	<ol style="list-style-type: none"> 1. Education Administration Information Systems 2. Education & School Planning 3. Strategic Planning & Future Studies 4. Education Policies & Planning Techniques 5. School Project Administration 	Postgraduate Studies (Education Planning & Policies), Faculty of Education, Helwan Univ.	
	Education Criteria & Performance Signals	Postgraduate Studies (Quality Assurance), Faculty of Education, Helwan Univ.	
	Accreditation Systems & Performance Appraisal		
	Accountability in School Administration		
	Education Reform & Change Administration	Postgraduate Studies (Classroom Administration), Faculty of Education, Helwan Univ.	
	<ol style="list-style-type: none"> 1. Theories of Classroom Administration & its Applications 2. Remedial Education 3. Development & Care for Special Need Students 4. School & Classroom Sociology 5. Communication & Interaction 6. Inner Classroom Organization 		
C-006-M0	1- Arabic 2- English 3-French 4- Science (physics)Science (Biology) 5-Agriculture 6-Math 7-Art		Third year, Teaching Methodology, Faculty of Education, Menya Univ.
C-058-G0	Introduction to Land Sciences		First year, Education Geology, Ain Shams Univ.
	Maps		
	<ol style="list-style-type: none"> 1. Precipitate Rocks 2. Rock Crystal Science 3. Mineral & Land Resources Science 		Second year, Education Geology, Ain Shams Univ.
	<ol style="list-style-type: none"> 1. Rock Science 2. Invertebrate Animals 3. Levels Science 4. Stars & Galaxies 	Third year, Education Geology, Ain Shams Univ.	
	Geophysics	Fourth year, Education Geology, Ain Shams Univ.	

A Report of Electronic Courses and E-Learning in the Faculty of Girls

Project .	Course Title	Place
A-112-G0	Education and Issues of the Contemporary Era	First year, Scientific & Educational Departments
	Organic Chemistry	First year, Chemistry for Scientific & Educational Departments
	Tissue Chemistry	Second year, Tissue
	Color Chemistry	Third year, Tissue
	Teaching Methodology of French	Third year, Teaching French
	Teaching Methodology of English	Third year, Teaching English
	Computer	Third & Fourth year, Literary Departments
	Teaching Methodology of French, Educational Materials, School Curricula	Technical Diploma

A Report of Electronic Courses and E-Learning in the Faculty of Arts

Project .	Course Title	Place
B-029-K0	Machines & Tools of Ready made Clothes Industry	Applied Arts, Helwan Univ.
	Perspective	Beautiful Arts, Helwan Univ.
	Construction Glass Designing – History of Art	
D-035-L0	1. Human Geography 2. Geographical Methods of Research 3. Rural Population Geography 4. Regional Geography 5. Field Study	First year, Faculty of Arts, Mansoura Univ.
	1. Minerals & Industry 2. Second year Field Study of Arab World Geography 3. Population Geography 4. Climate Geography	Second year, Faculty of Arts, Mansoura Univ.
	1. Transportation & Trade 2. Geomorphology	Third year, Faculty of Arts, Mansoura Univ.
	1. Field Study 2. Regional Planning 3. Regional Geography of Egypt 4. Political Geography 5. Service Geography 6. Geographical Project	Fourth year, Faculty of Arts, Mansoura Univ.

A Report of Electronic Courses and E-Learning in the Faculty of Tourism & Hotels, Project . (D-174-N0)

Course Title	Place
1. Heritage of Pharaonic Egypt 2. Practical Tourist Guidance (Meuseums) 3. Heritage of Polemic Egypt	Second year, Heritage, Faculty of Tourism & Hotels, MenoufyiaUniv.

4. Heritage of Islamic Egypt	
1. Practical Tourist Guidance 2. Heritage of Pharaonic Egypt 3. Heritage of Roman Egypt 4. History & Civilization of Byzantium Egypt	Third year, Heritage, Faculty of Tourism & Hotels, MenoufyiaUniv.
1. Civilization & Monuments of Alex. (Tourist Studies Department) 2. Heritage of Islamic Egypt 3. Tourist Guidance (Alex. Museums) 4. Heritage of Pharaonic Egypt 5. Heritage of Islamic Egypt (Mohammed Ali Era) 6. Tourist Guidance (Monumental sites)	Fourth year, Heritage, Faculty of Tourism & Hotels, MenoufyiaUniv.
Tourist Agencies Work	Third year, Tourist Studies, Faculty of Tourism & Hotels, MenoufyiaUniv.
Tourist Transportation Economy	
Conference Tourism	Fourth year, Tourist Studies, Faculty of Tourism & Hotels, MenoufyiaUniv.
1. F & B Administration 2. Hotel Cost Commerce 3. Room Service Administration 4. F & B Monitoring 5. Front Office Administration 6. Food Menus	Third year, Hotel Studies, Faculty of Tourism & Hotels, MenoufyiaUniv.
1. Foreign Kitchens 2. Restaurant Management	Fourth year, Hotel Studies, Faculty of Tourism & Hotels, MenoufyiaUniv.

Appendix C: Simulation experiments, Virtual labs, and Virtual reality

Project . (B-097-Q0) Physics Department, Faculty of Science, Suez Canal Univ. Study Year: Preparatory year in the faculties of (Pharmacy, Dentistry, Science (Physics, Geology, Biology) + First & Second year in the Faculty of Science (Physics)

Electricity Experiments	Magnetism Experiments
6- Calibration of Search Coil 7- Non Ohmic Resistance 8- Elctrolysis 9- Electrical conductivity 10- Sensitivity of Galvanometer 11- Kirchhoff 12- Discharge of a Capacitor 13 - The internal resistance and sensitivity of Voltmeter 14- Meter Bridge 15 - The Lead Accumulator 16 - Ohm Law 17- AC-Source 18 - Dielectric medium 19 - High pass Filter 20- LDR 21- LED 22 - Low pass Filter 23 - PN – Junction 24 – RLC 25 - Zener Diode 26 - Potentials in plate capacitor 27 – Transformer 28 -Conductivity of an electrolyte by Kohlrausch's method 29 - full - wave rectifier 30 - half - wave rectifier	1- Magentic moment 2- Magentic Field of a Long Wire 3- Magentic Field of a Circular Loop 4- Magentic Field of a Solenoid Loop 5- Magentic Field of a Toroid
	Electronics Experiments
	31 - BCD counter 32 - binary counter 33 - bipolar transistor switch 34 - Logic inverter 35 - Diode Logic 36 - Set / reset flip – flop 37 - D-type flip-flop and registers 38 - Transistor Logic gate 39 - NAND gate
Heat and Thermodynamic Experiments	Waves Experiments (optics ans sound)
40 - General Law of gases	54 - Young interference 55 - single slit diffraction 56 - polari renter 57 – Prism

41 - Newton Law of cooling 42 - Lee dis 43 - Stefan's Law 44 - Melting point of wax 45 - Mechanical equivalent of heat 46 - Specific heat 47 - Linear expansion 48 - Searle method 49 - Latent Heat of Evaporation 50 - Positive / negative temp 51 - Peltier effect 52-Thermoelectricity 53 - Heat engine Properties of matter Experiments 68 - Viscosity-stock 69 - Tensional Pendulum 70 - Surface tension – tubes 71 - Fly wheel 72 - Young Modulus for A Metal Rod 73 - Simple Pendulum 74 - Hook law 75 - Young Modulus of bearn 76 - Archimedes Principle 77- Simple pendulum2 78 - Compound Pendulum 79 - Free fall 80 - Projectile Modern physics Experiments 88 - Charge of electron 89 - Millikan experiment 90 - Frank Hertz 91 - Hall effect 92 - photo electric effect	58 - Microwave Interference 59 - Focal Length of a Convex Lens using Mirror 60 - Focal Length of a Concave Miror 61 - Combined Lenses 62 - Determination of The Refractive Index of a Liquid 63 - Speed of Sound using Closed Columns 64 - Speed of Sound using Open Columns 65 - Kundt Tube 66 – Sonmeter 67 - Meld's Experiment Nuclear Experiments 81 - Beta absorption 82 - Geiger Counter 83 - beta & gamma Efficiency 84 - Dead time 85 - Efficiency of Geiger 86 - Gamma absorption 87 - Inverse square Law
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Virtual labs, and Virtual reality

Project .	Course Title	Place
C-093-Q0	Simple Organic Salts Lab	Preparatory, First, & Second year, (Organic Chemistry) Faculty of Science, Suez Canal Univ.
	Chromatographic Separation Lab	Third year, (Organic Chemistry) Faculty of Science, Suez Canal Univ.
	Creative Organic Chemistry Lab	
	Biological Organic Chemistry Lab	Third & Fourth year, (Organic Chemistry) Faculty of Science, Suez Canal Univ.
	Organic Salt Mixtures Lab	
	Prism Chemistry Lab	Third & Fourth year, (Organic Chemistry) Faculty of Science, Suez Canal Univ.
	Natural Products Lab	Fourth year, (Organic Chemistry) Faculty of Science, Suez Canal Univ.
B- 060-T0	Physics (Practical)	Preparatory year, Physics, Faculty of Engineering, Zaqaqiq Univ.
	Mechanics (Practical)	
A-070-J0	Construction of virtual Reality model for upper limb	First & Second year, Anatomy, Kasr El-Eini Medicine, Cairo Univ.

B-099-P1	1-Free Fall Experiment 2- Newton's Law 3-Electrical Equivalent of heat 4- Boyle's law 5- LRC resonance Circuit 6- Permanent Magnet 7- Solenoid magnet 8- Resonant modes of a tube 9- Stopped Waves in a string 10 - Heat engine cycle	Practical Physics for Teachers, Physics Labs, Faculty of Science, Suhag Univ.
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