A COMPREHENSIVE APPROACH FOR THE DEVELOPMENT OF THE EDUCATIONAL PROCESS IN ACADEMIC DEPARTMENTS IN FACULTIES OF MEDICINE IN EGYPT

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ABSTRACT: This research aims to upgrade and enhance the whole educational process in the academic departments in faculties of medicine in Egypt. This is achieved through the following objectives:

- Obtaining medical students that have good skills in the basic medical sciences & are capable of dealing with recent information technology & internet to obtain recent information in these fields.
- Enhancement of medical staff members' skills concerning curricula (theoretical & practical) designing, teaching and to get benefit from the recent methods of education.
- Construction of efficiently equipped laboratories that satisfies the practical educational needs of medical students with coordination between these laboratories according to the needs of each department.
- Improving the evaluation process by incorporation of modern examination procedures for students (computers, case study, MCQ and making a question bank) and questions that depend on good understanding.

INTRODUCTION:

In the last few years, there is a great progress in the fields of medical educational tools and methods, curricula development and evaluation programs.

Currently, methods of education and assessment are the traditional ones that donot cope with nor use the recent achievements, discoveries and developments in information technologies, instrumentations as well as successful experiments of others.

This leads to inability of medical students to focus or determine the exact targets and the importance of studying each branch in basic medicine and how this branch helps them later. This creats a **gap** between basic science, clinical and practical life and, also, represents failure of understanding the main objective of giving a broad scientific bases of all medical problems on a biochemical, physiological, parasitological and histological, basis, etc.

This is not the problem of students, but it is our own problem that we fail to direct and clear our targets because of many factors such as:

- Lack of correlation between different subjects and sections even in the same branch, i.e. the student takes each subject as it is and as if it is not correlated with the others.
- Overlapping between many sections of basic sciences, like overlap between Physiology and Biochemistry, as the same chapter is studied in both of them with minor differences.
- Fine details overcome major points.

- Frequent and short timed exams that make students out of the educational process for at least 2 to 3 weeks before the exam and this decreases the efficiency of the time tabled programs for both theoretical and practical courses.

These previous factors are attributed to:

- Traditional methods of teaching and using tools which are not suitable for this large and growing number of students.
- Large number of students (1100-1300 students/year) in the lecture, unsuitable places, lack of areation and conditioning at the time when these places are designs for 30 year students.
- Lacking of attendance of both students and staff members which leads to prevelance of private teaching courses by genior staff members.
- System of examinations depends mainly on memory of students, not on understanding, thinking, imagination and creation.
- No available time for conversation scientific discussion & meeting between students and lecturers.
- Old laboratories and instruments.

The objectives:

General objectives:

1. Obtaining medical students that have good skills in the basic medical sciences (Medical Biochemistry, Medical Physiology, Medical Histology and Parasitology…etc,) & are capable of dealing with recent information technology & internet to obtain recent information in these fields
2. Enhancement of medical staff members' skills concerning curricula (theoretical & practical) designing, teaching and to get benefits from the recent methods of education.
3. Construction of efficiently equipped laboratories in Medical Biochemistry, Medical Physiology, Medical Histology and Parasitology Departments, etc. that satisfies the practical educational needs of the students with coordination between these laboratories according to the needs of each department
4. Improving the evaluation process by incorporation of modern examination procedures for students (computers, case study, MCQ and making a question bank) and questions depend on understanding

This is achieved by:

1. Educational methods upgrading by making tutorials or sessions for the students after grouping them (70-100 students/group). The data are presented in an animated form through a CD to be presented lastly into a large T.V., for each group of students. Each one of the staff member is responsible for a chapter, at least, to be prepared from the internet, or designed by a specialist (animated graphics), so using different tools of **e- learning** which are complementary to the lecture.

2. Regarding the practical courses, Each department will upgrade the course through introducing recent instruments, giving up relatively useless old fashioned ones. This process goes parallel to the educational process upgrading.

3. Upgrading the medical staff by:

- Using and getting benefit from the internet and recent technology in their fields.
- Conversation and discussion between students and staff members during lectures and tutorials.
- Designing of medical projects.
- Recent methods of evaluation.
- Studying the needs of the market and preparing the suitable outcome.

4.The evaluation of medical students in these departments will be greatly looked for to be coapted for the recent methods of evaluation, taking into consideration the number of students, duration of study, number of staff members, and availability of equipments as well as chemicals in the laboratories. The evaluation will be applied for both the practical and theoretical courses according to the international levels of evaluation. An example of the evaluation development is to increase the number of MCQ to minimize the personal factor of evaluation to a great extent, Also case study is a good alternative in some occasions. This is achieved through programs which minimize the time factor and delete the personal factor in evaluation.

Outcomes in short:

As we respect our patients, the medical students must be highly qualified. These objectives will result in the following:

The medical students will be able to clear their knowledge, make benefit from recent technologies and apply them to their fields.

Students can express, imagine, create without keeping text in their memory.

This will increase creation and innovation of students.

Medical students react with, think in scientific manner with medical problems.

The staff members, also, will be upgraded through making use of and getting benefit from recent information in the internet, upgrading courses will approximate and clear the targets. Recent methods of education and open discussion between students and the staff members will fix and organize information.

The specific objectives include:

1. Upgrading the educational process: through application of tutorials using animated, good presented data in theoretical and practical courses, will change the view.
2. Upgrading medical staff: The under and post-graduate will take a great benefit from this approach. Taking one look on a page of written title, for example, will be greatly developed and presented in a concise, representative, animated diagrams. This will develop a clear knowledge, fix memory for a long time and allow making use of many special senses instead of memory alone. This maneuver will increase the creation, thinking and imagination. Also, it will make a proper graduate that gets benefit from recent theories and large information provided to him through his study and applies them. The e-learning and small grouping of students (70-100 students/one staff member) instead of large one (1000-1300 students/one staff member) will be beneficial to the learning process as it makes close contact between staff members and students, facilitates conversation between staff members and students and put the educational problems in front of solutions.

3. The practical courses in the four departments will be upgraded regarding instrumentations and experiments.
4. The evaluation programs will greatly takes into consideration the international rules of evaluation, minimizing and deleting personal factors, targeting fairness and justice.

Application of such strategy will result in an accepted medical practitioner in the market, capable of reaction and response with recent information and technology. The practitioner will be opened to the international medical schools, develop and upgrade himself continuously.

Why do we think in upgrading?

We still teach, learn and evaluate using the same system and methods whether theoretical or practical, in spite of increase in number of students and relative decrease in the number of staff members. Also, there is a big failure to benefit from the great evolution in the field of instrumentation and communication. The huge number of students, lack of places, lack of staff members relative to the increased number of students, all lead to private teaching and many other educational problems. These reasons suppress the creation, innovation and scientific thinking. The medical students depend mainly on memorization of the information even in the absence of good understanding, good imagination, proper making correlation between information and proper keeping these information for a long period. This lose the graduate a great benefit of the basic scientific data essential for good and proper understanding of the medical problems later on.

Why don't we think of making progress and upgrading before? This is because of many problems including:

1. Lacking of financial support.
2. Lacking interest of some staff members.
3. Difficulty of cooperation as a team-work in different departments and even in the same department.
4. Presence of educational problems and their progression as private teaching, increase and growing number of medical students.

How to upgrade?

For tens of years ago, the tools and methods of education of theoretical courses curricula and practical courses in academic departments have been the same. They depend mainly on keeping a lot of information in the memory, utilizing only one sector of the brain function. This will lead to loss of these information within a short period of time. This is not good especially for medical students who must keep a long-lasting, clear and simplified view of basic knowledge in different branches of medicine, especially in the first academic stage, which gives the medical students the basis of all applied, clinical cases and medical problems later on.

When you ask medical students in the examination about the benefits of study of basic science in understanding clinical and medical problems or what is the benefit of studying such sciences to medical students later on? We usually get shallow understanding from the students. This represents failure of understanding the main objectives of such basic sciences which is supposed to give medical students a broad & deep scientific base for understanding the medical problems on an academic background.

How can we upgrade the educational process?:

1. The data are presented as animated diagrams as much as possible to clear, organize, and facilitate understanding and imagination of the subject, keep it for a long time to restore and utilize these information for planning treatment.
2. Curricula development by a group of specialists in academic departments.
3. The redundancy of information, fine details and overlapping between different branches will be controlled taking into consideration time factor, number of staff members in relation to students number and the duration of the course.
4. Also, students will be divided into **small groups** (70-100 students/one staff member), instead of the one large group (1000-1300 students/one staff member), in the lecture. The application of grouping and sectioning of students in the theoretical and practical courses has many advantages for the outcome of the educational process.
5. Another view, which will maximize the benefit, is the use of **e-learning** by having benefit from all recent tools of communication and information technology.

Each of the medical staff members (assistant lecturers, lecturers and assistant professors) will prepare a section for which he is responsible for its preparation, reviewing and presenting according to the already designed curriculum. The students are divided into small groups (70-100 students/group/one staff member) according to the capacity of the classroom. Each section is studied animated through a T.V. connected to computer through T.V. out. This presentation will be done in the practical laboratories and other large classrooms, dividing time alternatively with the practical courses **(N.B. This will be complementary to the lectures and not alternative).**

The practical courses will be upgraded where old fashioned useless experiments will be deleted and recent ones will be studied, using recent available and of least cost instruments to implement the already designed courses that learn the medical students modern practical skills in the intended fields. An instrumentation and maintenance group in each department is organized.

The evaluation process of students, both under and post-graduate, will be designed taking into consideration the methodology of presentation of information, promotion of creation, thinking skills, correlation between subjects, i.e., to know the main ideas and their explanation instead of focusing on fine details. This necessitates:

- Continuous assessment of the evaluation techniques.
- Follow up of the examiner's personality and behavior.
- Making statistical analysis for each examination to correct the drawbacks of any.
- Application of the suitable and accepted international programs according to our situations.

Targets:

1. Upgrading the educational process in the four academic departments through time tabled tutorials, e-learning and application of small groups of students/lecture instead of large number in the lecture.
2. Upgrading the practical courses by developing laboratories and instruments and application of recent techniques, giving up old fashioned useless ones.
3. Application of an innovated evaluation program for under and post-graduates to fulfil the international criteria of evaluation of medical schools. This is achieved through

application of MCQ and case study questions. We choose the most suitable programs according to time, places, number of staff members, number of students, curricula, methods of education, etc.

4. Upgrading the medical staff through preparation of text and animated diagrams, getting benefit from the recent information in the internet, making scientific discussions and applications of advanced tools of teaching and evaluation methods.

The outcomes:

1. Educational process:

a. In class instructions for medical students on CD-Rom (used for under and post graduate students and by professors, as a recent technique.
b. Learning anytime, anywhere (new approach in these medical sciences education in Egypt)

2. Medical students:

a. Upgrading medical students (under and post-graduate) to have international level competing with good positions in the market of medical practice.
b. The medical students will focus on basic data that help in the understanding of the medical and clinical problems in a simplified and clear manner.
c. Medical students sharing in discussion, broad minded and highly qualified.
d. Medical students using and get benefit from e-learning.

3. Medical staff:

a. Well qualified medical staff members that could design and teach both theoretical & practical courses in a proper and concise way taking in consideration the rapid changes in the concepts of education and the needs of international market.
b. Application of recent methods in curricula designing and teaching using the available techniques that could aid medical students to get both sufficient and efficient understanding of the explained information.

4. Laboratories and instruments:

a. Well equipped laboratories in Medical Biochemistry, Medical Physiology, Medical Histology and Parasitology Departments coordinated with each other and related to the theoretical & practical courses in each department and coped with the applied requirements of medical students
b. Medical students that can apply skillfully the practical courses and capable of using recent laboratory techniques.

5. Evaluation of medical students:

a. Decrease rate of fallacies in the determination of the student level.
b. Medical students become able to understand and imagine and not to filling their memories only

6. The other departments in the Faculty:

All of them will benefit from the successful items in view of partnership.

We assume the following:

1. The courses must be covered.
2. The courses will be prepared animated and diagramed.
3. Enhancement medical staff members' skills in curricula design & teaching is very essential for both students and staff members themselves. But at the same time many obstacles may face us on doing this.
4. Construction of well equipped laboratories that satisfy the educational requirements of applying the practical courses in each involved department and preparing generations of medical students capable of understanding and applying the practical courses skillfully are very essential steps as regard the basic medical sciences education in the first years of medical education, These laboratories already exist at the academic departments but rearrangement of them is supposed to be done in a suitable way for the added equipments and accessories. Safety conditions, maintenance and supplementation of the necessary needs of the equipments as chemicals, kits and samples are mandatory to achieve this objective and is to be assured by each department. We assume medical students accept these lines of upgrading of exams.
5. Medical students will be cooperative and will attend lectures and practical courses, giving up private teaching.
6. The medical staff will accept and cooperate in the implementation of all items with a high degree of fidelity & in the achievement of the evaluation programs.
7. The laboratories and instruments will be suitable for performing recent experiments.
8. The faculty will support and promote the process.
9. The budget will be parallel with time table of the implementation of all items.

Risks for implementation:

1. Team-work:

- Some may develop lack of interest and this is overcomed by successive workshops and seminars for the process outcomes.
- Some may become busy with other tasks or may travel abroad, this is overcomed by increasing number and good choice from the start.

2. Other staff members in the departments:

- They may be not cooperative and even creating problems. This is overcomed by increasing number of young staff which are more cooperative.
- Some staff members (not included in the project team and included only in the project implementation) may neglect their tasks in front of their own researches and other business. They, even, may not respond to participation in the implementation of their duties.

So, we focus on young staff and through declaration of the benefits through continuous seminars and meetings.

- Some may refuse to learn and accept updating from junior staff. So we concentrate on juniors.

3. Institution:

- Lack of cooperation and hence coordination between the intended departments regarding instruments use, places, fund, etc., so we must do continuous meetings and issue handouts to organize the achievements and outcomes of upgrading.
- Also, other view of the institution manager that interfere with the implementation, this is solved by explanation and good presentation of the targets.
- The degree of interest of different departments, varies and depends on the acceptance of the idea.
- The course or curricula development may not be completed due to objections from senior staff who may loss some financial benefits.

4. Instruments:

- Long term maintenance and replacement may be not available. This is solved by making a group for maintenance instrumentation in each department.
- Increased prices and instability of the economic status that affects the stability of the price.
- Miss-using of the instruments by some personnel's included in the project. This is overcame by preparing good regulations in this respect. Also by good control, responsibility and maintenance groups.

Dissemination

To continue the activities of this project, we expect that the regular workshops, seminars, curriculum development and updating, in addition to the support provided from those who are interested. All this will lead to dissemination and spread in addition to the following activities:

1- Announcement of the activities of the project through continuous publications, making a site of the project on the net.
2- This site will help dissemination, cooperation and connection with others who are interested.
3- Time table for workshops, seminars for staff members through the site.
4- Making connection with the international schools and centers to get benefit from their experiments in this respect.

Sustainability

After that, the sustainability of the project will depend on many lines, after financial support of the project, including:

1- Each department will support the project practically and theoretically through continuous workshops, seminars, mission abroad.
2- Continuous workshops for operating and maintenance of instruments.
3- The majority of staff from younger ones, who take advice and experience from the senior staff and try to disseminate and communicate with others to complete.
4- Supply the project items financially, through special production units in each department.
5- Making a fixed source for maintenance of instruments as taking part of the income of the theoretical and practical books of each department.
6- The fund of the university and use of its infra-structure as internet and telephone.
7- Announcement through the internet for the project.
8- Sharing of business-men in the project financial support through explanation of the benefits of the project to community development.
9- The financial support may be extended through announcement in the news-papers.
10- All these policies of financial and structural support of the project will potentiate and disseminate the outcomes and this will lead to improvement of the medical community.

Quality Control & Monitoring

For getting good results regarding quality assurance and monitoring, many lines are taken in to consideration which include formation of groups of those interested and specialists regarding each point of the project:

1. Specialized groups for upgrading and improvement of the educational process and subgroups for each item as group for preparation of tutorials, group for electronic - learning, group for design of diagrams.
2. Groups for upgrading the courses in Medical Biochemistry, Medical physiology, Medical parasitology and Medical Histology, taking into consideration time factor, places, staff number/students numbers, evaluation methods, clear target of the project, needs of the market, recent information technology, rapid and successive evolution and development in information technology all-over the world.
3. Group for instrumentation and maintenance, in labs of Medical Biochemistry, Medical physiology, Medical parasitology and Medical Histology Departments.
4. Group to design, develop and innovate programs for upgrading the evaluation process taking into consideration number of students, curriculum design, educational process, places, groups of evaluating the programs of evaluation applied as well as staff members included in the evaluation depending on statistical study.
5. Support the project specialized groups of implementation with specialists in psychology, management, specialists in educational tools and economy of learning.
6. Groups for preparing seminars and workshops in quality control and monitoring the project, activities, inputs and out puts and preparation of the report to the administration council.
7. Groups for connection with international medical schools and centers to apply which is suitable and useful for our situation.

8. Regular meetings between medical students and staff members to evaluate, discuss and explain the targets and outcomes of the project, control and overcome any problem.
9. Groups for follow up quality control of the project implementation depending on the international criteria of evaluation.
10. Specialized groups for upgrading medical staff regarding educational methods.

Management of the Project

The whole project skeleton is represented as follows:

1- Project manager:

(1) Legal representative and the main supervisor of the regulation of the administration council.
(2) The main supervisor on the implementation team, groups and subgroups of the project items.
(3) The main representative of the project team and HEEPF
(4) Prepare the reports of the project and discuss it with the implantation team.
(5) Coordination between different departments, groups and topics of the project.

2-Adminstration council: * includes:

(1) Project manager (head)
(2) Coordinators for programs of educational development.
(3) Coordinators for course upgrading.
(4) Coordinators for evaluation programs.
(5) Coordinator for lab and instrumentation.

Duties of the administration council:

(1)Design the groups of the project
(2) Follow up the defined implementation program according to the time table.
(3) Documentation of reports.
(4) Planning rules that promote and develop the groups & team work.

3- Specialized Groups:

1- Specialized group for upgrading the educational programs
2- Technical and specialized group for lab and instrumental development.
3- Specialized group in communication and maintenance of instruments.
4- Technical and specialized group for course and curriculum development in the four academic departments; Medical Biochemistry, Medical physiology, Medical parasitology and Medical Histology department.

4- Financial and Management groups: are detected