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An Example of Program Evaluation Project in Undergraduate Medical Education

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ABSTRACT

Revisions to existing program evaluation approaches of the Dokuz Eylul University School of Medicine (DEUSM) were made by the Medical Education Department in June 2005. After considering several evaluation models, a mixed evaluation model was developed to meet institutional needs. The general program evaluation plan was structured as areas of inquiry under the three main program evaluation questions: what are the effects of the educational program on students and graduates, what are the effects of the educational program on trainers, and is the educational program being implemented as planned. The School's first report made through its new program evaluation approach was prepared in July 2006, leading to important revisions to the educational program. This article presents DEUSM's project to revise its program evaluation approach and briefly discusses its early implementation.

Keywords: Program evaluation, program revision

Introduction

Evaluation is one of the essential elements of the educational process. Program evaluation has been described as the effort to determine whether program objectives have been reached and the gathering of information to assess the efficiency of a program. In

a more comprehensive context, program evaluation is described as the act of collecting systematic information on the nature and quality of educational objects (Nevo, 1995). Program evaluation seeks to answer how well educational needs have been met and objectives and educational standards have been attained. Program evaluation also assesses the organization's educational quality, the efficiency of its training method's and identifies aspects of the curriculum that can be improved through modification (Morrison, 2003). Ideally, program evaluations are planned at the beginning of the educational program and implemented concomitantly with the program (Morrison, 2003).

Various evaluation approaches have been described, including objectives-oriented, expertise-oriented, management-oriented, naturalistic and participant-oriented approaches, as well as those using various models like logic model (Worthen & Sanders, 1987; Demirel, 2002; Mc Neil, 1996; Mennin, 2004; Logic Model Development Guide, 2001). Educational institutions have been advised to weigh the advantages and disadvantages of different evaluation models and approaches and to develop an institution-specific evaluation model that meets their particular needs (Worthen & Sanders, 1987). It has also been suggested that program evaluation emphasizes both educational processes and outcomes (Demirel, 2002).

Kirkpatrick has described four levels of program outcomes to be assessed (Kirkpatrick 1998). The first level is learners' and instructors' reactions and contentment with the program. The second level is to assess the increase in learners' knowledge and skill, and the third level evaluates whether learners apply their new knowledge and skills through appropriate behavioral changes in their subsequent work/roles. The fourth level is to evaluate the impact of the program on the institution and society in which the program was implemented. It has been suggested that program evaluation should start with assessments of the first evaluation level and then, within practically achievable limits, continue with the second through fourth levels (Nickols, 2003; Kirkpatrick 1998; Hutchinson 1999).

When evaluating an educational program, an evaluation plan should be prepared in accordance with the general principles of the program's objectives and the pressing questions about it that should be answered. For each program evaluation question, a format consisting of the evaluated parameter and its rationale, data collection method, indicator/criteria, data analysis/interpretation, implementation frequency, authorities receiving the reports and identity of the evaluators should be developed (Nevo, 1995; Curriculum 2000 Program Evaluation Study Group Final Report, 2000).

The Dokuz Eylul University School of Medicine (DEUSM) in Izmir, Turkey started a Problem-based Learning (PBL) program for its three pre-clinical years in 1997 and a Task-based Learning (TBL) program for two clinical years in 2000 (Musal et al., 2006; Ozkan et al., 2006). Since the initiation of the PBL and TBL programs, as part of the evaluation approach then used by the school, student performance levels, oral and written student and trainer feedback were assessed, and reports of educational committees were evaluated. Additionally, educational research studies were carried out.

A systematic, school-wide revision to its evaluation approaches was undertaken as a project by the Medical Education Department in June 2005. With the approval of the Dean's Office, a systematic and multidimensional evaluation of the School's educational program was initiated. This article presents DEUSM's program evaluation project, its approaches and some of its early findings and curricular decisions made based on the findings.

Planning the Program Evaluation Project at DEUSM

Following a comprehensive review of evaluation models and examples, a mixed evaluation model was selected to meet institutional needs. The model included the logic model's program elements (inputs, activities, outputs and outcomes) and their causal relationships (Logic Model Development Guide, 2001) and Kirkpatrick's first three evaluation levels (Nickols, 2003; Kirkpatrick 1998; Hutchinson 1999).

Based on the general educational goals and strategies of the DEUSM (Appendix 1), the following three program evaluation questions were developed:

- What are the effects of the educational program on students and graduates?
- What are the effects of the educational program on trainers?
- Is the educational program being implemented as planned? (Appendix 2).

For each of these three evaluation questions, we further developed a schema for answering them by articulating the necessary data collection methods, the indicators and criteria for success, the data analysis methods, frequency at which data were to be collected, and reporting mechanisms (Table 1, 2 and 3). The program evaluation activities for a one-year period were planned on a Gannt chart. Based on a written timetable, the data were collected, analyzed and interpreted in the planned manner.

Table 1. What are the effects of the educational program on students and graduates? (Question 1)

Parameters evaluated based on General Principles (GP)	Data collection method	Data analysis /interpretation	Frequency/ calendar	Reported to
Determining whether new coming student profile changes over time	a. Investigation of students' university entrance points b. Questionnaire to investigate new coming student profile	a. Increase or decrease in students' entrance points b. Interpretation of the answers of new coming students	Once a year	Academic committee (at the beginning of the academic year)
Evaluation of the change in annual success averages GP 2	Evaluation of year-end grade averages	Investigation of changes among classes and study years	Once a year	Academic committee (at the end of the academic year)
Evaluation of student success GP 2	Evaluation of students' passing percentages	Evaluation of the results of the year and investigation of changes among classes and study years	Once a year	Academic committee (at the end of the academic year)
Evaluation of student performance GP 1, 2	a. Skills grades (Professional skills, Communication, Clinical Propaedeutics, PBL) b. Observation of performance c. Structured and focus group interviews (trainers and students)	Evaluation of the results of the year and investigation of changes among classes and study years	a. Once a year b. and c. Once a year (sampling)	Academic committee (at the end of the academic year)
Investigation of students' opinions on the educational program GP 1, 2, 3	a. Survey (questionnaire) b. Focus group	Evaluation of the results of the year and investigation of changes among classes and study years	Once a year	Undergraduate Medical Education Committee Year Committee Academic Committee
Students' evaluation on the educational program and their competencies at graduation level GP 1, 2, 3	Survey (questionnaire)	Evaluation of the results of the year and investigation of changes among classes and study years	Once a year	Academic Committee

Table 2. What are the effects of the educational program on trainers? (Question 2)

Parameters evaluated based on General Principles (GP)	Data collection method	Data analysis/ interpretation	Frequency/ calendar	Reported to
Determination of trainers' opinions on the educational program GP 1, 2, 3	a. Survey b. Focus group, structured interview, SWOT analysis	Evaluation of the results of the year and investigation of changes among years	Twice a year	Undergraduate Medical Education Committee, Academic Committee
Determination of Year Coordinators' opinions GP 1, 2, 3	Structured interview, SWOT analysis	Evaluation of the results of the year and investigation of changes among years	Once a year	Undergraduate Medical Education Committee

Table 3. Is the educational program being implemented as planned? (Question 3)

Parameters evaluated based on General Principles (GP)	Data collection method	Data analysis/ interpretation	Frequency/ calendar	Reported to
Is PBL implemented according to principles and directives? GP 3	a. Focus group (with trainers and students) b. Observation of the functioning of a PBL module (random 1, 2, 3) c. Student feedback (Scale): Module-end feedback, student feedback on tutor performance	Evaluation of the results of the year and investigation of changes among years	Once a year (at the middle of the year)	Undergraduate Medical Education Committee
Is TBL implemented according to principles and directives? GP 3	a. Focus group (with trainers and students) b. Observation of the functioning of a Task week (random 4, 5) c. Student feedback (Scale)	Evaluation of the results of the year and investigation of changes among years	Once a year (at the middle of the year)	Undergraduate Medical Education Committee

Implementation of the New Program Evaluation Approach at DEUSM

All planned activities were implemented except the observation of activities during a PBL module and a TBL week. Due to time limitations, these omitted activities were moved to the following year's evaluation plan. No other problems were experienced while carrying out the evaluation, except for some delays in disseminating the findings on the implementation of program activities through a report to relevant educational committees.

The results of program evaluation activities implemented throughout the year were presented to relevant educational committees upon their completion and they were used for program improvement. For instance, the results of a survey and focus group studies to assess students' opinions on the educational program were discussed in the relevant educational committees. The survey, to be repeated at the end of each academic year, assesses students' levels of contentment with each educational activity (PBL sessions, lectures, clinical skills practicals etc.), evaluation methods, tutors' performance, the School's medical facilities and supports for students. In this survey, the points attributed to each item are comparatively evaluated throughout the years (Musal et al., 2006). The focus group interviews were used to evaluate students' opinions about the educational program. The qualitative and quantitative data originating from these efforts have been used to revise the programs. For example, in focus groups the students

indicated that the joint implementation of pre-clinical disciplines' practicals (anatomy, histology, physiology etc.) made learning difficult. As a result, the School decided to implement the practicals separately during the course of the PBL modules. The focus groups also revealed that concept maps were not developed in all PBL groups. In DEUSM, at the end of each PBL module students are expected to develop a concept map, a diagram exhibiting the main concepts pertaining to the PBL case and the relationships among them. Considering students' statements regarding the development of concept maps, a course on concept maps for PBL tutors was started.

The first program evaluation report on the results of all implemented activities was prepared in July 2006. Program revision proposals were developed and reported to the Dean's Office and relevant educational committees.

After the first year's evaluation successes, the subsequent year's evaluation plan was prepared. New evaluation activities were added for the second year specifically to evaluate students' performance and assess graduates' perceptions of the educational program and their perceived professional competencies.

Based on two successive years' program evaluation studies, changes made in the School's education programs include an overall revision of the curriculum, a reduction in the frequency of examinations, and a diversification of socio-cultural activities to meet students' expectations. Numerous other changes were also made in response to the detailed content of the program evaluation report.

In the light of these outcomes, the School plans to continue its new program evaluation approach with its quantitative and qualitative methods assessing all components of the educational program.

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Appendix 1. General Principles* (GP) of DEUSM's Educational Program

GP 1. Generic competencies of students and graduates:

- Questioning, research, problem solving
- Learning to learn (self-study skills, determination of knowledge limits and learning needs, attainment and use of varied learning resources)
- Communication skills (Basic and professional, team work)
- Knowledge and application of ethical concepts

GP 2. Professional gains of students and graduates:

- Gaining basic clinical skills
- History taking
- Performing physical examination
- Formulating a diagnostic algorithm
- Ordering appropriate investigation
- Selection and implementation of appropriate treatment
- Performing emergency interventions
- Knowing country's priority health problems
- Knowing preventive health services
- Being knowledgeable about socio-cultural and environmental affecting health
- Evaluating an individual as a biopsychosocial whole.
- Gaining knowledge on Country's health policies and organization.
- Knowing a physician's administrative and legal capabilities and responsibilities.

GP 3. The use of Problem-based learning program in preclinical years and Task-based learning program in clinical years to attain the gains mentioned in GP1 and GP2.

GP1 and GP2 reflect students' intended generic and professional acquisitions. GP3 represents the School's educational strategies to achieve the acquisitions mentioned in GP1 and GP2.

Appendix 2. Program Evaluation Questions

Question 1. What are the effects of the educational program on students and graduates? (Table 1)

- How do students' medical school entrance points and the profile of new coming students vary?
- How do annual success averages vary?
- How do the class pass/fail and exemption from final test percentages vary?
- What are the students attainment level regarding the gains described in the general principles of the educational program?
- What is the students' contentment level regarding the educational program?
- How are the graduates' evaluation of the educational program and their personal gains?
- Are the graduates' professional applications compatible with the gains described in the general principles of the program?
- Are the graduates professional competencies differ from the graduates of other medical faculties?
- What is the distribution of graduates' professional carriers?

Question 2. What are the effects of the educational program on trainers? (Table 2)

- What are the opinions, expectations and contentment levels of trainers regarding the educational program? (How did the adoption of duties like PBL tutoring or Task responsibility affected trainers' opinions on education?)

Question 3. Is the educational program being implemented as planned? (Table 3)

- Are the module functioning processes in accordance with the program and directives?

Are the task functioning processes in accordance with the program and directives?