

### Evaluation of Educational and Research Status in Microbiology Department. Mashhad University of Medical Sciences

**Background:** Continuous improvement of quality in higher education is the ultimate goal of any medical school. Evaluation of research and educational status makes it possible to judge about the quality of educational achievements in a system. Thus we evaluated the educational and research status of Microbiology and Virology Department, faculty of medicine in Mashhad University of Medical Sciences.

**Methods:** This cross-sectional study was conducted during 2012 in the Department of Microbiology and Virology. The study population included the head of the department, members of the Evaluation Committee, nine faculty members of the Department, postgraduate students and some undergraduate students, several alumni, as well as educational staff of the department. A questionnaire was utilized to evaluate 8 fields by questions based on a 3-point Likert scale. This questionnaire has been previously assessed and confirmed in terms of reliability and validity. Descriptive statistics were calculated using appropriate software.

**Results:** The best scores were obtained in the area of faculty members, students, and dissertations while the minimum points were achieved in the areas of educational facilities, educational programs (curricula) and alumni.

**Conclusion:** According to the results, curricula, educational and research facilities and spaces which were identified as the weakest areas need to be considered and paid more serious attention. Planning to develop the effective communication with alumni can improve the quality of education in the department.

**Keywords:** Evaluation, Microbiology Department, Mashhad University of Medical Sciences

### تقييم المعايير التعليمية و التحقیقاتیه فی فرع علم المیکروب فی جامعه مشهد للعلوم الطبیه

**المقدمه:** إن الفایه من تقييم التعليم هو تحسين وضع التعليم بشكل مستمر. و هذا الامر يساعد على رفع مستوى التعليم و نیل الاهداف نظام التعليم بناءً على هذا الامر قرر الباحثون فی قسم علم المیکروب فی کلبه الطب فی جامعه مشهد الطبیه وضع هذه الدراره لنیل الاهداف المرجوه.

**أسلوب البحث:** اجريت هذه الدراره التي كانت على شكل توصیفی- مقطعی فی عام ۱۳۹۰ فدرش فی قسم علم المیکروب والویروس وامتثلت على مدیرالقسم واناخص من اعضاء الریثه العلمیه و عدد من الطلاب فی هذا القسم و طلاب من مختلف مقاطع الطب و تم استخدام استماره تحتوي على ۸ محاور مختلفه قد تم تأییدها من قبل. تم محاسبه النتائج و تبینها بواسطة رسوم بیانیه.

**النتائج:** اکثر الإمتیازات كان فی مجالات الریثه العلمیه و من تم فی مجال الطلاب و رسائل التخرج و اقل العلامات كانت فی مجالات الإمكانات و الأدوات التعليمیه و البرامج التعليمیه و الدرارات الدراریه و الخریجن.

**النتیجه:** یلفت النظرالی النواقص و اجراء برمجہ لتحسين التجهيزات و ایجاد ارتباط مع الخریجن و اعاده النظر فی البرامج التعليمیه ما یوتر فی رفع المستوى التعليمی فی القسم المذكور.

**الكلمات الرئیسیه:** تقييم المعايير التعليمیه و التحقیقاتیه. الفرع العلمی فی مجال علم المیکروب. جامعه مشهد للعلوم الطبیه.

### مشهد یونیورسٹی آف میڈیکل سائنسس میں بیکنریالوجی شعبے میں تعلیم اور تحقیقاتی معیاروں کا جائزہ۔

**بیکن گراؤنڈ:** طب میں اعلیٰ تعلیم کے معیار کو بڑھاتے رہنے کی ضرورت محسوس ہوتی ہے۔ اسی طرح سے تعلیمی معیاروں کو جانچنے کی بھی ضرورت ہوتی ہے تاکہ تعلیمی اہداف تک پہنچا جاسکے۔ اسی ہدف کے تحت مشہد یونیورسٹی آف میڈیکل سائنسس میں بیکنریالوجی کے شعبے میں تعلیمی معیارات کا جائزہ لینے کے لئے یہ تحقیق انجام دی گئی ہے۔

**روش:** یہ تحقیق دوہزار گیارہ میں انجام دی گئی، اس تحقیق میں شعبے کا مینجمنٹ گروہ، جائزہ کمیٹی، اکیڈمیک کونسل کے نو ارکان، اور مختلف سطح کے طلباء نے شرکت کی۔ تحقیق کے لئے آٹھ موضوعات میں سوالنامے تیار کئے گئے اور ہر گروہ ڈٹے گئے۔ اس میں برا، اچھا اور بہت اچھا کی کٹیگری رکھی گئی تھی۔ اس سوالنامے کی ماہرین نے توثیق کی تھی۔ اس تحقیق کے نتائج ٹیبل کی صورت میں پیش کئے گئے۔

**سفرشات:** اس تحقیق سے پتہ چلا ہے کہ سب سے زیادہ نمبر اکیڈمیک کونسل کے اراکین اور طلباء کو ملے ہیں جبکہ تعلیمی وسائل و ذرائع اور ساز و سامان کے شعبے، منصوبہ بندی شعبے اور تعلیمی شعبے کو سب سے کم نمبر ملے ہیں۔ بناہرین یہ سفارش کی جاتی ہے کہ ان مسائل کو حل کرنے کے لئے ضروری ہے کہ نئے ساز و سامان خریدے جائیں، فارغ التحصیل طلباء سے موثر رابطہ رکھا جائے، نصاب پر نظر ثانی کی جائے تاکہ تعلیمی معیاروں میں بہتری آسکے۔

**کلیدی الفاظ:** تعلیمی معیار، بیکنریالوجی، مشہد یونیورسٹی۔

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### ارزیابی معیارهای آموزشی و پژوهشی گروه میکروب شناسی دانشگاه علوم پزشکی مشهد

**مقدمه:** ارتقا ی مستمر کیفی آموزش عالی هدف غایی ارزیابی آموزشی است و ارزیابی معیارهای آموزشی و پژوهشی، قضاوت در مورد کیفیت و دستیابی به اهداف نظام آموزش را ممکن می سازد. بنا براین نویسندگان بر آن شدند که به ارزیابی معیارهای آموزشی و پژوهشی گروه میکروب و ویروس شناسی دانشکده پزشکی دانشگاه علوم پزشکی مشهد بپردازند.

**روش:** این مطالعه توصیفی - مقطعی در سال ۱۳۹۰ در گروه میکروب و ویروس شناسی اجرا شد. جامعه مورد مطالعه شامل مدیریت گروه، اعضای کمیته ارزیابی، ۹ نفر اعضای هیأت علمی، تعدادی از دانشجویان تحصیلات تکمیلی و دانشجویان سایر مقاطع، و نیز چندین تن از دانش آموختگان به انضمام کارشناس آموزش گروه بودند. سوالات پرسشنامه در ۸ حیثه اصلی به صورت جداگانه برای گروه های فوق آرایه گردید. سوالات پرسشنامه فوق در ۳ طیف نا مطلوب، نسبتاً مطلوب و مطلوب تدوین شد. پرسشنامه استاندارد ارزیابی درونی به لحاظ پایایی روایی قبلاً مورد ارزیابی قرار گرفته و روایی و پایایی آن مورد تأیید می باشد. نهایتاً توصیف داده ها، محاسبه ی فراوانی ها و درصدگیری به صورت شاخص های کمی انجام و نتایج حاصله به صورت جدول ارائه گردید.

**یافته ها:** بیشترین امتیاز در حوزه های هیات علمی، دانشجویان و پایان نامه کسب شد و کمترین نمره ها در حوزه های حوزه امکانات و تجهیزات آموزشی، برنامه های آموزشی و دوره های درسی و فارغ التحصیلان بدست آمد.

نتیجه گیری: توجه به موارد کاستی ها و برنامه ریزی در جهت بهبود این موارد از قبیل نوسازی تجهیزات، ارتباط موثرتر با فارغ التحصیلان و بازنگری در کوریکولوم آموزشی می تواند ارتقاء موثری در کیفیت آموزشی گروه مورد مطالعه داشته باشد.

**واژه های کلیدی:** ارزیابی معیارهای آموزشی و پژوهشی، گروه آموزشی میکروب شناسی، دانشگاه علوم پزشکی مشهد

**INTRODUCTION**

Higher education institutions are important elements for society development. To achieve the desired results, one of the most important issues that should be considered is educational quality. The quality of these organizations is increasingly influenced by factors inside and outside the institution. Despite advances in the field of education, yet general agreement on how to manage the quality of education has not been reached.(1, 2) Functions of the higher education institutions management are as follows. a) Planning; b) Organizing; c) Directing; d) Monitoring and Evaluation (3). Among these, monitoring and evaluation play crucial roles. The evaluation is a process to improve the quality of the education using the collection and judgment of data. Growing needs of experts and a growing number of students have high lightened the importance of the quality of education.(4) In recent years, many researchers have conducted studies in this field. In this regard, an appropriate evaluation that leads to accurate judgment is of specific importance. (5) Each evaluation program consists of systematic data collection, observation, analysis, and finally summarizing all the information to judge and to determine the quality of the educational system. However, in a traditional approach, changes within or outside the organization, might challenge the evaluation process. (6) Conventional models of evaluation for higher education institutions, include assessment of the content, data and process evaluation, and outcome evaluation.(7, 8) The evaluation of the department of Microbiology and Virology, Mashhad University of Medical Sciences was conducted based on this common pattern for evaluation (9, 10). We

hope this process assess the efficacy of educational programs provided at the Department of Microbiology and Virology to estimate and address the limitations and strengths. The ultimate aim is to promote the quality of the education in the field of microbiology for medical students as well as postgraduate students.

**METHODS**

This study was conducted in the Department of Microbiology and Virology, Mashhad University of Medical Sciences during 2012. The data collection tool was a questionnaire. Through this descriptive cross-sectional study, the efficacy of provided education was assessed in 8 fields; "the mission and objectives", "training", "faculty", "student", "teaching and learning strategies", "educational and research facilities," "dissertation", and "graduates". The study population consisted of the head of the department, evaluation team, 9 faculty members in the department, the PhD and M.Sc. students together with the undergraduate students (such as medical students, dentistry, pharmacy and paramedical students),and also some of alumni. These questions were presented separately to these groups. This questionnaire was based on a 3-point Likert scale. The questionnaire had been previously assessed and confirmed in terms of validity and reliability (Cronbach's alpha= 0.85). Finally descriptive statistics were calculated using SPSS. Educational evaluation results were analyzed based on SWOTS (strengths, weaknesses, opportunity, and threats) method.

**RESULTS**

Findings based on the degree of desirability of the 8 fields were as follows:

<b>Table 1: The degree of desirability in Mission, goals, organization field</b>			
<b>Criteria</b>	<b>score</b>	<b>Maximum score</b>	<b>Desirability %</b>
Mission, goals	9	16	56.25%
Head of the department	22	30	73.33%
Program to develop courses and educational fields	6	9	66.66%
Resource development	3	10	30%
Regulations and rules	6	8	75%
Faculty members participation in educational planning	7	8	87.5%
Financial resources	2	10	20%
Activities outside the university	8	14	57.14%
<b>Sum</b>	<b>63</b>	<b>105</b>	<b>60%</b>

<b>Table 2: The degree of desirability in Courses and curricula field</b>			
<b>Criteria</b>	<b>score</b>	<b>Maximum score</b>	<b>Desirability %</b>
Curricula and educational goals	9	12	75%
Fields of study and faculty member expertise	6	14	42.85%
Need to revise the curriculum and course	4	10	40%
<b>Sum</b>	<b>19</b>	<b>36</b>	<b>52.77%</b>

**Table 3: The degree of desirability in faculty members field**

Criteria	score	Maximum score	Desirability %
The number of faculty members	8	10	80%
Educational activities of faculty members	8.75	10	87.5%
Research activities of faculty members	11	12	91.66%
Executive activities of faculty members	7	8	87.5%
Academic level of faculty members	4	10	40%
<b>Sum</b>	<b>38.75%</b>	<b>50</b>	<b>77.5%</b>

**Table 4: The degree of desirability in student's field**

Criteria	score	Maximum score	Desirability %
Admitting process and student development	13	16	81.25%
The number and distribution of students	4	9	44.44%
Student participation in educational planning	7.5	10	75%
Student interaction with faculty members	12	12	100%
Students' awareness and interest in the field of study	1	9	11.11%
Viewpoint of students about the department	14	24	58.33%
Research activities of the students	8.75	10	87.5%
<b>sum</b>	<b>60.25</b>	<b>90</b>	<b>66.94%</b>

**Table 5: The degree of desirability in teaching / learning strategies field**

Criteria	score	Maximum score	Desirability %
Models and teaching methods	13	20	65%
Resources and training tools	12	15	80%
Assessment of Educational Progress	11	15	73.33%
Feedback from previous evaluations	9	15	60%
<b>sum</b>	<b>45</b>	<b>65</b>	<b>69.23%</b>

**Table 6: The degree of desirability in Educational facilities field**

Criteria	score	Maximum score	Desirability %
Educational and administrative spaces	4	10	40%
Library and IT unit	2	12	16.66%
Computer facilities and services	5	12	41.66%
Workshops and laboratories	8	15	53.33%
Audio-visual facilities	6	15	40%
<b>sum</b>	<b>25</b>	<b>64</b>	<b>39.06%</b>

<b>Table 7: The degree of desirability in Thesis, Sabbaticals, seminars field</b>			
<b>Criteria</b>	<b>score</b>	<b>Maximum score</b>	<b>Desirability %</b>
Quality of thesis and dissertations	17	18	94.44%
Seminars held by the department	7	15	46.66%
Research contracts	6	12	50%
<b>sum</b>	30	45	66.66%

<b>Table 8: The degree of desirability in alumni field</b>			
<b>Criteria</b>	<b>score</b>	<b>Maximum score</b>	<b>Desirability %</b>
Postgraduate education	6	12	50%
Communication with graduates after graduation	3	18	16.66%
Scientific articles and books by the Alumni	6	9	66.66%
Alumni careers and job opportunity	9	9	100%
Capabilities of graduates	5	9	55.55%
<b>sum</b>	29	57	50.87%

## DISCUSSION

Regarding the mission and goals of the department as the first evaluated field, the status of the department is appropriate. However, the department score was unfavorable in some cases such as training manual for new students. As a guideline to give an overall view of the course at the beginning of the course increases students' learning efficiency, it is necessary to properly develop such guidelines. In most cases the score of management was favorable except for the participation of students in educational planning. The department situation to attract foreign students is unacceptable. This can be improved by planning in international unit of the university and reduction of administrative and bureaucratic procedures. Unfortunately, the criteria for department status in terms of physical resources and facilities were not acceptable. Also the department did not succeed to obtain resources outside the university. This can be improved by reducing the bureaucracy and expanding relationships with industry and the private sector. It seems that there is no programmed schedule for taking sabbaticals by faculty members. Considering the rapid growth of science, the need for taking sabbatical courses and expanding the relationship with other academic centers has been increased.

Regarding the field of curricula and courses, the overall condition is moderate. The Non-Core courses were not offered by the department. The current educational program is too rigid though the university can offer up to 10% of each curriculum as non-core courses and be more flexible. This potential should be activated and universities should provide Non-Core Courses based on their ability and capacity.

The status of the department in the field of faculty members and educational and research activities was appropriate. Department has repeatedly won awards because of research activities. However, the department failed to admit guest researchers from other universities. This can be improved by facilitating the process at faculty and university levels.

In the field of students, the department had a relatively good condition in most areas. However, the number of postgraduate students was not consistent with the educational facilities. This deficiency can be overcome with additional resources as the number of students increasing. The department also failed to involve the students in educational planning.

In the fifth field, teaching and learning strategies were evaluated. Learning output is still assessed by the traditional method of taking test in the end of semester in the department so new and appropriate plans for students' evaluation are needed. Moreover, the exam results were not finally analyzed.

There are many deficiencies and defects in the field of educational facilities, Physical facilities, and equipment as well as the space which needs to be expanded. Special programs and mechanisms should be considered to renovate laboratory equipment and facilities.

More attention should be paid to the theses and dissertations and research contracts with relevant organizations should be facilitated. Sabbatical courses must be encouraged to develop the relationship with other research centers.

In the field of graduates, although continuing education programs are held regularly for graduates, the communication with alumni should be increased furthermore. Fortunately, scientific works and future career of the graduates were

acceptable. However, the overall score is satisfactory in these departments (310 points out of 512). But more emphasis should be put on the limitations as the results of any evaluation can help to resolve the failures (11, 12) .

According to this study, the following recommendations at the department, faculty and university levels are provided to improve the educational quality of the department.

The department must provide the booklet or educational manuals for new students and the students should be involved in educational planning furthermore. Also annual meetings with alumni and maintaining effective communication with them should be considered. Also the department should plan to offer non core courses. The faculty should provide opportunities for students to get familiar with industries and markets for their future career. The faculty members should use new methods to evaluate the students. The university should extend sabbaticals and increase communication with other universities within and

outside the country. Meanwhile improving facilities, including physical environment, expert personnel, and equipment should be considered. The university should also develop international relations with higher education institutions in other countries in order to attract foreign students. Open communication with industry and research institutions to attract funding from the private sector, is also critical for higher education development. And finally the curricula should be regularly revised by expert committees. Renewing the facilities and equipment, more effective contact with graduates and a revised curriculum should be considered. These programs may lead to an upper grade in later evaluations.

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### REFERENCES

1. Mohammadi R, Fathabadi J, Yadegarzadeh G, Mizamohammadi M, Parari K. Evaluation Quality in higher education. Tehran: Sanjesh Press; 2005. p. 12-3.
2. Mehralizadeh Y. New Reforms in the Management of the University: Transition from Centralized to Decentralized (University-Based Management) in Iran. High Educ Policy 2005; 18(1): 67-82. [In Persian].
3. Bazargan, A.(1995). Internal evaluation and its application in continuing quality improvement. Research and Planning in Higher Education,3(374);1-22 (in Persian).
4. Abat F. Education for more learning. Tehran: Ministry of Health, Treatment and Medical Sciences; 1995.
5. Hosieni F, SahlaNazaran F. Translation of evaluation and accreditation medical school: standards and policy. Edit 2002. Tehran: Ministry of Health, Treatment and Medical Sciences; 2007.
6. Hughes OE. Public Management and Administration: An Introduction. 3rd ed. New York: Palgrave Macmillan, 2003.
7. Mizikaci F. A systems approach to program evaluation model for quality in higher education. Quality Assurance in Education 2006; 14(1): 37-53.
8. Bazargan A. Educational evaluations. 4th ed. Tehran: Samt publish, 2004. [In Persian].
9. Maryam Hashemian, Mohammad Shuride yazdi, Hoda Azizi, Kazem Hassanpour. Internal Evaluation of Basic Science Department in Sabzevar University of Medical Sciences in 2010 - Future of Medical Education Journal, 2012 sep, Volume: 2 Number: 3, page 24.
10. Soosan Saatsaz, Fatemeh Hajihosseini, Zahra Beheshti, Rozita Rezaei, Internal Assessment of Nursing and Midwifery School of Amol (solar year 1390), Future of medical education, 2012 JUNE, Volume 2, Number 2, page 25
11. Farzianpour F, Sedighi Gilani MA, Zeinalo A, Eshraghian MA. [On Line]. Result of educational evaluation concerning 15 educational groups active in research works relevant to basic and clinical sciences in Tehran University of Medical Sciences. [Cited 2004]. Available from: URL: edc.tums.ac.ir/UserFiles/File/evaluation/Farzianpour%20Abstracts5.doc
12. Bazargan A. Internal evaluation to quality assurance in higher education: the case of medical education
13. in Iran. Journal of Medical Education 2001; 1(1): 23-27.