

Research Article

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Next generation medical education from the student's perspective

[Öğrencilerin Bakış Açısıyla Yeni Nesil Tıp Eğitimi]

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Abstract

Objectives: Izmir University of Economics Faculty of Medicine's aim is to implement a novel and effective system called "Next Generation Medical Education". This system is designed to provide us a modernized medical education which covers the students' requirements. This study is designed to investigate different aspects of this educational system from the student's perspective.

Methods: Main characteristic features of the educational system was determined and a survey as well as phone interviews have been conducted in order to determine the views of the students of the faculty regarding these aspects.

Results: The survey and the phone interview results showed that the students are mostly satisfied with current system and all of its components.

Conclusions: We have determined the key aspects of the system as: integrated curriculum, learning to learn, advisorship, e-learning and feedback mechanisms. We believe that the next generation education system adopted by our faculty is a way of transforming medical education in order to train qualified physicians for tomorrow.

Keywords: e-learning; integrated curriculum; lifelong learning; medical education.

Öz

Amaç: İzmir Ekonomi Üniversitesi Tıp Fakültesi'nin amacı, "Yeni Nesil Tıp Eğitimi" adı verilen yeni ve etkili bir sistemi hayata geçirmektir. Bu sistem, öğrencilerin ihtiyaçlarını karşılayan modernize bir tıp eğitimi sağlamak için tasarlanmıştır. Bu çalışmanın amacı, bu eğitim sisteminin farklı yönlerini öğrenci bakış açısından araştırmaktır.

Yöntem: Eğitim sisteminin temel karakteristik özellikleri belirlenmiş ve fakülte öğrencilerinin bu yönlere ilişkin görüşlerini belirlemek için anket ve telefon görüşmeleri yapılmıştır.

Bulgular: Anket ve telefon görüşmesi sonuçları, öğrencilerin mevcut sistemden ve tüm bileşenlerinden çoğunlukla memnun olduklarını göstermiştir.

Sonuç: Sistemin temel unsurları; entegre müfredat, öğrenmeyi öğrenme, danışmanlık, e-öğrenme ve geri bildirim mekanizmaları şeklinde belirlenmiştir. Fakültemizin benimsediği yeni nesil eğitim sisteminin, yarının nitelikli hekimlerini yetiştirmek için tıp eğitimi dönüşürmenin bir yolu olduğuna inanıyoruz.

Anahtar Kelimeler: Tıp Eğitimi; Hayat Boyu Öğrenme; Entegre Müfredat; E-öğrenme.

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Introduction

Medical education shapes the medical practice of physicians; therefore, education system is the key determinant of healthcare quality. The role of the student receiving the medical education constantly evolved throughout history, from the apprentice to the trainee and eventually to the

active learner of today. İzmir University of Economics Faculty of Medicine started its first semester with 39 students in 2017. The aim of this new faculty was to create a student centered and standardized medical education. This concept of next generation medical education presents a new system, which claims to satisfy the needs of the students by allowing them to be aware of their progress and fulfill their own needs accordingly, adapt easily to the process, access reliable information easily and be up-to-date on medical literature. We conducted this study in order to investigate these specific aims of this system from the students' perspective.

Materials and methods

Selection of the key aspects

We have selected the key aspects of next generation medical education of the faculty via in-group discussions as follows and used these as baselines to conduct further investigation:

Advisorship: This program helps students during adaptation to medical school and augments the learning process by constantly evaluating the student progress and by providing advices for a better learning experience.

E-MED: It is a collection of on-line educational materials such as "AccessMedicine", presentations, class recordings and additional multimedia content as well as the main platform for assignments and exams.

Learning to learn: It is a component of the courses aiming to teach how to acquire and manage reliable information easily.

Feedback: This includes feedback from instructors to students and more importantly from students to the instructors, which convey important information for the faculty to improve the system.

Integrated curriculum: The curriculum is integrated between different disciplines and between basic and clinical knowledge creating a better chance for students to make connections and see the whole picture.

Data collection

An online survey consisting of five Likert-type questions was conducted to measure the satisfaction from four key aspects of the education system (advisorship, E-MED, learning to learn and integrated curriculum). The sample size was 39 students 32 of whom submitted a response. The questions were as follows:

- Question 1: "How satisfied are you with advisor's support for your adaptation to the education system and the university life"
- Question 2: "How satisfied are you with the E-med system"
- Question 3: "How satisfied are you with our faculties learning to learn concept (Encourage students towards research by increasing students' eagerness to learn)?"
- Question 4: "How satisfied are you with our faculties integrated curriculum?"

A phone interview was conducted to measure the utilizability of four concepts to complement previously stated four aspects: self-awareness and evaluation, adaptation, accurately reaching information and feedback culture. Four "Yes/No" questions were asked and 38 out of 39 students (the same student pool with the online survey) were reached. Questions were as follows:

- Question 1: "Has E-MED provided reliable information fast?"
- Question 2: "Has the faculty's education system helped you to realize and cover your inadequacies?"
- Question 3: "Has the faculty's education system enables you to be up-to-date on current literature?"
- Question 4: "Were given and received feedbacks useful?"

Results of the survey as well as the phone interview were analyzed to get a comprehensive picture of the students' perspective on the education system.

Results

According the result of the survey designed to measure student satisfaction regarding the key aspects of the education system of the faculty, student satisfaction (agree or above) was found to be high (more than 80%) in all of the key aspects (Figure 1A). Among these key aspects advisorship received the highest 'strongly agree' ratio (almost 72%). This shows that students are quite satisfied from having an advisor. Learning to learn received the lowest 'strongly agree' (about 34%) but still high satisfaction (more than 80% agree or above).

Table 1 shows the results of the online survey. Figure 1A demonstrates these results with a stacked bar graph which clearly shows a high student satisfaction. The total of positive results are consistent as it is seen in the graph as a clear line after the satisfied bar.

Table 2 shows the results of a phone interview which questions if certain skills are acquired by students related to key concepts. Figure 1B demonstrates these results with pie charts. These charts are almost the same indicating a consistent student perception of acquiring different skills.

Discussion

There is an increasing potential for change in medicine and competencies necessary for physicians. At this day, we look back at the historical development, try to embrace today's understanding and have a share in the critical changing of medical education. We started this project by thinking about these changes and our role as students in this area. The system in our faculty is a framework for this

Online Survey Results

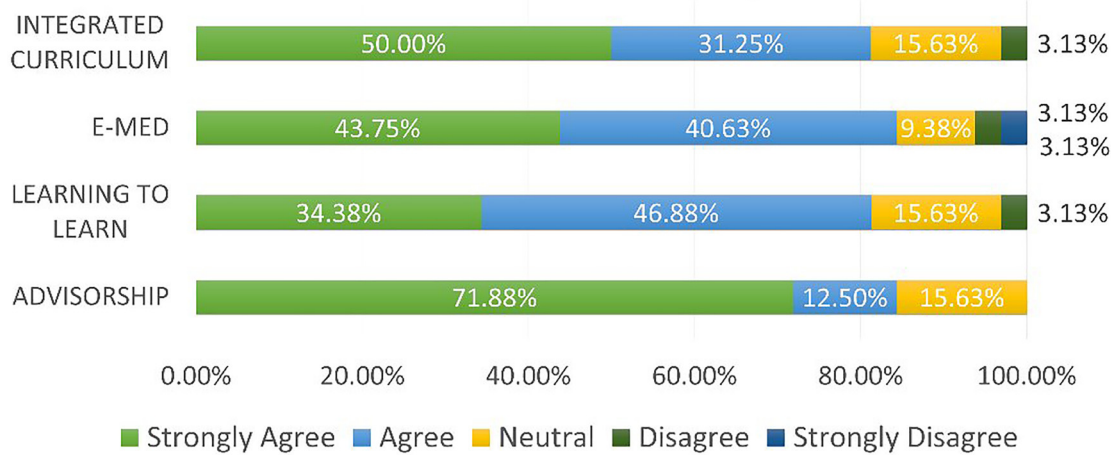


Figure 1A: Stacked bar graph showing the results of Likert-scale questions of an online survey about the student satisfaction of key concepts.

Table 1: Results of a 1–5 Likert-scale online survey about the student satisfaction of key concepts of “Next Generation Medical Education” in IUE Faculty of Medicine.

Concepts	Weighted average	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Advisorship	4.56	23	4	5	0	0
E-med	4.19	14	13	3	1	1
Learning to learn	4.13	11	15	5	1	0
Integrated curriculum	4.25	16	10	5	0	1

Table 2: Results of a phone interview with yes or no questions showing if certain skills are acquired by students related to key concepts of “Next Generation Medical Education” in IUE Faculty of Medicine.

Skills	Yes	No
Access to accurate information	34	4
Self-awareness and evaluation	34	4
Staying up-to-date	33	5
Feedback mechanism	34	4

process allowing us to gain the skills adaptability, time-management, learn meaningfully, access information accurately, be up-to-date with the literature, critical thinking, reflective approach and self-evaluation.

The survey and the phone interview results indicate that most of the students are satisfied about all the concepts this system includes. This may be a result of the student-centered approach adopted by the instructors while preparing this curriculum. We will discuss each of the key aspects evaluated by the students separately.

Integrated Curriculum is an educational design that is organized in such a way that it cuts across subject-matter

lines, bringing together various aspects of the curriculum into meaningful association to focus upon broad areas of study. It views learning and teaching in a holistic way and reflects the real world, which is interactive [1].

In our education program, we have spirally integrated three main courses in the first three years. Scientific Basis of Medicine (SBM), Clinical Basis of Medicine (CBM) and Human, Society and Planet (HSP). With this concept, we have the opportunity to see different aspects of the same topic from each discipline. For example, while learning the biomedical information of the respiratory system in SBM in the fields of anatomy, physiology, histology, embryology, we also have the chance to learn from the clinical point of view of clinical interventions in CBM. In addition, we learn environmental factors that may cause respiratory diseases in HSP.

There are also in-class activities such as CIS (Clinical Integrated Session) and TBL (Team Based Learning). Our observations indicate that these tools support the integrated learning style. In CIS sessions, instructor gives us a clinical case and some related questions expecting us to solve them with the knowledge that we have acquired in the past 2 weeks where the theoretical background was

“Results of the Phone Interview

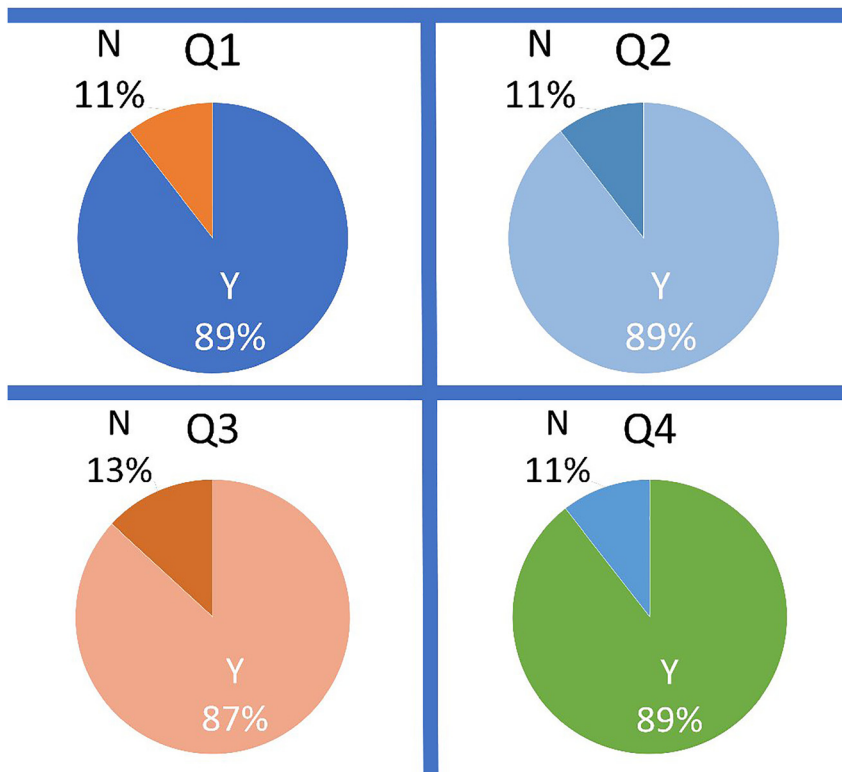


Figure 1B: Four pie charts for four yes or no questions of a phone interview about the students perception of acquired skills related to key concepts.

provided. TBL emphasizes teamwork for learning by first completing a home reading then a quick self-evaluation prior to working on the subject with a team. At the end of the session, another evaluation, this time with the team, is conducted. The collective work of the team enriches the study on the subject. These activities help us understand what we have studied and how to use the information that we have.

The reason for integrated curriculums success by the means of student satisfaction is that in the first year of medical school, it is not easy to adapt to lessons, learn and use information efficiently. An integrated curriculum is helpful for adapting to such complicated subjects. Most of the students in our faculty think that they have a chance to learn all aspects of a subject, work as a team member by team-based learning activities such as CIS and TBL, which included clinical integration.

Learning to learn

Although the field of medicine contains a large amount of information, one of the key elements of being successful in this area is being up-to-date after learning the neces-

sary basic information. The dynamic process that varies depending on individual skills and motivation for self-regulated, generative learning and on life events that impose challenges that sometimes demand incremental/adaptive change and other times require frame-breaking change and transformational learning defined as “lifelong learning” [2]. These requirements for the lifelong learning are collected under “learning to learn” of the key aspects we have determined and investigated under this headline. Since the developments in communication technologies have proceeded rapidly in the last century, it is much easier to reach information. Even though, this progress has huge advantages, it causes information pollution, which makes harder it to find reliable sources. Knowing how to get credible and current information has a key role in scientific approach specifically in the clinic. The skill of eliminating less reliable sources, especially the ones on the internet, is aimed to be gained by students as a part of our education system. There is a method known as “CRAAP Analysis” [3] which our lecturers specifically included in our curriculum. This method allows us to examine the sources’ currency, relevance, authority, accuracy and purpose. After the lectures, we were given an assignment to see our progression in the topic of finding correct and current information in

any subject of our choosing. With this training, we can be up-to-date with reliable information in today's scientific community.

After our online survey and phone interview, we evaluated 2nd year students' opinions about our school's learning to learn concept. According to the online survey, 11 students said that they are very satisfied, and 15 students said that they are satisfied within 32 students about learning to learn understanding. This ratio indicates that most of the medical students in İzmir University of Economics are pleased about it. As stated in our survey results, we think, this shows our medical education system is accepted by the medical students in our faculty.

Advisorship in IUE Faculty of Medicine is beyond having an academic advisor and more towards having a [4] mentorship. Instead of solely evaluating student's performance in exams, in our faculty the mentor is someone to talk for them to discuss various issues about being a student. Medical education, with its usually intense curriculum, may induce dramatic lifestyle changes for students. These may be continuous sleep withdrawal, excessive stress, unhealthy diet and harmful habits. One student shares her experience with her advisor. After having hard time to keep up with the curriculum and sleeping less towards exam week, she talked with her advisor. Her advisor suggested a plan for her daily routine and helped her to put her life back on track. As this anecdote shows having an advisor helps when a student struggles by proposing a possible solution

For advisorship, 23 students are very satisfied, and four students are satisfied (Figure 1A). Only 5 of the students were neutral. There was no negative answer. This could be because advisor is helpful about our adaptation to the school and medical education. They help in our exams and assignments by informing us about time management. As the first students of IUE, Faculty of Medicine, we did not have any senior students to guide us. However, with our advisors' support we never felt the absence of a role model.

E-learning has become a part of the mainstream in medical education in the past decade [5]. E-learning is not simply a broadcast of documents in electronic format to students via the Internet, in fact it encompasses a pedagogical approach that typically aspires to be flexible, engaging and learner-centred; one that encourages interaction, collaboration and communication, often asynchronously. Students might be at a distance, or might be at traditional campus-based universities, accessing their online learning environment from computer laboratories, lecture theatres, cafeterias or any other site that has internet access. The classroom, then, is the world; any

location that has internet access can become a classroom. İzmir University of Economics, Faculty of Medicine, collected various sources under a new platform named "E-Med" on a learning management system (Blackboard). E-Med supports our learning with different forms of learning such as visual auditory and verbal learning. This system allows us to communicate with our instructors, access e-materials including the presentations to study before or after the lecture, upload our homework which may receive real-time feedbacks from the lecturer, discuss different topics with peers, take exams with instant grading and feedbacks helping us to see our mistakes and learn from them. We are able to access Panopto lecture recordings, which allows us to review the lectures anytime, anywhere. AccessMedicine is a scientific e-library which contains more than 150 medical e-books, multimedia and interactive materials. It allows us to reach scientific information in a shorter time than using hard copy books. In addition, we are able to research about other subjects of the medicine other than the lectures. It helps us to improve our research skills and increase our curiosity. We can solve study questions, so we can see different perspectives about a subject to evaluate ourselves.

From our analysis of the online survey and phone interview, generally students find e-Med helpful in their education but according to the online survey few students did not find it useful. Also, according to the phone interview some students don't agree with other students. While we were doing phone interview students who did not agree, gave us feedbacks about why they think e-Med isn't helping them to reach reliable information quickly. According to the feedbacks that we got, interfaces of the programs used in e-Med (Blackboard and AccessMedicine) are not user-friendly. They make many things easier such as reaching reliable information, but we can't study productively with these programs because they are not practical. Furthermore, we could not use Panopto for studying because accessing the recordings is not easy and recordings do not have good sound quality. Blackboard's section that we reach presentations which are used in lectures, have some problems in classification of materials.

Feedback mechanism

Getting and receiving feedback in IUE Faculty of Medicine is an important way to evaluate the workflow in a system. Giving feedback to students to improve the quality of education is a well-known process which has been utilized for many years. The less known process is receiving feedback from students about instructors or any other components

of the education system [6]. This allows instructors to realize the strengths and weaknesses of their lectures creating a chance for improvement. Also, the system can be manipulated according to the students' need. As an example, there were five quizzes at the first semester and this caused continuous stress among students and increased the workload. As students gave feedback towards having less quizzes there were two quizzes at the second semester. This resolved most of the issues students addressed but quizzes contained too many subjects and could not maintain a routine evaluation. As a result, student feedback shifted towards having more quizzes thus at the second year three quizzes are planned. At this point in constant improvement, we tried to find optimal number of quizzes, but this can be applied to many other issues, which makes it possible to be as close as possible to the current ideal system for the students.

Feedback mechanism is effective as seen in phone interview and survey results, because students feel comfortable while expressing their opinions about lectures, assessments, assignments and curriculum. The instructors value the students' feedback as long as there is a reasoning behind. Therefore, the student has an active role in shaping the process of education system creating a student-centered system. There are discussion sessions specifically designed to transmit feedback from students directly to the responsible instructor.

Key aspects of the educational system of İzmir University of Economics, Faculty of Medicine including integrated curriculum, learning to learn, advisorship, e-learning and feedback mechanisms increase the enthusiasm of education participants towards learning and provides students with many opportunities for self-development. Effective

implementation of these aspects, all of which were embraced by the learners as well as the instructors, ensures a high quality medical education. We believe that the next generation education system consisting of these aspects and adopted by our faculty is a way of transforming medical education in order to train qualified physicians for tomorrow.

Acknowledgments: This study was completed by İzmir University of Economics, Faculty of Medicine 2nd year students. Data used in this work has been presented as a poster in "FEBS Workshop on Molecular Life Sciences: Training Tomorrow's Scientists" on September 5–7, 2018, in IUE. We would like to thank our mentor Ali Burak Özkaya, PhD for his meaningful assistance, patience and tireless guidance. He is the one who enabled us to work on this topic.

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