

The Survey of Deep Learning Indexes in the University of Guilan

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ABSTRACT

The deep learning indexes consist of regarding to the independent learning, individual development learning, problem based learning, student reaction based learning, student team activities learning, student individual activities learning, student learning Skills and project activities learning. The research method is descriptive-analytical. In qualitative part, some of academic staff members of Guilan University were interviewed and in qualitative part, students' viewpoints were investigated in relation to academic staffs' performances by using researcher-made questionnaire (with coefficient of Cronbach Alpha 85% for permanent and exerting the views of three academic staff members). In academic staff members' selection, cluster sampling method has been used that 40 out of 400 were selected with using the Morgan table and for the assessment of academic staff members' performance, 375 students were selected. The research findings in the qualitative part of the research showed that academic staff members emphasized on the importance of deep learning and its necessity. In quantitative part, on the basis of students' viewpoints, the academic staff members with getting the score of 4.06, more than average 3.5 regarded to the deep learning indexes. Here were not significant in academic' performances with respect to the faculty, academic level and age but they were significant split in gender and teaching experiences.

KEY WORDS: deep learning, quality, academic staff member, university, student

INTRODUCTION

Different definitions have been presented for the learning concept. In a general definition, it can be define as a more or less permanent change in potential behavior of learner, so that ,this change has happened as the result of getting experience not as the result of other factors such as tiredness, using drugs and changes which arises from puberty. So, learning is not just to transfer and present the materials from the teacher and perceive it by learner, but this a fairly permanent process that has caused change in behavior. Students have more learning potential than traditional educational methods often tap. As Tagg (2003) has mentioned, this shift from passive, instructor-dominated teaching and learning to deep, active, learner-centered activities promises to take students to deeper levels of understanding and meaning as they apply what they are learning to real life examples in the company of others.

Students take different approaches to learning, with the outcomes of learning closely associated with the chosen approaches (Ramsden, 2003). The concept of "deep learning" is attributed to Marton and Saljo (1976) who discerned qualitative distinctions in the ways students responded to various learning tasks that were linked to certain approaches to processing information. Biggs (1989) believed students using "surface learning" focus on the substance of information and emphasize rote learning and memorization techniques. Also, Bowden & Marton, (1998) emphasized that the goal of studying for a test or exam is to avoid failure, instead of grasping key concepts and understanding their relation to other information and how the information applies in other circumstances.

In other side, students using "deep learning" focused not only on substance, but also the underlying meaning of the information. Scholars like Entwistle (1981), Ramsden (2003), Tagg (2003) generally agree that deep learning is represented by a personal commitment to understand the material which is reflected in using various strategies such as reading widely, combining a variety of resources, discussion ideas with others, reflecting on how individual pieces of information relate to larger constructs or patterns, and applying knowledge in real world situations. Also, characteristic of deep learning is integrating and synthesizing information with prior learning in ways that become part of one's thinking and approaching new phenomena and efforts to see things from different perspectives.

Surface and Deep learning

Surface and deep approaches to learning are not unalterable behaviors, though they maybe influenced by personal characteristics such as ability (Biggs, 1987). However, using one or the other approach is also affected

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in part by the learning task itself and the conditions under which the task is performed (Ramsden, 2003). Thus, students may use both surface and deep approaches at different points in their studies. Although, students may adopt different approaches in different situations, the general tendency is to adopt a particular approach and stick with it (Entwistle, 1981). In addition, the learning context seems to have a substantial effect on how students approach learning tasks (Zeegers, 2001). That is, the interaction between a student and the course structure, curriculum content, and methods of teaching and assessment shape whether a student will gravitate toward a surface or deep approach (Entwistle & Ramsden, 1983).

When the learners act their learning tasks, the methods of doing this task, are different. Probably every teacher has experiences that some of the learners suppose that everything which is presented during the teaching should be rendered very well in the form of reports and particular activities or examination. But some teachers try to represent their analyses and perspectives from under studying subject and try to develop and improve those cases. As Safari (1993) emphasized, when knowledge and skill are not used, gradually will be forgotten and teacher should provide conditions that learners could apply their learned materials. In the first step, this point might draw attention that these two groups of learners are different with regard to mental abilities and capabilities. For this reason deal differently with learning tasks, in principles and in purposes is very important. Here, these two learners have completely different purposes that are called as surface and deep methods of learning. Marton and Saljo (1976) first introduced the idea of deep learning. Deep learning implies the demonstration of higher order thinking skills such as synthesis and evaluation, and a personal commitment to learn the material, not merely learning for the sake of a passing grade (Ramsden, 2003; Tagg, 2003). Surface learning, on the other hand, is associated more with rote learning and the desire to earn a passing grade (Draper, 2009). Students who use a surface learning strategy are trying to avoid failure with the minimum amount of effort and involvement (Cano, 2007). Draper (2009) expanded upon this idea by concluding that shallow learners understand the material correctly, but simply do not possess the connections between concepts that deep learners do. Deep learners can transfer the learned concepts to a variety of situations thereby creating a denser matrix of connections within their knowledge and understanding. Therefore, the student's motive is integral to whether he or she engages in deep or surface learning strategies.

Marton and Saljo (1976) through a research by using interview have specified some definitions for the two different learning methods. In the surface learning, learners reduce the value of things that should be learned in the form of particular concepts and memorize them in the form of irrelevant concepts. Their duties in learning process are to increase and remember the course materials within the specific time in the future, for example in the examination time. In fact, the important problem in this method is, learners are permanently on the track of remembering that how they should remember this subject or that subject. But in the deep learning method, learners try to get through making concept, making meaning and finding the major ideas of context. In this process, thinking and finding the relations among the elements and their tasks are fundamental matters. In fact, the important point in this method is that learners are on the track of thinking and finding the new ideas, that is, they try to find the principles and bases of ideas, views and thinking about the generality of a phenomenon and the elements of its formation.

The deep learning indexes

The first index: regarding to independent learning.

The second index: regarding to learning based on the personal development

The Third Index: regarding to problem based learning

The fourth index: regarding to reaction based learning

The fifth index: regarding to group activities based learning

The sixth index: regarding to individual activities learning

The seventh index: regarding to learning based on the creation of learning skills

The eight index: regarding to learning through performing the project activities

If the students wait for academic staff to teach them the course book, their scope of deep learning will be limited. Of course, because the learners may use learning sources independent of teacher teaching method and class situation, it does not happen automatically. According to Gibbs et al (1984), if there are no skills for using the sources, just use of learning sources will not guarantee the quality of learning. With respect to above-mentioned explanations, the purpose of this paper, in the first step is to assign the deep learning indexes at University of Guilan from the academic staffs viewpoints and planning to design the amount of achieving of these indexes in the performance of academic staffs of this university from the students viewpoint. In other words, this research is looking for answering to the following those two questions.

- 1) What are the University of Guilan academic staffs points of view about deep learning?
- 2) With regard to gender, college, academic level, teaching experiences, and age, to what extent academic staffs will apply the indexes of deep learning in the classroom?

METHODOLOGY

- 1) **The research method:** The research method is practical and descriptive- analytical. Also, according to Gal & Borg (2003) it is accounted as integrated research methodology, because the quantitative-qualitative method is used altogether.
- 2) **Population and Samples:** The research populations were all academic staffs and students in the University of Guilan. The cluster sampling method has been used for selecting 40 from 400 academic staffs of the university in the 2008-2009 academic years. Also, in order to evaluate the performance of academic staffs, Kerjencie and Morgan's table (1970) have been used and classified sampling method. The number of 375 students out of 10000 students in the population has participated in the research.

3) **Research instrument:**

A) **Questionnaire:**

The first tool of the research was a researcher-made questionnaire. Then for recognizing the indexes, with regard to essence of teaching at the universities, indexes are adjusted based on the five scale of Likert. Also, for validity of the questionnaire 3 behavioral sciences specialists; ideas have been received and their reformat ideas were used. The reliability of the whole questionnaire is done through the method of Coronbach Alpha with 85%.

B) **Interview**

Second instrument of the research was interview which was done in the case of personal and semi-structured method about the indicators of deep learning at the university in the form of 10 questions with academic staffs and the text of interviews was recorded and written.

For analyzing of the interviews, firstly, the interviews were studied and on the basis of key points, different topics were created. After being confident about appropriateness of topics and specialized materials to each topic, the important expressions of interviewees are mentioned as a direct quotation under the relative topics. In addition, the findings of interview were used independently for both answering to research questionnaire and making a questionnaire for assigning the teaching quality of academic staff members.

The amount of attention which academic staff members gave to deep learning was determined on the basis of four levels spectrum. According to university of Measurement and Evaluation Committee (MEC), for improving the rank of assistant professors to associate professor, the quality of teaching at least should reach 14 out of 20 and from the associate professor to full professor at least should reach 15 out of 20. These scores were based on the Likert scale for introducing scores of 3.5 and 3.75 out of 5. Then the criterion for the deep learning was at least 3.5.

According to this criterion, performance with average of lower than 3.5 is put in spectrum lower than deep learning, performance with average of 3.6-4 with nearly deep learning, performance with average of 4.1-4.5 within deep spectrum and performance with average of 4.6-5 with the completely deep spectrum.

4. **The method of analyzing the data**

For analyzing the achieved data from interview, they were used topic-making method and qualitative analysis. For the sake of analyzing the questionnaire data, they have used multi-variable analysis of T test, MANOVA and LSD tests.

Research findings

As mentioned, the purpose of the research was to answer to the two basic questions which the first one was replied by qualitative findings (interview) and the second one answered by quantitative findings (questionnaire). The achieved findings are presented as following, in two separate parts:

First question: What are the university of Guilan academic staffs' view points about deep learning indexes?

The academic staffs have mentioned to the important points in answering to this question that indicates the importance of deep learning at university level. The answers of interviewees are considered in two different topics, the importance of deep learning and the necessity of attention to deep learning:

A) **The importance of deep learning:**

Some of the academic staffs have emphasized on explaining deep learning for students. The importance of deep learning to the students (*academic staff, 5*), necessity of collecting the obvious criteria for deep learning of all students, creating educational justice (*academic staff, 11*), being active student in the process of deep learning, the importance of discussion at the university (*academic staff, 22*), question and answer (*academic staff, 21*) are some of the important ideas that academic staffs of sample group have mentioned about the importance of learning.

Some of the academic staffs, in some manner, have presented different ideas about the students' viewpoints and the way they cooperate in the classroom. Not knowing inactive students those who do not express their ideas (*academic staff, 31*), not to be strict about cooperating of students (*academic staff, 24*), showing

cooperation through exact attention by students (*academic staff, 40*), student's belief to cooperate (*academic staff, 5*), understanding the course book by students, student's attention to course book, free the students to ask question or listen (*academic staff, 29*) are the professors viewpoints in the case of how students cooperate in the classroom.

Some of academic staffs have emphasized directly to necessity of sensitivity toward the deep learning and they know it is necessary to give attention from the university, faculty and student. The necessity of attention to deep learning in the classroom and dealing with students who follow the surface learning (*academic staff, 19*), speaking about out of class subjects and warning about the importance of deep learning to students (*academic staff, 1*), not to be sensitive towards the surface learning and act with plan in this kind of learning (*academic staff, 22*) take into participate the students who just think about the score in the process of classroom and give motivation to them (*academic staff,34*) are some academic staffs of sample group viewpoints in the ground of sensitivity towards the deep learning.

Some of the academic staffs have pointed out to creation of flexibility in teaching and know it suitable for preventing the surface learning reinforcement. One of the academic staffs says sometimes it is necessary to give attention to the methods of studying and the importance of reading book, regardless of the content of course book that causes to change the students ideas from just giving attention to score and certificate (*academic staffs, 31*).

Some of the academic staffs have pointed to the role of academic proficiency of professors in superficial learning and they are more related to scientific authority of academic staffs. The proficiency of academic staffs in teaching in creation of deep learning (*academic staff, 33*), not to take serious the course of academic staffs who do not have enough proficiency on book by students and just attention to getting score by academic staffs (*academic staff, 21*), make fun of the essence of teaching and learning environment by academic staffs who are not proficient in teaching (*academic staff, 2*) are viewpoints of academic staffs of sample group in the case.

Therefore, the ideas of interviewees showed that they put special emphasis on the importance of deep learning, being active student in the classroom, question, and answer and generally academic cooperation proficiency of academic staffs, being flexible and sensitive towards the performance of deep learning.

B) The necessity of deep learning:

Although, all the academic staffs implicitly have emphasized on the necessity of deep learning, some of them more explicitly have mentioned to this process. Generally, academic staffs are believed that deep learning should be accomplished, but there are different obstacles that are not easily possible (*academic staff, 31*). The importance of self-information, the willingness of student for deep learning, lacking the emphasis of academic staffs on quality and deep learning (*academic staff, 21*), special emphasis on the role of academic staffs informed about learning, doing teaching tasks correctly and academically for the influence of students learning (*academic staff, 29*), recognizing the obstacles of deep learning by academic staffs, emphasis on teaching awareness and enough skill by academic (*academic staff, 21*) are the expressions of the sample group of academic staffs in the ground of necessity of attention to deep learning. Generally, academic staffs' viewpoints in this area indicate the notice to obstacles of deep learning of students, the influence of effective teaching in deep learning, giving awareness of academic staffs to students and absence of force in the process of deep learning.

Second question: To which extent the professors of Guilan University apply the indexes of deep learning?

Table1: Distribution of frequency and percentage of students who reply to the indexes of deep learning

Items Cases	Completely Disagreed	Disagreed	To some extent	Agree	Completely Agreed	Total percentage of agreed and Disagreed	Mean	Standard Deviation
Regarding to independent Learning	7 2%	7 2%	63 18%	112 32%	161 46%	78%	3/99	1/34
Regarding to learning based on the personal development	14 4%	14 4%	14 4%	119 34%	189 54%	88%	4/17	1/44
Regarding to learning based on the problem	7 2%	10 3%	21 6%	105 30%	207 59%	89%	4/22	1/20
Regarding to learning based on the reaction	21 6%	17 5%	35 10%	102 29%	175 50%	79%	4/03	0/98
Regarding to learning based on	14 4%	17 5%	31 9%	94 27%	193 55%	82%	4/08	1/08

doing group activities									
Regarding to learning through doing personal activities	10 3%	14 4%	49 14%	109 31%	168 48%	79%	4/03	0/98	
Regarding to learning based on the Creation of learning Skills	7 2%	7 2%	10 3%	98 28%	228 65%	93%	4/41	0/96	
Regarding to learning through doing the projective activities	52 15%	32 9%	70 20%	105 30%	91 26%	56%	3/57	1/06	
Mean and Total standard Deviation							4/06	1/13	

N=350

According to table 1, based on the students' idea, the most percentage of completely agreed items are related to indexes of " regarding to learning based on creation of learning skills" with 93% (mean = 4.41) and the least percentage of agreed and completely agreed items are related to indexes of " regarding to learning through doing projective activities" with 56% (mean= 3.57): So, academic staff members of university in the case of deep learning more than determined criterion (3.5 out of 5) have paid attention to deep learning indicators. As, it has mentioned, for the sake of assigning the amount of attention which academic staff members of university give to effective teaching indexes, the effective teaching spectrum has been defined based on four levels and position of academic staff members of university in terms of quality of performance have been presented in table 2.

Table 2: The amount of attention that professors give to the effective teaching indexes

effective criterion	FREQUENCY	percentage
Ineffective (3/5 and lower)	2	5%
Fairly effective (3/6-4)	25	63%
Effective (4/1-4/5)	9	21%
Completely effective (4/6-5)	4	11%
Total	40	100

According to the result of table number2, from the whole academic staff members, 2 persons (5%) have been in ineffective spectrum, 25 persons (63%) in fairly effective spectrum, 9 persons (21%) in effective spectrum and 4 persons (11%) in completely effective spectrum.

Table 3: The difference of median of score in academic staff members' performance in the ground of deep learning in terms of gender

Sources of faculty				
Among Groups	1	1/276	1/27	4/43
In the Groups	344	47/9951	0/28	
Total	345	49/2711		

According to table 3, because the existence of F at $P \leq 0.05$ level is meaningful, so the performance of academic staff members of university in the ground deep learning with regard to being male or female, is a meaningful difference.

Table 4: The difference of median of scores in academic staff members' performance in the ground of deep learning from the college points of view

Faculty	Basic Sciences	Human Sciences	Natural Sciences	Agricultural Sciences	Physical education	Technical and Architectural	F	Sig	Eta	power
	3/90	4/14	3/70	3/80	4/22	4/55				
	0/34	0/31	0/59	0/29	0/56	0/33	1/81	11%	0/311	0/542

According to table 4, technical and architectural faculty with mean 4.55 have the highest mean and natural sources college with median 3.70 have the lowest mean. So, because the F at $P \leq 0.05$ level is not significant, there is no significant difference between the performance of academic staff members of university in the ground of deep learning at different faculties.

Table 5: The difference of mean of score in academic staff members' performance in the ground of deep learning from the academic rank view points

Teacher (n=8)		Assistant professor (n=25)		Associate professor to upper (n=7)		F	Sig	Eta	Power
3/80	5/17	4/05	0/430	3/66	0/332	1/16	32	0/96	0/230

Table 5 shows that academic staff members who have the assistant professor rank with median 4.05 have the highest and persons who have associate professor to upper rank with mean 3.66 have the lowest mean, because the F at $P \leq 0.05$ is not significant, so there is no significant difference between the academic staff members performance in the ground of deep learning and the rank of academic staff members.

Table 6: The difference of mean of score in academic staff members in the ground of deep learning in terms of teaching experience

(n=16)1-10		(n=23) 11-20		(n=13) to upper 21		F	Sig	Eta	Power
M	SD	M	SD	M	SD				
3/98	0/35	4/74	0/44	4/01	0/31	3/22	0/06	0/319	0/715

Table 6 shows that academic staff members with 11-20 years teaching experience with mean 4.74 have the highest and teaching experience 1-10 years with median 3.98, have the lowest mean. Because the F at $P \leq 0.05$ level is significant. So, the academic staff members' performance with different teaching experience in the ground of deep learning has significant difference.

Table7: The difference of mean of score in academics staff members in the ground of deep learning from the age point of view

(n=8) 25-35		(n=8) 36-45		(n=7) to upper 46		F	Sig	Eta	Power
M	SD	M	SD	M	SD				
3/80	0/517	4/14	0/430	3/86	0/43	1/19	0/333	0/341	0/248

Table number 7 shows that the academic staff members with age between 36-40 and mean 4.33 have the highest and age 25-35 to upper and mean 3.8 to lower have the lowest mean, because the F at $P \leq 0.05$ level is not significant. So, there is no significant difference between the effective teaching indexes in the ground of deep learning and the age of academic staff members.

DISCUSSION AND CONCLUSION

In the quality section of research, the interviewees point of view show that they put special emphasis on the importance of deep learning, being active student on the classroom, question and answer and being sensitive towards the process of deep learning. They also emphasized on the attention to obstacles of deep learning, being self-activated student and lack of force to accomplish deep learning.

The quality section showed that indexes of regarding to learning based on the creation of learning skills of students with 93% (median= 4.41) and the least percentage of agreed and completely agreed items are related to indexes of attention to learning through projective activities in students with 56% (mean=3.57). So, the academic staff members of university in the ground of deep learning have paid more attention to deep learning indicators than the determined criterion for effective (3.5 out of 5). From the whole academic staff members, 2 persons (5%) were in ineffective spectrum, 25 persons (63%) in the fairly effective spectrum, 9 persons (2%) in the effective spectrum and 4 persons (11%) in completely effective spectrum.

At the gender level, for the sake of F, at $P \leq 0.05$ level which is significant, there is a significant difference among the effective teaching indexes in the ground of deep learning in male and female academic staff members.

At the Faculty level, technical college with mean 4.55 has the highest mean and natural source Faculty with median 3.70 has the lowest mean, because the F at $P \leq 0.05$ level is not significant, there is no significant difference among the effective teaching indicators in the ground of deep learning at different Faculties.

At academic rank, the academic staff members with assistant professor rank with mean 4.05 have the highest and persons with associate professor rank to upper with mean 3.66 have the lowest mean, because the F is not significant, So, there is no significant difference among the effective teaching indexes in the ground of deep learning and the rank of academic staff members.

At teaching experience level, the academic staff members with 11-20 years teaching experience with mean 4.74 have the highest and 1-10 years teaching experience with mean 3.98 have the lowest mean because the F

at $P \leq 0.05$ level is significant, so there is no significant difference in the performance of academic staff members with different teaching experiences in the ground of effective learning.

At age level, academic staff members with age of 36-45 years and mean 4.14 have the highest and teaching experience 25-35 years with mean 3.80 have the lowest mean, because F at $P \leq 0.05$ level is not significant, so there is no significant difference in the performance of academic staff members with different teaching experiences in the ground of deep learning. The result of this research except the age variant are compatible with the researches of Biggs (1989), Eley (1992), Gow, Kember & Cooper (1994), Zeegers (2001), Nicole and Harison (2003), Ramsden (2003), Tagg (2003) and Jose et al (2005).

Suggestions

- 1) Without knowing the surface learning and its tolls, it is impossible to enter deep learning. That is why, the awareness level of academic staff members and students about the surface learning should be increased.
- 2) With regard to special attention to learning based on the creation of learning skills of students, it is needed to create recognition about both deep learning and enough skills for entering to this type of learning.
- 3) Due to most of the academic staff members follow the effective teaching; the university should plan a special schedule for reinforcing and improving the deep learning and effective teaching indexes.
- 4) Because academic staff members' performance who have associate professor rank to upper with 1-10 years teaching experience and within the age of 25-35 had got less attention to deep learning it is needed to improve the teaching and learning skills.

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