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Research Article

PROPOSING A MODEL OF STUDENT EVALUATION BASED ON SYSTEMATIC APPROACH REGARDING THE FINAL TERM EXAMS

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ABSTRACT
The evaluation model of students' current performance can highly affect their future performance. The most successful managers are those with a conscious or subconscious evaluation system. This issue is as much important in education area as any other field. In the current study, a model for final term student evaluation is proposed based on systematic approach. The 10 influential parameters on appropriate suitable performance evaluation were determined using systematic approach along with distribution of open questionnaires among students and also interview with university professors. 9 parameters out of the original 10 parameters were verified using statistical tests; then the remaining parameters were categorized and the final model was proposed based on them.

Keywords: *Performance Evaluation, Systematic Approach, System Analysis, Questionnaire*

INTRODUCTION
Evaluation is defined as the process of analyzing one's performance using pre-specified standards on one hand and collection, analysis, and interpretation of data on another hand in order to investigate the level of the possibility of organizational and functional goals (Borden and Hong, 2003). A comprehensive definition of evaluation is proposed by Kiamanesh (2001). He maintains that evaluation is the systematic process of collection and interpretation of evidence that finally leads to a specific judgment regarding specific task. This definition includes 4 main factors. The first factor is that it evaluation should be systematic which requires a minimum level of planning for data collection. The second factor, based on Kiamanesh definition, is the interpretation of evidence. The third factor is evaluative judgment which extends the evaluation beyond mere description. The fourth factor which concerns the existence of at least some pre-specified goals means that the evaluation should be carried out consciously for possible future actions.

Educational evaluation as an academic discipline emerged in the 1960's based on Ralf Tylor's (1966) efforts. It has witnessed considerable development since then. Nowadays, the field is supported by a wide variety of important scientific resources, documentaries and also a strong literature. We have witnessed considerable development in different area of the field e.g. definitions, concepts, goals, methods, patterns, and approaches; the developments pave the way for different models of evaluation regarding students educational performance, curriculum evaluation, and also evaluation in structural level such as institutions, projects, teachers, and personals. Some experts believe that the educational procedures of an educational system are determining in its evaluation which implies the level of evaluation importance. The most important goal of evaluation is to improve, guarantee, and strengthen the quality of educational programs (Keizoori *et al.*, 2007). Systematic approaches are comprehensive frameworks which emphasize on understanding the relationship among different factors as a whole and not individually; in reality, it does understand of dynamic patterns, not a stagnant understanding. Evaluation is based on several general rules. Rules which were extracted from other disciplines such as social sciences, physics, management and engineering beside which systematic approaches and toolsare being used as a notable technique.The above-mentioned tools have been using in exploring a wide spectrum of systematic phenomena such as co-operative, urban, regional-economic, political, ecological, and physiological systems.

Quality in higher education is an obscurely defined term and there is no general consensus over its scope in the area (Benet, 2001; CHEA, 2003). The complexity of higher education system along with serious

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debates over its addressees and also its production has resulted in a vague definition for the term quality in the area (Roinstin, 2003). What are important in defining quality in higher education is the opinions of the audience. Quality in higher education is a function of audience perception of the whole system. Audience who define quality based on his understanding (Bazargan, 2008). That is why it should be stipulated that no single definition can be comprehensive enough to encompass all the scope of quality in higher education. It is a fluid dynamic definition. As a result, it should be noted that quality cannot be defined and measured easily; in this regard, both norm-based definition and standard-based definition can be applied respectively (Bazargan, 1995). In recent years, considerable efforts have been made on evaluation of the quality of educational programs in many countries. Other states have devoted resources to the same area seeking appropriate methods of quality evaluation in higher education (INQAAHE, 2003).

Verten and Sanderz (1987) have categorized approaches in performance evaluation into six different types:

1- *Goal-centered:* In this approach, determination of educational goals and also the level of their realization are emphasized.

2- Management-centered: in this approach, evaluation is defined as employing decision-makers.

3- *Consumer-centered:* The most important point in this approach is development and eliciting the evaluation process based on the needs and requirements of the educational system.

4- *Expert-centered:* This approach is probably the oldest and most common used approach in the area of performance evaluation which is based on the views of experts regarding educational institutions, programs, products and activities.

5- *Differences in expert's Opinion-centered:* In this approach there is an inclination toward rebalancing the differences; a comprehensive ideologically-free evaluation method is obtained using both positive and negative views.

6- *Environmentalist or Co-operative Approach:* The best comprehensive evaluative approaches are those based on the values and views of all the participants in a system (including groups and individuals) who have been already judged.

According to Iran's higher education principles evaluation is based on a 0-20 scale in which any score below 10 is of no value (0-10 scores are considered as the failing scores and students with such scores need to retake their exam) which in turn means that the minimum possible score (0.25) can act as a determinant factor to motivate students to improve their potential capabilities under teachers' supervision. Considering the fact that students' motivation is far less than what it used to be, it is necessary to conduct researches of this origin. It must be noted that the evaluation approach of this paper is categorized in the sixth type.

The current study was aimed at analyzing the issue in a survey-type research which in turns make the research applied. On the other hand, considering the methods of data collection e.g. questionnaires and other respective methods, one can categorize the research among descriptive-survey studies. Data collection tools in the current study are categorized into four types: a) existing information, experiences, and documentaries; teachers are a great source of experience due to their many years of teaching;b) Library studies; c) surveys and supervision: the recording of target behaviors in a more comprehensive exact way; and d) data collection from students using questionnaires. The study, in some of its aspects, is connected with statistical studies.

2. *Model*

2.1. Introduction

The main key of management process in many situations is a thorough understanding of the complexities in their dynamic state and not in a detailed Way. Rebalancing between increasing market share and development in goods/services quality, dominance in price, quality, and status areas, competition and customer satisfaction are all considered to be dynamic issues. Increasing competition power and customer satisfaction is also among dynamic areas which are associated with respective dynamic complexity. It is obvious that most of the issues regarding education, as we see in literature review, are considered to be

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dynamic issues as well. Unfortunately, most of the analysts of educational programs emphasize detailed complexities and not the dynamic complexities of the whole system comprehensively. As a result, they cannot understand and find appropriate solutions for current problems. The six stages of a systematic study that needs to be carefully followed are cleared here (Gibson *et al.*, 2012).

1. *Goal Clarification:* The functional necessities of systems are more important for employers (Chestnut, 1965). Asking your sponsor to define a problem requires that the sponsor transfers an important part of the systematic analysis to you and supposes for himself the most important and difficult part of the study as accomplished (Rothblatt, 1971).
2. *Define Standards to put the Candidates in Order Respectively:* The possibility of selection of physical parameters as a measurement to gauge system performance is a shortcoming of systematic approaches; some may argue its uselessness. As a result, it can be seen that the process of selecting nominal scales for complex systems can be highly difficult (Sage and Armstrong, 2000).
3. *Drawing Alternative Plans:* While it seems easy to write down B-scenarios, but there are some serious hindrances. While employers are often too tough about goals, scenarios, and performance scales; analysts have difficulty regarding alternative scenarios (Churchman, 1979).
4. *Alternative Solutions Rating:* Performance and limitation measurement scales are used to make a list of the candidates and then the two factors are used to rating the candidates (Saaty and Vargas, 2000).
5. A common question which usually occurs during the activity is that how many times the activity should be repeated? The important point is that repetition must focus on gaining efficient results. Each repetition clarifies a new series of information which in turn can be used to improve the final solution; however this requires resources such as time and money. The repetition procedure ends when the probable costs of one more repetition override the probable interests of that final administration.
6. *Action:* The main issue in systematic analysis is to attain the goals determined by the employer and not to merely present a final report. Any final report is just a driving force which needs to be changed toward operational applications.

2.2. Model Formulation

Generally, it is believed to start with those factors that are considered to be vital regarding an acceptable situation in future. In this regard, the first step is to determining important matters based on students and teachers point of view. This multi-step process is shown below:

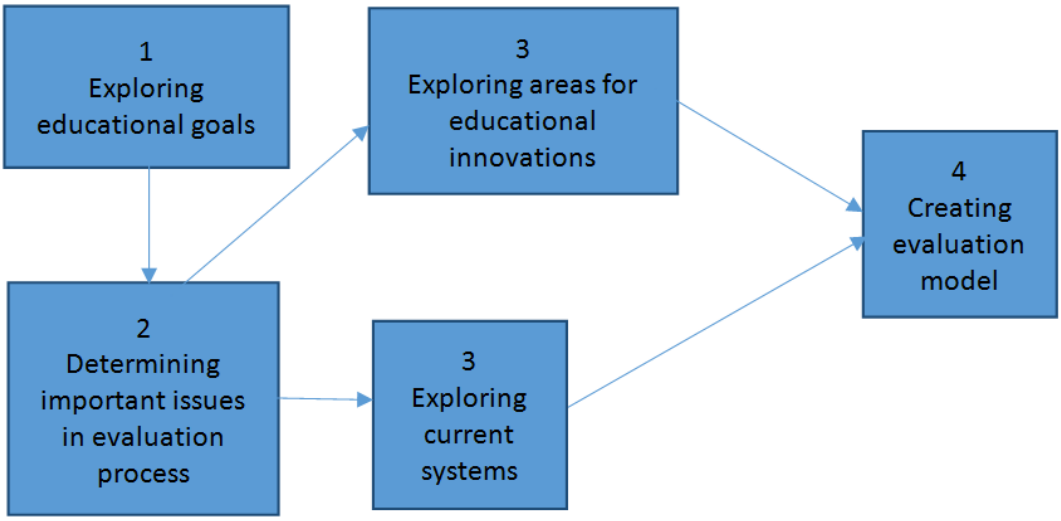

Figure 1: The four stages to create an evaluation model

It may be assumed that the first step is the most difficult of the steps, however it is not. Moreover, if an analyst tries to provide himself with a wide range of goals in order to be able to extract developmental

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purposes in a comparative way, then another confusing step will be added to the current ones. This process seems to be difficult over lack of a general consensus on the real principles of an educational system. Actually the existence of such generally-agreed upon system is contrary to the principles of democracy; however, such stipulated consensus is not necessary in long term. A minimum agreement about current situation and external factors will suffice.

2.2.1. Initial Poll

Even if analysts accept both the concepts of upside-down design procedures and also to limit him to upside-down and bottom-up design models, there still remains the question of how he can bridge between (a) future ideal conditions in upside-down models, and (b) current situation. The first step toward overcoming the issue is to define a descriptive scenario and a standard scenario. The descriptive scenario tries to define the current situation, while the standard scenario contains the overall situations and details of the future ideal situation (which is still not accomplished), but works successfully (Buede, 2000).

The cornerstone of formulation a descriptive scenario for the current study was based on students' opinions and data collected from open questionnaires. Using Friedmann Table 120 questionnaires were distributed of which 103 were aimed at the appropriate methods of final term evaluation from students' point of view.

Analyzing the questionnaires collected from the target group of students and interviews with three different generation of university educators including (a) fresh teachers, (b) teachers with 15 years of experience, and (c) teachers with more than 25 years of experience, the descriptive scenarios were formulated as follow:

- Emphasis on final term written tests.
- Teachers' lack of interest in students' presence in classes both qualitatively and qualitatively.
- Teachers' negative feedback on students' formative suggestions.
- Students' lack of interest in studying during semesters.
- Students' lack of interest in participating in class activities.
- Not considering the moral aspects of students' performance in final term evaluation.
- Teachers' lack of interest in valid correction of final-term tests.
- Teachers' lack of understanding in issues such as students' family, economic, and cultural issues.
- Inappropriateness between final term questions with students' real needs in the outside world.
- Non-existence of meaningful difference in students' final marks: e.g. the highest score is 16 and the lowest score of the class is 13.

A scenario in which all the above faults are removed will naturally be the standard scenario. After formulating the descriptive scenario it is time to produce a transient scenario which specifies the transfer from A to B.

2.2.2. Second Poll

In this stage, each of the items will be given a score based on the presumptions. For example bring in mind a short trip from home to your office. In this regard, you may think of different ways among which selection of a vehicle to go to work comes first. But can the place you live and go to work be also part of the question? It might seem logical to live in a place near your work and acquit yourself of the need to find any vehicle (White and Scherer, 1983). The same complexity is true also about evaluation models; moreover other factors such as technical, cultural, and social also play an important role in formulating evaluation models. In this regard, 182 students were asked to declare their opinions about their level of satisfaction regarding teachers' explanation and final term grading; students' peripheral view was also investigated.

In this study, 182 questionnaires were distributed amongst students of four different universities. 84% of the whole students answered the questions. According to Hire et.al (Hair *et al.*,1998) the most appropriate answering rate in any variable is 10; so the sample was consist of 152 participants scoring above the minimum require of 100. 90% of the participants were engineering students and the rest were from management field. Respectively, 65% B.A students, 30% M.A students and the final 5% were Ph.D. students.

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Any questionnaire must meet validity and reliability standards. Reliability coefficient based on Cronbach's alpha calculated to be 85%, it was calculated to be 82% based on Spear-Brown correlation coefficient. It is obvious that the more the Cronbach's alpha is close to 1, the more the questions become correlational and consequently the questions will become homogeneous.

2.2.3. Integration of the First and Second Polls

Determining an appropriate research methodology, collecting the required data for hypotheses test, now the researcher can categorize, analyze and test the collected data and the associated hypotheses based on statistical techniques, variable types etc.

Administering all the stages successfully, now the researcher can find an acceptable answer (or a solution) based on the systematic research he has done (Khaki, 2002). Descriptive findings of the first 10 parameters in the questionnaire which were distributed at the second stage of the research arepresented in table 1 and the findings related to research hypotheses demonstrated in table 2.

Table 1: Average, standard deviation, minimum score, and maximum score in research hypotheses

Parameter	Number	average	Standard deviation	Minimum score	Maximum score
1	152	4.7	0.11	4	5
2	152	4.1	0.3	3	5
3	152	4.8	0.2	4	5
4	152	4.5	0.12	4	5
5	152	4.7	0.65	1	5
6	152	3.1	1	2	5
7	152	5	0	5	5
8	152	3	0.9	1	5
9	152	4.1	0.19	4	5
10	152	4.4	0.13	3	5

Table 2: Group t-test in comparing the scores with the average scores in the questionnaire

Groups	number	average	Standard deviation	Standard error	Degree of freedom	Level of significance	t	Level of significance
Parameter1	152	4.7	0.11	0.104	151	0.05	46	0.001
Parameter2	153	4.1	0.3	0.101	152	0.05	40.67	0.001
Parameter3	153	4.8	0.2	0.064	152	0.05	48.49	0.001
Parameter4	153	4.5	0.12	0.12	152	0.05	42.18	0.001
Parameter5	153	4.7	0.65	0.24	152	0.05	44.36	0.001
Parameter6	153	3.1	1	0.202	152	0.05	30.67	0.001
Parameter7	153	5	0	0	152	0.05	-	0.001
Parameter8	153	3	0.9	0.123	152	0.05	20.3	0.001
Parameter9	153	4.1	0.19	0.21	152	0.05	39.18	0.001
Parameter10	153	4.4	0.13	0.203	152	0.05	44	0.001

Regarding the fact that the observed t-value at the significance level of 0.05 with the freedom degree of 152 is larger than the t-value for the 9 parameters in the table, it is concluded that difference between average and the parameters is statistically significant. Furthermore, the results show that only parameter 8 is rejected. Other parameters, according to the level of students' satisfaction are 7, 3, 1, 5, 4, 10, 2, 9, and finally 6.

2.2.4. Model Execution

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From what have been done up to here, it can be concluded that the foundation of our evaluation model is ready. It is necessary to design the first stage of systematic life. It is obvious that no system analysis can be done without considering the realities of life cycle separately. That is why, any proposed structure should include in itself local requirement based on which the whole educational system could be improved.

Conclusion

The current study aimed at formulating an evaluation model for final term exams based on systematic approach. The process was carried out employing all the systematic methods explained extensively; open questionnaires and direct interviews were used as ways of data collection from university students and teachers. 10 influential parameters were determined from which 9 of them verified and one rejected. These 9 parameters then categorized and a raw model of evaluation was obtained. Every systematic design is inherently a cycle; so, administration and development of the model can be a good research area for university professors and students of teaching.

Appendix A

Dear student;

The current study is supposed to collect data on different final term evaluation approaches in higher education context. You are going to be asked, by the next 10 questions, on evaluation models.

We thank you in advance for your sincere co-operation.

Please show your degree of agree or disagree by selecting one of the scores 1-5.

1: not effective at all; 2: a little effective; 3: neutral; 4: effective and 5: highly effective.

Personal Information

Age: ……. field of study: …… level: ……

Number	Question	Score
1	Teachers emphasis on final term exam rather than term activities	
2	Teachers emphasis on students' presence in class	
3	Creating a friendly environment for students to suggest formative solutions	
4	Teachers' interest in students motivation for study	
5	Not considering punitive scores and failing the students for absence	
6	Teachers consideration of moral and social behaviors of students	
7	Detailed correction of final term papers	
8	Considering students' economic, family and social issues	
9	Appropriateness of final term exam with students' real needs	
10	Significance difference between maximum and minimum scores; e.g. highest score of 16 and lowest score of 13	

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