

## E-LEARNING ADOPTION IN HIGHER EDUCATION IN JORDAN: VISION, REALITY AND CHANGE

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### Abstract

*This paper discusses the implementation of an e-learning program at a Jordanian University (Al-Ahliyya Amman University). The program originally aimed to establish a virtual university which offers totally online courses but due to a number of reasons there had to be some changes in the implementation process. The paper discusses such changes and challenges faced by AAU in implementing its e-learning program from an IS project management point of view. Findings suggest that implementing such projects needs careful consideration of a variety of issues to ensure that the objectives are achieved. The case provides rich insights to other educational institutions wishing to implement such projects.*

*Keywords: e-learning, IS project management, developing countries, Jordan*

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## 1. INTRODUCTION

Information and Communication Technologies (ICTs) are transforming the educational experience by affecting education in many ways (O'Donoghue et al 2003). Therefore, the use of technology in the learning and teaching process is spreading widely at all levels of education both in developing and developed countries. The ease of access to education provided by ICTs makes it a viable option to provide better education to people who may have been otherwise deprived from such opportunities (Casal, 2007). For developing countries in particular, better access to education provided by e-learning constructed an important means to achieve socio-economic development and fight poverty (Khan and Williams, 2006).

E-learning refers to the use of information and communication technologies (ICTs) to enhance and/or support learning in tertiary education. Such use of technology varies from implementing tools that

facilitate information delivery to offering online degrees. The importance of e-learning for development has paved the way for starting many programs at all levels of education in a number of developing countries both at school and higher education levels. E-learning projects at universities in particular take different forms where some programs are being offered totally online while other programs are offered as 'blended learning' programs in which face to face instruction is combined with the use of ICTs to deliver courses (Bliuc et al, 2007). However, experience shows that implementing e-learning programs is still facing a number of problems such as performance levels, student's level of IT skills, cost and IT access especially in developing countries, questioning the benefits gained by students, role of lecturers, information ownership, availability of resources (technology and information), social inequalities and the actual benefits of accessing education online (O'Donoghue et al 2003).

Recent literature in this area has discussed a number of issues related to e-learning. For example, indications of a bias show in student evaluation of teaching against online instruction compared to face-to-face instruction (Kelly et al., 2007). Other studies discussed issues that are important for student satisfaction within online instruction such as: interaction among students, quality and timely interaction between students and professors, consistent course design across courses, technical support availability, flexibility of online courses (Rovai et al., 2006), in addition to providing support for lecturers in implementing computer-supported learning strategies within their classes (Koubek and Jandle, 2000), and extending the evaluation of learners' views on blended learning and its implementation process by developing and validating an objective assessment instrument (Akkoyunlu and Yilmaz-Soylu, 2008).

This paper discusses the implementation of an e-learning project at Al-Ahliyya Amman University (AAU) in Jordan. At this stage we are not attempting to evaluate the outcomes of this program as it is in its early stage, rather, we focus on the *process* by which it is being implemented from a project management point of view. The paper follows the case study approach which is argued to be the suitable approach if the questions being answered are how and why questions (Orlikowski and Baroudi, 1991). This case study can be classified as an 'interpretive case study', the purpose of which is not to tell the 'truth', but to tell a story which consists of the researcher's thoughts and ideas concerning the phenomenon in question (Walsham, 2001). In this paper our aim is to analyze this e-learning project in terms of its phases, the challenges facing its implementation and the changes that had to be managed so far.

Data collection for case studies may come from a number of sources such as documents, archival records, interviews, and participants observation (Yin, 2003). Our data for this paper was collected by conducting semi-structured interviews with some of the people involved in the project including the president of the University, the former project coordinator, the current project manager and a member of the Accreditation Committee at the Jordanian Ministry of Higher Education (MoHE). In each interview one or two of the researchers were present and notes were taken, which were immediately discussed and summarized afterwards. In addition, co-authors of the paper are involved in the project in different capacities. One is currently the project coordinator from the AAU side, the other has been involved in online course development since the start of the project and two others are members of the e-Learning Higher Committee at AAU. Data collection took place in January / February 2009.

One of the constraints associated with case studies is the difficulty in generalizing the results when using this methodology. Nonetheless, Walsham (1995) argues that there are four types of generalization from interpretive case studies, the development of concepts, the generation of theory, the drawing of specific implications and the contribution of rich insights. It could be argued that generalization in our case may be in drawing implications and contributions of insights that are useful for the e-learning project at AAU in the future. Furthermore, other universities wishing to implement e-learning programs in developing countries which may benefit from the experience of AAU.

The paper is structured as follows: it starts by presenting the theoretical framework that will be used as a lens to analyze the case. Then the paper presents the case study of this research and analyses a

number of related issues. Afterwards, the case is discussed in relation to the theoretical framework used before. Finally it presents the main conclusions of the paper.

## 2. THEORETICAL FRAMEWORK – PROJECT MANAGEMENT PHASES

A project is a unique, complex, one time effort, with specified limitations (time, budget, resources and performance) designed to meet organizational goals or customer needs. Project management is concerned with providing project managers with new tools that improve their ability to plan, implement and manage activities to accomplish specific organizational objectives (Meredith and Mantel, 2006; Gray and Larson, 2008).

A project is normally divided into a series of phases or stages (called the project life cycle), which could be conducted sequentially or in parallel (Cadle and Yeates, 2008). Each phase has integrated activities and tasks associated with it and has specific objectives which have to be completed or achieved within specific constraints (limitations) such as: project duration (time: each project has to have a start and an end), project budget (resources: project has a limited resources e.g. money, people, and material...etc.), and project quality (certain project specifications) (Meredith and Mantel, 2006; Gray and Larson, 2008).

The project lifecycle can be a useful tool for project managers as it provides guidelines for monitoring and controlling projects. There are a number of different lifecycle models in project management literature, most have four or five phases, but some have nine phases or more (Duncan, 1995). For example, some may identify four phases: definition, design, code, integration (Cervone, 2007; Korpi and Ala-Risku, 2008; McBride, et. al., 2007) or defining, planning, executing, delivering; while others separated project life cycle into initiation, planning, executing and delivering.

In our framework we use the five-phase lifecycle model which is shown in figure 1 and discussed briefly below (Meredith and Mantel, 2006; Gray and Larson, 2008).

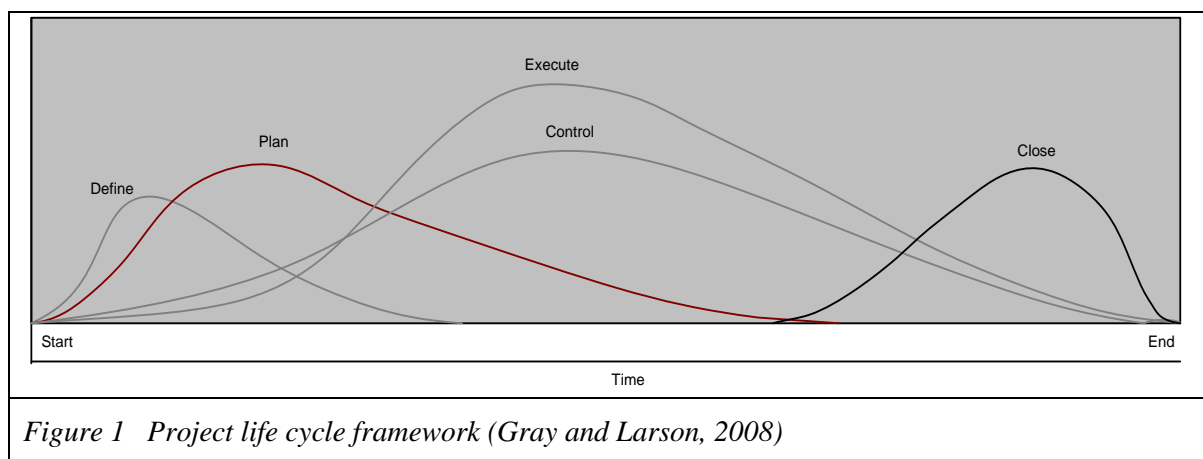


Figure 1 Project life cycle framework (Gray and Larson, 2008)

- Define phase: This is the phase of the project where the project is evaluated, selected, and defined. The first phase is about identifying project vision, mission and goals; project specifications; expectations and the scope of the project. It also includes establishing project initiation team; initiation plan; management procedures; project management environment; and developing project charter.
- Plan phase: In this phase, the project concept is verified and developed into a workable plan in order to start implementation. Also, certain management activities are carried out to ensure that the project is established with clear reference terms and substantial management structure. This phase includes many sub-phases/activities such as: describing project scope, alternatives, and feasibility; dividing project into manageable tasks; estimating resources and creating a

resource plan; developing a preliminary schedule; developing a communication plan; determining project standards; identifying and assessing project risks; creating a preliminary budget; developing project scope statement; and setting the baseline plan.

- Execute phase: During this phase the implementation plan is carried out. This phase includes many sub-phases/activities such as: executing the baseline plan; developing the project team's skills, monitoring project progress against the baseline project plan; managing changes to the baseline project plan; communicating project status.
- Control phase: within this phase the manager applies monitoring, controlling, and auditing processes of the project. One of the most important activities of the project manager is to monitor the implementation of the project against the baseline plan. In the case of deviation the controlling phase should start and the project manager should give an instruction for the project team in order to pull back the project to the master plan. After the project team applies the instruction to correct or avoid the deviation in the project, the project manager should audit or review the effectiveness of the instruction s/he gave and check if the project is running according to the baseline plan.
- Close/Closure: The focus of this phase is to bring the project to a successful end, where the project process is completed and documented and the responsibility moved from the developers to owners and users. Many activities must be conducted through this phase, such as: closing down project and conducting a postproject review.

### 3. CHANGE MANAGEMENT AND IS PROJECTS

An information system/technology (IS/IT) project has unique attributes that give such projects a different nature from other projects. IS/IT projects can differ in terms of project size, project complexity, ambiguity in project requirements, products produced, environment, resource requirements, skills of project team, the cost and benefits sides of the project which usually include many intangible and unexpected costs and benefits, in addition to the rapid change in the technology used within these projects which brings more ambiguity and uncertainty in the project outcomes, consequently, IS/IT project managers need to consider different factors due to the unique environment of these projects (Berlin et al., 2009; Sauer and Reich, 2009).

Due to the above factors, change in IS/IT projects is a normal and complex organizational concept. It is argued that no matter how carefully the project is defined through the initiation phase, the scope of most projects is subject to considerable uncertainty and change (Linderoth and Pellegrino, 2005). Furthermore, even if the project is well-planned by the project manager and team for implementation; it is almost certain to be changed before its completion. These changes may result in changing business processes and procedures, creating new roles and responsibilities leading to organizational restructuring, and needing new equipment, human resources, or new skills (Garies and Huemann, 2008).

There are many basic causes for change in projects such as: project team characteristics (e.g. awareness, qualifications and commitment), rules and regulations, and technological uncertainty. Some changes occur because mistakes were made in the initial assessment as to how to achieve given goals, or in choosing a clear vision and goals for the project (Steffens et al., 2007). Technological change is a fundamental factor for uncertainty or project risks. Other changes result because the users or project team's lack of awareness, qualifications and commitment to the project, in addition to the high turnover level of. Many of these changes involve people, who are the key to the successful implementation of any IS/IT projects. Therefore, managing change is primarily about dealing with people issues and involving them at every stage of the project (Arkinson et al., 2006).

### 4. AL-AHLYIYA AMMAN UNIVERSITY (AAU): E-LEARNING PROJECT

Before presenting the case study of this paper, it is useful to identify the context within which it is placed – Jordan. The use of ICTs for development has been advocated by a number of development

agencies as a means for achieve socio-economic development. Jordan is a developing country with limited natural resources, a fact that has led the country to depend heavily on its human resources. This has encouraged the Jordanian government to implement a number of ICT-led development initiatives since the succession of King Abdullah II to the throne in 1999 (see Al-Jaghoub and Westrup, 2003). Furthermore, to achieve excellence as qualified human resources who are able to compensate for the lack of natural resources, Jordanians have been oriented towards education. This has resulted in high literacy rates in the country (adult literacy rate has been 91.1% in 2007/2008 (UNDP, 2008)). University education is also very important in Jordan, where people tend to consider it as a must. This has resulted in establishing a number of public and private universities to meet the educational needs within Jordan and the region. The use of ICTs as a catalyst for development coupled with the importance of education for Jordanians has led to the start of a number of e-learning initiatives both at school and university levels.

The e-learning project at Al-Ahliyya Amman University (AAU) is placed within this context in which ICTs are becoming seen as an important means for change and development to eventually transform the country into a knowledge-based economy. AAU was the first private university to be established in Jordan in 1989/1990, and it has been pioneering in providing private higher education to students in Jordan and in the region. In 2006 AAU started implementing its e-learning project, the vision of which is expressed by the President of the University. He has been the champion for this project since its beginning:

*"Our vision for the e-learning project is to build a 'virtual university' which is able to export AAU degrees to other countries, students of which have difficulties in joining the university physically. This stems from the AAU vision of becoming a leading university in the Middle East" President -AAU*

The main aims of the e-learning program are to offer online academic degrees, provide certificates in some specializations, offer distance learning to other countries and therefore access new markets, enable cooperation with other universities that AAU already has agreements with (such as those in Bahrain and Oman), capture and share know-how for AAU staff, enhance the educational process in general by supporting both faculty and students, and serve the local community by providing life long learning opportunities.

Different forms of E-learning have been implemented at Jordanian universities but for AAU the aim of the program is to develop courses that are "made at AAU" from scratch and offer these courses to students online:

*"We have looked at the experience of other universities in Jordan. Some of them are using learning management systems such as Blackboard in their e-learning programs, while others are recording lectures and broadcasting them online. For us at AAU what makes our program unique is that our aim is to develop our courses from scratch and offer them totally online" E-learning Project Manager – AAU*

To implement its e-learning project, AAU signed an agreement with a specialized company (we will call it ABC) to oversee the project in partnership with the University. According to the agreement, the company will train AAU staff, provide the required technology, and supervise the development of a number of online courses by AAU staff. ABC will work onsite for three years and then offsite for two more years. After this period *knowledge transfer* from ABC to AAU staff should be completed and this will enable AAU to takeover its e-learning project completely. Originally, a project manager from the company's side was appointed especially for AAU's e-learning project, and at the same time a coordinator for the e-learning project at the University was in charge for the project. Later on, the University appointed a project manager from its side also to supervise the implementation of the project.

A very important part of the project for AAU was the establishment of the E-Learning Centre of Excellence at the University which hosts the most recent technology. It aims to facilitate offering ICT enabled education, developing online courses, and in general providing the community with services.

To develop and implement its e-learning program, AAU in coordination with ABC started training the staff, signing agreements for acquiring the technology and developing courses that were planned to be taught totally online. However, as with any other IS/IT project, the e-learning project had to go through many changes caused by a number of factors within and outside AAU. As a result of the changes that had to be managed and challenges faced, the project is currently different in a number of aspects from its original plan although the vision of the "virtual university" remains unchanged. In the following section we discuss the main issues that AAU faced in implementing its e-learning project.

## 5. DISCUSSION

The original plan has been to offer online courses developed by AAU staff, which will lead to offering online degrees and ultimately achieve the vision of the 'virtual university'. Among Jordanian universities, AAU is argued to have been the first university to follow such a methodology and according to the people interviewed, this is what made the project more challenging. Therefore, for a number of reasons there have been many changes within the project and such changes had to be managed so that the project could be continued. In this section we will discuss a number of these changes, the challenges that have been faced and consequently discuss these issues in relation to the theoretical framework.

First, higher education in Jordan is subject to the laws and regulations of the Ministry of Higher Education (MoHE) and according to these laws, offering online degrees is still not permitted as a certain percentage of any course has to be face to face. Therefore, the implementation of the original vision of "the virtual university" is still not possible. The second issue that proved to be problematic is the development of a fully online course from scratch as this proved to be difficult, time consuming, and lacks some aspects such as the required interactivity between students and instructors. These problems have resulted in making changes to the development methodology for the courses themselves, which has led AAU to adopt a new methodology for developing its courses using Moodle<sup>1</sup>. The aims of this new methodology (called Rapid Development Methodology) are to shorten development time, provide better interactivity, enhance collaborative learning, and meet the requirements of the MoHE in terms of blending face to face and online learning especially that blending online with face to face teaching is argued to be the most successful approach for e-learning (Georgina and Olson, 2008). However, in parallel with using Moodle, the original methodology of developing online courses is still ongoing.

Technological uncertainty is the third issue. The technology for the project had to be changed for two main reasons: the first is the time gap between signing the agreement and the actual implementation time which made it necessary to reconsider the specifications. The second reason is that the original specifications for the IT infrastructure (including bandwidth, servers, storage, clustering systems) were seen to be insufficient. As a result, new technology was agreed upon without extra cost on AAU after a negotiation and conflict management process with ABC. The new technology infrastructure was with better specifications and the change in technology proved to be a positive change in the project.

Fourthly, the availability and sustainability of human resources involved in the project have been a major challenge and resulted in many changes within the project team, which has also been reflected on the implementation of the project. Generally speaking, the sustainability of qualified human resources has always been an issue for Jordanian organizations because qualified resources tend to find better opportunities especially outside Jordan, which makes it difficult for Jordanian organizations to compete. In the case of the e-learning project, this applies to academics, technical staff and the project team. The project manager from the company side has changed more than once (for various reasons), the academics involved in developing the courses also changed partially because many of them received offers elsewhere or for other reasons. Changing the project manager resulted in

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<sup>1</sup> Moodle is a free and open source e-learning software platform, also known as a Course Management System, Learning Management System, or Virtual Learning Environment.

changing how the project was implemented, the development methodology by which the courses were developed and the process by which the project continued. The turnover in the academic staff developing the courses meant losing valuable resources spent on training, having to train new people and facing all the related issues again.

The project also faced a number of challenges that have also affected its implementation. One of the major challenges is the culture related to e-learning among faculty members and students. For some faculty members, it was difficult to change the way they were teaching for many years, as e-learning is a new trend that requires new teaching cultures (Uhomoihi, 2006) and for some students changing the way they were taught was also difficult, which has also been the case for students elsewhere (O'Donoghue et al., 2003). To overcome the cultural issues, extensive training is needed but the problem is that training is costly, time consuming and of course sustaining the qualified faculty members is another problematic issue, which was discussed earlier. Furthermore, appointing a qualified project manager who is able to translate the vision of the e-learning project into a workable plan has proven to be difficult. From the company's side, three managers were changed in a short period of time, which meant that each project manager comes with a different vision, a different plan of action and a different management style and this of course creates confusion and uncertainty. For example, when the blended learning methodology was adopted, the project manager did not actually set a clear definition of what blended learning is.

Furthermore, the project vision of ABC seems to have been different from that of AAU. As mentioned earlier, for AAU the vision is to establish a virtual university while for ABC the vision is basically to improve the educational process. This difference in the vision has also contributed to the uncertainty and to the difficulty in translating the strategy of the e-learning project into a plan of action and actually implementing such a plan as scheduled.

*"An e-learning project is a special case and it is different from any other IS project because of the involvement of the human factor and the differences between disciplines" Former e-learning project coordinator – AAU*

The above quote summarizes two major issues, the first is the human factor which was discussed earlier and the second is the differences between disciplines. One of the problems that the company does not seem to have taken into account is that each faculty within the University has its own special circumstances (for example, developing courses for Graphic Design proved to be more difficult and challenging than those for IT or Business because of the practical nature of such courses), which means that developing some courses did not proceed as planned.

Reflecting on our theoretical framework of the project management phases and analyzing the changes that took place during each phase so far we can see that for the **defining phase** all the details for starting the project were established, including its vision, aims, team and signing the necessary agreements. However, because of the changes and challenges faced such as the MoHE regulations and the difficulties in implementing the original development methodology, some of the aims had to be changed (for example using the blended learning methodology in addition to original methodology of the completely online courses). In addition, some details of the original agreement with ABC regarding the required infrastructure had to be re-negotiated and new specifications were set.

As for the **planning phase**, the project managers, especially those from ABC's side who were responsible for setting the plans for the project, faced a major challenge in translating the strategy and vision for AAU's e-learning project into an actual plan. The change in project managers also had its effect because each project manager had his/her own vision and view on how to implement the project. This was reflected on the implantation strategies and methodologies used for course development. Another example of challenges faced in project planning was related to scheduling the time needed to develop each course. As mentioned earlier, AAU was unique in its course development methodology which as the President puts it "*courses made in AAU*". Such courses needed more time than was actually estimated because the material for each course had to be developed from scratch, then translated into an online course using graphics, animation, and voice. The online course had then

to be approved and its quality checked by the faculty members and being offered online. In addition, differences between disciplines needed to be considered during course development which proved to be a problematic issue. In short, time estimation, activity planning and time management for the faculty members who already have their teaching and research responsibilities proved to be a challenging issue and a number of aspects had to be re-planned to accommodate these difficulties.

The above issues related to planning and project definition were reflected on the **execution phase**. The new methodology which uses Moodle was introduced as a change management strategy and as a way to face the delays in the original course development methodology. Further, a very important issue during the execution phase is related to developing the project team skills. The faculty members responsible for course development were offered a number of training courses that are both related to pedagogy and online course development techniques but the main problems in developing the project team skills were related to the high turnover and culture which were discussed earlier.

The **control phase** actually runs through the project lifecycle because any deviation or change needs to be dealt with during any stage based on the project manager's monitoring of the project. This is reflected in the changes that were discussed in the above phases. The change in objectives, technological requirements, and methodology are examples of issues that arized for various reasons and had to be dealt with in a variety of ways to control how the project was implemented.

As for the **closure phase**, the project is not there yet as it is still an ongoing project for AAU. The objectives of AAU's e-learning project still need to be realized before an actual assessment of outcomes is possible.

## 6. CONCLUSION

The case of the e-learning project at AAU illustrates a number of issues that are related to implementing information systems projects in general and e-learning projects in particular. In addition, it is an example of implementing an e-learning project in a developing country which aims to be transformed into a knowledge-based economy using ICTs as a means to achieve such a transformation.

For such a project, change and managing this change has been a major issue, where a number of aspects had to be re-considered as a result of challenges faced during the various phases of the project. Managing change is an ongoing activity for any project, let alone a project that is being implemented in a volatile environment, in which the human factor plays a key role. An e-learning project may be seen to differ from any other IS project because of the heavy dependence on the human factor represented by the faculty members developing the courses and the students. The high turnover of faculty members is a challenge that is still being faced in spite of the incentives offered to the staff developing courses. Furthermore, such an experience is relatively new, especially that AAU chose to follow the methodology of developing courses from scratch which are to be offered totally online, a choice that proved to be more challenging than using other methodologies used later on in parallel to help in achieving some deliverables for the project. The change management process and its control requires effort, resources and even courage from the side of the people overseeing the project to admit that change is necessary and actually take measures to implement the necessary measures which seems to be inevitable if the project is to keep running until its objectives are realized.

What about the future? For AAU the project is still ongoing and the vision is still to establish a 'virtual university' despite the challenges. There is an agreement among the people interviewed that "real e-learning" for AAU is the first methodology of developing online courses and offer online degrees but with some enhancements using the tools provided by Moodle. The establishment of the E-learning Centre of Excellence in itself creates an entity that is responsible not only for the implementation of the project but also offers opportunities for training, consulting, and development of other projects in the future. The experience of AAU in this area is very useful as a case for the university itself as it offers a number of valuable lessons in managing this project and in starting other IS/IT related projects



in the future. Furthermore, it is useful for other higher education institutions in developing countries as it provides rich insights. The issue of e-learning itself is still problematic in terms of its definition and consequently the methods of implementation. Before starting an e-learning program, any institution needs to have a clear vision of what its aims are and the risks and challenges involved. In addition, human resources, their culture and the ability to sustain these resources once they acquire the necessary know-how are major issues that need careful consideration. Moreover, many constraints related to higher education laws and regulations within each country need to be considered carefully because of the special nature of the educational process. Adding to the above issues is the risk inherent in IS/IT projects.

For us, the aim of this paper has been to shed some light on issues related to e-learning, education, ICTs and project management that have been apparent in the implementation of the e-learning project at AAU. Such crucial issues still need further research especially in developing countries where valuable resources are being invested in ICT related projects given that education in particular for these countries, as it is in Jordan, is one of the most important areas that provide the country with its major resource – qualified human resources.

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