

AN ANALYTICAL SURVEY ON IMPLEMENTING BEST PRACTICES FOR INTRODUCING E-LEARNING PROGRAMS TO STUDENTS

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ABSTRACT

Today, a need has risen to reduce paper both to become "green" and to save costs. Shifting to an online course, to expand, the number of students who are participating in online courses and programs with significant global reach continues to increase dramatically. However, many studies showed that the failed retention rates for students of online institutions are bit higher than traditional classroom environments. This calls for analysing the current practices in the use of contents in online courses to improve e-learning student persistence. This is a conceptual paper sharing the specific best practice examples, observations, and outcomes from some leading universities, based on surveys of existing methodologies and practical experience. Special emphasis placed on current and future trends in effective online pedagogy. This paper identifies the best practices for introducing the students to e-learning experience in an analytical manner. The paper also analyses the various attributes of best practices in E-learning using Fuzzy AHP method of a Multi-Criteria Decision-Making (MCDM) method. The Fuzzy AHP involves several steps which include the setting of evaluation criteria and their weights, and evaluation of the E-learning technique as compared to the traditional learning technique for identifying the effect on response rates for different aspects of quality and time in order to explore the real worth in the use of e-learning. This paper shows that all the attributes behave comparable very well in the case of E-learning as compared to the traditional method. The analysis of our criteria which are essential for any effective learning demonstrated that the E-learning methods have good potential to grow.

Keywords: AHP, Best practices, E-learning, online pedagogy, criteria weights.

Introduction

Along with the brisk growth in the decline of trees, currently, world is moving toward paperless working to save trees, to lessen cost and eventually to go green. Education sector was also not untouched with this deliberation. E-Learning concept is accomplishing a course online provided by a university anywhere in the world (and thus motivating towards paperless working). In present scenario, the concept of E-Learning in education sector is emerging as means for student education. In E-Learning, learner studies through online journals and magazines, educational television, forums and through the content placed on the web to be used for educational purposes.

Earlier, normally simple learning contents were made available over the web. With the augmentation of internet over the world, people steadily began to surf net. Later on more topic, specific contents came in the form of magazines, forums, journals and audio and video tools on several websites. Learners bit by bit begin to use these for educational purposes, and some even made them available for all to download through their personal websites.

In addition to that, with the growing tendency of learners to learn through online contents, several institutes started various programs to promote the online classroom which is different from traditional classrooms in a way that student is not required to present there yet physically the learner can study through online technologies. Encourages learners to regularize their self-learning from any of the institutes they want without being physically present there.

Using E-learning, students can also interact with other students (known as Peer to Peer interaction), with the faculties, with the text over the Internet, in groups, one-on-one with an associate, etc. There they can discuss the syllabus; learners can network

about assignments, case studies, to solve lab activities, etc. Because the objects, course content, and approaches are constantly changing, it is important to assess and review best practices on a regular basis and make sure they align with desired learning outcomes, and user needs. Therefore, there is a real need to analyse the implications of e-learning teaching methodologies in Iraq universities to validate the Arabic speaking student's attitude towards science subject.

This paper identifies the best practices for introducing the students to e-learning experience in an analytical manner. The paper also analyses the various attributes of best practices in E-learning using Fuzzy AHP method of a Multi-Criteria Decision-Making (MCDM) method. The Fuzzy AHP involves several steps which include the setting of evaluation criteria and their weights, and evaluation of the E-learning technique as compared to the traditional learning technique for identifying the effect on response rates for different aspects of quality and time to explore the real worth in the use of e-learning. This paper shows that all the attributes behave comparable very well in the case of E-learning as compared to the traditional method. The analysis of our criteria which are essential for any effective learning demonstrated that the E-learning methods have good potential to grow.

Research Survey

Numerous universities have understood the need of E-Learning. According to one of the Times Educational Supplement, there is growth towards E-Learning as there was as in face-to-face pedagogy. Now a day, institutes are also designing online courses because of strong student learning results in online programs. However, in some cases, like as suggested by Herbert (2006) and Fike & Fike (2008), online student retention is one of the greatest weaknesses in online education. In a literature review conducted by Herbert (2006), several studies showed that the failed retention rate for online college and university undergraduates range from 20 to 50%, and that online course administrators believe the failed retention rate for online courses to be 10 to 20% higher than traditional classroom environments (Frankola, 2001; Diaz, 2002; Moody, 2004).

The student's first set of experiences with their e-learning courses can be either a barrier to retention or contribute to the likelihood of persistence. Tyler-Smith (2006) argues that the sense that students are losing control and becoming overloaded in their initial experience of e-learning contributes to their early departure. Students who have a poor set of first experiences with their e-learning courses become frustrated and dissatisfied, and consequently more likely to drop out. Many times, a lack of visibility may lead to student's critical attitudes of the instructor's effectiveness and lower levels of effective learning (Tyler-Smith, 2006).

Furthermore, a lot of teachers need expert and technical support when it concerns the production and application of e-learning (Davids, Chikte, & Halperin, 2013). In the literature, there are a variety of reports on e-learning especially in higher education, but generally from discipline-specific perspectives. As explaining by Back et al. (2014), Educators could utilize various programs for the progression of contents in the context of their academic teaching scenarios, relying on the available material. The huge majority offer training or qualification programs for instructors. That this is very important was also hypothesized by Cook and Triola, who emphasized the need for faculty development in making use of current tools and continuous training in arising technologies (Cook & Triola, 2014). Among such skills of teaching, numerous formats seem to become well-known and widely applied, while tools which concentrate on online collaboration are less introduced especially as mandatory didactic elements (Rasmussen, Lewis, & White, 2013). Authoring tools depend on e-learning staff, qualification programs and training courses for the application of e-learning (Barefield & Meyer, 2013).

Despite all these, as the global reach of e-learning continues to expand, the number of college students who are participating in online courses and programs (some with significant global reach) continues to increase dramatically. This is because of the faster action time and delivery of results, which can give more time to discuss and act on any findings.

Inclination Towards E-Learning

As already that E-Learning provides detailed results within specified period say as in hours while traditional classroom results declared in next semester or 2-3 months' period. There are many other factors also which attract the learners to move towards E-Learning. Some of them (Boezerooij, 2006; Mehregan, Jamporzmay, & Hosseinzadeh, 2011; Ozkan & Koseler, 2009; Wu & Chen, 2013) are:

- 1- E-Learning provides more flexibility to learners from their hectic schedules as that from traditional classrooms. Further, mode of E-Learning can be audio or video which is helpful and equivalent to face to face interface.
- 2- As in E- Learning, the mode of communication is through voicemail or E-mail, which provide security even if the learner is sitting far apart.
- 3- It provides a platform for different culture and background environment learners to develop cultural sensitivity, to interact with one another thus establishing a community of learning. In the community, learners depict themselves as real people by sharing their personal view and thoughts.
- 4- Many universities or institutes course comprehension are available over the web which is accessible from anywhere and can access with 24x7 hours. This provides unique, flexible opportunities for learners to chase their higher education goals.
- 5- Currently, trends of a considerable improvement in the number of learners for getting connect themselves outside of their domicile country have taken pace. The concept of E-Learning also assists this escalation.

Disadvantages Of E-Learning

In spite of the E-learning benefits in the education process, also has some disadvantages. According to (Arkorful & Abaidoo, 2014), there are some points about disadvantages of E-learning:

- 1- E-learning as a technique of education makes the students undergo contemplation, and also a lack of interaction or relation. Therefore, it requires a strong inspiration in addition to skills with to the management of time to reduce such effects.
- 2- On clarifications, the offer of explanations, as well as interpretations, the e-learning method might be less effective than the traditional method of learning. The learning process is much easier with the use of the face to face encounter with the instructors or teachers.
- 3- Researchers have argued that e-learning is more appropriate in social science and humanities than the fields such as medical science and pharmacy, where there is the need to develop practical skills.
- 4- One of the most noticeable condemnations regarding e-Learning is the total absence of vital personal interactions, not only between instructors and learners but also among colleague learners.

Best Practices In E-Learning To Enhance Response Rate

Of course, benefits of E-learning can convey through posters, email campaigns, banners ad on student portal, through a press release or Ads for the campus newspaper. There are many more practices which if considered can pave the path to increase response rate.

- 1- Along with good quantity, good quality materials should be made available to increase the response rates. For this, teachers should pay extra effort in preparing the online tutorials, materials, and assignments.
- 2- Many learners have a hands-on computer, but very often some learners may not be good in this regards. So extra instruction or paper options should also be provided in that case to continue to improve response rate.
- 3- Act as quickly as possible on results of E-Learning evaluations. This makes learner to gain trust over Institute, and he will have a feeling that institute is listening and taking proper actions on their concerns which have a direct impact on response rate.
- 4- By mode of online discussions, learners can also communicate with each other on web resources, assignments, case study analysis, etc. and thus pave the path to enhance response rate of E-Learning.
- 5- As today's era is moving toward the Internet and the world becoming more techno savvy, various online modes can helpful to increase the response rate of for E-Learning like web content, discussion boards, collaborative learning, Interactive Television (ITV), e-mail, text, voice or video chats, etc.
- 6- As in E-Learning, time to time reminders of assignments, formalities, any course regarding information and various things are to be communicated to the learner using student portals as notice boards are used in traditional classrooms.
- 7- In E-Learning, among one of the factors that can improve response rate is its ease of use and it doesn't require learning before to get started as E-learner, motivates learner for E-Learning. Design such a system that leads the student to build scalability through faster response put off lag time and to hold every person who wants to use the system for other work at the same time. If there is an intolerable hang around between questions or screens, learners will discard the process, and response rates will diminish. Sometimes, being online in initial stage may lead to some issues and ultimately affects response rate. For avoiding the effect of this over response rate, Institute may move toward online feature step by step instead of all at once. In initial years, there may be some hindrance offered in adopting of these practices, but gradually it will increase the response rate among the universities or institutes if followed properly.

ANALYTIC HIERARCHY PROCESS (AHP)

AHP is a widely used method for addressing decision-making problems with multiple attributes and a mix of quantitative and qualitative data inputs. In AHP, the problem is constructed as a hierarchy-breaking down the decision from top to bottom. The main characteristic of this technique is the use of pair-wise comparisons, to compare the alternatives on the different attributes and to assess attributes weights (Løken, 2007). Saaty (1980) has developed the Analytical Hierarchy Process (AHP) in the 'theory of prioritised hierarchies.' Thus, it became common and has been used broadly to model problems in many application areas. AHP used to rank, select and assess based on a wide variety of decision alternatives. The major exclusiveness of AHP is its inherent ability to weight a large number of various factors, of various natures, containing both quantitative and qualitative data, to make a decision rely upon a formal and numerical process (Liberatore & Nydick, 2008). According to Salmeron & Herrero (2005), AHP technique uses the principle of pairwise comparison (PC). Creating Pairwise comparisons seem to be a more reliable manner of getting the real weights than getting them directly. Generally, this method is easier to assess the relative weights of each attribute with respect to the others. Vaidya & Kumar (2006), mentioned that AHP method is also a flexible way in that it can be integrated with other procedures such as quality function deployment, linear programming, fuzzy logic, etc. Douligeris & Pereira (1992), suggested that four steps are involved in AHP procedure.

Step 1: Decompose problem into a hierarchy of more comprehensive sub-problems.

Step 2: Gather trade-off information input by pairwise comparisons of decision elements.

Step 3: Use the 'Eigenvalue' method to assessment the relative weight of the hierarchy attributes.

Step 4: Collection of attributes is made through a mixture of relative weights so as to make an overall assessment of all alternatives.

In general, AHP has a number of significant advantages. For example, it is a relatively simple manner for DMs. Moreover, AHP does not contain complex mathematical operations and works on principles of decomposition, gathering of pairwise comparison information, and priority vector generation and synthesis.

Analysing The Best Practices In E-Learning

To examine the after effects of the e-learning, as well as to analyse the student’s creative thinking, motivation, and achievement, we developed a scientific model for evaluating a set of universities based on Iraqi society. The model is designed to analyse the implications of e-learning teaching methodologies in Iraq universities to validate the Arabic speaking student’s attitude towards science subject.

To analyse the potential of E-learning on new perspectives we used the Analytic Hierarchy Process (AHP) method, which is a structured technique for organizing and analyzing complex decisions. Here, we employ the use of Fuzzy AHP (Fuzzy Integral Based AHP). Fuzzy integrals are a useful tool for global evaluation models. A fuzzy measure is one class of fuzzy measures which can be identified by interaction index λ (or ξ) and weights of individual evaluation items. The models use Choquet integrals instead of the ordinal weighted sum and enable to do a global evaluation with interaction degree among evaluation items. The parameters of the model are evaluation items weights and interaction index. The evaluation is done by calculating the Choquet integral using λ fuzzy measure by CGI software.

Table 1 illustrates the various evaluation criteria used to identify response/retention rate using various learning methods. For every attribute, a normalized weight is obtained using AHP the based on their relevance in the learning methods.

Table 1. The evaluation attributes for response/retention rate with their weights

S. No.	Criteria	Normalized Weights
1	Teaching Effectiveness	0.0363005
2	Flexibility of learning	0.311831
3	Result and Action	0.386511
4	Accessibility	0.122206
5	Hesitation factor	0.143152

Table 2 shows the obtained Pairwise Comparison Matrix to demonstrate the ‘Fuzzy Measure’ of all the attributes.

Table 2. Pairwise comparison matrix

	Teaching Effectiveness	Flexibility	Result and Action	Accessibility	Hesitation factor
Teaching Effectiveness	1	0.166	0.14285	0.25	0.1666
Flexibility	6	1	0.333	5	3
Result and Action	7	3	1	2	2
Accessibility	4	0.2	0.5	1	1
Hesitation factor	6	0.3	0.5	1	1

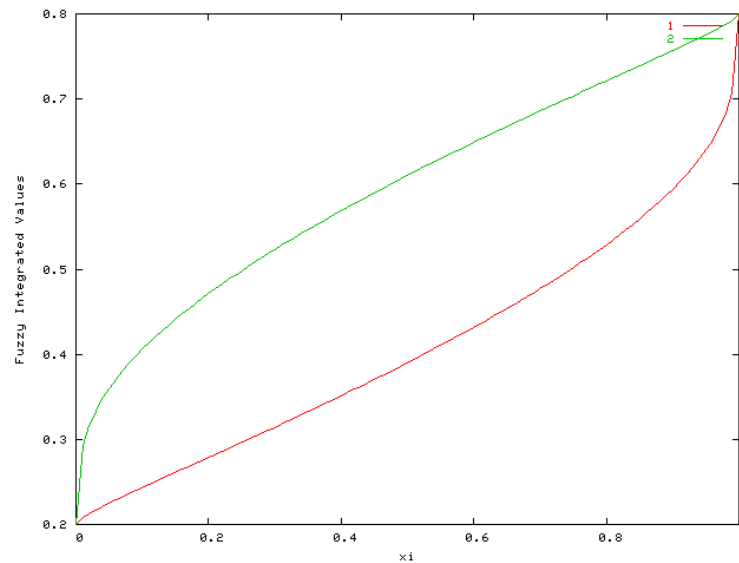
Table 3 displays the input values as a weight we have chosen for every attribute considering the relevance of traditional methods of learning and E-learning respectively. The Choquet Integrated Values generated using additive Fuzzy AHP shows almost double impact factor when analysing for E-learning attribute weights.

Table 3. Input Values and obtained Choquet Integrated Values

	Traditional learning	E-learning
Teaching Effectiveness	0.6	0.4
Flexibility	0.2	0.8
Result and Action	0.4	0.6
Accessibility	0.3	0.7
Hesitation factor	0.8	0.2
Choquet Integrated Values	0.389934	0.610066

Fig.1 displays the graph of sensitivity analysis in terms of fuzzy integral values with varying interaction index ξ or λ . The graph line 1 is corresponds to efficiency in traditional learning and the graph line 2 corresponds to the efficiency using E-learning.

Fig.1. Sensitivity analysis



From the graph obtained as shown in Fig.1, it can be seen that all the attributes behave comparable very good in the case of E-learning as compared to the traditional method of face-to-face classroom learning. Though researchers have shown that the response rate factor is better in traditional classrooms due to precise and high quantity data, the analysis of our criteria which are essential for any effective learning demonstrated that the E-learning methods have good potential to grow.

Conclusion And Further Research

As learning objects continue to evolve and new uses are found for them within online courses, E-learning will become more and more utilized. But all these will occur only when practical approaches will be developed in order to exploit the use of E-learning. Best practices that take into learning theory and ease of use have a higher likelihood of success. Because the objects, course content, and approaches are constantly changing, it is important to assess and review best practices on a regular basis and make sure they align with desired learning outcomes, and user needs. Successfully launching and operating online programs requires ongoing investment, experience, and specialized attention and skill. In this paper, we developed a scientific model for evaluating a set of universities based on Iraqi society. Evaluation criteria for the teaching techniques (e-learning and traditional learning) have been done using Fuzzy AHP method as well as the comparison between e-learning and traditional learning as is the aim of this paper. As our result has shown that E-learning methods have good potential to grow with 61%, while the traditional learning got 32% based on the Choquet Integrated Values generated using additive Fuzzy AHP. The most significant criterion was Result and Action with 38%, as well as the second important criterion was Flexibility of learning with 31%, and the less important criterion was Teaching Effectiveness. Further research as a suggestion can be done to test the worth of the E-learning objects such as its utility within formal and informal instructional activities. Research can also be done to determine the relationship between various objects and learner's motivation, self-concept, self-efficacy, and overall performance.

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