

Internal Evaluation of the Department of Environmental Health Science and Engineering

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ABSTRACT

Internal evaluation is a process in which it is possible to evaluate an educational program using standards based on pre-defined objectives and certain educational quality. The aim was to evaluate educational program of Environmental Health Science and Engineering students in the Environmental Health department and investigate if it is adjusted for students needs. The study was cross-sectional, descriptive and analytical on the basis of 10 procedural steps and within 8 sections dealing with evaluated factors, namely, scientific board members, management and organizational capability, students, manpower and logistic affairs, educational environments, research work centers, health and therapeutic sections, educational equipment, research equipment, laboratory and diagnosis centers, educational courses and programs, teaching and learning process as well as satisfaction expressed by students. The general average of 8 investigating sections was 68.8% indicating a desirable research work. It is, therefore, concluded that the function of the educational management is directly in line with evaluation process. Educational evaluation is the best indicator that shows up to what extent we should go to achieve certain aims. It analyzes the quality of the activity of such a system and by which we achieve logical and routine results.

Keywords: Internal Evaluation, Department of Environmental Health Science and Engineering, School of Public Health, Tehran University of Medical Sciences

1. INTRODUCTION

Internal evaluation is the best indicator of the level of achievement of educational objectives. Since it deals with analysis of educational activities in a university system, it is possible to reach rational and well-known results (Farzianpour *et al.*, 2011a).

Tehran University of Medical Sciences and Health Services, Iran, is considered as one of the most important educational health care and research institutes in society

for solution of problems and for training specialized and efficient forces (Farzianpour *et al.*, 2011b).

It is expected that this educational institute will determine a method for solving social intricate issues and for developing the science by training potential learners (Soleymani *et al.*, 2012). To meet society's expectations, it is necessary to define the objective and do appropriate planning to accomplish these results. Planning in the university begins with understanding the needs. It leads to evaluation or

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process of compiling required data to judge issues in educational system in order to increase quality level (Sedaie *et al.*, 2007; Abdolvahab *et al.*, 2009).

On the other hand, the world is changing so rapidly and continually that it is considered a necessity to review educational programs continually for new expectations (Farzianpour *et al.*, 2010a). Appropriate evaluation and research in education are considered as practical tools for confirming these changes in order to promote research, health care and educational quality levels (Farzianpour *et al.*, 2011c).

In this way, the key to success in reaching the required quality level in this university lies in training of scientific board members and in encouraging them to participate in activities, evaluation of group activities, solving of problems and development of standard educational elements and tools (Farzianpour *et al.*, 2009).

For this purpose, the Study and Educational Development Center in Tehran University of Medical Sciences decided in 2000 to do an internal evaluation plan for the Environmental Health science and Engineering group in the School of Public Health. This plan was about their situation and existing abilities so they could identify strengths and weaknesses in order to compensate for their limitations. Consequently, they would be prepared to perform internal evaluation annually as well as external evaluation periodically, on the basis of compiled indicators and functional basis and eventually accreditation, validity measurements and validity recognized at university level (Farzianpour *et al.*, 2011a). The aim of this study was to evaluate educational program of medical students in the Environmental Health science engineering department and investigate if it is adjusted for students needs.

2. MATERIALS AND METHODS

In this study, the educational group of Environmental Health science and Engineering in the School of Public Health was evaluated using questionnaires given to scientific board members and students from 2010 to 2011 in order to suit education to society's needs and increase quality level.

This study was cross-sectional and survey descriptive; analytical evaluation questionnaires were used as tools for collecting data which included collected statements, close and open type choices and multiple choice.

All statements in the questionnaires were developed and standardized for validity and reliability

based on the latest resources and educational evaluation sources (Saif, 2009).

The internal evaluation was performed based on the following 10 steps and in 8 areas.

10 Steps in internal evaluation:

- Step1: Acquaint scientific board members about evaluation of educational management process.
- Step2: Form committees on evaluation in educational and remedial courses and provide orientation to members.
- Step3: Compile objectives (educational remedial and research objectives)
- Step4: Define evaluation factors and related criteria.
- Step5: Define and compile appropriate indicators for evaluation of factors.
- Step6: Specify the required data for judging each factor.
- Step7: Select and compile needed tools for collecting data.
- Step8: Collect data
- Step9: Analyze data, discuss and make conclusion.
- Step10: Prepare a report and provide suggestions

The areas under study are as follows:

- Organization and management
- Scientific Board
- Learners
- Human resources and support
- Remedial hygienic research and educational spaces
- Diagnosis laboratories, research and educational equipment
- Educational programs, courses and learning-teaching process
- Satisfaction of the graduates

2.1. Validity of Data Collecting Tools

A table was developed before preparation of data collecting tools, which exactly specified each one of the related research questions and on that basis, the tools were provided. Then to define appropriate validity of data collecting tools, experts reviewed compiled questionnaires; questions were clarified including direct questions and uncertainties. The main requirement to questionnaire validity was providing correct questionnaires with expressions whose uncertainties were minimized as much as possible. The content validity was based on whether or not the sample question was an important aspect of the research objective.

In order to obtain scientific validity for questionnaires, the content validity method was used. The questions were provided through text study and present research collections (Mansoorfar, 2011; Farzianpour *et al.*, 2011b) Questions on stability in data collecting tools were defined and clarified.

2.2. Data Analysis Method

Data descriptions, collections, tables, percentages, X^2 , regressions and variance analysis were used as follows:

- Fax program was used for inputting data to computer and editing them
- All data were analyzed using software SPSS 16 and descriptive, statistical method and absolute abundant, calculation and geometrical average and percentage, $\times 2$ and statistical regression assessment
- Software HG-3 was used for the graphs
- Data results from research were quantified by appropriate calculation formulations and then compared with each other. The resulting calculations were recorded in related tables to represent

information. In order to compare data in each case, ANOVA Test and $\times 2$ method were used

- On the basis of SWOT pattern, the educational evaluation result in this group was studied
- Software SPSS16 and Excel were used to convert qualitative data to quantitative data

To identify strengths and weaknesses in areas under study as given below, the survey range in all educational groups was used:

Data results of less than 50% were undesirable while those with results between 50-75% were relatively desirable. Data results of more than 75% were desirable.

3. RESULTS

As shown in **Table 1 and 2**, the educational evaluation council on the Environmental Health science and Engineering group developed educational strategies based on special objectives and educational indicators based on criteria.

Table 1. Educational strategies based on special objectives

Special objectives	Educational strategies
1- Improvement and promotion of quality level and remedial hygienic research and educational program development conforming to society's needs at university level.	1- Internal evaluation about the quality of educational programs
2- Increase in the number of scientific board members and specialists in educational groups.	2- Review of present permanent system to achieve desirable internal evaluation.
3- Knowledge development and acquisition of modern technologies.	3- Development of scientific relations with other universities and domestic and foreign authorized centers.
4- Training efficient human resources in remedial hygienic research and educational courses.	4- Promotion of short-time educational courses qualitatively.
5- Promotion of scientific board members, facilities, equipment conditions and educational resources in laboratories.	5- Promotion of remedial-hygienic research, educational materials and conditions qualitatively.

Table 2. Indicators based on criteria

Criteria	Indicators
Management	Management organizational structure, remedial research, description of service and educational performance function, planning of internal and external activities of members, management authorities.
Scientific board	Scientific board distribution, operational, remedial, hygienic research and educational activity information and experience.
Learners	Educational improvement.
Learning teaching process	Applying educational technology by scientific board, educational improvement, teaching methods and graduates.
Educational courses and curriculum	Educational courses quality, conforming courses to objectives, group courses content, conforming courses to mission, objectives, facilities and program evaluation.
Graduates	Capability, identification, relation between learners and their educational group after completing education, occupational future (destination), keeping education, management and planning service, receivers' comments about learners' occupation capabilities.
Equipment	Service remedial hygienic research and educational resources, Space, facilities, laboratory, library, computer, visual and audio, radiology, clinic, office and pavilion.
Research	Research activities, study opportunities, compiling of research programs, group, gathering, text magazine research plans.
Satisfaction	Management, scientific board and learners' satisfaction with all educational, operational, remedial hygienic and research aspects.

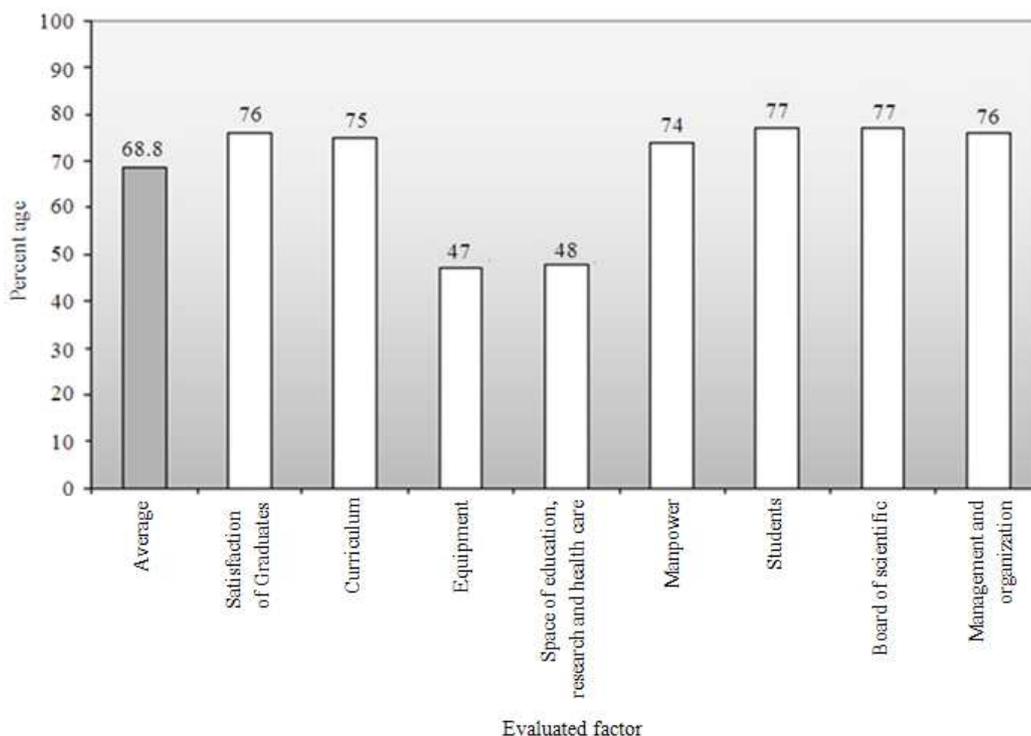


Fig. 1. Results of internal evaluation in Dept. of Environmental Health and Engineering School of Public Health, Tehran University of Medical Sciences

Average results from educational evaluation of the group were represented in **Fig. 1**.

Strengths and weaknesses, opportunities and threats were analyzed on the basis of SWOT pattern observed in the group as follows:

- O: Health Care, research and educational validity of university
- S: Scientific board members, experienced and powerful experts, students, graduates, manpower, curriculum development, library
- T: Laboratory, spaces of educational equipment for research
- W: Scientific board welfare, modern technology, space of educational, research and health care equipment, laboratory, computer

4. DISCUSSION

Educational evaluation is an essential and inseparable component of any organizational function, particularly in organizations such as medical education, remedy and hygiene which provide Para-medical coordination

planning and operation as well as varied range of remedial and hygienic services in the country (Farzianpour *et al.*, 2011c). It is a process, which deals with collecting data and judging about educational activity promotion (Given some principles related to educational measurement and data collecting, it could be well understood (Focht and Henderson, 2009).

The results of the research showed that the general average of 8 investigating sections was 68.8% indicating a desirable research work. Therefore, it can be concluded that the function of the educational management in that group was directly in line with evaluation process.

Previous studies in educational evaluation showed that averages of the function of educational evaluation in basic sciences groups and clinical groups were 76.4 and 86.6%, respectively, while the grand average of the function of clinical groups and basic sciences groups was 80.5% (Farzianpour *et al.*, 2011a).

In a university educational system, it is possible to use educational evaluation in electing students, scientific board and curriculum and other educational system inputs. In addition, it supervises on system process performance

and directs outputs and system consequences optimally (Bloom, 2005; Leung, 2010).

In most developing countries, the number of students has increased and per head budget of university education has decreased. It is expected that higher education system will operate more against decreased resources (Kazu, 2009).

This decrease in financial resources has affected research and educational quality. Thus, it is necessary to have a higher standard of quality on education (Rostirolla and Rostirolla, 2011).

It is necessary that the medical education system structure in our country meets some educational quality and is improved in view of existing shortages in educational programs and for meeting society's needs (Farzianpour *et al.*, 2011b).

One of the methods, which can be helpful in identifying strengths and weaknesses in an educational system, is educational evaluation (Khan and Nasira, 2011).

Occupational capabilities and graduates' efficiency in the fields of medical sciences depend on the level of achieving objectives in educational programs in order to present remedial, hygienic services, research and educational programs, for the promotion of individual and society's health level (Gale, 2011).

If educational programs have not developed and performed correctly, these can cause irreparable damages and serious economic, cultural and social effects on individuals and graduates as well as on university management (Farzianpour *et al.*, 2011c; Shah and Sid, 2011).

On the other hand, if government-wide investment is provided on human, financial and physical resources to develop medical education centers, it seems necessary to evaluate different aspects of educational programs in medical groups (Khasawneh, 2011).

It is necessary to equip the management with control and supervision tools according to educational programs. If educational management has an effective and helpful system for evaluation, then it will have an active and dynamic nature (Farzianpour *et al.*, 2011a).

Further, identifying and analyzing problems and issues in educational system can be considered an important step to improve the university educational system and, consequently, to be ready to perform remedial, hygienic and medical development programs in the country (Farzianpour *et al.*, 2011a; 2010b).

5. CONCLUSION

- Development of spaces for education, research and health care in the Environmental Health science and Engineering group
- Modern technology for education and research
- Scientific board welfare

6. ACKNOWLEDGMENT

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