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PROFESSOR'S EVALUATION OF CREATIVE EDUCATION IN UNIVERSITIES AND THEIR IMPACT ON UNIVERSITY STUDENTS' LEARNING[1]

(PROFESÖRLERİN ÜNİVERSİTELERDEKİ YARATICI EĞİTİMİ DEĞERLENDİRMELERİ VE ÜNİVERSİTE ÖĞRENCİLERİNİN ÖĞRENMELERİ ÜZERİNDEKİ ETKİSİ)

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ABSTRACT

Universities have the potential to create an environment in which creativity flourishes. In such universities, students will have enriched opportunities for thinking, inquiry and innovation, as well as systematic engagement with research, social and cultural challenges and scientific thinking. To achieve the above-mentioned goal, a dynamic and persuasive procedure along with the efficient educational strategies will be required. Many universities and our expectation of them are completely different. Therefore reviewing educational practice and policies in current university programs is necessary if new approaches based on question-oriented, creative problem-solving and modern teaching methods are to be developed. This study investigates professors' perspectives on the potential of current educational strategies to encourage creativity in university students. Data was collected by a Likert type scale surveying university faculty from the three departments of a single university. The survey data reveals a strong tendency of university faculty to rely on didactic, memory-based instruction, despite the fact that respondents also recognized that this form of learning was not motivating for their current students. The recognition that, with the exception of the engineers, little change has occurred raises concerns about the education of young people in a rapidly changing world. From the very existence of the system, higher education has encompassed philosophies and aims directed at knowledge creation and cultural development.

Keywords: Creativity, Educational strategies, University Teaching

ÖZ

Üniversitelerin yaratıcılığı ortaya çıkarma potansiyeli bulunmaktadır. Bu türden üniversitelerde öğrenciler sistematik bir şekilde araştırma, sosyal ve kültürel olaylarla ve bilimsel düşünmeyle ilgilenmenin yanı sıra düşünme, keşfetme ve icat etme fırsatı da bulabilmektedirler. Bu amaçlara ulaşabilmek içinse dinamik ve ikna edici bir süreçle birlikte etkili eğitim stratejilerine ihtiyaç duyulmaktadır. Birçok üniversite ve bizim onlardan beklentimiz oldukça farklıdır. Bu nedenle, eğer yeni yaklaşımların soru-odalı, yaratıcı problem-çözücü ve modern öğretim metotlarına uygun olabilmesini sağlamak amacıyla hali hazırda var olan üniversitelerdeki programlarında yer alan eğitim uygulamalarını ve politikalarını incelemek gerekmektedir. Bu çalışma üniversite öğrencilerinin yaratıcılıklarını teşvik edebilme amacıyla, şu anki eğitim stratejileri üzerine profesörlerin görüşlerini araştırmaktadır. Veri Likert tipi anket aracılığıyla tek bir üniversitedeki üç farklı bölümde toplanmıştır. Sonuçlar üniversite bünyesinde yer alan fakültenin didaktik ve ezbere-dayalı öğretime meyilli olduğunu göstermektedir. Ne var ki, katılımcılar bu türden bir yaklaşımın faydalı olmadığını belirtmişlerdir.

Anahtar sözcükler: yaratıcılık, eğitim stratejileri, üniversite eğitimi

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INTRODUCTION

Today, creative approaches are increasingly valued in schools and universities. This paper reports a survey of attitudes of higher education faculty to instructional dimensions of creativity and the impact on student learning. These findings are interpreted with reference to the author's ongoing study of the conditions, practice and outcomes of creative learning. University programs, purposes, contents and educational facilities play a prominent role in the activation and destruction of people's creative abilities. By establishing dynamic and motivational situations for learning, university professors can assist students to achieve their interests, extend their capabilities and exploit their creative potentialities.

Torrance (1962, 1990) regarded the over-reliance on memory-oriented educational strategies as an obstacle to the development of creativity. He emphasized the importance of making the change from traditional education to creative programs through appropriate educational strategies. Many researchers have agreed, including Ciskszentimihalyi, (1999), Gorey (1996), Strenberg (2001, 1996), Kleiman (2008), Kerka (1999), Author (1996, 1998, 2002) and Ekvall, Ryhammar, (1999).

Traditional methods emphasize direct transmission of knowledge and maintain these processes through inflexible structures which limit the engagement of learners in innovation, discovery and mental growth. Problem-solving and inquiry oriented approaches on the other hand, offer opportunities for exploring and discovering complexities, involving learners with the process of learning, and enhancing internal motivation. It is through such processes that the practice of creative learning and teaching can be established and maintained. Wallace (1986) believed that in a creative class, thinking is more valuable than memory. Over time, researchers have supported these understandings with innovative teaching models that sustain a creative atmosphere and engagement in the classroom (Torrance 1962; Williams 1970; and Strenberg and Williams 1996).

Author (1996, 1998, 2002) also designed and researched a model for the growth of creativity in school and university classrooms. This model recognizes that the exploration of creativity and flexibility encompasses both innovative learning (precision, exploration, cooperation and involvement) and predictive learning (location, observation, analysis and preparation to face the events). The five dimensions of this model (Physical, Emotional/Cognitive, Social, Thinking and Instructional) support teachers in developing creative approaches to teaching and learning and support students in taking responsibility for their own learning as they raise questions, manage ambiguity, expect high levels of motivation, look forward to the surprise of new discoveries, and take risks. The consistent application of these strategies

ensures that the learning experience will broaden students' viewpoints, enhance their power of analysis and scientific criticism, and prepare them for the future. Author (2002) also found, that in order to maintain these new ways of learning, students also needed to develop skills in collaborative learning, dialogue and generally, the learner's active contribution to the learning process.

Mayer (1992) believes that teaching at the university relies on a process of scientific inquiry, raising awareness and expanding understanding through exploration. In this context, the scientific approach can be defined as activities intended to explore and synthesize current practical information in one field with other knowledge and experiences, so that new understanding and new perspectives are generated, applied and questioned. Therefore faculty members are required to continuously introduce their students to new developments in their field.

If students are to satisfy their needs in the information age, educational systems will be required to go beyond didactic transmission models to the development of more creative forward-thinking forms of education. These creative educational approaches enable learners to analyze the facts, produce and organize the materials, defend their own views, compare them with each other, infer something from them, evaluate them, and finally solve the problem (Chance, 1986). In other words, future oriented educators will teach the next generation how to think through three important stages:

1- Teaching students to think directly.
2- Teaching students to use basic analytic skills such as predicting, developing and testing questions and problem-solving.
3- Creating the necessary conditions in classes to teach thinking and to reflect on the thinking and action that has occurred.

An approach based on problem-solving can bring about such a situation. This method can be used individually or collaboratively — it can be applied in a class, laboratory, workshop, community or in any other educational situation. Emphasizing the advancement of thinking skills is most successful, when it makes connections between the curriculum and students' real problems and questions. Educational strategies like brainstorming, questionnaires, research projects, role-playing, and study of force fields are appropriate methods to support creative problem-solving and question-oriented pedagogies.

But to what extent are the current educational methods in universities compatible with these approaches and methods? To what extent are universities succeeding in educating creative and thoughtful university students?

RESEARCH METHODS

To answer the above questions and consider the variables of this study and its history, three questions are rendered according to their importance:

Professors believe:

1. That current educational strategies reduce students' motivation toward creativity.
2. That educational strategies are equally applied in different universities.
3. That the memory-based approach is preferable to the creative problem –solving and question-oriented approaches:

The statistical sample consists of 60 faculty members randomly drawn from each of three faculties. The information about the statistical sample is shown in the tables and charts.

Data Collection

Data was collected by surveying 60 university faculties from the Science, Engineering and Humanities Departments of Yazd University in Iran. The questionnaires consisting of 26 questions covered the questions, pedagogical theories, the scientific basis of creativity, and the problem-solving strategies. Responses were made according to a Likert scale that included options such as always, often, sometimes, never, rarely.

In order to study the first question of this research, some questions based on the main theories of creativity were prepared. For example:

"Students are encouraged to state their ideas even if the ideas are unrelated".

"Students are asked to think about the answers which are not in their books and texts.

These phrases state the flexibility of their minds. Students can answer the question by guessing or using their imagination (This phrase is based on the risk factor). New ideas and thoughts are welcome (encouraged) in classes (Related to creativity factor). Professors increase students' self confidence (Based on social and emotional cognitive creativity). Study of the second question is determined by the field of study.

In order to study the third question based on problem-solving and creative-learning some questions were designed. For example: in class students are asked to judge the presented subjects. Lectures are the main method of teaching in class. Other questions also design the basis of creative theories.

Reliability and Validity

Reliability is one of the technical features of measurement, showing to what extent a similar result would be obtained under similar conditions. The Cronbach alpha method was chosen as an efficient procedure for calculating the internal consistency of the different features of the study. The reliability obtained from this analysis is .84, demonstrating that the test enjoys the required reliability.

For content validity the contents of questionnaires were accepted and approved by five experts.

Considering the nature of the collected data being categorical, people have to choose one of the five choices of always, sometimes, etc. In order to answer the question, the researcher's goal is to study the significance of the available differences in frequency for each of the five categories. So the chi square test which is used in such matters is suitable.

In this statically test the difference between the observed frequency in categories and their expected frequency is calculated (the related formulas are available in statistical books). Then the calculated value which is known as chi square according to the considered significance level of the related degree of freedom is compared to the critical chi square which is available in statistical tables in statistical book appendixes. If the observed chi square is equal or greater than critical chi square, the research question is accepted and if it is less than the critical chi square the research question is rejected.

Analysis of Findings

The responses of randomly selected faculty from three departments (Engineering, Science and Humanities) are summarized below.

Questions 1: Instructional Strategies and Motivation

Table 1. Frequency and Professors Comment Percentage regarding Instructional Strategies

Answers	Frequency	Percent	Pure Percent	Cumulative Percent
Always	38	20.4	20.4	20.4
Often	61	32.8	32.8	53.2
Sometimes	55	29.6	29.6	82.8
Seldom	24	12.9	12.9	95.7
Never	8	4.3	4.3	100.00
Total	186	100.00	100.00	

According to the above findings more than 50% of the surveyed faculty (20.4 + 32.8) believe that current educational strategies significantly decrease motivation for creativity. Another 29.6 report that this sometimes occurs and only 17.3 (12.9 + 4.3) believe that the current instructional strategies rarely or never decrease motivation.

Table 2. Chi Square Percent , One Variable , the Current Instructional Strategies of University from Professors Points of View

Answers	Observed Frequency	Expected frequency	Remainder
Always	38	37.8	0.8
Often	61	37.8	23.8
Sometimes	55	37.8	17.8
Seldom	24	37.8	-13.2
Never	8	37.8	-29.2
Total	186		

	Quantity	Degree of freedom	Significance level
X^2	51.366	4	000

According to the findings in the above tables, the observed x^2 (51.366) is significant at the 99.9 level of certainty which indicates that the observed distribution is different from the expected and theoretical one. So we can conclude that the first hypothesis is accepted and the professors believe that the current instructional strategies lead to decrease in motivation.

Hypothesis 2: Instructional variation between faculties

Table 3. Summary of Two Variables x^2 Result Including the Field of Study and Application of Instructional Strategies

		Quantity			Degree of freedom	Significance Level	
Field of study		**Never**	**Seldom**	**Sometimes**	**Often**	**Always**	**Total**
Human sciences	FO	20	43	39	18	0	120
	FE	24.5	39.4	35.5	15.5	5.2	120.0
Technical engineering	FO	8	9	9	4	3	33
	FE	6.7	10.8	9.8	4.3	1.4	33.0
Basic sciences	FO	10	9	7	2	5	33
	FE	6.7	10.8	9.8	4.3	1.4	33.0
Total	FO	38	61	55	24	8	186
	FE	38.0	61.0	55.0	24.0	8.0	186.0
X^2		22.356		8		0.004	

According to the findings in the above table , the observed x^2 (22.356) with a certainty of 0.99 is significant and shows that there is a substantial difference between the three faculties regarding the application of creative instructional strategies — Engineering was the most creative, followed by

Science and finally Humanities. Whereas they are used less then expected in art and human sciences faculties, the second hypothesis is not acceptable.

Hypothesis three: Preference for memory – based approach over problem- centered and creative problem – solving.

Table 4. Frequencies and Percentages of Professors Comments regarding Memory – Based Learning.

Answers	Frequency	Percent	Pure percent	Cumulative percent
Always	31	12.3	12.3	12.3
Often	81	32.1	32.1	12.3
Sometime	68	27.0	27.0	71.4
Seldom	51	20.2	20.2	91.7
Never	21	8.3	8.3	100.0
Total	252	100.0	100.0	

According to the above findings 44.4 percent (12.3 + 32) of professors rely heavily on the memory – based approach, 27.0 sometimes using these approaches, and 28.5 percent (20.2 + 8.3) are less likely to prefer memory-based approaches to problem solving pedagogies. As noted earlier the engineering faculty was more often represented in the third group

Table 5. x^2 percent , one variable , the memory – based approach

Memory – Based Approach			
Answers	**Observed Frequency**	**Expected frequency**	**Remained**
Always	31	50.4	-19.4
Often	81	50.4	30.6
Sometimes	68	50.4	17.6
Seldom	51	50.4	0.6
Never	21	50.4	-29.4
Total	252		

	Quantity	D.F	Level of Significance
x^2	49.34	8	0.004

According to the findings in the above table, the observed x^2 (49.34) is significant with the 99.9 percent certainty which shows that there is a

noteworthy difference between the observed distribution and the theoretical one. So hypothesis 3 is also accepted, leading to the conclusion that the memory – based approaches are usually preferred over problem-centered and problem – solving approaches.

DISCUSSION

The survey data reveals a strong tendency of university faculty to rely on didactic, memory-based instruction, despite the fact that respondents also recognised that this form of learning was not motivating for their current students. The recognition that, with the exception of the engineers, little change has occurred raises concerns about the education of young people in a rapidly changing world. From the very existence of the system, higher education has encompassed philosophies and aims directed at knowledge creation and cultural development. As illustrated in the findings of this study, universities face new challenges in the current era as they seek to satisfy their goals in a rapidly changing world.

In a recent UNESCO publication, Anderson (2004) emphasized three main functions of higher education:

1. Producing science along with the research
2. Conveying the knowledge or training (teaching)
3. Spreading knowledge or services

Of these, Function 1, the production of knowledge is the most important. In modern industrialized societies universities remain key knowledge-producing centers and an important source of societal change. In addition, the production of new technologies supports innovation which in turn enriches the day to day living in communities.

The second main function is to extend this knowledge to the younger generations so as to engage them in the processes of innovation, change and development. This education will extend cultural competency and prepare a skilled labor force for the society. Thus, in modern industrial societies higher education not only brings about scientific and technological development in the economic sections of production, distribution and support, but it also generates innovation and socio-cultural movement. In other words, universities contribute to thoughts, ideas and new ideologies and philosophical and social movements, at the same time as they educate the skilled labor force for different social, political, economic, and cultural environments.

The third function of higher education is to extend knowledge and expertise in the community. Education needs to prepare students/workers to succeed in complex, competitive industrialized situations. Such students will

be able to embark on innovative projects and to become innovators themselves. However, innovation demands creativity and creativity fails if it fails to access the latest scientific findings. Therefore universities should plan for and adopt the educational approaches and constructive changes that will enable their primary aims and purposes. This focus on strategic creativity, innovation, growth and development is a radical stance that ventures far beyond the provision of traditional memory–based learning.

The challenge will be to develop teaching-learning procedures that will transform learning and teaching in response to these three functions of higher education. Traditional approaches based on conveyance of information need to be enriched by problem-solving, creation of knowledge, information management and the encouragement of creativity. In order to maintain improved teaching procedures it is important that innovations be constantly investigated and reviewed. Teaching programs will also need to be constantly reviewed in the light of today's upheavals and demands. The focus of the curriculum will thus move from data-collection toward development of thinking capacity so that learners are equipped with new qualities such as identifying, analyzing, and resisting the variable conditions of environment. These learning environments will also encourage creativity, innovation, confidence, and flexibility.

Creative learning affects all dimensions of teaching and learning and supports the development of new ways of thinking, acting and being. To succeed in this field and to transform the traditional teaching procedures a comprehensive change is required. The main principles of change are as follows:

1. Providing the university students with the motivation
2. Emphasizing learners' involvements in teaching
3. Attending the practical and functional strategies in teaching
4. Considering the collective learning in teaching
5. Encouraging the research and attending to research in the education
6. Providing the opportunity for thinking, analyzing, criticizing, and solving the problem.
7. Offering opportunity for creative thinking

In Table 5-1 Author summarizes nine teaching fundamentals which change as teaching and learning becomes more creative. The overall movement will be from articulating requirements of student work, to engaging students in persuasive and curious explorations of important questions.

Table 5-1. Required changes to the teaching methods

Moving from	Towards
1. Beginning topics by focusing on the aim	1. Raising authentic questions to begin themes and units
2. Learning compulsorily and without preparation	2. Providing motivation for engagement and inquiry based learning
3. Explaining teaching materials	3. Raising questions and creating ambiguity
4. Increasing competition and individualism	4. Fostering cooperative and collective learning
5. Adhering strictly to the pre-designed and published syllabi	5. Flexible organizing of materials according to learners' needs and interests
6. Performing proven and pre-constructed approaches	6. Changing emphasis from testing to performance and evidence of understanding
7. Provision of most materials by the professor	7. Involving students in learning activities and the creation or investigation of materials
8. Giving priority to content above understanding	8. Giving prominence to the learning process
9. Placing the emphasis on the acceptance of ideas and material	9. Encouraging, critical review of ideas

or example, inflexible adhering to the published syllabus limits flexibility and does not recognize students' needs or previous learning. In addition, the intense application required for memorizing and re-presenting information in examinations limits opportunities for future orientated practice, inquiry and learning.

To enable inquiry-based approaches activities will need to be focused on students' experiences, concerns and interests, and motivated by authentic and important questions that will continue to engage students throughout future learning and practice. University students will thus be encouraged to review and critique information and activities rather than simply accept the transmission of fixed information. These changes encompass not only teaching methods but also classroom management and evaluation.

In university classes, learners rarely present answers that challenge or question information from teachers or prescribed texts. Moreover, they are even less likely to take risks by speculating about the questions based on their experience or intuition. However, educators can change this climate if they are willing to consistently welcome unusual responses and expect various and creative contributions from students rather than continuously reinforcing predictable reiterations of their teaching materials. In addition, expecting

students to pay attention to different aspects of issues and suggest a variety of different answers will help them develop flexibility of the mind and increase their critical capacity.

CONCLUSION

In spite of the importance of changing from didactic, memory-driven approaches to creative, inquiry-based problem solving, this study indicates that this goal is far from being achieved. According to the findings, the current educational strategies lead to the reduction of motivation and creativity in university students. Students are rarely able to spontaneously express emerging thoughts and their seemingly irrelevant questions are not welcomed. One of the most serious problems in our society is the need to review university programs, especially pedagogical approaches and inquiry-based, problem-solving and creative methodologies.

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