

# Motivation in E-Learning: How Do We Keep Learners Motivated in an E-Learning Environment?

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**Abstract**—E-learning provides students with a different opportunity to learn regardless of where they are and when they are available. In e-learning environment, students are able to participate in self-faced and interactive learning that is otherwise impossible. This paper shows that the use of interactive features of e-learning increases the motivation of undergraduate students for the learning process. Internet technologies provide integrated environment for web-based learning tools to support e-learning education. Motivation is a corner stone in online distance learning. Together with the flexible and effect interaction between teachers and learners enhance the learning outcomes. This paper gives a preliminary study of the relationship between interactive features of e-learning and the motivation of undergraduate students for the sake of learning process.

**Index Terms**—e-learning, higher education, motivation, educational system in Egypt, web-based learning

## I. INTRODUCTION

Internet provides a web-based integrated environment that support diverse needs of teachers and learners, enhances face-to-face instruction and deliver better distant learning course. There have been several studies and frameworks developed for analyzing these tools from pedagogical and institutional perspectives [1]-[4]. These frameworks provide guidance on factors to be considers and how to apply them when deploying web-based learning tools. They do not provide enough information about the easiness of these tools. To the knowledge of the authors, few studies have been conducted to address usability issues with these tools.

Motivation could be classified into intrinsic or extrinsic. Intrinsic motivation appears when a person doing something for inherent satisfaction. It is a powerful drive for learning since it depends upon the person right

to decide his or her behavior autonomously [5]. In the other hand, extrinsic motivation appears when there is some immediate gain which considerably varies from one person to another [6].

In order to enhance motivation, the course material should be prepared via a variety of educational strategies in order to suit with the variety of learning styles of students. In addition, assessments can be either formative or summative. Formative is taken throughout the duration of the course, while summative is taken at the end of the course [7]. Summative was proven the most appropriate in obtaining the students awareness. “Homework, tests and class discussions” are methods to measure the student’s performance or achievement. Activities are learning in many classrooms “is fugitive, recordable only at great cost and inconvenience” [8].

## II. RESEARCH METHOD AND PROCEDURES

### A. Design and Approach

How far e-learning has helped to increase the motivation of students towards learning a subject? This question is the aim of our research paper. A qualitative approach of data collection found to be suitable for the research aim. It depends on the results of feedback from a questionnaire given to students to evaluate their willingness to use e-learning. The qualitative results had been obtained from a questionnaire. That questionnaire had been obtained to the students of a private validated university, i.e. The British University in Egypt (BUE) [9]. BUE has a relevant experience with e-learning and can offer insights into the factors affecting the present and future state of online education.

### B. Hypothesis Tests and Procedures

In this study, we aim to preliminary investigate the students’ motivation within the scope of interactive e-

learning process. The author expectations had been formulated into hypothesis. A questionnaire had been designed and distributed to test those hypotheses. The hypothesis test statistics uses p-value to determine the significance of the results. The p-value is a probability statement which answers the question: If the Null Hypothesis is true, then what is the probability of observing test statistics at least as extreme as the one observed. A p-value of 0.05 or less rejects the null hypothesis "at the 5% level" that is, the statistical assumptions used imply that only 5% of the time would the supposed statistical process produce a finding this extreme if the null hypothesis were true. 5% and 10% are common significance levels to which p-values are compared, see Fig. 4, Fig. 5 and Fig. 6.

Our proposed research hypotheses are:

H1: Students will generally show preference towards web-based activities as opposed to traditional method of learning,

H2: Students preferences towards web-based activities will be affected by the module leader,

H3: Students' interactions with teachers and classmates are enhanced via web-based activities.

C. Participants

The participants of the research were *natural* groups. This means that the students were enrolled and studying at the university before the research had begun. BUE had introduced e-learning as a learning tool to support traditional face-to-face lectures/classes. Moodle version 2.0 and higher is used. E-learning has been used as an essential tool for the learning process. This study was part of a longitudinal effort to understand the use of technology in teaching within higher education.

D. The Questionnaire and Results

The questionnaire was designed to measure student attitudes towards e-learning for the modules to be included in the study. The questionnaire was adapted slightly to reflect the different modules the research was focusing on. The questionnaire consisted of 19 questions. Each question contained five Likert scales: Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree for each question.

The results of the questionnaire are shown in Fig. 1, Fig. 2 and Fig. 3. The Y axis shows the value of the mean for the responses of the students as well as the value of the standard deviation. The mean is the sum of the observations divided by the number of observations. It identifies the central location of the data, sometimes referred to in English as the average. The maximum value of the mean is five (i.e. strongly agree=5, Agree=4, neither agree nor disagree=3, Disagree=2, strongly disagree=1, No answer=0). The standard deviation is the most common measure of variability, measuring the spread of the data set and the relationship of the mean to the rest of the data. If the data points are close to the mean, indicating that the responses are fairly uniform, then the standard deviation will be small. Conversely, if many data points are far from the mean, indicating that there is a wide variance in the responses, then the

standard deviation will be large. If all the data values are equal, then the standard deviation will be zero.

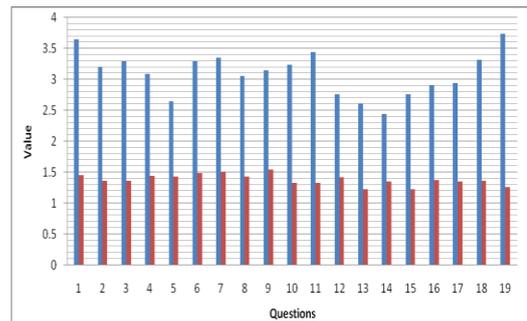


Figure 1. Questionnaire (34 students-digital design-Fall 2014-module leader S). Blue bars are the mean. Red bars are the standard deviation

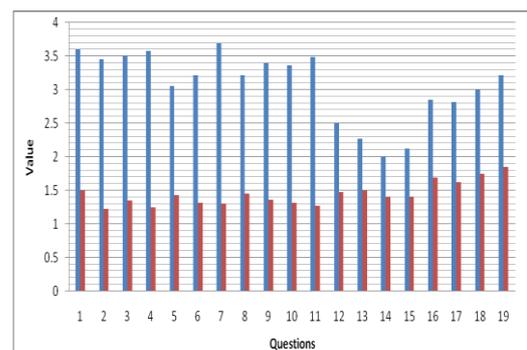


Figure 2. Questionnaire (33 students-computer architecture-Fall 2014-module leader S). Blue bars are the mean. Red bars are the standard deviation

TABLE I. THE QUESTIONNAIRE USED FOR THE SURVEY FOR THE COMPUTER GRAPHICS MODULE

1	I like using e-Learning for Computer Graphics
2	The information, strategies and instructional methods posted online were helpful
3	It successfully delivered the stated objectives
4	This online course was effective at helping you reach those learning objectives?
5	The sessions were challenging and interesting
6	I find Computer Graphics modules easier when the teacher uses e-Learning in their teaching
7	The information was received when requested
8	The information posted on the e-Learning meet your expectation
9	I received the answer to my questions within the time requested
10	I was happy with the answer to my questions
11	My question was answered in full
12	I did not receive the information that I required
13	I received the answer to my enquiry too late for it to be useful
14	I am unwilling to learn Computer Graphics modules through using e-Learning
15	I think the teacher's application of e-learning in teaching Multimedia modules is not useful
16	By using e-Learning for Computer Graphics modules, the opportunity of interaction with the teacher is enhanced
17	By using e-Learning for Computer Graphics modules, the opportunity of interaction with my classmates is enhanced
18	By using e-Learning for Computer Graphics modules encourages me to continue learning via the Internet by myself
19	I hope teachers of Computer Graphics continue to use e-Learning in their teaching

The questionnaire, see Table I, was paper based. It was administered to three different groups of students. The first group is 2<sup>nd</sup> year students who already finished

Digital Design and Computer Architecture modules at fall 2014 with module leader S. The second group is 1<sup>st</sup> year students who are currently taking Digital Design module at spring 2015 with module leader N.

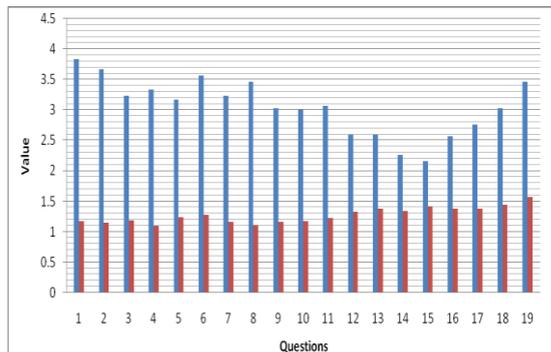


Figure 3. Questionnaire (30 students-digital design-spring 2015-module leader N). Blue bars are the mean. Red bars are the standard deviation

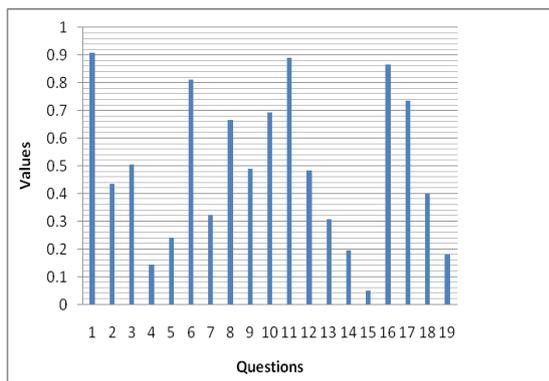


Figure 4. P-value for the two groups of Fig. 1 and Fig. 2

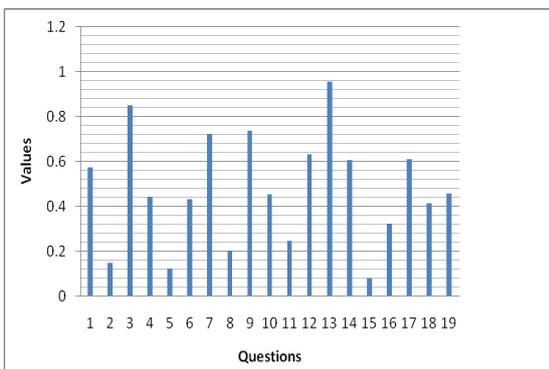


Figure 5. P-value for the two groups of Fig. 1 and Fig. 3

The results of the questionnaire surveys show that:

- From Fig. 1, Fig. 2 and Fig. 4 students have close opinions for all questions ( $p > 0.05$ ). Mean and standard deviations values are not significantly different between figures 1 and 2. They are the same group of students, the same semester, the same module leader and different subject of study.
- From Fig. 1, Fig. 3 and Fig. 5 students have close opinions for all questions ( $p > 0.05$ ). Mean and standard deviations values are not significantly different between Fig. 1 and Fig. 3. They are different group of students, different semester,

different module leader and the same subject of study.

- From Fig. 2, Fig. 3 and Fig. 6 students have close opinions for all questions ( $p > 0.05$ ). Mean and standard deviations values are not significantly different between Fig. 2 and Fig. 3. They are different group of students, different semester, different module leader and different subject of study.

From all of the above and for the students of the same faculty:

- H1 will be evaluated by the questions 14, 18 and 19. It will be accepted,
- H2 will be evaluated by the questions 6 and 15. It will be accepted,
- H3 will be evaluated by questions 16 and 17. It will be accepted.
- From H1, H2, and H3 students prefer web-based activities; it will enhance their communications with teacher and classmates. Even with the fact that the preference of students towards web-based activities will be affected by the teacher, students still see the benefits of using multimedia effects into web-based activities as appeared from the results of question 15 in Fig. 1, Fig. 2, Fig. 3, Fig. 4, Fig. 5 and Fig. 6.
- The students reply for the rest of the questions requires further investigation and further hypothesis about motivation in the scope of e-learning.

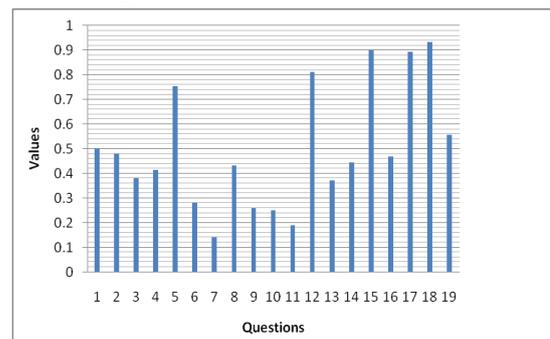


Figure 6. P-value for the two groups of Fig. 2 and Fig. 3

### III. CONCLUSION AND FURTHER RESEARCH

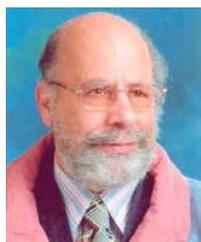
In order to motivate students within the scope of e-learning environment, teachers should consider attention, relevance, confidence and satisfaction differently. Attention could be addressed using animation, Relevance and confidence could be achieved through clear organization of the materials of the course over time needed to finish it, with quizzes and explanation of importance of the information of the course. Satisfaction could be achieved via electronic certification or electronic recognition within the course collaborative students and teachers over e-learning environment.

The above results are encouraging for further research to be conducted in this area in the future in order to explain these results and to investigate further

hypothesis that motivate students to use and benefit from e-learning system. Future advances in internet technology, especially in wireless bandwidth internet connections, will have a great impact in motivation towards delivering and using more online learning and interactive lessons.

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