

# A New Methodology (3A) for E-Learning in Higher Education

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## Abstract

*E-Learning is gaining an increasing interest nowadays both at the level of studies and research and at the level of the development and proliferation of the relevant software and tools. While e-Learning has opened up many opportunities, it has meanwhile posed a real challenge to both the institutions and researchers. However, e-Learning precise methodologies should be defined when the concept needs to be used. In this paper, we propose a new e-Learning methodology to deal with e-Learning challenges. The result is an innovative, easy-to-follow, comprehensive and procedural (Task-to-Task) e-Learning methodology for higher education sector.*

## 1. Introduction

Information and communication technology (ICT) is used and invested by governments and organizations as a way to increase productivity, skills, profits, quality of services and cost reduction [1] [2] [3]. One of the emerging tools that are talented to satisfy the ICT investment is e-Learning. However, there is no standard methodology that covers the whole process especially, in higher education sector. E-Learning is gaining an increasing interest nowadays both at the level of studies and research and at the level of the development and proliferation of the relevant software and tools [4]. While e-Learning has opened up many opportunities, it has meanwhile posed a real challenge to both the institutions and researchers. This is because it deals with many functions and specializations. It is, in fact, a field where inputs, processes and effects are various and where different attitudes, theories and philosophies lead to contradictions. E-Learning is not limited to technology and communications or to the teaching/learning methods and theories. It is actually a comprehensive and integrated environment which has its own inputs, processes and outputs and which requires a consistent and coherent institutional, technical and educational planning.

The failure which accompanied many e-Learning projects in higher education institutions was, on the whole, a result of the lack of deep understanding of the process dimensions as well as the lack of good planning and comprehensiveness. Thus, this paper aims at studying e-Learning deeply [1] [2] [3]. It will attempt to investigate elaborately all the aspects and dimensions of this innovation. The purpose of this paper is to develop an e-Learning methodology that is capable to connect all components together in a succession easy way to be followed by the institutions particularly, higher education institutions, in order to achieve the goals as well as guarantee success and maximize the benefits. The introduced e-Learning methodology is called 3A methodology and it consists of three stages: adoption, adaptation, and applying.

This paper is divided into five sections: it starts with defining the proposed e-Learning methodology. As this paper aims is introducing a new e-Learning methodology, most sections of this paper are dedicated to a detailed description of the proposed methodology

phases. Finally, the conclusions will recap the research argument and some future research remarks for the purpose of research complementation.

## **2. E-Learning Methodology: The 3A E-Learning Methodology**

E-Learning methodology is an ordered set of methods, procedures, rules, guidelines and techniques for adopting, aligning and applying ICT and management in teaching and learning. Such methodology has to take into considerations the management, technology, academics, faculties, globalization, social/culture (environment and ethics), customers (applicants and students), financials and human resources perspectives and factors.

The proposed e-Learning methodology in higher education is an ordered set of methods, procedures, rules, guidelines and techniques for adopting, aligning and applying ICT and management in teaching and Learning. E-Learning should not be treated as a separate issue of the institution's strategic plan; hence, the suggested methodology will involve an e-Learning strategy plan, aligning this strategy to the institution's strategy plan as a whole and then implementing and applying the e-Learning strategy plan. The proposed e-Learning methodology will be named "3A e-Learning Methodology" - abbreviation for "Triple A e-Learning Methodology" which derived from its three phases. Since, triple A "3A" refers to Adopting phase, Adapting phase, and Applying phase. The procedures and phases for the proposed e-Learning methodology will be as the following:

Adopting phase which is aiming at making institution to become convinced, willing, and ready to exploit technology in teaching and learning (e-Learning), and it covers mainly, leadership's commitment and e-Learning strategic planning. E-Learning strategic planning clarifies and discusses the pre-planning steps, the components of e-Learning plan and the four basic elements of strategic management: environmental scanning, scenario planning, strategy formulation, strategy implementation, and evaluation and control.

Adapting phase aims at creating a harmonious and compatible environment to ensure greater success and minimize costs and efforts. This phase studies and discusses the process of adapting e-Learning strategy to the institutional strategy

Applying phase is the last one in the proposed e-Learning methodology, which addresses the process of e-Learning implementation. Applying phase is about e-Learning process itself, which consists of the following three domains: Content, technology, and human resources orientation (Readiness).

## **3. Adopting phase**

Adopting Phase aims to make institution becoming convinced, willing, and ready to exploit technology in teaching and learning (e-Learning), and it covers mainly, leadership's commitment and e-Learning strategic planning. Leadership's commitment section discusses the adoption/diffusion theories presented by Rogers [5]. E-Learning strategic planning clarifies and discusses the pre-planning steps, the components of e-Learning plan and the four basic elements of strategic management: environmental scanning, scenario planning, strategy formulation, strategy implementation, and evaluation and control. Adopting phase refers to the e-Learning strategy plan within the higher education institution. E-Learning strategic plan is to achieve the following [6] [7]:

- provide focus, vision and strategic directions for e-Learning,
- raise awareness of e-Learning,
- achieve the commitment of leadership,
- set the goals and address the expectations for related departments,
- focus on quality assurance from the beginning

When talking about adopting e-Learning, there are many points that must be declared and clarified. Because of the ambiguity in the concept of the e-Learning and because of the multiplicity of definitions that covered the e-Learning from different narrations, many of higher education institutions (HEIs) have the impression that e-Learning is a new learning system that still has no trust and hence has no accreditation. Hence, higher education institutions (HEIs) have to consider and take into account the following clarifications:

1. E-Learning is the exploitation of technology for facilitating, enhancing, accelerating, supporting and availability of learning, and maximizing benefits and beneficiaries according to field theories and pedagogies.
2. E-Learning is a critical complement to traditional higher education institutes (HEI).
3. The golden rule: adopt e-Learning techniques where their use will enhance the student learning experience.
4. Simply, say that you are going to use technology for enhancing and supporting the learning and teaching processes.
5. The use of technology to deliver high quality teaching, learning and assessment (e-Learning) is becoming a mission-critical component for all universities, and seen as key to excellence in modern higher education.
6. Higher education institutions (HEI) are asked to serve more students, meet workforce demands, drive economic development, expand research capacities, and contribute to the quality of the social and cultural lives.
7. Strengthen the technological literacy of students, faculty, and staff by transforming educational delivery through technology planning and implementation and ensuring the technological competency of students, faculty, and staff.

Hence, to adopt e-Learning, we suggest adding the following foundational pillars:

- Leadership's commitment,
- Formulating mission statement and vision,

### **3.1 Leadership's Commitment**

Adoption is a decision process that may be taken when someone is confronted with a new innovation. This process includes information gathering, scanning, analyzing and taking decisions. According to the OECD Policy Briefs, 2005 [8], building a community of e-learning adopters within and across institutions is clearly crucial for further e-learning developments. Consequently, when tackled with new innovation, e-Learning adaption in higher education institutions (HEIs) can be achieved by applying adoption/diffusion theories [5].

### 3.2 E-Learning Strategic Planning

The objective of e-Learning strategy plan is to translate the e-Learning needs analysis into a strategic action plan, it should align with institutional plans and identify institutional, instructional, and assessment solutions. The proposed adopting-based steps and procedures for e-Learning strategic planning consist of the following [8] [9] [10] [11] [12]:

#### Pre-Planning steps:

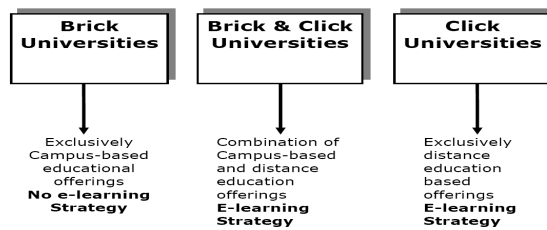
1. Designate the committee members (Planning team);
2. Consider any facilitators;
3. Assign the educational technology (Pedagogy-Technology) committee to including information and communication technology (ICT) and academic affairs;
4. Match planning tasks with institutional culture (workshops, meetings, etc.);
5. Study the internal e-Learning environment;
6. Study the external environment (e-Learning, technology, globalization aspects, competitors, etc.);
7. You are advised to make the gap analysis;
8. State the institutional situation (the initial state).

#### Plan components

- a. E-Learning mission statement: the mission statement is a declaration of institutional purpose. All mission statements should be read as if they opened with the phrase; **It is our mission (purpose) to;**
- b. E-Learning vision statement: an institutional vision statement is a shared mental image of a desired future – what the University wants to be. Vision statements deal with the future. The reality of a vision does not exist and it may never exist as first imagined. A vision is a creative leap of faith that transcends, but does not ignore, facts. When reading vision statements assume they start with the phrase, **this university will be;**
- c. E-Learning opportunities, E-Learning threats, Institutional strengths, Institutional challenges and E-Learning goals and objectives.

### 3.3 E-Learning Strategic Formulation

For surviving with changing demand, new student markets and competition, higher education institutions have to formulate strategies for integrating e-Learning in their educational delivery and support processes. One of the tools for strategy formulation is scenario planning. One of the many approaches used for higher education strategies is illustrated in the following figure [8] [9] [10] [11] [12]:



**Figure 1:** Approaches used for Higher Education Strategies.

#### 4. Adapting phase

Adapting phase is the process of conducting the e-Learning implementation plan (e-Learning action plan) by adapting and aligning the technology, management, academics, faculties, students, and applicants, and society and culture matters with e-Learning strategy plan. To create a harmonious and compatible environment and to ensure greater success and minimize costs and efforts, e-Learning strategy plan must be aligned with institution's other strategies and stakeholders and all institution's divisions and elements. Furthermore, adaptability must also be accompanied with both the performance and quality of learning and services. E-Learning is associated with stresses and pressures to both instructors and learners, since e-Learning changes the way instructors teach, facilitators facilitate, supervisors supervise, management manage, and learners learn. Hence, e-Learning will create change. Change degree varies from higher education institution (HEI) to another depending on culture, technology literacy, motivation, confidence, and other factors. So, it is expected that institution will face some resistance during e-Learning implementation. Cultural resistance is the greatest obstacle to e-Learning [13] [14]. Championing and Communicating are two key strategies that can help dealing with push-back [15] [16].

Academic staff must be able to employ e-Learning to enhance the quality and efficiency of their teaching practice. Both academic staff and faculty members must be provided with the appropriate training and needed development. Staff development requires addressing needs and building skills. Showing how to use technology to aid the teaching and learning process is the most common form of training given to academic staff when teaching with new technology, rather than how the technology can be used [17]. According to Salmon (2000) [18], online teaching and learning changes the way required for academics and lecturers to teach. Hence, Salmon (2000) suggested that the process should concentrate on the use of technology rather than on the role of the online teacher.

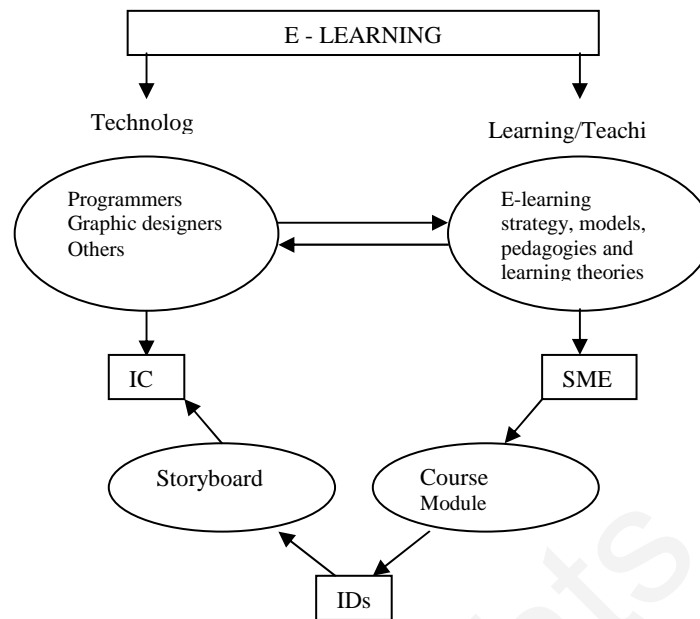
#### 5. Applying phase

Applying phase is the institution's e-Learning maturity stage that complements both previous stages. Applying phase is about e-Learning process itself, which consists of the following domains: Content, Technology and Human resource orientation (readiness)

##### 5.1 E-Learning Content (e-Content)

E-content combines the course content and technology for the purpose of creating high quality learning/teaching materials. Most objectives and characteristics of using technology to maximize e-Learning process could be achieved through well-designed e-content. Furthermore, the quality of design and implementation of the content to be

delivered are the best practice effectiveness for e-Learning [19]. The figure below depicts the full e-Learning content developing process and the key players in the development lifecycle. As figure shows, e-Learning and skilled people act as gap bridging between learning/teaching and ICT technology.



**Figure 2:** Functions in E-learning Environment

## 5.2 E-Learning Technologies

E-Learning technologies aim to create, manage, and deliver e-Learning processes. E-Learning technologies can be classified into three categories: Platforms, Tools, and Services [20] [21][22].

**Service-Oriented Architecture (SOA) and Web Services,** Service-oriented architecture (SOA) is an application architecture where all functions are defined as independent services with well-defined invocable interfaces [23]. These services communicate with each other, and the communication can involve either simple data passing or more services coordinating some activity [23]. Hence, SOA overcomes the problem of integration and interoperability across multiple technologies [23]. E-Learning benefits from this trend of computing because integration, reusability and interoperability are important and primary requirements for e-Learning. SOA uses different ways and new techniques in delivering and sharing the content. This requires that the organizations of e-Learning standards to consider the impact of standards changes on the delivering techniques. Web 2.0 service is another E-Learning service technology that transfers the World Wide Web from a collection of websites to a full-fledged computing platform serving web application to end users. In this technology, e-Learning supports the creation of ad-hoc learning communities by taking small and loosely joined pieces to combine the use of discrete but

complementary tools and web services - such as blogs, wikis, and other social software [Wenger] [23].

### 5.3 Human Resource Orientation (Readiness)

Human resources readiness is the preparation process for both teachers and learners. To make them ready, institution has to offer them the required training and support.

#### Readiness of teachers

According to the study conducted by Yun and Murad (2006) [24], there are seven factors that influence the teachers' e-Learning readiness which are: Psychological, technological facilities, technical skills, management, course contents, environmental and financial [24]. Furthermore, the readiness of teachers for the acceptance of new practices depends on three factors: the awareness of teachers, collaboration and refocusing [24]. Thus, to achieve readiness of teachers, the training planning team should consider the following issues:

- There should be a strategic plan for training and support
- Sharing ideas planning
- Psychological factors of teachers must be addressed
- Teachers understanding of pedagogies and e-Learning trends before the technical and technological facilities.
- Adopting system for supporting incentives

#### Readiness of learners

To produce the best return on investment, the learners are to be trained to most effectively use the e-Learning solution [24]. Kaminski (2001) identified three dimensions to assess the readiness of learners for e-Learning: the learners' technical skills, learning skills and time management behaviors [25].

- *Technical skills*: the ability of learners to effectively use and access the computer and Internet.
- *Learning skills*: this includes learners' self-motivation and positive attitude about the learning experience.
- *Time management skills*: this obviously requires a respectable level of long term commitment in order to complete the course.

A positive feeling toward the use of technology as a delivery system for learning plays a central factor in technical readiness of learners.

## 6. CONCLUSIONS AND FUTURE WORKS

In spite of the existing software engineering methodologies, there was a need for a new methodology for e-Learning field. The reason is that such software methodologies mainly focus on software itself, but not on the whole context: interactions, relationships, social factors, culture, regulations, management, learning theories and pedagogies. The proposed methodology phases form an innovative and easy-to-follow, especially when dealing with most issues and aspects of the whole process. It is also considered to be a comprehensive and procedural (Task-to-Task) e-Learning methodology, especially in higher education sector. Finally, for the purpose of completing this research effort, there is a need for more

research to parallelize the three proposed e-Learning methodology phases. Furthermore, survey should be conducted to measure the performance and effect of the proposed models and procedures on the entire e-Learning system. Moreover, more research is required to determine the relation between the concept of change management, change and technology resistance and innovation and leadership commitment on e-Learning process.

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