Towards Three Dimensional Analyses for Applying E-Learning Evaluation Model: The Case of E-Learning in Helwan University

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Abstract

Lots of studies have discussed the issue of "ELearning in higher education" and what it could provide to these institutions like: improved performance, increased access, convenience and flexibility to learners and developing the skills and competencies needed in the 21st century, in particular to ensure that learners have the digital literacy skills required in their discipline, profession or career. In this case study we'll adapt (three dimensional analyses: Student – Staff – University) to evaluate the impact of e-learning implementation in Egyptian Universities, and the case study took "Helwan University" as a Sample of the research community to explain how it'll improve, affect and maximize the efficiency of the educational process within the university, through the three dimensions discussed in the case study. There are previous studies framed that there is a positive relation between the adoption process of e-learning environments and the education process analysis.

Keywords: *Three dimensional evaluation model, E-learning, blended learning, students and staff satisfaction, e-learning infrastructure, traditional learning, e-learning cost.*

1. Introduction

Over the past decade the structure of higher educational institutions has changed, partly due to the introduction of technological initiatives .eLearning is now facilitating a more flexible learning approach; contemporary institutional structures are less robust than in previous years. E-Learning has enabled universities to expand on their current geographical reach, to capitalize on new prospective students and to establish themselves as global educational providers. This paper examines the issues surrounding the deployment of eLearning into higher education to enhance the quality of educational process by adapting the three dimensions evolution model which, including the structure and delivery of higher education, the implications to both students and teaching staff and the impact on university.

A multidimensional framework developed suggests that the e-learning fall into three dimensions: Student; Staff; university to evaluate the impact of e-learning implementation in universities.

First dimension "Student" offers an integrated model of educational perspective which suggests that students enrolled on eLearning courses perform better than those on more traditional schemes. It is important to clarify that in the context of this paper student performance considers the level and quality of learning outcomes as well as the student's grades in assessments.

[17] explains that in higher education student participation is a primary feature of enhanced performance and in distance learning courses students are more likely to participate in class discussions and group work than in traditional lectures, as they are given more time to prepare questions and responses [16] argues that quieter students will still be excluded from virtual discussions, as there will always be students who will monopolise conversations, even online! Also, controlling dominant students is far more difficult in eLearning environments when compared to face to face lectures (16).

Second dimension "Staff" represent the role of the teacher or lecturer which is an important factor in the design of technology-based environments in that various roles can be supported. While there is much written about how e-learning technologies can facilitate greater interaction and collaboration for students and their lecturer in the teaching and learning process , there are several facets of the role of the lecturer that can impact upon how e-learning environments are developed and delivered. The following discusses the considerations that developers and lecturers need to take into account for each of these facets when designing e-learning environments.

The third dimension describes the cost benefits of creating e-learning courses in the universities compared with face-to-face education (traditional instruction).

Thus, the framework covers the full e-learning evaluation model factors but with a focus on the facilitating and constraining effects of the three dimensions that can have on the choices available to educational planners.

This analysis should be of value to educational planners in two major ways. First, the methodology of the framework and conclusions of the case studies should help in the

analysis for applying e-learning evaluation model and decision-making procedures.
Second, the framework can be applied to the evaluation of proposed universities and used to forecast outcomes and the probability of successful deployment.

2. Background

E-learning is here to stay. It is one of the vital tools in modern teaching practices, and widely used by private and public organizations. It has a vital role in teaching teens, young adults, adults and senior citizen. It also provides opportunities for developing cross-cultural teaching programs. This means that while e-learning is important today, it also has a very promising future as a central part of the modern Information and Communication Technology society [3].

There are a large number of studies which indicate eLearning Readiness in Egypt across the following dimensions: Technology and infrastructure, Content and content management, Social (sociological, cultural and psychological), Legal & Economic. But here we`ll focus in the three dimensions discussed below [18].
At the end of the background we will clarify the Purposes of the study which aimed to analyze and discuss critical issues for successful e-learning via the three dimensional evaluation model for applying E-learning in Egypt universities. Specifically, the research objectives of this study were to:

- Ascertain on-line learners' level of e-learning acceptance, and
- Investigate possible factors affecting e-learning acceptance.

3. Research Methodology

This research analyzes evaluation model in Helwan University to apply e-learning in its educational process policy making as a cornerstone of (Fundamental) educational planning.
It was intended to clarify integration challenges for teachers, students and educational institutions in deployment of e-learning systems to the benefit of all stakeholders. The Research design was a cross-sectional survey design by employing the administration of self-administered questionnaires to gather the required data for the research.
When we talk about the research participants; the E-Learning Center was the e- learning tertiary institution investigated, with approximately 300 students Helwan Campus in 2010 as the targeted population. Questionnaires were distributed to 200 selected e-learning students from the bachelor programmes, the total number of questionnaires returned was 230.

Data were collected from the participants using questionnaires. The first part of the questionnaire gathered information pertaining to the participants' age, gender, and marital status, working experience, computer use experience and educational background. The second section of the questionnaires determined the learners' acceptance of e-learning based on the three dimensions: Student – Staff – University to evaluate the impact of e-learning implementation in universities.

The three factors measured in this section included: "students' satisfaction, ease of use & usability– 'Staff' financial income, academic productivity interactive tracking & performance– 'University' cost, estimated components (IT) & infrastructure. The data obtained from the questionnaires were analyzed and presented using descriptive statistics such as means and standard deviations.

4. The Three Dimensions

Effective eLearning comes from using information and communication technologies (ICT) to broaden educational opportunity and help students develop the skills they—and their countries—need to thrive in the 21st century. While conclusive, longitudinal studies remain to be done, there is evidence suggests that eLearning can deliver substantial positive effects for:

- STUDENTS are more engaged and able to develop 21st century skills.
- TEACHERS have a more positive attitude toward their work and are able to provide more personalized learning.
- UNIVERSITY can result from direct job creation in the technology industry as well as from developing a better educated workforce.
- E-Learning systems are becoming more widely available. There are increasing expectations from a variety of stakeholders, including the government; employers and students, that e-learning will become a normal part of lifelong learning. E-Learning has the potential to:
- Improve the quality of the learning experience by increasing flexibility and variety.
- Alleviate the increasing pressure on existing, limited resources.
- Increase and widen access to all forms of education. [11].

4.1 The First Dimension "STUDENT" (Explorer.Cognitive.Apprentice.Producer)

Nowadays, more and more students are enrolling in online classes. They enjoy the flexibility of being able to continue their studies at places more convenient for themselves, also it offer students the flexibility to learn in their own time, the availability of notes and assessment in electronic format to be downloaded at their own convenience, and a platform to communicate with staff and colleagues in real time. All in all, providing a level of service which meets the needs of the customer and produces customer satisfaction. (5)

Therefore, we hypothesize that in order to develop relationship with the students in an e-learning environment a customer oriented approach is needed which positively impacts the service quality provided.(13)

The restrictions on the student to educator ratio remain, and larger class sizes do not become immediately feasible. Similarly, good educators are just as highly valued online as in the real world, so they are not removed from the educational process; if anything their significance in achieving student satisfaction is made greater because of the nature of the online course [7].

The removal of the physical restrictions on class size and the ability to record lectures would inevitably lead to large student classes and the removal of the need for the educator.

It's due to the growth of online students over the past years, that more and more universities are offering online courses in addition to on-campus classes for students. As students continue to take online courses, there's the need for more college professors who are willing to teach online [9].

Students can inspect and experiment, build and test hypotheses, and generate a rich sense of how this model behaves, i.e. how this economic theory works.

4.2 The Second Dimension "STAFF" (Facilitator .Guide .Co-learner/co investigator)

The role of the teacher in Higher Education is changing rapidly, and much of this change is as a result of the introduction of e-learning. Teachers are now expected to share their role as course designers with many other professionals working in their institution while taking on a bigger role in the technical and resource discovery aspects of course design. In addition, teachers are being encouraged to share their teaching resources with others, while being urged to reuse materials created by others as much as possible [8].

Generally e-learning is seen as offering solutions to several challenges currently facing HE. These include the move towards lifelong learning, with its ongoing demand for continuous professional development, and the drive to widen participation. These challenges come at a time of increasing pressure on resources, and the increasing diversity in the student population and their modes of attendance, including learning that is part-time, at a distance, open or flexible, and work based [16].

There are many motivations behind the uptake of e-learning by universities, including pedagogical considerations, the drive for innovation, meeting the needs of students and maintaining a competitive profile [17].

E-Learning requires investment of time and effort in developing new skills, new approaches, and new resources: perhaps time and effort that would otherwise be spent on research. However, you can save time and effort in the long term.

E-Learning could benefit the staff by reducing the administrative load by making routine information available online. This will release more time for other activities also making it possible to use a wider range of resources that may otherwise be too difficult or expensive to use it also help in releasing time for more active, engaging and interactive forms of Teaching & making it easier to amend and update materials.

E-Learning can improve the flexibility and quality of learning by:

- Providing access to a range of resources and materials which may not otherwise be available or accessible, for example graphics, sound, animation, multimedia;
- Giving control to students over when and where they study;
- Allowing students to study at their own pace;
- Providing a student centered learning environment which can be tailored to meet the learning needs of individual students;
- Creating an environment that promotes an active approach to learning;
- Supporting increased communications between staff and students, and amongst students;
- Providing frequent and timely individual feedback, for example through computer assisted assessment, and positive reinforcement;
- Motivating students through appropriate use of interactive courseware;
- Supporting and encouraging collaborative learning;
- Supporting economic reuse of high quality, expensive resources;
- Encouraging students to take responsibility for their own learning.

The dynamic nature of the IT industry in conjunction with evolving eLearning technologies has created a tension for lecturers in higher education. ELearning initiatives have reportedly created new educational issues for lecturers, such as changing work patterns and in some case the reluctant integration of technology.

Some professors teach online because they can do it at their convenience (either full-time or part-time). Other professors teach an online course because they have other jobs or have other commitments. In short, online teaching allows professors a flexible career. It can be rewarding too; for instance, being a school teacher usually has the following benefits: health and life insurance coverage, and a retirement or pension plan.

The teacher can set challenging problems, such as finding the combination of changes in inflation and exchange rate that produces a sudden rise in unemployment. Students can inspect and experiment, build and test hypotheses, and generate a rich sense of how this model behaves, i.e. how this economic theory works. The teacher could extend this further, as they become more knowledgeable, by noting that the model fails to account for a recent set of data.

E-Learning can support these interactions by being:

- Narrative - teachers. Conceptions are made accessible to students and vice versa;
- Interactive - the teacher provides feedback to students based on the outcomes of tasks students undertake;
- Adaptive - the teacher uses this information to revise what learning has occurred and, if necessary, change the focus of dialogue;
- Communicative - the teacher supports processes where students discuss and reflect upon their learning;
- The teacher and student agree learning goals and task goals, which can be achieved using productive media, such as online presentations.

Technology as a vehicle for staff development:

- Alters the learning environment.
- Provides new structures and media for reflecting, communicating, and acting.
- Facilitates modeling and visualization.
- Allows for construction and discovery of knowledge.
- Expands access to information, networks, people, and ideas.
- Increases the flexibility of time and places for learning; and
- Provides significant resources.
- A leading cause of dropping out in e-learning is isolation among learners and a lack of direction and motivation. Increased interactivity among participants and the instructor through immediate feedback, frequent assessments, shared assignments, and small study teams, will create a cyber-community among learners. When examining programs, products, and services, consumers will want to know, among other things, how interactivity is structured, how often it is expected and it occurs, how easy various communication systems work, and if there is the option for private and public communication within the learning group.

4.3 The Third dimension" Cost"

The costs and benefits of e-learning are difficult to quantify due to the large number of variables involved. Each institution will have to decide whether the benefits outweigh the costs in its particular context [15].

Costs include both financial and human resource investments in e-learning. Greater access to information and increased opportunities for educator learning can both reduce and increase cost. E-Learning courses available to students and universities are not necessarily less expensive to purchase or implement than traditional way development courses; however, they may be more convenient and flexible.

4.3.1. An E-Learning funding methodology

In our experience, funding for eLearning initiatives is most effective when built on a core set of principles or assumptions:

- All beneficiaries of eLearning initiatives should make some contribution, however small.
- Funding should be structured so that all have a chance to opt into the program, regardless of income bracket [14].

The chosen funding model should be structured for sustainability, rather than depending on one-time grants, appropriations or limited tax concessions. Starting with these assumptions, our funding methodology can be organized into three phases:

- Survey the environment
- Maximize all possible sources of funding
- Develop a needs-based segmentation model for funding contributions [10].

4.3.2. Cost

- Investment in quality products & services.
- Investment in infrastructure to support learning: Infrastructure includes both behind the wall wiring and electricity, as well as hardware and software, technical support, ongoing maintenance, and equipment upgrades [1].
- Hardware
- Software
- High-speed connectivity
- Regular maintenance
- Planned upgrades
- Specially prepared faculty
- Appropriate participant- instructor ratio [11].

4.3.3. Costs Savings To Enterprise

Undisputed are the dramatic cost savings to both industrial and governmental enterprises from adopting e-learning. Some examples:

1. ASTD: Eighty-four percent of two- and four-year colleges expect to offer distance learning courses in 2002. In 1998, only 58% of colleges reported offering these courses.
2. Credit Suisse First Boston: The percentage of adults enrolled in distance education is expected to triple from just 5% in 1998 to 15% in 2002 [2].

4.3.4. Findings

General agreement was found in that e-learning should be used alongside other approaches to learning to enhance learning and not to substitute more traditional forms of learning.
The respondent's views about the suitability of e-learning suggested very positive outcomes that can be analyzed from the figures below and the facts.

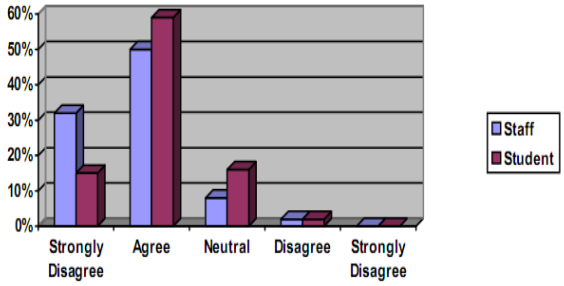

Fig. 1 shows a graphical representation of responses e-learning effectiveness.

It can be seen that 96% of respondents which included staff and student agreed that e-learning was an effective educational tool, whilst only 4% of students and staff disagreed with the statement.

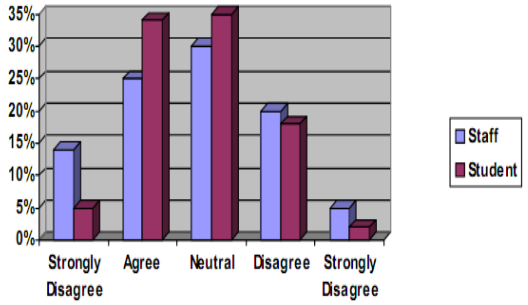

Fig. 2 shows a graphical representation of responses e-learning suitability for teaching any subject matter.

The above graph demonstrates that 75% of staff respondents and 80% of student respondents agreed that e-learning could be adopted for teaching any subject matter. On the other hand 25% of staff and 20% of students disagreed.

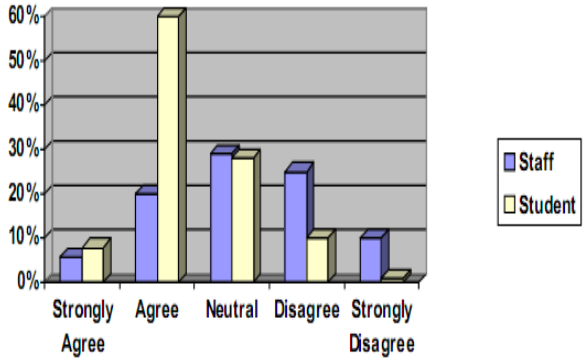

Fig. 3 shows a graphical representation of responses the perceived reduction of tutor's workload with e-learning

It can be seen from the above graph that 65% of staff members and 90% of students agreed that e-learning reduces the tutor's loading, while 35% of staff and 10% of students disagreed.

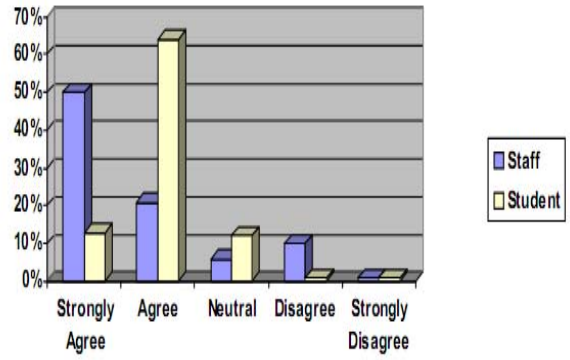

Fig 4 shows a graphical representation of the responses the extent to which e-learning was found as providing better opportunities for self-study.

The results demonstrate that 97% of staff and 100% of students agreed that e-learning provided better opportunities for self-study. Only 3% of staff disagreed with the statement.

Table 1.1: Data on how cost-effective e-learning was found to be as perceived by the respondents.

Scale	*Staff*	*Student*
Strongly Agree	36%	15%
Agree	34%	55%
Neutral	27%	30%
Disagree	3%	0%
Strongly Disagree	0%	0%

It can been seen that 97% of staff and 100% of students agreed that e-learning can be cost effective, whilst only 3% of staff disagreed.

Table 1.2 : Data on perceived time efficiency gains with e-learning from the respondent's viewpoint.

Scale	*Staff*	*Student*
Strongly Agree	0%	7%
Agree	27%	46%
Neutral	27%	36%
Disagree	38%	11%
Strongly Disagree	8%	0%

As can be seen 57% of staff and 91% of students agreed that e-learning was less time consuming than books and e-books, while 43% of staff and 9% of students disagreed with the statement.

5. Conclusions

The study improves performance, increased access, convenience and flexibility to learners and developing the skills and competencies needed in the 21st century.
The study ensures that learners have the digital literacy skills required in their discipline, profession or career
The case study explores the impact of the adaption of the three dimensional analyses model: (Student – Staff – University) on e-learning implementation and evaluation in Egyptian Universities. The case study has took place Helwan University.

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