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البريطانية في  
دبي



The  
British University  
*in Dubai*

# BLACKBOARD-USER TRAINING FRAMEWORK

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In light of Training as a Change management tool for  
Higher Educational Institutions in the U.A.E

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*This work is dedicated to my parents Rekha Gautam Narwani and Gautam Narwani and  
my sister Archana Gautam Narwani.*

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## Abstract

The increasing presence of web-based educational technologies is continually pressing demands on UAE-based teaching-learning environments. Among other consequences, higher educational institutions are increasingly adopting technology for teaching such as learning management systems (LMS), most commonly the Blackboard learning system, in turn triggering changes on academic and non-academic levels.

The rapid penetration of learning management systems as facilitators of knowledge management in the UAE-based Higher education space is inherently calling on user training as a tool for change management; and this occurs in a vacuum of a related body of knowledge. The purpose of this study is to develop a pragmatic framework to facilitate the process of devising Blackboard User Trainings, tailored to UAE based Higher Education Institutions to facilitate ICT triggered change management.

Through extensive research, of literature expressing concepts, factors, drivers and approaches related to context, ICT and Training, their influence on Higher education systems, Change management and the Blackboard Learning System, the base for the framework delivered by this study is obtained. The author of this study published a paper in the context of this work, at the EIAE 07 conference Spring book and also for the BBSummit Middleeast 07. Following the initial research, the remaining part of the study takes shape using a four-stage methodology; first on groundwork the foundation of the proposition is laid. Further, based on Subject-matter experts' feedback and an Analytical Hierarchy Process (AHP) Survey, the determinants of the training arrangement are extracted. Next, the working definition of the framework is detailed, followed by the Experimental application at the University of Sharjah in the UAE. The experimental results are analyzed using a mix of qualitative and quantitative tools.

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## Executive Summary

The increasing presence of web-based educational technologies is continually pressing demands on UAE-based teaching-learning environments. With the drive towards preparing a Knowledge-based Economy, the emirate of Dubai has been at the helm of developments related to economic diversification, within the United Arab Emirates (UAE). Studies echo the massive efforts devoted by the emirate of Dubai, towards the creation of a world-class Information Communication Technology (ICT) sector and induction of ICT driven change across all aspects including government, industries, and education, which has propagated across UAE. Among other consequences, higher educational institutions are increasingly adopting the use of learning management systems (LMS), most commonly the Blackboard learning system triggering changes on academic and non-academic levels.

The rapid penetration of learning management systems as facilitators of knowledge management in the UAE-based Higher education space is inherently calling on user training as a tool for change management; and this occurs in a vacuum of a related body of knowledge. The purpose of this study is to develop a pragmatic framework to facilitate the process of devising Blackboard User Trainings, tailored to UAE based Higher Education Institutions to facilitate ICT triggered change management.

Through extensive research, of literature expressing concepts, factors, drivers and approaches related to context, ICT and Training, their influence on Higher education systems, Change management and the Blackboard Learning System, the base for the framework delivered by this study is obtained. The author of this study published a paper in the context of this work, at the EIAE 07 conference Spring book and also for the BBSummit Middleeast 07. Following the initial research, the remaining part of the study takes shape using a four-stage methodology; first on groundwork the foundation of the proposition is laid. Further, based on Subject-matter experts' feedback and an Analytical Hierarchy Process (AHP) Survey, the determinants of the training arrangement are extracted. Next, the working definition of the framework is detailed, followed by the Experimental application at the University of Sharjah in the UAE. The experimental results are analyzed using a mix of qualitative and quantitative tools.

In this study, the underlying principles of the proposed framework are drawn from the 3C-Model of learning arrangements described by Kerres and Witt (2003) and the Kirkpatrick's Training evaluation four-level model. The Blackboard-user training framework devised uses a systems approach taking in input variables, processing through three tiers of decisions and giving prescriptions for the training objectives, outcomes, arrangement and evaluation criteria.

# Chapter 1: Introduction

## *1.1 Context*

Knowledge management (KM) and Knowledge economy (KE) are terms driving institutions towards fostering continuous-learning workforce, and Information Communication Technology (ICT) is perceived as a strong facilitator for this goal. The consequential influences of this drive are considered as the K-factor in this study, which brings with it, propagative and overwhelming changes. Institutions both in Education and Commerce are rapidly recognizing the need to induce High Performance Workforce. Instilling the readiness for higher performance workforce becomes a responsibility of the function of education, which is, among other reasons, driving educational institutions to adopt ICT in the form of educational technology. The research provides evidence of a strong link between Knowledge reproduction and the intrinsic use of ICT and consequent need for training as a change management tool in the dynamic institutions.

The study is set in the context of the UAE Higher education environment, with evidence of advent of Knowledge-economy based practices and initiatives propelling the inculcation of educational technology. Led by the need of the environment, accreditation requirements include the use of a learning management system (LMS). In the UAE learning management systems (LMS), more commonly the Blackboard learning system has visibly spread across the emirates' Higher Educational bodies. There are currently over one dozen Blackboard enabled Universities.

With the increasing adoption of educational technology intended to support academic work in the Higher Educational Institutions in the UAE, there is, although ironic, an increasing demand on academic users to quickly learn and make effective use of the technology at their disposal. It is not expected for the LMS to intelligently evolve and adapt to the changing human learning needs, however, it can be desired to customize the system to adjust itself to procedures and requirements of the learning environment (Narwani – Arif 2007). Established research indicates that effective adaptation to technology is enabled by sensible change management. It is noted that training is among the key facilitators for effective change management. In this context, as a result there is a strong and growing need for effective Blackboard User-training tailored to address the change management in UAE-based Higher Education and their users, which includes students, faculty and administrators of UAE based Universities, Colleges and similar Institutions.

The approaches to generic training are multiple; however, there are characteristic elements, which go into the planning of a training oriented towards Blackboard users. The manner in which the

training is evaluated has a close relationship with the effectiveness of the training itself. There is a need for a working framework to guide the process of devising such Blackboard user trainings and its absence in the current UAE-based locale is visible.

There are numerous existing research studies related to ICT enabled change, educational technology, learning management systems as an instance, training users and its challenges, the adaptation of teaching pedagogies with the advent of instructional technology, the LMS user adoption and lack of it, however, it is not common to see tangible principles and project management strategies which may be the working reference for planning Blackboard User trainings in specific.

There is limited research published on approaches for Blackboard User-Training. The limited research, which exists, discusses the challenges and success factors for conducting Blackboard User-trainings and generally focuses on higher educational institutions outside the Middle-eastern region.

In this context, from the conceptual and theoretical research, it is evident, that there is a strong need for building a body of knowledge related to Blackboard projects and project management, encompassing implementation and training, for the UAE-based Higher educational context. Among others there is a gap due to the absence of research to address the need for a working framework to facilitate the processes underlying effective Blackboard User Trainings.

This work of research has been undertaken driven by the will to bridge this gap for provisioning of a Blackboard user-training framework, expected to facilitate the task assumed by the training planner in the context of change management in UAE-based higher educational institutions.



## *1.2 Aim of the Paper*

This work of research aims to address the need for a Blackboard User-training framework to facilitate the process of planning trainings as a tool in ICT driven change management for UAE based Higher Education Institutions.

## *1.3 Objectives of the Paper*

This work of research has the three set of objectives converging towards the fulfillment of the aim of the dissertation.

Research Study: To conduct an extensive study and provide a comprehensive understanding of concepts which would form the basis of this research work

- To conduct an extensive study and provide a comprehensive overview of existing research studies and literature related to the subject.
- To provide identify and provide substantial evidence for the need of a working framework focusing on Blackboard User-trainings for UAE-based higher educational institutions in managing change.
- To uncover substantial supporting evidence to develop the proposition and address the central purpose of the work of research, by a study of the concepts, factors and forces related to Training, Information communications technology (ICT), Change management and the Blackboard Learning System implementations in the UAE.

Proposition: To describe a framework for devising Blackboard User-Training tailored to UAE Higher education institutions, and provide guidelines for measuring its effectiveness

- To conceptualize the research study findings and the available and applied Blackboard user training approaches, with a focus on the aim of the research work.
- To outline the elements and factors, which directly or indirectly influence the training arrangement and approach; using a disciplined approach to shortlist based on fundamental elements, drawn from collection of considerable and dependable feedback from experts of the UAE-based Blackboard training environment and an AHP survey.
- Provide a definition of the framework intended by the paper and its scope

Experiment and Analysis: To validate the proposition and working framework

- Conduct an experiment by application of the framework for Blackboard User Training by application of the propositions made to a realistic setting and collect results.
- To use a combination of qualitative and quantitative tools to analyze the results of the application of the framework.
- To infer conclusive findings, success factors and limitations of the propositions underlying the Blackboard User-training framework.

### *1.3 Approach to literature review*

For the purpose of this study, the literature review takes a twofold approach – one to identify the Blackboard user-training demand in the UAE-based higher education sector and availability of sources to satisfy this need in the area of the problem; and two is to find substantial evidence to base the initiation and outcomes of the research study on.

The research study has two parallel objectives, which together form a basis for the framework delivered by this study. The research studies the influence of the spurred momentum of ICT driven change in the UAE which has been enabled by the Knowledge-based economy forces, on the paradigm shift among UAE-based higher educational space to embrace online learning technologies, such as Blackboard; the second objective is to uncover the source of needs for training. The research also studies in detail Training as a tool for change management and approaches for training users of ICT, in addition to training and evaluation theories to the end of understanding the elements for Blackboard learning system user training.

The research investigates factors, which influence or inhibit the training project and aims to bridge this gap of a working framework to facilitate the devising of Blackboard-user-trainings using a project based approach customized to the UAE-based needs of the UAE Higher education institutions.

The traditional approach to literature review is to associate the issues addressed in this study to existing research material by academics and practitioners and identify the relationships on variables of concern to the project management.

The basis of the methodology to reconcile and deduce concrete conclusions from the literature review would follow the best-evidence synthesis approach. Journal articles, Online periodicals and Texts sources form the major portion of the body of knowledge for the literature review.

The literature review is conducted with the forethought of understanding the practices and guidelines for Training in institutions as a change management tool, more commonly associated with human resource management functions, and narrowing down the dimensions of the process for the same with respect to Blackboard User-training.

### *1.4 Outline of Dissertation*

The following three chapters entail the progressive completion of the aim of this research work, through the fulfillment of the objectives.

The goal of the study is, in its deliverable form, the proposition of a framework for facilitating the planning of the Blackboard User-training in the context of UAE-based higher education institutions, referred to as "*The framework*" throughout the rest of the dissertation.

As part of the phase of the research work, the author provides submissions at the inaugural BBSummit Middleeast 2007 and the EIAE 07 conference; the paper for EIAE 07 was accepted in presented in December 2007 and the publication is awaited. The research papers submitted by the author form a strong support for the work produced in this research (Appendix II).

Chapter 2, the Literature Review, documents the *pure academic research and the conceptual research* conducted for this study. The research provides factual and theoretical information about the progressive instillation of information and communications technology (ICT) development, its relationship with the Knowledge based economy concept and its role in the need for training as a tool of change management in the UAE-based educational environment, including the drivers and consequences. This provides a strong basis for understanding the source of the requirement for IT, educational technology and in specific learning management system (LMS) skills development for academic users.

The research studies the theoretical aspects of Training and information technology user-skills-development; and scrutinizes practical training and evaluation models, with a focus on UAE-based higher educational training needs. The research uncovers the guiding principles and training project formation in the light of training as a change management tool.

The research provides substantial evidence of the need for effective Blackboard User-training tailored to address the training needs of UAE-based Higher Educational Institutions. There is limited research published on approaches for Blackboard User-Training, specifically related to the UAE based Higher-educational institutional requirements. Bridging the gap evident from the Literature review is the goal for the following chapters of the study.

Chapter 3, the Conceptualization and Framework design encompasses the first three parts of the four step *methodology including the Conceptualization and Action research, the Data Collection and Analysis using the AHP approach and the design of the proposed Working Framework based on the findings* and deductions. The Data collection step is collection of subject-matter expert feedback, research findings and an AHP Survey, which provides the basis for drawing a schema for the design of the framework.

Based on guiding principles drawn from the research and interviews conducted by the author, a *Blackboard User-Training Framework (BBU-TF)* is proposed. Using the Analytical Hierarchy Process (AHP), developed by Saaty (2005), the dimensions of the framework are deduced based upon the relative importance of each aspect based on a survey of a small sample of educational technology experts from within the U.A.E.

The BBU-TF is designed to cater to the training needs of the UAE-based Higher educational institutions user-base which includes but is not limited to the Faculty, Students and IT Administration supporting the Blackboard LMS.

Chapter 4, Application of the BBU-TF: An Experiment, involving an exercise targets the completion of the Experiment and Analysis objectives, by applying the propositions of the framework to a realistic setting and by gathering the practical inferences, is the fourth stage of the methodology employed by the study.

Using a Before and After analysis and later tools for Descriptive Statistics, the experimental results are analyzed to measure the effectiveness of the pragmatic application of the framework against the set expectations.

A mix of quantitative and qualitative analysis is applied throughout.

The Conclusion and Recommendations, Chapter 5, details the inferences, neutralizes presumptions and abstractions in order to highlight the outcomes of the research. The critical evaluation covered in the last part of Chapter 4, forms the larger basis of the Conclusions and the path for the recommendations, extensions and scope for improvement.

The statistics, surveys, interviews and specific approach outlines have been documented in the Appendices.

The dissertation uses a pragmatic approach for research, mixing the use of literature review, data collection tools such as interviews and AHP survey, conceptual and action research, proposition making and experimental analysis in a balanced manner focusing on the aim of the study.

### *1.5 Scope and Assumptions*

The research documented in this paper regards the role of Higher Education institution in Higher Education as that of a Banking Firm in Finance. The Higher Education institution is studied as an organization with employees who are objects of continuous learning. The employees of any organization, in general require some form of training in order to enhance their skills and improve productive performance at work.

The propositions of generally accepted and apparent practices which hold true for the UAE-based environment and organizational cultures, influenced by global socio-economic, technological, cultural and are directly or indirectly inherited into the Higher education institutional settings.

The framework intended, in the context of UAE Based higher educational institutions, aims to provide working principles and practical means of defining the Blackboard user-oriented Training's objectives, outcomes, training arrangement and evaluation criteria, in turn providing a tool to facilitate some design related functions of the training planning process in the related context.

The framework does not provide a list of learning materials, resources or learning content which should or should not be included in the training sessions. Developing the training material is out of the scope of this research.

The project methodology and management functions, choice and execution is assumed the responsibility of the training project managers or stakeholders and is assumed beyond the scope of the role of the framework in the process of devising the Blackboard user-training arrangement in the project.

Training in organizations is often associated with Human resource management (HRM) functions and research in this regard provides insight into training practices and approaches, however, functions including developing an organizational system, which promotes exploratory learning and facilitates knowledge transfer, retention, enrichment and growth are out of the scope of this paper.

## Chapter 2: Literature Review

Much work has been done in the past, by academics and practitioners on reconciling the fundamentals of building knowledge based economies with the role of ICT and training.

Knowledge has been at the heart of economic growth and is not a newly discovered factor to development. The thirst for knowledge has been a driver for progression from the beginning of civilization. The recognition of the role of knowledge in development has been a learning behind the naming of the Knowledge-based economy. The information age has become an outdated term with the dawn of the Knowledge Era.

"Knowledge-based economy", however, is a recently coined term. As such, its true use is meant to signify a change from the economies of earlier periods, more of a sea-change than a sharp discontinuity (David and Foray 2002).

### *2.1 The K-factor in Learning and Training: the Knowledge Management Talk*

David and Foray (2002) in their studies associate knowledge-based communities as agents of economic change. Characteristic function of knowledge-based community is knowledge-reproduction. Their studies draw that Knowledge reproduction will then occur through training, practice and simulation techniques.

International Labour organization (ILO) in 2002 appreciated the political leadership for creating and promoting initiatives towards building a knowledge based economy and the fast-growing Information Communications Technology (ICT) sector in the UAE. Knowledge-based activities emerge when people, supported by ICT, interact in concerted efforts to co-produce (i.e. create and exchange) new knowledge.

To this effect information technology tools and aids are increasingly parceled with the learning and training environments. From simple document processing, to web-based trainings to learning management and evaluation systems, the role of ICT has evolved to support the knowledge reproduction needs of communities. According to the ICT Use Index -2006, the UAE ranks the highest among the GCC countries.

The ILO is pursuant for integrating Human resource development (HRD) and training objectives as a tool for promoting the knowledge-based economy. To this end defined are several key mutually supportive objectives including education, training and life-long learning.

The impact of ILO's intentions propagates to the Middle-eastern region. In the U.A.E, specifically in Dubai, the move towards organizational training and development has been visibly felt since the 1990s, and this has gained pace with the turn of the century.

Research has been conducted imperative to identifying the human capital enrichment factors, which influence the development of knowledge economies. Research investigating relationships between Human Resource Management (HRM) and Knowledge Management (KM) is a useful reference point.

*Training: a Human resource management function or tool for Change Management*

The recognition of the high performance workforce development is a result of the awareness that Human Resource (HR) practice is an important predictor of organizational performance and organizational innovation.

Patterson et al (2006) in their paper argue that HR practices also have the potential to promote organizational innovation. Results reveal that *training*, induction, team working, appraisal and exploratory learning focus are all predictors of innovation. Contingent reward, applied in conjunction with an exploratory learning focus, is positively associated with innovation in technical systems.

Furthermore, training, appraisal and induction, combined with exploratory learning focus, explain variation between companies in product and technological innovation above and beyond the main effects observed.

A typical HR 'system' encompasses training, appraisal/ performance management and sophisticated socialization as well as practices designed to promote participation and involvement, such as teamwork and reward (Hutchinson et al., 2003)

Research in the last decade in the field of human resource management (HRM) represents a strong emphasis on the importance of HRM in organization performance.

Innovation is 'the intentional introduction and application within an organization of ideas, processes, products or procedures, new to the unit of adoption, designed to significantly benefit the organization or wider society' (West and Farr, 1990).

Innovation is regarded as a continuous, evolutionary process involving the application and re-application of existing as well as new scientific knowledge. Knowledge management has its needs deep rooted in the core of organization performance enhancement.

The advance of the development of Knowledge Economy, especially in the UAE, is inherently associated with the organization performance strategies. People are the profit lever of the knowledge economy.

Consultancy and Service companies have known this for a long time, that "their assets are their people". Gigante (2005) in his research commends that as the knowledge economy concept has evolved, the idea of looking at employees as "Human Capital" has become more and more common, and has expanded from service-driven field to all other fields. Studies by the International Labour Organization reveal the professionals in mechanical, information technology and similar engineering and scientific industries are increasingly appreciating the value in experiencing workplace learning.

Over recent years, the use of the workplace as a learning experience has been transformed. There are three main reasons for this. The first relates to the growth of the knowledge economy. The second refers to the impact of the "new economy" and information and communications technology (ICT) in improving productivity. The third and related reason is the growing use of high performance working practices (HPWPs) that are transforming the ways in which work is organized. This is being facilitated by developments in ICT.

Training is not the only route to facilitating knowledge acquisition and employee competency enhancement. Moreover, alone training cannot fully address the requirements of increasing organization performance. Studies reveal that organization performance gains value through the employment of training to generate high performance workforce and farm continuous improvement.

Knowledge engineering in an organization is not only an HRM responsibility. Organizations in the onward and upward Knowledge economies are deriving organization performance from various forms of learning and development initiatives. Continuous learning, lifelong learning, and professional development all contribute towards achieving the objectives.

The purpose for knowledge engineering and management in organizations encompasses an array of possibilities. Developing an organizational system, which promotes exploratory learning and facilitates knowledge transfer, retention, enrichment and growth are out of the scope of this paper. This paper focuses on the one, among many aspects of HRM: 'Training', which, as we derive from the above findings is intrinsic with the whole process of Knowledge engineering.



Training may be interpreted as a form of 'Knowledge Transfer', which is used to transmit and extend expert information on a specific matter to subjects who are assumed to know less about the matter than the subject-matter expert expected to train them.

Ellis describes transfer of learning as the experience or performance of one task that influences performance on some other task (Ellis 1965). In the context of this inquiry, training would lead to some subsequent task that, may for example, be carried out at the workplace. Three forms of 'transfer' were identified:

1. Positive Transfer, in which performance on one task facilitates a second task
2. Negative Transfer, in which performance of one task inhibits another
3. Zero Transfer, wherein no effect occurs or the effects effectively cancel one another

Ellis also describes the major issues associated with transfer (Ellis 1958):

- Research methodologies and measurement techniques for transfer
- Specification of transfer variables and their influence
- Development of updated conceptual models and theoretical structures
- Educational technology developments which can be applied to a greater spectrum of evolving and changing training problems and issues

As a success factor the extent and effectiveness of knowledge 'transfer' is a useful reference point to examine the results training and potential for enhancing competency levels.

Training, a possible determinant of Organizational performance, which is driven towards Knowledge engineering, is not necessarily a function of the HRM, but providing the necessary support and direction to encourage training initiatives is foresight of the HRM in organizations.

Training for organizational performance improvement takes a different meaning if the organization is a Higher educational institution.

Training is a process of updating the knowledge, developing skills, bringing about attitudinal and behavioral changes, and improving the ability of the trainee to perform his/her tasks efficiently and effectively (Palo & Padhi 2003).

Training may be triggered by the need for improving organizational performance, introduction of new technologies, need for development of new skills at any organizational level, or curiosity to gain new learning, uplifting qualifications or as part of requisites of education at the individual level.

In the path towards Knowledge based economy orientation, the UAE-based market has seen a spurge of training and support services and consultancies at both the public and organizational levels.

#### *The Promotion of ICT in the U.A.E*

There is an evident endeavor in Dubai towards building a knowledge economy. The role of the political leadership has been very strong in promoting the economic and social progress of the UAE as a whole. In their Global Information Technology Report 2002-2003, researchers for the World Economic Forum (WEF), for instance, gave the UAE a full score on the role of its leaders in creating an environment that is conducive to development of information and communication technology (ICT).

The country's goal to establish a framework for an economy encompassing a wide range of knowledge-based industries has gathered momentum due to the UAE's active participation, and adherence to, international treaties that govern the user and protection of intellectual property – the knowledge economy's primary currency (Madar 2003).

The ability to invent and innovate, that is to create new knowledge and new ideas that are then embodied in products, processes and organizations, has always served to fuel development. ICT enables this form of knowledge creation and effective manner.

The emirate of Dubai has been at the helm of developments relating to economic diversification within the UAE. The Madar research group studies echo the massive efforts devoted by Dubai to the creation of a world class ICT sector and the promotion of stronger ICT use across all aspects including government, industries, and education, within the emirate.

In the last decade, U.A.E, specially driven by initiatives of Dubai vision, has seen a boom in the ICT Sector and supporting services.

The visionary establishment of the Dubai Internet City, Dubai Media City, The Knowledge Village and the upcoming Silicon Oasis zones are all laurels to the growth of ICT in the Dubai and the U.A.E overall. The establishment of the University City of Sharjah and the Dubai Academic City are as much

as milestones as the other. The impact of the intra-Dubai initiatives has seen its way to the industrial environments of the other emirates and to the other GCC nations as well.

A study by Dr Omar Bin Sulaiman, CEO of Dubai Internet City of the Dubai Vision 2010, envisaged in year 2000, shows that among the Growth of value added industries between 1985 and 1999, the annual average growth of Knowledge Based Industries was the highest. The highlighted elements of a Knowledge Economy prescribed in his study include, Core Technological competencies and Educated Workforce, in to Intellectual property and Talent management within the environment.

Dubai Vision 2010 is: To Have a stable of world class companies with core *knowledge* based. competencies which can compete effectively globally (Sulaiman 2003).

According to the Dubai Vision 2010 master plan; envisaged in the year 2000, by His Highness Sheikh Mohammed Bin Rashid Al Maktoum; are identified three major sectors, which are believed, will play a pivotal role in the prosperity of the local economy in the future. These are tourism, IT and media - in addition to traditional industries such as trade and services, which were behind the emirate's prosperity over the past few decades.

As part of the 3-Horizon Growth Strategy of the Dubai Vision 2010, to goal to apply core competencies to new areas is meant to be achieved through the Technology enabled services including Financial, Media, Information technology (IT) and Telecommunications.

The development of the eGovernance, ebanking and eBusiness are all visible outcomes, in addition to the creation of Tejari.com, a Middle-eastern business-to-business online company. The vision upon which the E-Government was launched involves interlinking the economy with government management. Such a link is based on the fact that the modern infrastructure required for eGovernment is the same on which eCommerce is based and through which it will flourish.

According to the Dubai eGovernment, "The vision upon which the E-Government was launched involves interlinking the economy with government management. Such a link is based on the fact that the modern infrastructure required for eGovernment is the same on which eCommerce is based and through which it will flourish.

The objective of the 3<sup>rd</sup> Horizon of the Dubai Vision 2010 Growth Strategy, is to seed investment for future competencies by focusing on Research and Development (R & D), Education and Emerging Sectors.

Providers of E-Learning and integrators of e-learning, e-business and e-governments solutions are converging in Dubai. The opportunity that GITEX, the annual Gulf Information Technology Exhibition, hosted by Dubai provides is ample and deeply tapped into by e-learning solution providers.

Towards Knowledge reproduction, retention and engineering, ICT is being capitalized on as the backbone to earn effectiveness, improve efficiency, provide consistency, measure quality and reduce expense.

The technological forces being created within the Emirates, has a special influence on the local environments. The spread information technology and communications technology in the mainstream of business process is strongly linking business excellence to knowledge engineering. With the adoption of new technologies and adaptation of industrial and academic activities to engage in the use of ICT, there is an evident need for support services, including Training and a visible rise in the available modes of training at individual, organization and industry levels.

The ICT sector of the Emirates has evolved, and in this course of evolution, drawn with it the multiple facets of ICT application and Training.

## *2.2 ICT in Teaching and Learning*

### *The Role of ICT in Higher Education: Learning and Training Technologies*

#### *With a Focus on UAE-based Higher Educational Institutions in the U.A.E*

With the goal towards building Knowledge based economy supported by ICT, Higher Educational Institutions are being driven to adopt instructional technology and adapt the teaching pedagogy to the effect, by socio-economic and technological forces.

In their study David and Foray (2002) highlight the importance of Information technology as a facilitator of the change in learning, teaching and as a whole knowledge creation. Information technologies can affect knowledge creation in a number of different ways. For a start, the mere fact that one has the capacity to create such a wealth of information is truly revolutionary. They draw on the developments as an abstraction and fundamentally the codification of tacit knowledge. Yes, codification eliminates the factors of loss of knowledge owing to memory limitations, however, the codification of tacit knowledge is claimed to *partially* replace the person who holds and teaches knowledge. Codification helps form a sound basis for the creation of new 'knowledge objects'.

Donald Clark (2006) in his studies draws on Blended Learning as a positive and learner-centric approach that is more sensitive to the real needs of both learner and the context in which learning has to take place.

Clark examines the established beliefs and practices models and uncovers some key components to the design of blended learning programmes. The components include, but are not limited to Media and Content, Online Collaborative Learning, Online Knowledge Management, Coaching and E-coaching.

A study by Harrison (2006) extends into practice and the fundamentals laid by Clark on Blended learning. His examination derives a Blend Matrix from the analysis of Content Analysis, Target Audience analysis and Organizational requirements and constraints.

Several academic and practitioners have expressed research into the converging area of knowledge management and project management, in management-oriented literature. Chase 1997 puts forward "in its simplest form, knowledge management is about encouraging people to share knowledge and ideas to create value-adding products and services".

According to Soderlund and Bredin the application project-based structures in organizations in intensifying. Project work holds particular importance for both mature and growth industries in which firms are knowledge-intensive, and project based (Soderlund & Bredin 2006).

Knowledge management is seen as a metaphorical perspective on management where the managerial focus depends on the epistemological standpoint taken. An identification of three epistemological perspectives accommodates the main body of literature on knowledge management: an artifact oriented epistemology that focuses on explicit knowledge, a process oriented epistemology focusing on both tacit and explicit knowledge and the interaction of these types of knowledge and an antipoetic epistemology where knowledge basically always has a tacit dimension (Skowang et. al 2003)

Leseure and Brookes (2004) ran a study to identify knowledge management benchmarks for project management. It is interesting to note from their findings a key distinction made between generic project knowledge (kernel knowledge) and specific project knowledge (ephemeral knowledge). The empirical data used in this paper was collected from companies of various sizes operating in the manufacturing, construction and service sectors.

Knowledge management and K-economy are terms driving institutions towards facilitating continuous-learning workforce and ICT is perceived as a strong facilitator for the goal. Institutions

both in Education and Commerce are rapidly recognizing the need to induce High Performance Workforce. Instilling the readiness for higher performance workforce becomes a responsibility of the function of education, which is driving educational institutions to adopt ICT, in many forms of educational technology.

Economic, social and technological forces are pressing demands on UAE-based educational institutions and calling for sophisticated yet flexible electronic learning management systems to cater to the ever-changing learning needs.

With the ever-growing emphasis on Knowledge, Intelligence and management of Intellect, there is a growing pressure on the UAE-based educational system to provide sustainability and preparedness in the generation for the future evolution of competent development.

An example is the ongoing achievement of the Dubai Vision 2010 and the endeavored Dubai Strategic Plan 2007 to 2015, for the emirate of Dubai puts increasing demands on the supporting system.

The U.A.E saw the establishment of the International Computer Driving License (ICDL) in 2003.

According to Dr. Khalifa Mohammed Ahmed, Chairman, Dubai Ruler's Court (AMEInfo 2003 Press release), 'In a drive to make Dubai a Knowledge-based economy and the region's digital hub, Dubai Government is sparing no effort to ensure that government and citizens are conversant with deploying eServices in all spheres of life. The two new programs 'eCitizen' and 'eEmployee' are in line with the directives to Government Departments to enhance public services through the delivery of eServices of which ICDL certification is a part'.

Instilling the readiness for higher performance workforce becomes a responsibility of the function of education, which is driving educational institutions to adopt ICT, in many forms of educational technology.

ICT supports each component of the Knowledge Economy concept. The information age phased into what we have today as a Knowledge led age.

The Use of IT helps reduce the costs of Knowledge reproduction.

Armed with continuously improved educational technology, teaching ought to change from the traditional teacher-centered, lecture-based instruction to a student-centered, computer-based instruction and to achieve this end, successful technology-supported teacher education programmes should be designed and implemented (recommended by UNESCO 2002) (Kadijevich).

The recognition and growing awareness of educational technology usage has been supported by formal standards development, like Educational Technology (ET) standards developed by International Society for Technology in Education (ISTE).

*Educational Technology and its peripherals*

From the International Technology Education Association (ITEA) Terms, Educational Technology is using multimedia technologies or audio-visual aids as a tool for enhancing the teaching and learning process. By this definition the term educational technology is not all about Information Technology.

A systems view Educational Technology describes learning development and management processes used for designing and evaluating instruction (Banathy, 1996). From the AECT Definition Committee (1972), "Educational Technology is a field involved in the facilitation of human learning through the systematic identification, development, organization, and utilization of learning resources and through the management of these processes" (AECT 1972).

To structure the discussion of technologies, it is helpful to classify the technologies by reference to the notions of tacit and explicit knowledge.

Table 2.2.i Examples of technologies that can support or enhance the transformation of knowledge (Marwick 2001)	
Tacit to Tacit	Tacit to Explicit
E-meetings	Answering questions
Synchronous collaboration (chat)	Annotation
Explicit to Tacit	Explicit to Explicit
Visualization	Text search
Browsable video/audio of presentations	Document categorization

The most typical way in which tacit knowledge is built and shared is in face-to-face meetings and shared experiences, often informal, in which information technology (IT) plays a minimal role.

However, an increasing proportion of meetings and other interpersonal interactions use on-line tools known as groupware.

A richer kind of shared experience can be provided by applications that support real-time on-line meetings—a more recent category of groupware. On-line meetings can include video and text-based conferencing, as well as synchronous communication and chat. Text-based chat is believed to be capable of supporting a group of people in knowledge sharing in a conversational mode

According to Nonaka, the conversion of tacit to explicit knowledge (externalization) involves forming a shared mental model, then articulating through dialog. Collaboration systems and other groupware (for example, specialized brainstorming applications) can support this kind of interaction to some extent.

On-line discussion databases are another potential tool to capture tacit knowledge and to apply it to immediate problems. We have already noted that team members may share knowledge in groupware applications. To be most effective for externalization, the discussion should be such as to allow the formulation and sharing of metaphors and analogies, which probably requires a fairly informal and even freewheeling style. This style is more likely to be found in chat and other real-time interactions within teams.

Capturing knowledge: Once tacit knowledge has been conceptualized and articulated, thus converting it to explicit knowledge, capturing it in a persistent form as a report, an e-mail, a presentation, or a Web page makes it available to the rest of the organization. Technology already contributes to knowledge capture through the ubiquitous use of word processing, which generates electronic documents that are easy to share via the Web, e-mail, or a document management system.

Capturing explicit knowledge in this way makes it available to a wider audience, and “improving knowledge capture” is a goal of many knowledge management projects. One issue in improving knowledge capture is that individuals may not be motivated to use the available tools to capture their knowledge. Technology may help by improving their motivation or by reducing the barriers to generating shareable electronic documents.

- Taxonomies and document classification.
- Search.
- Portals and meta-data.
- Summarization.



The concept of Codification of tacit knowledge, as drawn from the study of David and Foray (2002), is the underlying principle driving the involvement of information technology in Knowledge creation and sharing; or in other words Knowledge management. Information technologies affect knowledge creation in several ways.

With the emergence of codification "the problem of memory ceases to dominate intellectual life" (Goody 1977). Learning programmes are then produced that partially replace the person who holds and teaches knowledge. Partially is the key word here because for codification amounts to the process of reducing human knowledge to information, and in the course of such transformations, some things most certainly will be altered, and quite likely other meanings will be lost. What is expressed and recorded then, is not complete knowledge. It is a learning programme that helps to stabilize and reproduce knowledge.

The applications and variations of the use of Educational technology cover a large spectrum. Some refer to this as Computer Aided Learning (CAL) and the other side of this coin as Computer Aided Teaching (CAT). Computer led teaching (CLT) is a form of the application of educational technology to the end of replacing the role of the instructor in the paradigm and enabling the learner to use technology to acquire knowledge from, of course, knowledge in its codified form.

From the recognition of online learning the role of ICT has moved in leaps and bounds across the Emirates. Starting with off-the-shelf learning content, teaching bodies have evolved in their use of ICT to develop SCORM / IMS compliant learning objects which are reusable across systems and platforms.

The Sharable Content Object Reference Model (SCORM) is a collection of specifications that enable interoperability, accessibility and reusability of web-based learning content. Other similar concept based interoperable formats are also commonly used for creation of digital learning content.

### *Definition of Learning Management System*

Learning Management System is a broad term that is used for a wide range of systems that organize and provide access to online learning services for students, teachers, and administrators. These services usually include access control, provision of learning content, communication tools, and organizations of user groups. Another term that often is used as a synonym to LMS is learning platform.

Kaplan-Leiserson provides the following definition of LMS:

LMS (learning management system): Software that automates the administration of training events. The LMS registers users, tracks courses in a catalog, and records data from learners; it also provides reports to management. An LMS is typically designed to handle courses by multiple publishers and providers. It usually doesn't include its own authoring capabilities; instead, it focuses on managing courses created by a variety of other sources.

#### *Success Factors and Barriers to adoption of Educational Technology*

An educationist engaged with learning management systems, or a technologist involved in the implementation of learning management systems, or someone who identifies with the likes of any of these, would not find it difficult to recognize the challenges surrounding the successful adoption of a learning management system (LMS) implementation in an educational environment, many of which have been identified and classified by Narwani et al (2007) from a project implementer's perspective.

Faced by challenges related to the institutional readiness, user adoption, teaching methodologies, technical and some social factors, Higher education institutions are visibly striving to train their user base. The absence of user-readiness, user responsiveness, frequently changing faculty, low user IT competency, language barriers make it increasingly necessary to have a realistic training approach in order to facilitate the adoption of Blackboard across a University.

The conduciveness of institutional environment for meaningful and effective adoption of Blackboard LMS is not independent of the external socio-economic, cultural, technological and political factors.

All this in the backdrop puts increased pressure on need for effective Blackboard User-training. The approaches to training users are multiple, yet there are key common elements which go into the planning of a training oriented towards Blackboard users.

The manner in which the training is evaluated has a close relationship with the effectiveness of the training itself. There is a need for a practical framework to guide the process of planning such a Blackboard user-training and its absence in the current UAE-based Blackboard-consumer zone is visible.

### *Blackboard as an educational technology system: in the light of knowledge reproduction*

As a learning management system, by principle, the Blackboard Learning system is designed for training online. The 'teaching and learning' application of this training is in the form of course delivery, learning objects management and evaluations in the context of Higher Educational Institutions.

At its core, the Blackboard LMS fulfils the purpose of Knowledge Reproduction and facilitates Knowledge Transfer. The procedures underlying the function of the system are designed to address the learning-teaching cycle in a simplified manner without losing the work-flow and conditional characteristics of course management.

The web and E-learning and constantly changing environments and to get the most of the teaching-learning cycle, flexible, integrated e-learning tools are required.

The Web 1.0 generation evolved to Web 2.0, and Blackboard has updated their technologies to create e-Learning 2.0. With more focus on interactivity, flexibility, and collaboration e-learning 2.0 provides an integrated online platform to support the needs of the academia.

The Blackboard suite GUI is evolving to become increasingly intuitive and flexible in terms of accessibility, branding and module organization.

Under the umbrella of the product series called the Blackboard Academic Suite, the Blackboard Learning system has the following variations:

- Blackboard Learning System™ – Enterprise License
- Blackboard Learning System™ – Vista Enterprise License
- Blackboard Learning System™ – CE Enterprise License
- Blackboard Content System™
- Blackboard Community System™
- Blackboard Outcomes System™

The Blackboard learning management system by implementation, may take on one or more of the following roles

1. As a online course delivery platform
2. Learning resources management system
3. Evaluation and performance management system
4. Collaboration Suite
5. Content Management platform

Basic Academic work may be broken down into simplified components, which map to the functions of the Blackboard Learning management system, including:

- ü Organizing Course Schedules
- ü Delivering Course Materials
- ü Presenting Learning Materials
- ü Reading course materials
- ü Submission of Homework
- ü Assessments and Exams
- ü Monitoring Performance
- ü Evaluating Course/Program Effectiveness
- ü Archiving and reusing Online course and learning materials

The Blackboard LMS is project as a student-centered platform, without ignoring the special requirements of teaching members.

The Blackboard Academic suite as an LMS, in its bare-minimum form caters to its users at three levels, through its user-friendly interface:

Instructors / Teaching Members

- Course Design
- Course Management
- Student evaluation
- Student performance management

### Students / Learning Members

- Course Study
- Schedule Management
- Assessment/Evaluation submissions
- Personal Gradebook

### Administrators / IT Specialists

- System Management
- Course Schedule management
- User management
- Backup and Performance monitoring

The underlying principles of the Blackboard learning management system are directly related to Knowledge Management: Knowledge Reproduction and Knowledge Engineering.

Moreover, the Blackboard system ideology exactly corresponds to training and evaluation guiding principles.

The paradox is that for the purpose of achieving the training benefits through application of the Blackboard LMS in the teaching-learning cycle, academia and students need to be trained to benefit by the effective application of the system.

## *2.3 ICT driven change management and Training*

### *Management of change: Role of training*

“Change is good for us, .... But there’s a tremendous amount of energy – physical, mental and emotional – that goes on when we adapt. We’re firing on all cylinders, which is a peak. Ideally, at the end of every peak we will have a plateau, a period of rest during which we can review what we’ve done, get accustomed to it and replenish our energies. What tends to happen in the information professions is that the plateaux have become shorter and shorter to the point where there aren’t any. Its just peak followed by peak. In fact in many cases we don’t even reach the end of one peak before we start another one” – Mendelsohn (1994)

According to Farrow (1997) change brings with it packaged fears, and in her study set in the information and library sector, it soon became apparent that the best way to manage these fears is through communication and training.

Research is ample across ICT and non-ICT industries on the constructive role of training as a change management tool. The process of learning and knowledge sharing in managing change often takes shape in forms of training and development.

Research by Spacey et. al. (2003) in the space of UK based Libraries affected by developments affecting the growth of ICT in public libraries , highlight that resistance can arise because of the way new technology was introduced and that training is an appropriate means of enabling staff to cope with technological change.

The study by Kempton (1996) reports the importance of the training strategy, which was required to facilitate the important organizational change and establish it as a new culture at Kingston Hospital. The evidence provided by study by Kempton (1996) strongly suggests that training made an important contribution to facilitating major organizational change.

The concept of training for organizational success can be extended to cater to the needs of academic institutions faced by the challenges of ICT triggered changes.

The management of change needs to be approached in a logical and structured manner (Farrow 1997). An in-depth study on the role of training needs analysis in organizational change by Reed and Vakola (2006) draws light on the challenges faced by organizations in transition. Fears among the ICT users, resistance to adoption, and misunderstanding of technology support are some of the visible obstacles that change management is expected to handle.

Schein (1999) states that his thinking on change has evolved from a model of planned changes to a concept of managed learning.

For ICT systems to be successful, it is suggested staff need positive attitudes to ICT (Evald 1996). Applying this understanding to an individual's acceptance of information systems, the Technology Acceptance Model (TAM) (Davis 1989) suggested attitude influences behavioral intention to use, and subsequent actual use. TAM also includes the constructs of perceived usefulness and perceived ease of use. Studies utilizing the TAM to consider the effect of variables such as training on the use of computers and information systems have found that training does exert an influence.

Research indicates that training has a positive role to play in acclimatizing people to changes taking place around them. It can assist in the process of demystifying technology, although it is important to note that technophobes – those with an extreme fear or anxiety of computers – may need specialized training prior to general ICT training. The relationship between training and attitudes is less controversial and training is seen as an appropriate technique to change attitudes towards ICT (Spacey et. al. 2003).

#### *Training for training: a Paradox*

Simplistically, Teaching and learning are the give and take functions of the educational system. There is much theoretical and practical evidence to support the perspective that Computer-aided learning and Computer-aided Teaching are interpreted to be two sides of the same coin.

Educational technology and information technology implementations for support the educational process often face this challenge of having to address the different needs of the learning through IT and teaching with IT. The Blackboard learning management system (LMS) implementations are posed with similar challenges.

The Blackboard user base, comprising mainly of academic staff and students, has its own special characteristics. The malleability of this academic user base is difficult to judge. It is not difficult to assess the user's readiness for the LMS based on a calculation of level of users' IT skills. The ground reality, however, is quite different, since it is not only a user's competency with computers that determines his/her interest in using an LMS for the purpose of teaching or learning. The simple comment by faculty, "Why should I need to use an LMS? I'm able to teach perfectly well without it right now.....", is difficult to address aptly.

One among the many ways to mitigate the apprehension among the end users and benefactors of the Blackboard LMS, and in turn facilitate the management of ICT triggered changes, is effective Training for the Blackboard-User.

In order to achieve the training benefits through usage of the Blackboard LMS in the teaching-learning cycle, instructors and students, and possibly other Blackboard users, need to be trained to capitalize on application of the LMS. This is a paradox that Training for Training should ideally address.

Training can be spelt differently in different situations. The goal of training may be related to uplifting organization performance, or purely teaching new skills to the targeted training audience.

Some organizations take to Values Campaigns to discover what the priorities of employees are. The AAA Case Study carried out by Element K [C1] in 2001, revealed that indeed "gaining new knowledge" is a top priority, second only to spending time with family.

Where the learners' base is large and broad e-learning is the best solution apt to cater to the varying needs. E-learning is not only able to reach a wider audience concurrently, it makes it much more practical and efficient to track, report and evaluate the learner audience.

At the University of Toyota, as the case study by Element K [C2] reveals, the training initiatives were manifested to address the need of providing students with a round-the-clock technology training to employees. Moreover e-learning provides the adaptability to customize courses to the variable needs of employees based on needs.

At the same time, there remain undercurrents in the employees of whether the training being offered to them is actually some form of appraising their performance at work. Apprehensions of this nature among employees are not only damaging to their individual reception of the training but are also threatening to future progress and improvement in productivity.

#### *Growing Need: Context and Factors for the need of Blackboard User Training in UAE*

The UAE University was the earliest adopter of the Blackboard LMS in the early 2002, which now caters to more than 10 K students. The next to follow was the Zayed University (ZU), the American University of Sharjah (AUS) and the University of Sharjah (UOS). More recently several other Universities, Colleges, Institutions have acquired the Blackboard LMS.



Accreditation requirements, laid out by the Ministry of Higher Education, deeming the necessity of a learning management system for higher education delivery, have been driving many of the UAE-based higher education bodies to accrue a technology-aided learning environment in the last decade or so. Moreover the influx of ICT and the Knowledge management competition in the UAE, has added to this end.

The University of Sharjah has the first successful Arabized implementation of the Blackboard LMS.

These are considered among the more successful implementations of Blackboard LMS in the UAE-based Higher education space, commended by the measureable benefits to academic and institutional performance.

Institutions invest large amounts towards the learning management systems. Assuring return on investment is however a challenge. Level of adoption of the LMS, determined by the extent of its utilization and the adaptation of the users' teaching and learning methods to incorporate its functions, is the target for those interested in the value for money of the LMS.

One of the tools for addressing Institutional Effectiveness expectations from the LMS implementation investments, is Blackboard end-user training.

As is true for any Information and communication technology implementation, its success is determined by the extent of utilization and degree of effectiveness in the function it was developed to serve.

End-user Training is a facilitator of improving the level of utilization of the LMS and for enabling end-users to gain more by the effective use of the system.

The end-users of the LMS are part of the academia and administrative functions of the Educational Institution. Institutions are faced with the challenge of defining their dynamic training needs and developing training strategy that are aligned to the business objectives, environment and organizational culture.

There exists a gap with respect to IT skills and LMS expertise which a Blackboard user-training would intend to bridge. The absence of proficient IT skills among academic users poses a significant challenge for the Blackboard-user training.

Cooper (2006) in his paper examines the evidence for the digital divide based on gender. An overview of research published in the last 20 years draws to the conclusion that females are at a disadvantage relative to men when learning about computers or learning other material with the aid

of computer-assisted software. The evidence shows that the digital divide affects people of all ages and across international boundaries.

The spurred increase of the presence on e-learning tools in the teaching-learning cycle influences and challenges the prevalent teaching and learning practices to adopt new means of achieving already set objectives. Consequently teaching pedagogies are being recalled to adapt towards achieving of learning objectives using LMS and related educational technology.

It is strongly evident that the drive towards Knowledge engineering, management and reproduction and the intrinsic use of ICT, is inculcating educational technology in the UAE-based educational system. One of its variant of the subsequent developments is the adoption of Blackboard LMS by Higher educational institutions which now have a significant need for making effective use of educational technology and provisioning return on investment, producing an ever-increasing demand for effective Blackboard User-training.

As is true for any other IT system, it is true for the Blackboard LMS also, that effective user-training is a key to the successful implementation of the system. The approaches to training users are multiple, yet there are key common elements which are characteristic of Blackboard end-user oriented training plan, which lacks description in published research.

Although published research provides a vast body of knowledge for Training IT-end user, planning, processes, evaluation and project management, because of the special nature of the UAE based Higher educational Blackboard training needs, no one single model can satisfy the training planners concerns.

There is an evident vacuum of working principles and best-practice guidelines for planning Blackboard user-training.

#### *Approaches of planning Blackboard User Training*

There is very limited research published on approaches for Blackboard User-Training specially for the Middleeastern region. Existing research discusses the challenges and success factors for conducting Blackboard User-trainings and generally focuses on Higher educational institutions outside the Middle-eastern region.

Research related to the UAE-based Blackboard user training needs is limited and vague.

In a study by Staffo and Nzeocha of the Stillman College in Alabama, questions are addressed related to how to offer multiple approaches for Blackboard training. Their challenge was to provide Blackboard professional development for faculty required to use the LMS, even though their technology skills ranged from nearly non-existent to expert. Blackboard training was carried out initially by the Blackboard vendor in the region as a hands-on “one type fits all” workshops for about 15 to 25 faculty per session. This training was not very effective for two reasons, one that it was very generic and two that it was conducted much before the actual system came online to faculty to practice on. The second approach differentiated 3-levels: beginners, intermediate and advanced level trainings. Yet another approach suggested was a one-on-one and time-of-need Blackboard assistance.

The last approach suggested is more a form of support than training. However this approach is most useful for getting new users started on using the system.

According to Blackboard Inc. their Training empowers users to take maximum advantage of the Blackboard Academic Suite™. By sharing best practices for teaching and learning online, we enable clients to grow adoption while simultaneously decreasing their support and administration costs.

Blackboard understands that when educational institutions spend scarce resources on enterprise technology like ours, they want users to fully leverage its features and functions. An investment in training lays the foundation for achieving your goals in both distance and Web-enhanced educational environments. To this end, we offer flexible training formats to meet the needs of our user community.

#### Online Training

In circumstances where instructors are obligated during the school day or the institution employs a distance education model, many clients choose online training. Blackboard offers seven facilitated asynchronous courses that comprise our certification series, advanced series, and administration series. Blackboard Training will confer Certified Blackboard Instructor status on all participants who successfully complete the three component courses in the Teaching and Learning Online certification series.

### Onsite Training

Blackboard consultants travel to client institutions to deliver hands-on training workshops that share state-of-the-art techniques for effective online teaching and learning.

### Regional Training

Our trainers also deliver monthly regional events in Washington, DC, Phoenix, AZ, and in selected locations around the globe. These training opportunities are ideal for institutions that need to train new staff, or schools with existing system administrators, course developers and instructors who need to sharpen their skills.

### Technical Training

Blackboard consultants deliver hands-on training workshops that share techniques for automating administration of the Blackboard Academic Suite™, as well as extending the platforms.

### Training Materials

Blackboard's licensed training materials provide a comprehensive, ready-to-use training program that prepares faculty to successfully design and teach online. Whether you're looking for materials for face-to-face workshops or online training events, you'll save time and effort with our off-the-shelf training solutions.

(Blackboard Inc.)

Blackboard Inc. Services hosts online workshops also. With respect to the Middle-east region timings, the online workshops do not fit the convenient time-slot. Recorded and played back the sessions do, to some extent, lose on interactivity, and therefore effectiveness.

Blackboard hosts multiple forms for training options, however, there is no theoretical or practical evidence found of the application or underlying basis of a stated neither Training nor Evaluation model. The trainings are planned on a needs basis and criteria are the type of training from the given options, left to the requesting institution to decide, and the number of attendees. The next important and deciding criteria are the cost of training.

The weakness of the available forms training with Blackboard is that, one the training structure is not tailored to the characteristic needs of the UAE-based Higher education institutions' Blackboard users; and two there is no published evidence of concrete underlying design or effectiveness measurement model.

The Blackboard user base, comprising mainly of academic staff and students, has its own special characteristics. The malleability of this academic user base is difficult to judge. It is not difficult to assess the user's readiness for the LMS based on a calculation of level of users' IT skills. The ground reality, however, is quite different, since it is not only a user's competency with computers that determine the skills and level the end-user has or will have with respect to the use of the LMS.

### *Theoretical Framework for End-User Training*

Like any other project the planning for the training project is largely driven by the objectives the initiative is intended to fulfill. The drivers for the Training project thus play the most critical role in the initiation of the process. Research by Smith in Australia has shown that organizational training and development is driven by relatively small number of factors. The study identifies the extent of the workplace change as a significant factor in determining the shape of the training. The second most important factor is the introduction of various forms of new product and process technology. However, although the introduction of workplace change and new technology provide triggers for training (Hendry 1991), the nature and extent of corporate training and development is determined by factors intrinsic to the organization, which Smith refers to as moderators.

Researchers are concerned, therefore, not only with establishing how and what change acts as a determinant of training but also how the training consequences of change are translated into identified training needs and training provision.

The plan for training would broadly entail a route to involve one or more variations of the following:

- Needs Identification
- Needs Analysis
- Training program design
- Training program development

- Training outcomes evaluation

Lewis (1997) draws on appraisal systems as an important vehicle for identification of training needs.

A multitude of factors plays into the decision making driving a training program or session.

Research has been conducted across areas to model Technology-Based Training and Competency-based training.

The planning of the training project would be faced with the following challenges with regards to knowledge transfer:

- The inability to recognize and articulate “compiled’ or highly intuitive competencies- tacit knowledge idea (Nonaka & Takeuchi 1995)
- Geographical distance
- Language
- Gender
- Digital Divide
- Areas of expertise
- Internal conflicts – intrinsic professional conflicts
- Incentives and Motivational levels
- Degree of Knowledge visualizations
- Misconceptions and false expectations
- Organizational culture which may or may not promote knowledge sharing
- Sources and integrity of information

Understanding the principles of knowledge management is a pre-requisite to drawing plans for training projects. In order to identify the learning needs of workforce it is important to assimilate the

types and sources of knowledge. Using the classification to facilitate the organization of the retained and required knowledge gives a framework to the understanding of the learning needs. Skowang (2003) throws light on knowledge management seen as a metaphorical perspective on management. The managerial focus depends on the epistemological standpoint taken. An identification of three epistemological perspectives accommodates the main body of literature on knowledge management: an artifact oriented epistemology that focuses on explicit knowledge, a process oriented epistemology focusing on both tacit and explicit knowledge and the interaction of these types of knowledge and an antipoetic epistemology where knowledge basically always has a tacit dimension.

Nonaka and Takeuchi (1995) developed a four-stage spiral model of organizational learning. They started by differentiating Polanyi's concept of "tacit knowledge" from "explicit knowledge" and describe a process of alternating between the two. Tacit knowledge is personal, context specific, subjective knowledge, whereas explicit knowledge is codified, systematic, formal, and easy to communicate. The tacit knowledge of key personnel within the organization can be made explicit, codified in manuals, and incorporated into new products and processes.

This process they called "externalization". The reverse process (from explicit to implicit) they call "internalization" because it involves employees internalizing an organization's formal rules, procedures, and other forms of explicit knowledge. They also use the term "socialization" to denote the sharing of tacit knowledge, and the term "combination" to denote the dissemination of codified knowledge.

According to this model, knowledge creation and organizational learning take a path of socialization, externalization, combination, internalization, socialization, externalization, combination . . . etc. in an infinite spiral.

Marwick (2001) in his examination of Knowledge Management technology identifies technologies that contribute to knowledge management solutions aligned to the Nonaka's model of organizational knowledge creation as a framework. The extent to which knowledge transformation within and between tacit and explicit forms can be supported by the technologies is discussed.

It is found that the strongest contribution to current solutions is made by technologies that deal largely with explicit knowledge, such as search and classification. Contributions to the formation and communication of tacit knowledge, and support for making it explicit, are currently weaker, although some encouraging developments are highlighted, such as the use of text-based chat, expertise location, and unrestricted bulletin boards.

An interesting note is drawn on how technologies, specifically collaboration oriented IT, enables a Tacit-to-Tacit propagation of knowledge objects. Collaboration is a key feature of effective and paced learning using technology.

"Blended" Learning is the form of teaching-learning mixing instructional led and information technology supported knowledge delivery.

'What is 'blended learning'? It is the use of two or more distinct methods of training. This may include combinations such as: blending classroom instruction with online instruction, blending online instruction with access to a coach or faculty member, blending simulations with structured courses, blending on-the-job training with brown bag informal sessions, blending managerial coaching with e-learning activities.' Elliot Massie (Clark 2006)

*E-Learning sometimes is regarded as Evil-Learning. The "E" itself may present to be a barrier for learning and teaching. E-learning is yet to establish itself as Enhanced Learning rather than Evil or just Electronic Learning,* was a comment made by Educational technology specialist Poonam Chottelal at the Blackboard E-learning Day 2006. Blended learning eliminates this mind-block for trainees and many a times the trainer as well.

It is a challenge to identify the ideal delivery methodology in learning arrangements and to ensure the match content components.

There are signs of a more mature view of blended learning emerging that moves beyond the boundaries of traditional training. 'Blended e-learning' by Bielwaski and Metcalfe (2002) takes a very specific line. The subtitle is integrating knowledge, performance support and online learning and their recommended blend is e-learning, knowledge management and performance support.

Many of current implementations of blended learning turn out to be these crude 'pick and mix' solutions. The traditional training methodologies and ideologies are limiting. The study blended learning beyond the boundaries of traditional training, leads into the concepts of performance support and knowledge management and much deeper into corporate communications, workplace learning, marketing recruitment and customer learning.

According to Clark (2006) in the planning process comes the re-iteration of aligning the activities to the aim. The ultimate aim is to blend formal and informal learning by breaking down the artificial barriers created between, for example, learning and knowledge management. His view reflects the need for benchmarks of blended learning arrangement. Identification of the better characteristics of the 'blend' is challenging and most of time subject to personal judgements, although there are



specific, not necessarily quantifiable, but measurable elements which typify the better blending approaches from others.

It is suggested that for the training planner, keystones in designing, developing and delivering optimal blends would be included among the matters of planning.

Key questions to be addressed in the planner of Blended learning deliverables:

- ü Where are we in blended learning?
- ü What are the possible 'components' in a blend?
- ü What are the 'criteria' for choosing an optimal blend?
- ü What are the general 'categories' of blends?
- ü What are 'bad blends'?
- ü What tools can be used to decide on a blend?

*3C-didactical components of a learning arrangement:*

Kerres and Witt (2003) suggested the 3C-model of didactical components outlined in Table 2.3.i, tries to provide a framework for specifying parts of a blended learning arrangement and their relative weight.

According to the 3C-model, any learning environment consists of three components: *Content* Component: that makes learning material available to a learning; *Communication* Component: that offers interpersonal exchange between the learners and tutors; *Construction* Component: that facilitates and guides individual as well as cooperative learning activities to actively operate on learning tasks (or assignments) with different degrees of complexity (from multiple choice to projects or problem-based learning)

These components can be delivered in various formats: in Face-to-Face (FTF) scenario, based on exchange media, transmitted as analogue information or digital information.

Table 2.3.i				
Communication scenarios and perceived costs (Kerres and Witt 2003)				
Communication Scenario	Location	Time	Communication	Learner's Cost
Face-to-Face	Dependent	Dependent	Bidirectional	Very High
Telecommunication/ Tele- and Video- Conferencing	Independent	Dependent	Bidirectional	High
Broadcasting, radio and TV	Independent	Dependent	Unidirectional	Low
Publishing, print, CD,	Independent	Independent	Unidirectional	Very Low
Internet	(In-) Dependent	(In-) Dependent	Bidirectional / Unidirectional	From Low to High

The 3C-model differentiates the communication scenario. One of the limitations is the absence of specification of the intranet mode of communication; the intranet scenario may be considered is a subset variation of the Internet scenario.

Learning arrangements are described to use the three components differently. The didactical scheme of learning arrangement can be described by specifying the amount of time a learner is engaged with activities regarding these three components. There are learning arrangement where learning is based solely on a content component; for example a Web-based computer-driven training. In the case of a Virtual Class the communication component is most significant. In problem-based and collaborative learning approaches the learner would need to devote most time with the constructive component of a learning environment. Such 'pure' approaches as regarded by Kerres and Witt (2003) do not succeed as they are unable to deliver the rich experience that is essential for successful learning.

An interesting note made is that neither content, communication nor construction are always a necessary component of all blended learning arrangements nor would a certain teaching-learning philosophy, such as a constructivist approach or learner-centered approach, be the sole determinant of the component to include and the extent of its application.

The specification of learning objectives is depended on to define the presence and extent of use of the three components in the learning arrangement.

The guiding principles which provide a decision making basis for the choice of components provide conditions related to the learning needs, learning objectives and learner characteristics.

The 3C-model conditions uses the term 'Knowledge' to refer to the subject of matter to the training, which would be transferred by the teacher to the learner, and learner, would as a result acquire.

The content component will be included if:

- The knowledge consists of facts or rules the learner should be able to recall
- The knowledge can be explicated and communicated by media/technological means
- Information should be presented to the learners
- The knowledge of certain information is a pre-requisite for other communicative or constructive learning activities

The communication component is significant if:

- The knowledge reaches a certain complexity
- A deeper understanding of the theoretical framework is required
- The knowledge consists of different competing concepts
- Learners should learn to formulate, express and discuss a personal point of view
- Learners should learn to participate in discussions, to formulate and receive feedback in discursive settings

The construction component will be required if:

- The knowledge is to be applied (and not only to be recalled)
- The knowledge consists of procedures (and not only of declarative knowledge) that require practice
- The content includes 'fuzzy' knowledge

It is interesting to note the usage of the term 'learner' by Kerres and Witt (2003). The learner as an individual or as group has special characteristics and specific learning needs.

There is limitation of the 3C-model with respect to providing clearly defined route to establishing the relative weights of the components in the learning arrangement deduced based on the prescribed conditions.

The model also does not completely distinguish the delivery system options based on criteria related to the learning objectives.

The 3C-model (Kerres and Witt 2003) is useful reference point for determining the parts of the learning arrangement related to a blended approach.

The models that guide planning of the Blackboard user-training bear a close relationship to the effectiveness of the training itself.

The criteria for evaluation of training are closely related to the methodology of conducting the training itself.

Foxon (1989) in his review of Australian, British and American Training and Development (journal) literature, mentions that in the minds of practitioners, evaluation is viewed as a problem rather than a solution, and an end rather than a means.

Majority of writers of the literature reviewed, where a definition of training evaluation is given, see it as the gathering of information in order to make a value judgment about the program, such as necessary changes or the possible cessation of the program.

Many writers not only differ in their definition of evaluation - they also use evaluation terminology interchangeably and in some cases quite confusedly. Burgoyne & Cooper (1975) for example, use the term evaluation research as synonymous with evaluation.

While evaluation and research may appear at first sight to be similar, there are clear differences. Research is aimed at the advancement of scientific knowledge - it is not a given that it should be immediately useful or practical. Control groups, experimental designs, and total objectivity characterize research projects.

Unlike research, it is the context of the evaluation which defines the problem, and the evaluator's task is to test generalizations rather than hypotheses. The evaluator may not be able to avoid making value judgments at every stage whereas the researcher must avoid any subjectivity. Some definitions (Goldstein, 1978; Siedman, 1979; Snyder et al, 1980) focus on the determination of program effectiveness

Associated with the issue of definition is that of determining the purpose. Many imply their definition when they outline the perceived purpose. If one is unclear as to purpose, the choice of appropriate strategy and methodology will be affected. Nearly one quarter of the articles neither present nor imply any specific purpose for evaluating training. A similar proportion display a superficial understanding of the more complex issues involved, and a paucity of realistic applications (Foxon 1989).

Evaluation techniques are not well written up in the literature, and the use of experimental control groups, statistical analysis and similar methods may be concepts which exist only in academic journals according to Bramley and Newby (1984).

*Kirkpatrick model: learning and training evaluation theory*

From the literature reviewed, by far the most popular approach to evaluation of training in organizations today is Kirkpatrick's framework of the four-level's criteria. The Kirkpatrick's model demarcates four levels of training outcomes:

Level # 1    Reaction

Level # 2    Learning

Level # 3    Behavior

Level # 4    Results

Kirkpatrick's model considers the value of training on four levels (Kirkpatrick 1998). Phillips expanded on Kirkpatrick's model in *Accountability in Human Resource Management* (Gulf Professional Publishing Company, 1996), suggesting that another level be added to calculate a company's return on investment. Thus, a corporation cannot ultimately measure ROI at the fifth level of training benefits without taking accurate measurements at the other four levels.

Evaluating training programs begins with Level I, which answers the question, "What are participants' reactions to the training and what do they plan to do with the material?" Trainers measure this with what they call "smile sheets" -- surveys or questionnaires that measure whether the training was meaningful or enjoyable. These surveys should also include sections on how the employee plans to use the lessons learned.

Level II answers, "What skills, knowledge, or attitudes have been changed or acquired [with the training] and to what extent?" Achievement tests measure how well the employee learned the information or skill presented.

Level III answers, "Did participants apply what they learned in training to their jobs?" Observer ratings and observations measure the degree to which the employee applies what he or she has learned. Observers (usually managers and supervisors) must be thoroughly trained in the evaluation system. Managers need to establish a system for leveling out the inconsistencies between observers' judgments.

Level IV answers, "Did this on-the-job application produce measurable results?" These results may include increases in productivity and efficiency, decreases in absenteeism and occupational accidents, decreases in customer complaints, and so forth. Isolating the effects of training from other variables that produce an effect in these areas, either through statistics or by using a control group, is vital to getting a clear picture of ROI.

Level V answers, "Did the monetary value of the produced results exceed the cost of training?" This is the measurement of ROI, which can be calculated in several ways.

These four-levels are the key characteristics of the learning outcomes for the training plan.

Bates (2004) in his critical analysis highlights some of the limitations of the Kirkpatrick's training evaluation model and indicates several risks for stakeholders and its assumptions. His analysis raises questions challenging the extent to which the model is consistent with the principle of beneficence or providing benefits to clients and stakeholders.

According to Bates (2004) there are at-least three limitations of Kirkpatrick's model.

One is described as an oversimplified view of training effectiveness that does not consider individual or contextual influences in the evaluation of training, lending the model certain incompleteness.

The second is that the model assumes that the levels of criteria represent a casual chain such that positive reactions lead to greater learning, which produces greater transfer and subsequently more positive organizational results; Research however has failed to confirm such casual linkages.

The third states that the model assumes that each level of evaluation provides data that is more informative than the last.

Despite the limitations, there is limited proven research to replace the model providing levels of outcomes' classifications that facilitate the decoding of evaluation criteria that can be easily understood and applied are that provides an alternatives for such a training-specific model.

The objectives-driven model and its variations appears to be surface in some literature, although Tyler's name with which it is associated is rarely mentioned. This model of evaluation focuses on the extent to which training objectives have been met, and the common method of evaluating transfer of learning is by control groups. The desirability of setting measurable objectives, following a cost-effective plan to meet them, and evaluating to determine the degree to which they are met is a recurring theme in the Human resource development literature (Foxon 1989).

The 'transfer' component of training evaluation is used to provide the evidence that what was learned is actually being used on the job for which it was intended. Olsen (1998) investigates through a study, using a survey technique, what organizations are doing to evaluate the transfer of training, as described by the Kirkpatrick taxonomy of the four levels of training evaluation.

The four-levels of Kirkpatrick's model (1959) provide characterization of the learning objectives which usually are the major part of the inputs of the training arrangement and which help determine the approach to training.

The research studies are numerous with respect to educational technology, learning management systems are an instance, training users and challenges, the adaptation of teaching pedagogies with the advent of instructional technology, the LMS user adoption and lack of it, however, it is not common to see tangible principles and project management strategies to be reference for planning Blackboard User trainings in specific.

From the purely theoretical research, it is evident, that there is a strong need for a body of knowledge related to Blackboard implementations and User-Training best practices, in the UAE-based Higher educational context.

Research does show that Blackboard User Training in general is a need of UAE-based teaching bodies, however the methodology to conduct such a training programs cannot be derived based on any single available training model. The training needs associated with the Blackboard end-user in UAE and other GCC region based University and Higher educational institutions as special to their placing, and training programs require to be tailored to address the characteristic Blackboard user learning needs and institutional learning objectives.

The next chapter using a mixed approach draws upon the findings from research and integrates these with the methodology to the end of developing a proposition for framework to facilitate the planning of user trainings oriented to Blackboard end-users in the related context, proposed by the study as Blackboard User-Training Framework.



## Chapter 3: Conceptualization & Framework Design: Methodology and AHP Analysis

### *3.1 Four Stage Methodology*

The research is more qualitative in nature and intends to propose a set of guidelines, which formulate together to the end of a framework for the Blackboard User-Trainings, with respect to the UAE-based higher educational institutions.

This stage of the research work congregates the findings from the earlier research and literature review, to draw upon the key factors, which influence and shape the Blackboard User training, its planning and execution.

*The Methodology takes a Four-Stage approach:*

In the first stage of Conceptualization, makes use of Action Research wherein the theoretical framework Training, specially for Learning Management System (LMS) Users and the Kirkpatrick training-evaluation model are dwelled upon, to derive the common criteria, which later form the key ingredients for the design of the Blackboard User- Training Framework (the framework).

In the second stage of Data Collection and Analysis, the study was divided into two parts – the initial set of Interviews with educational technology experts and the second, the Analytical Hierarchy process (AHP) survey.

A mix of qualitative and quantitative methods was used to figure the elements and factors which directly or indirectly influence the training arrangement and approach, using a disciplined approach to shortlist based on fundamental elements, drawn from collection of considerable and dependable feedback from experts of the UAE-based Blackboard training environment and an AHP survey.

The first data collection step of personal interviews conducted by the author, interviewing 2 Educational technology experts who have had experience in dealing with Educational technology, in particular the Blackboard learning management system (LMS) implementations and training, provided the basis for deducing key questions which are criteria for planning a Blackboard User-training.

This top-level data collected is further broken down and classified into factors for the Blackboard user training. Through the AHP survey, a small sample of Educational technology experts' opinions

are used to derive the relative importance of the short-listed factors, thus, producing an ordered listing factors which provide the base for the guiding principles and dimensions for the Blackboard User-Training Framework.

The third stage of this approach, which is the BBU-TF Design, assembles the deductions and analysis from the prior stages, providing the structure of the proposed framework.

In the fourth stage, covered in the next chapter the Blackboard User-Training Framework is applied as an Experiment in a realistic setting using a UAE based University.

### *3.2 Conceptualization: through Action Research*

In developing a pervasive Training program plan the first task is to relate its aspirations to the current vision of the Institutional Audience.

#### *Design Elements for the Blackboard User Training*

From the view of Blackboard User-Training implementation as a project in its own right, the function of planning would lie at the nerve-cell of the system. The planning process for a Training project, is like the brain orchestrating the remaining functions of the body of the Training execution to achieve the objectives.

The fundamental issue to be addressed in this context of the training is, "What does the Training Plan define?"

On the whole the training plan is expected to address the who, what, where, why and how of the training and maybe more. By the PMBoK definition of Planning, the basic elements include the Project Scope, project objectives, required deliverables, framework for project schedule, project organization, estimated work effort, project risks, resource requirements including funding, people, technology and information resources and communication plan.

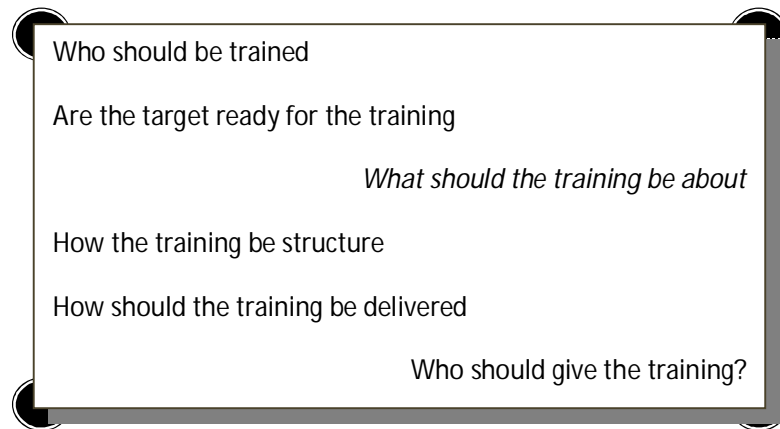
In more terms of the context of Training, the training plan would scope to accomplish the definition of:

- The Training Needs analysis

- Training Outcomes Evaluation Criteria
- Training execution method

Figure 3.2.i

The Training Plan Drawing Board



On the drawing board, the training planner would typically start with questions leading to an understanding of the purpose of the training being planned for. Subject to the nature of the training goal and whether the training is IT-oriented in the first place, the type of questions would vary.



Figure 3.2.ii

The process of planning can be seen as a system; Inputs in the form of Learning needs, defined by the Who and What are fed into the system, processed against the framework which produces Outputs in the form of the learning outcomes.

The questions posed by the planning; in its earliest stage set the theme of the training in question. In the process of planning Blackboard-user oriented training the fundamental matters of 'What' the

training is about and 'Who' the training is being laid out for sets the tone for the next level in the plan.

The Blackboard end-user groups may be classified as Academic and Non-Academic. The Academic group of users would include the Instructors and Students associated with the Blackboard LMS; Instructors, may be Faculty members, Deans, Heads of academic departments, Teaching assistants or other teaching staff; and the Students are those who are by their system role enrolled in courses for study. The Non-Academic group of users would include the Administration and System Level Administrative users with access to the Blackboard LMS for non-teaching purposes.

Different end-users have different expectations from the LMS and learn to use the features at different levels and degree of expertise. Determined by the IT skills, interest, adaptability and tolerance each end-user is a learning individual with his or her own special set of learning needs.

The learning needs of the Blackboard Instructor generally fall under one of the following types: Pedagogy, Technical, Remedial, and Personal Growth.

Curiosity to understand the pedagogical practices and their accomplishment through use of the Blackboard LMS underlies the Pedagogy type learning needs of instructors. The need to know the technical procedure for using the Blackboard LMS features to accomplish academic tasks is related to the Technical learning need. Remedial type learning needs are triggered by problems faced by the instructor on the Blackboard LMS, which drive him or her to look for answers to the problems faced. Personal growth related learning needs are an outcome of the inborn human need to learn and develop one's self.

The learning needs of the Blackboard Student could be Functional, Technical, Remedial or Personal Growth type of needs. The functional learning needs are driven to by the need to understand the Blackboard procedures related to the study functions. Technical type needs relate to satisfying the curiosity of technically how to conduct the study functions using the Blackboard features in a step-by-step manner. Remedial type learning needs, are triggered by problems faced by the student that need to be addressed in order for him to continue. Personal growth related learning needs are an outcome of the innate human desire to learn and evolve personal skills.

For example, learning how to submit a piece of course-work to the course instructor through Blackboard Assignments satisfies a functional type and a technical type learning need of the student.

In addition to type of the end-users view of his or her individual learning needs, the emphasis on organizational performance acceleration and continuous development, size of trainee group, current

level of skills, possible and preferred mode for training, are factors of the learning and training objectives definition.

On the basis of identified learning needs, the learning objectives can be defined based on the requirement for the fulfillment of those needs. The inferred learning objectives targeted by the training project or program, can be directly translated to the Training objectives.

What remains common to any form of training planning is determining the training or learning needs, derived training objectives, the expected outcomes for the training and the method for delivery of the training based on a combination of factors constituting the 'learning arrangement'.

The 3C-model (Kerres and Witt 2003) is useful reference point for determining which components and in which manner should the components integrate in the learning arrangement, based on the learning objectives of the Blackboard user training.

The learning objectives are defined in order to address the training needs that may be identified through training needs analysis.

Using the 3C-model described by Kerres and Witt (2003) as a reference, the learning objectives reduced to a simplified form of factors, can be mapped a corresponding component.

Drawing from 3C-Model for learning arrangements, of Kerres and Witt (2003), the learning arrangement for the Blackboard User-Training can be regarded as a container of the Content component, the Communication component and the Constructive components.

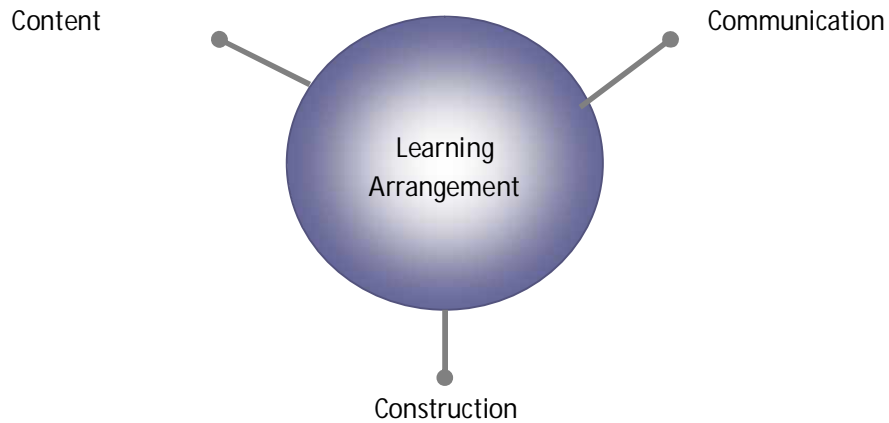


Figure 3.2.iii

In the 3C-Model the three components are: Content, Communication and Construction, varying combinations of which to different degrees produce different learning arrangements. The learner is the Blackboard end-user.

- 1) *Content* Component: that makes learning material available to a learner, either in the form digital content, published material, or oral interaction. Blackboard user-training per se content may be tutorials, step-by-step procedures, practice-workbooks, information in presentations,
- 2) *Communication* Component: that offers interpersonal exchange between the learners and tutors;
- 3) *Construction* Component: that facilitates and guides individual as well as cooperative learning activities to actively operate on learning tasks (or assignments) with different degrees of complexity (from multiple choice to projects or problem-based learning)

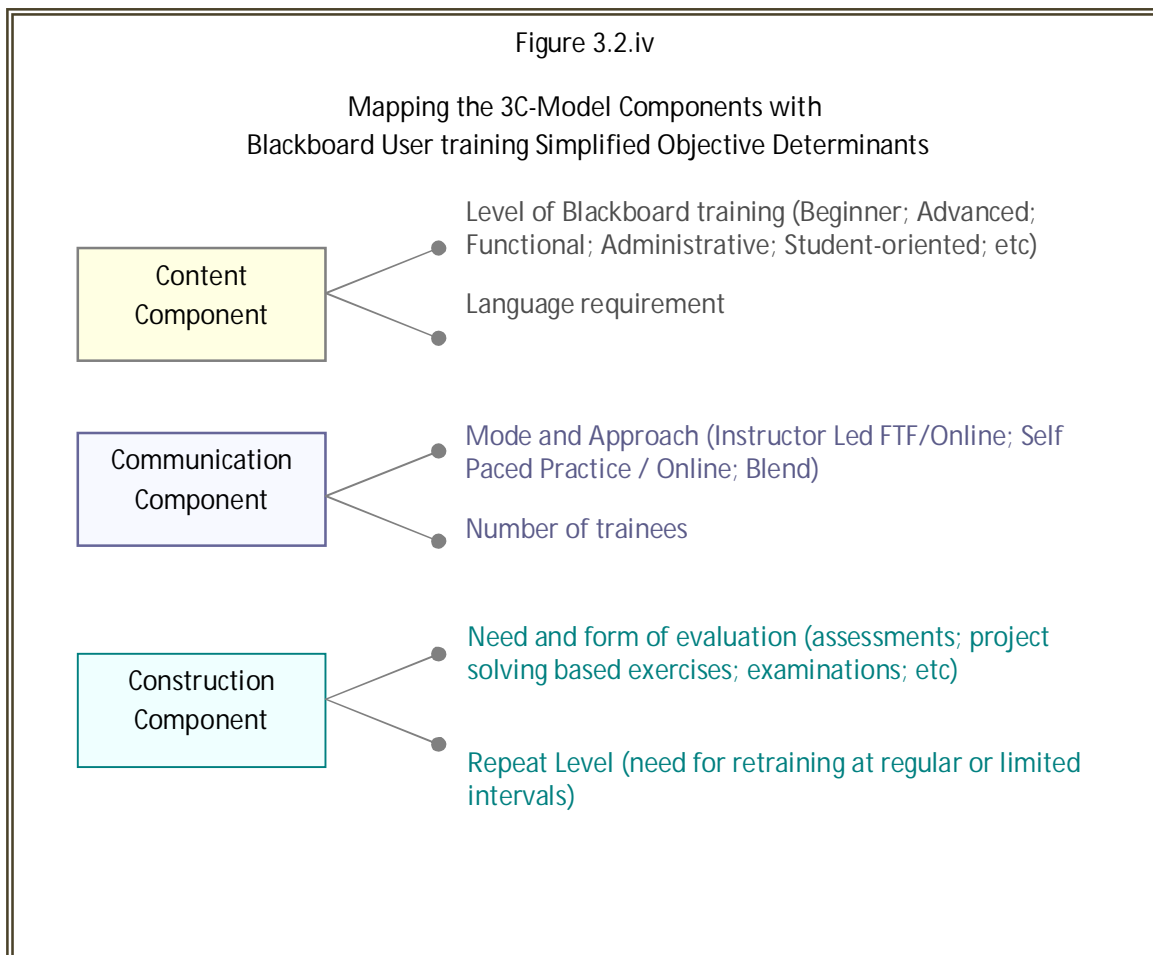
These components can be delivered in various formats: in Face-to-Face (FTF) scenario, based on exchange media, transmitted as analogue information or digital information.

The learning objectives of the learning arrangement are used to determine the kind and extend of mix of the components.

The Learning objectives may be exploded based on a number of criteria. The learning objectives for Blackboard user training are determined on the basis of knowing who the training is targeted for, the

level of trainee expertise which influences the level of training expected to be delivered, the mode of training preferred by the audience or suitable to the circumstances, the language the training should be arranged, the number of trainees, the need for a form of evaluation and the construction in terms of the type of components to be used.

The meaning of 'component' for the Blackboard user training is different from that used by the 3C-model. From the Blackboard user training perspective, the component may be a hands-on workshop, online tutorial, face-to-face instructor led session, online class, seminar or problem solving based project. These may be regarded as type of session for the sake of this discussion.



The illustration represents the relationship between the determinants of the Blackboard learning objectives, in simplified form of factors with the three components that possibly integrate towards forming a potential learning arrangement to address the learning objectives.

Using an approach to parameterize the factors which are related to the training objectives, it is possible to distinguish the determinant factors by weight of impact on the decision making process, in order to provide the basis for the working principles of the framework to guide the Blackboard user-training plan.

### *Choosing a Delivery method*

The presence of information and communication technology (ICT) offer options to vary the synchronicity of communication. Blended learning is definitely more than the simple combination of face-to-face (FTF) and e-learning. The integration of educational technology, telecommunications and collaboration tools open the doors to a wide range of instruction options.

### *Choosing the Evaluation criteria*

The deliverable of application of the framework is expected to be a suggested training arrangement that addresses the training objectives and promises training outcomes drawn from the provided inputs. In order to measure the effectiveness of the training arrangement certain criteria for evaluation is required.

Kirkpatrick's four level outcomes are used to distinguish the learning outcomes against dimensions for the framework. The four levels of Kirkpatrick's evaluation model essentially measure:

- Reaction the learner  
This outcome level is generally described by what the trainees or learners felt about the training.
- Learning  
The resulting increase in knowledge and/or capability measures the achievement of learning. The 'transfer' component of the training evaluation described by Ellis (1965) correlates to the level.
- Behavior of the learner  
The extent of behavior and/or capability improvement and implementation or application of the knowledge acquired
- Results



The effects on the tasks and environment resulting from the learner's performance

For a meaningful evaluation of the learning all these measures are recommended, although their application generally increases in complexity, resource intensity and cost, across the four levels.

Ellis (1965) describes the 'transfer' component of training evaluation. The significance of transfer in training and educational settings is that these learning arrangements are based upon the assumption that positive transfer will occur. Deece (1958) strongly asserts that transfer is the most important topic the study of learning. The transfer component correlates to the Learning level of the Kirkpatrick model.

This outcome is related to the effectiveness of the decisions made about the components of the training, and is also heavily influenced by the subjective judgments of the trainees. The nature of the reaction is subject to the training arrangement, the environment, the trainees personal approach, psychological and physical factors, and the trainer's approach.

The different design variables that constitute the derivation of the training objectives also provide the definition of the learning outcomes and consequently direction for evaluation.

For sake of example, for instance, choosing a purely Online Mode limits the type of evaluation tools which could be employed to assess the achievement of learning outcomes by measuring the reaction of the trainees during the conduct of sessions.

Using the Kirkpatrick's four levels as a basis, a description of evaluation and characteristics, tools and methods, and the determining variables of the Blackboard user-training in the related context is provided next.

This grid illustrates the Kirkpatrick's structure detail, and particularly the modern-day interpretation of the Kirkpatrick learning evaluation model, usage, implications, and examples of tools and methods in the context of the Higher education institutions and Blackboard user-training:

Table 3.2.i

Level #	Level	Evaluation description and characteristics	Examples of evaluation tools and methods	Determinants
1	Reaction	<p>Reaction evaluation is how the learner felt, and their personal reactions to the training or learning experience, for example:</p> <ul style="list-style-type: none"> <li>§ Did the trainees like and enjoy the training?</li> <li>§ Did they consider the training relevant?</li> <li>§ Was it a good use of their time?</li> <li>§ Did they like the venue, the style, timing, domestics, etc?</li> <li>§ Level of participation</li> <li>§ Ease and comfort of experience</li> <li>§ Level of effort required to make the most of the learning</li> <li>§ Perceived practicability and potential for applying the learning</li> </ul>	<ul style="list-style-type: none"> <li>§ Typically 'happy sheets'</li> <li>§ Feedback forms based on subjective personal reaction to the training experience</li> <li>§ Verbal reaction which can be noted and analyzed</li> <li>§ Post-training surveys or questionnaires</li> <li>§ Online evaluation or grading by delegates</li> <li>§ Subsequent verbal or written reports given by delegates to managers back at their jobs</li> </ul>	<ul style="list-style-type: none"> <li>§ Mode and approach</li> <li>§ Depending on the mode used for communication it may or may not be possible to fully measure the outcome at this level</li> </ul>

Level #	Level	Evaluation description and characteristics	Examples of evaluation tools and methods	Determinants
2	Learning	<p>Learning evaluation is the measurement of the increase in knowledge or intellectual capability from before to after the learning experience:</p> <ul style="list-style-type: none"> <li>§ Did the trainees learn what was intended to be taught?</li> <li>§ Did the trainee experience what was intended for them to experience?</li> <li>§ What is the extent of advancement or change in the trainees after the training, in the direction or area that was intended?</li> </ul>	<ul style="list-style-type: none"> <li>§ Typically assessments or tests before and after the training</li> <li>§ Interview or observation can be used before and after although this is time-consuming and can be inconsistent</li> <li>§ Methods of assessment need to be closely related to the aims of the learning</li> <li>§ Measurement and analysis is possible and easy on a group scale</li> <li>§ Reliable, clear scoring and measurements need to be established, so as to limit the risk of inconsistent assessment</li> <li>§ Hard-copy, electronic, online or interview style assessments are all possible</li> </ul>	<ul style="list-style-type: none"> <li>§ Level of training</li> <li>§ The choice of the method to evaluate the learning or 'transfer', depends on the subject and level of complexity of the Blackboard training</li> <li>§ Mode and approach</li> <li>§ The mode of communication and the type of approach determines the methods and tools</li> </ul>

Level #	Level	Evaluation description and characteristics	Examples of evaluation tools and methods	Determinants
3	Behavior	<p>Behavior evaluation is the extent to which the trainees applied the learning and changed their behavior, and this can be immediately and several months after the training, depending on the situation:</p> <ul style="list-style-type: none"> <li>§ Did the trainees put their learning into effect when back on the job?</li> <li>§ Were the relevant skills and knowledge used</li> <li>§ Was there noticeable and measurable change in the activity and performance of the trainees when back in their roles?</li> <li>§ Was the change in behavior and new level of knowledge sustained?</li> <li>§ Would the trainee be able to transfer their learning to another person?</li> <li>§ Is the trainee aware of their change in behavior, knowledge, skill level?</li> </ul>	<ul style="list-style-type: none"> <li>§ Observation and interview over time are required to assess change, relevance of change, and sustainability of change</li> <li>§ Assessments can be designed around relevant performance scenarios, and specific key performance indicators or criteria</li> <li>§ Online and electronic assessments are more difficult to incorporate - assessments tend to be more successful when integrated within existing management and coaching protocols</li> <li>§ Self-assessment can be useful, using carefully designed criteria and measurements</li> </ul>	<ul style="list-style-type: none"> <li>§ Level of training</li> <li>§ Mode</li> <li>§ Number of trainees</li> <li>§ Depending on the combination of these variables it may be not or very complex to measure</li> </ul>

Level #	Level	Evaluation description and characteristics	Examples of evaluation tools and methods	Determinants
4	Results	<p>Results evaluation is the effect on the academic environment resulting from the improved performance of the trainee - it is the acid test</p> <ul style="list-style-type: none"> <li>§ Measures would typically be academic or institutional performance indicators, such as:</li> <li>§ Volumes, values, percentages, related to active courses, number of course uploads, etc, return on investment, and other quantifiable aspects of academic performance, for instance; numbers of complaints, student failure rates, quality ratings, achievement of standards and accreditations, growth, student retention, wastage, non-compliance, etc.</li> </ul>	<ul style="list-style-type: none"> <li>§ It is possible that many of these measures are already in place via units responsible for measuring institutional effectiveness</li> <li>§ The trainee's influence can be measured by studying the activity and utilization on the Blackboard system</li> <li>§ Trends of Number of active courses, uploads, etc, preferably classified</li> <li>§ Other measurements related to examining student performance, teaching effectiveness, etc provided an agreement is reached for accountability and impact of the LMS on the results</li> </ul>	<ul style="list-style-type: none"> <li>§ The factors hardly matter at this level</li> </ul>

Moreover the factors of the training arrangement also influence the outcomes of the training, in effect the variables in the context can have positive or negative impact on the effectiveness of the training arrangement. Yet, training effectiveness in effect is a combined result influenced by not only factors related to the training arrangement, plan and execution but also physical, environmental, psychological, institutional, academic, personal approach and individual learner skills and desire.

Derived from the Kirkpatrick's evaluation model is the underpinning principle for determining the evaluation criteria of the training arrangement that indirectly or directly influence the effectiveness of the Blackboard user-training itself. The Training Objectives are set based on the desired training outcomes from the execution of the plan. The four levels from Kirkpatrick's model are used to characterize the result of the training plan and design.

### *3.3 Data Collection and Analysis: Factors and the AHP Survey*

The first part of the Data collection involving semi-structured interviews fulfills

the objectives to firstly, analyze several aspects of planning of Training programs, and to identify the success factors and limiters; secondly, to examine the parameters of the planning process of Blackboard-User-Training.

The Interviews involved face-to-face contact with the respondents and a series of questions, including mostly open ended and some Yes/No type of questions. The Interviews are documented in Appendix I.

A semi-structure approach was used for the interviews. The questions for the interview were posed based on the objectives to:

1. Understand the Blackboard User-Training context
2. Understand the success factors and limiters of the process
3. Understand the parameters for the User-Training planning process

The respondents have been chosen based on availability of subject matter experts who have been either directly involved in arranging Blackboard User-trainings or in delivering them; and based on the permission of access to gather information from them. The University of Sharjah has granted their kind permission (Appendix VI) for the purpose of this study.

The interviewees have sound experience in the related context and possess considerable expertise on the subject of arranging Blackboard end-user trainings for the University environment. Their

insight provides direction to steer the transformation of the concepts to a concrete working framework.

Interview 1: With Ms Dina Nasser, Acting Head of Academic Computing Center, at a University in the Sharjah (UOS), UAE

*Summary of Interview:*

Since the revamp of the course management using Blackboard LMS, which replaced the homegrown course content web-sharing method, in 2004, the University has experienced different challenges at the different stages.

*On Educational Technology:*

The Blackboard LMS version 6 was adopted by the UOS in 2004, when it still did not support Arabic. Because many faculty members were not yet familiarized with using IT for teaching, there was some apprehension in the beginning.

*On Blackboard User-Training:*

Training efforts were not very intensive initially. With steady efforts there is a better potential for use of the LMS.

Key questions for planning Blackboard user training include, Who is the training for i.e. the type of audience; which part of the academic year is the right time i.e. the schedule; only work-shops or seminars or both i.e. the components; how many people at a time i.e. the session size; and who will give the training i.e. the trainer.

*Cultural Aspect:*

The Blackboard users of the UOS have a special requirement for Arabic language support.

Interview 2: With Ms Anissa Bettayeb, Acting Head of Academic Computing Center, at a University in the Sharjah (UOS), UAE

*Summary of Interview:*

The Blackboard LMS at the UOS, since 2004, took some time to be adopted by at-least a substantial proportion of Colleges and faculty. The missing Arabic locale support with the earlier version of the product proved to be a handicap.

*On Educational Technology:*

The benefits of the Blackboard LMS include, many more features such as course announcements, course document organization, collaboration tools, assignment and online evaluations, etc; user friendly features; ability to archive and reuse courses; ability to monitor student performance.

*On Blackboard User-Training:*

The Blackboard training workshops were provided to faculty conducted by the local Blackboard support company during the University's IT Year in 2005. This was one year after the introduction of Blackboard LMS for teaching.

Key questions for planning the Blackboard user training include which is the Language of the training i.e. English or Arabic; Who is the trainer; whether the trainees will be faculty or students i.e. type of audience; How many i.e. number of trainees; When i.e. the schedule.

*Cultural Aspect:*

The language factor is crucial. The Arabic locale support has a significant role in the successful and meaningful utilization of the LMS implementation for.

*Top-level Findings on Training determinants*

Drawing from the above information gathered through the interviews some of the common questions which are expected to be addressed before planning the Blackboard user-training include:

1. Who is the training for?
2. What is the level of the targeted trainee group?
3. What is the size of the targeted trainee group?
4. When and Where would the training be conducted?
5. Who is the Trainer (s)?
6. What would be ideal session size i.e. number of trainees at a time?
7. What will be the mix of components: workshops/seminars/presentations/etc?

In addition to the above, there are some other important questions in and around the training plan, which determine the direction of the training approach, its construction, delivery and ownership.

Based on the research and collection of feedback from education technology experts (Appendix I) there are some common and key questions drawn that should be addressed during the process of planning the Blackboard User-Training project.



These questions form the basis for the principles guiding the Framework design.

Table 3.3.i

Keys questions for the Blackboard User-Training (BBUT) planning process

Question	Variable type	Variable(s)	Possible Values
1. Who needs the training	Category	Type of Audience	Teaching staff, Students, IT staff, IT administrators
2. What is the level of training	Category	Level	Functional (basic or advanced), Administration (functional or system), Developer, Certification
3. How many people need the training	Category	Number of trainees	<25, >=25, >=50
4. How long will be its duration	Contact Hours	Duration	# of hours/days
5. Style of training structure	Category	Components	Seminars / presentations/ projects / workshops/ or mix
6. Language to be used for training	Category	Language	English or Arabic
7. How will it be delivered	Type	Mode	Face-to-Face (FTF), Blended, Computer Led Training (CLT), Self-paced learning (SPL)
8. Will there be any assessment/evaluation	Choice	Evaluation	Yes/No
9. How often must the training be taken	Repeat level	Repeat level	
10. Who will promote/spread awareness about the project	Personnel group	Promoter	
11. Who will sponsor the training delivery	Personnel group	Sponsor	
12. Who will monitor the training delivery	Resource	Monitor	
13. Where is the training to be held	Resource	Location	
14. Capacity of the training venue	Number	Session Size	
15. What will the cost be	Range	Cost	\$
16. Who will deliver the training	Resource	Trainer	

The level of describes inclusively the type of training and the category of the Blackboard product.

These questions open the doors for more arguments such as following

1. How will we identify "completion" point of the
2. How do we define "completion" of the BBU-TF
3. How do we define "effectiveness" of the BBU-TF
4. What are the factors that impact effectiveness of the BBU-TF and how will these be accounted for
5. Is the cost only associated with financial resources or does it include staff time, etc.
6. Does the cost account for the working time of staff attending trainings

There exists a level of dependency among and between the variables listed in Table 3.3.i.

Segregating the independent and dependent variables can depict the relationships between the them as listed in Table 3.3.ii below.

Also, the variables enlisted above can be classified based on a projects view of their roles; one set of variables relates to the design of the training arrangement and the other set, which are factors pertaining to the resources for delivering the training, inherently related the planning and execution.

Table 3.3.ii

Layering the variables by Dependency relationships and Classification

Type of Variable		Classification
<b>Independent Variables</b>		<b>Dependents</b>
1. Type of Audience	Level of training and its dependents	Design
2. Number of Trainees	Duration and its dependents	Design
3. Language	Components	Design
4. Mode	Duration, Components, Evaluation, Repeat Level	Design
5. Sponsor	Promoter, Monitor Location	Planning and Execution
<b>Dependent Variables</b>		<b>Dependent on</b>
1. Level of Training	Type of Audience	Design
2. Duration	Number of Trainees and Mode	Design
3. Components	Level of Training, Mode, Language, Evaluation, Duration	Design
4. Evaluation	Mode	Design
5. Repeat Level	Level of Training and Mode	Design
6. Promoter	Sponsor	Planning and Execution
7. Monitor	Sponsor	Planning
8. Location	Sponsor and Mode	Execution
9. Session Size	Location and Mode	Planning and Execution
10. Trainer	Sponsor	Planning and Execution
11. Cost	Level of Training, No. of trainees, Trainer, etc.	Planning and Execution

A total of 16 Variables (5 Independent and 11 Dependent) are identified through the first part of the Data Collection.

The variables classified under Design are factors which influence the approach to training, shape the learning arrangement of the training itself and provide direction for the user-training execution plan.

The Training needs are defined by these factors, of which the Design factors impact the constitution of the training's learning arrangement from the Training Planner's perspective.

The variables classified under Planning and Execution, are resource and delivery related factors, which are of concern to the training planner, stakeholders and project managers for the delivery of the user training, which is beyond the scope of this study.

The framework proposition in this study focuses on facilitating the process of planning in the context, providing guidelines to design learning arrangement for the training based on the Blackboard User learning and training needs. For this purpose the factors that matter are Independent Variables 1 to 4 and Dependent Variables 1 to 5, which belong to the Design classification.

Table 3.3.iii

Independent Variables	
1.	Type of Audience
2.	Number of Trainees
3.	Language
4.	Mode
Dependent Variables	
1.	Level of Training
2.	Duration
3.	Components
4.	Evaluation
5.	Repeat Level

The Values of the Independent variables, determine the values of the Dependent Variables.

For instance, knowing the Mode of delivery determines the Components for the training approach; if the chosen mode is a purely Online Training Mode, then there would be only online classes and remote practice sessions without any face-to-face contact components. These will be detailed in the definition of the framework in the later sections.

Using the AHP approach the Independent variables related to the Design of the Training are processed to deduce the order of weights which imply the importance of each of the factors in the process of planning the Blackboard user-training.

### *Analytical Hierarchy Process (AHP) Approach*

The first part of the Data Collection through interviews facilitated the decomposition of the factors of Blackboard User-Training objectives to a simplified form.

In the second part of the Data Collection, through a Survey designed to collect information to feed into a the Analytical Hierarchy Process, educational technology experts provided their ratings for of the importance of the variables chosen in 3.3.iii.

The objective of the survey (Appendix III):

To collect feedback from educational technology experts, including the interviewees to form a basis for short-listing the dimensions for the Blackboard User-Training Framework .

The survey questionnaire was designed with a view of processing the findings using the Analytical Hierarchy Process (AHP) approach (principles described in Appendix IV).

The survey was answered by a small sample 3 Respondents, anonymously. The respondents are from the University of Sharjah and the leading vendor of knowledge solutions in Dubai, all three have experience in Blackboard technology implementations and training.

### *AHP Calculations*

In order to evaluate the factors, their means were computed using AHP, which helped to prioritize the rank of the factors and distinguish the generally more important factors than the less important ones. AHP was involved in grouping the factors into different matrices, which were rated by the Educational Technology experts who responded to the survey based on the scale specified.

The next step is the calculation of a list of the relative weights, importance, or value, of the factors, technically, this list is called an eigenvector.

The results drawn from the Survey (Appendix III) fed to the AHP when computed (Appendix IV) give:

Table 3.3.iv

Order of Relative Importance	Variable	Mean Eigenvalue
1	Type of Audience	0.5572
2	Mode	0.1936
3	Language	0.1591
4	No. of Trainees	0.0899

The "Type of Audience" factor has the highest relative importance, followed by the "Mode". The "Language" and the "Number of Trainees" factors have lower relative importance.

Saaty (2005) suggested two indexes, the Consistency Index (CI) and Consistency Ratio (CR) to check the consistency of the responses, where CR is the ratio between CI and the Random Index (RI).

For the matrix of order 4, the RI is taken at 0.90.

Table 3.3.v

	Response 1 $\lambda_{max}$	Response 2 $\lambda_{max}$	Response 3 $\lambda_{max}$
T	4.1808	4.1723	4.1248
L	4.12056	3.9943	4.2251
N	4.0094	4.1033	4.2627
M	4.1434	4.1657	4.1305
Mean $\lambda_{max}$	<b>4.1136</b>	<b>4.1089</b>	<b>4.1858</b>
CI	<b>0.037867</b>	<b>0.036313</b>	<b>0.061935</b>
CR	<b>0.042075</b>	<b>0.040347</b>	<b>0.068817</b>

Saaty (2005) argues that a  $CR > 0.1$  indicates that the judgments are at the limit of consistency though  $CRs > 0.1$  (but not too much more) have to be accepted sometimes. In this instance, we are on safe ground.

A CR as high as, say, 0.9 would mean that the pair wise judgments are just about random and are completely untrustworthy (Coyle 2004).

All 3 Response sets produce a CR within the safe-range, that is within 10% of the Random Index (RI) 0.9.

The response sets are considered Consistent as per Saaty (2005) Consistency test using the value of CR. These responses provide the judgments for the studied factors which have a practical implication on the formation of the Blackboard User-Training Framework.

*Practical Implication of Judgment:*

In order of relative importance, the factor of the "Type of Audience" plays to most important role in making decisions regarding the training plan for Blackboard User-training.

Whether the targeted trainees are Faculty members, Students, IT Administrators or of another specified type within the scope of Blackboard training targets, determines more about the design of the training plan than the other factors.

Thus, it is fair to believe, based on the implications from the AHP testing, that the "Type of Audience" factor has the most impact on the Blackboard User-training.

The next most important factor is deciding the "Mode" of training. Whether the training would be designed to be delivered using an online mode, Instructor-Led or Blended approach decides the mode of the training, which sets the tone for many other aspects.

The next relatively important factor is the "Language" which is sometimes the crucial missing link in planning of trainings for the UAE-based audience. The question to be addressed is whether there is need to provide the training for purely English or purely Arabic speakers. It is possible to mix these, but defining this variable is very important in order to proceed with the training plan.

The least significant factor, as compared to the other three, is the "Number of trainees". Although, resource allocation cannot be done without knowing this value, it does not heavily impact the training design and structure; what it will surely affect is the schedule and resource specifications.

Although, each one of these factors plays a role on determining one or more of the dependent variables or a variation of the dependencies, the order in which the Independent Factors would be addressed is now clear based on the results of the AHP.

Table 3.3.vi

Weighted Factors and their Dependents

Independent Factors	Dependent Factors
Type of Audience	⇒ Level of training and its dependents
Mode	⇒ Duration and its dependents, Components, Evaluation, Repeat Level
Language	⇒ Components
No. of Trainees	⇒ Duration and its dependents

The relationship between the factors can be made simple using the deductions from Table 3.3.iii and Table 3.3.iv, as shown in Table 3.3.vi; The dependency relationship factors integrate towards the training objective.

This weighted order of relative importance provides the decision basis for the Working framework for the Blackboard User-Training described next.

### *3.4 The Blackboard User-Training Framework*

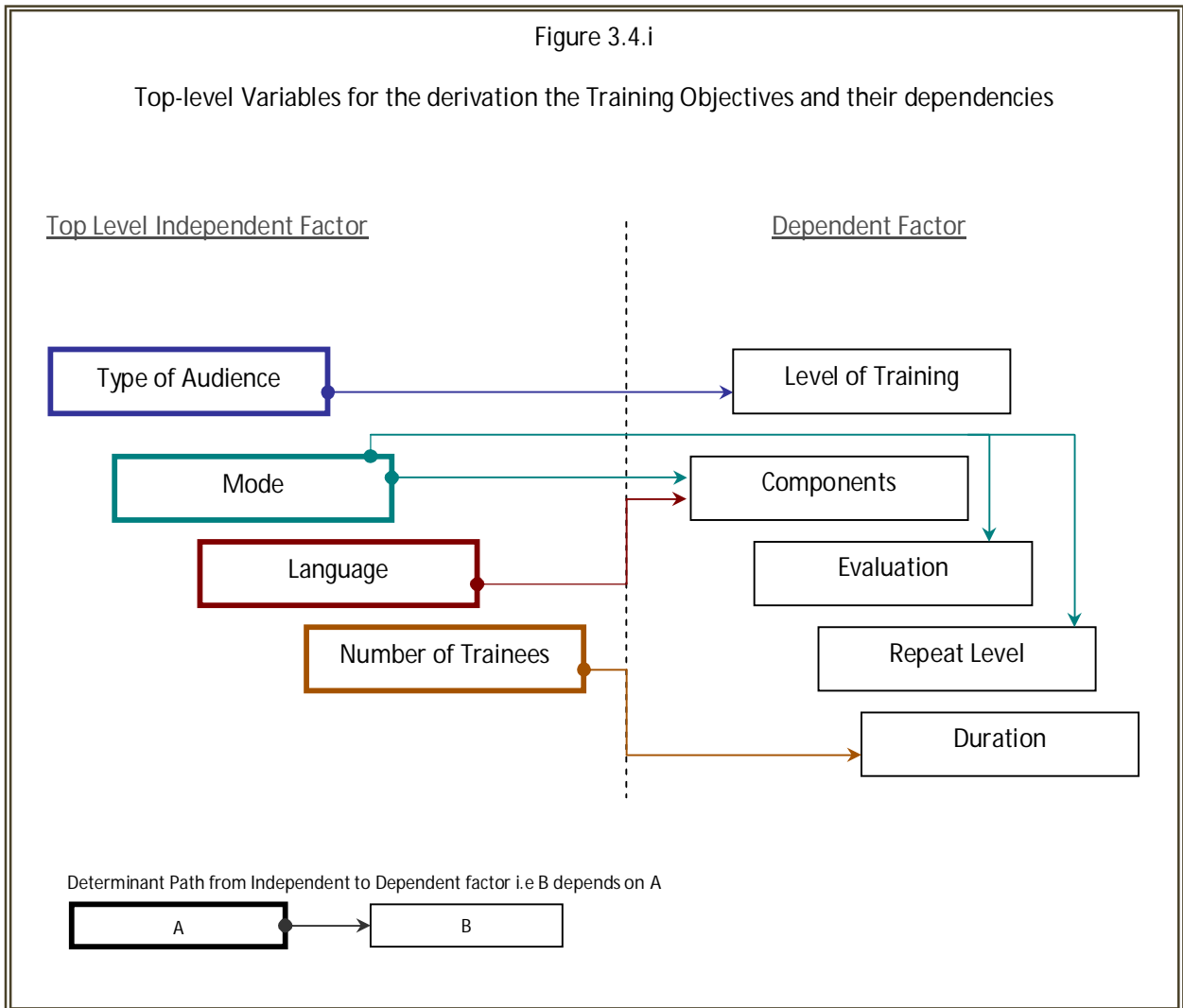
According to the conceptualization and AHP analysis, the primary determinants of the Blackboard user training arrangement and constitution are evident.

The Blackboard User Training is expected as a training project to involve planning, execution and evaluation. Ordinarily, the training planner should define the training needs and evaluation criteria.

In addition to resource, project schedules and potential execution method, the Blackboard User-Training Plan would, at-least include Training Objectives, Expected Training Outcomes, Training effectiveness evaluation criteria and the training design would define the components training arrangement.

These are the elements that are of concern to the Blackboard User-training framework (BBU-TF), which in principle facilitates the definition of the learning objectives, relates the expected learning outcomes with the evaluation criteria, and integrates the parameters to the end of proposing the learning arrangement to address the Blackboard User-training requirement.

The framework is based on the factors and dependencies as listed in Table 3.3.vi.



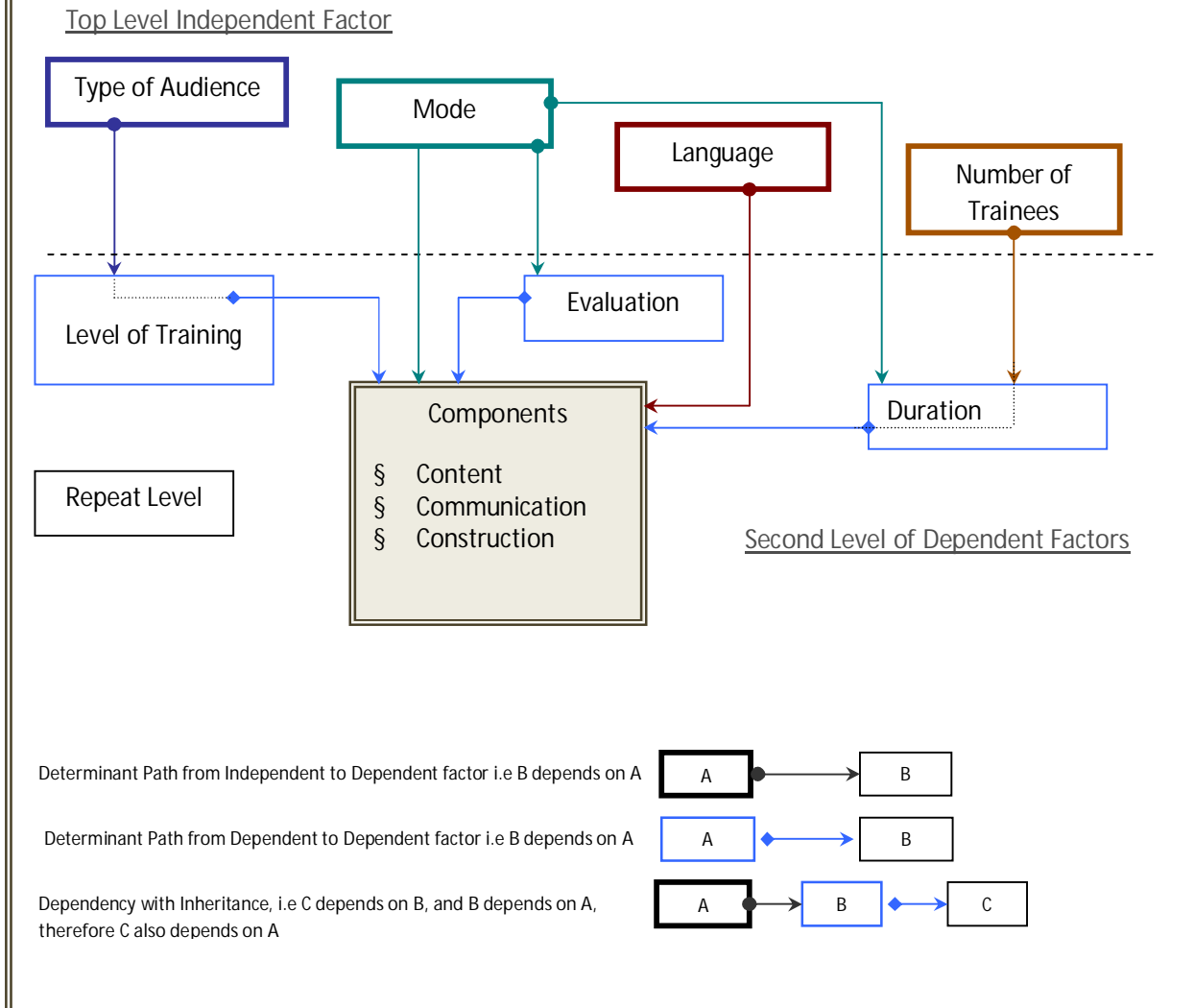
The variables Type of Audience, Mode, Language, Number of trainees in weighted order are the Top-level factors as they are independent and influence the values of the other factors, typified as the second level factors.

Moreover, there is interdependency between the Dependent variables itself. Of these dependencies the most significant is the relationship the Components as it bears a dependency on almost all the independent factors, either directly or by law of inheritance.



Figure 3.4.i

The factors "Components" depends on



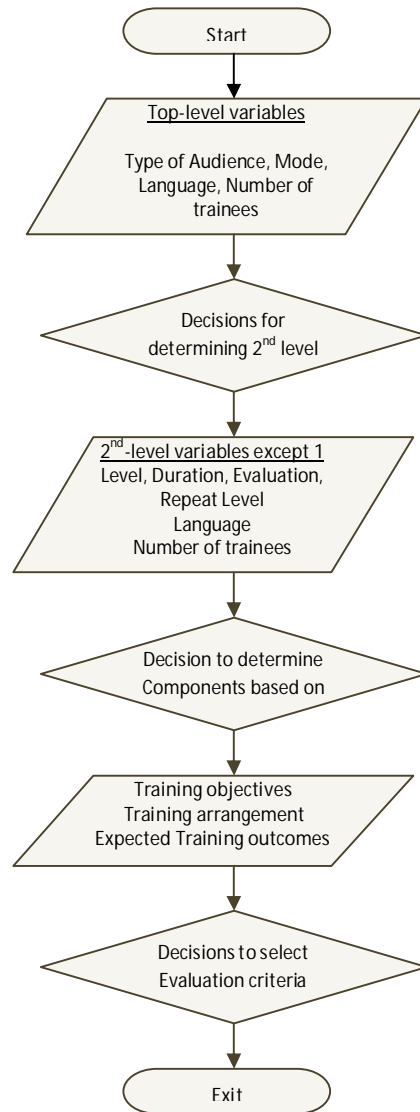
Together, in effect, all the factors affect the criteria for decisions about the learning arrangement.

According to a system view of the training framework, the inputs in the form of the top level factors and derived second level factors are fed to the system based on the framework which processes the values against the criteria giving and output of the suggested elements of the training arrangement and the evaluation criteria.

The frameworks outputs, for the purpose of evaluating the effectiveness of the training arrangement, are characterized by Kirkpatrick's four-level model and a criteria for selection of measurement tools for each level based on the determinants is as described in Table 3.3.i.

Figure 3.4.ii

Simplified Flow Chart for the processing based on the Framework



Without illustrating the iterations and permutation of conditions, a simplified view of the basic Flow chart including decisions, inputs and outputs of the steps in application of the framework is shown in Figure 3.4.ii above.

### *Working Definition of the Framework*

The training arrangement is shaped by training objectives, outcomes and the evaluation criteria for measuring effectiveness in outcomes, their determinants and constituents.

The Blackboard User-training framework (BBU-TF) by definition provides a basis to facilitate the tasks of the training planner by

1. Reducing the training needs to a set of fundamental factors which can be easily used to determine the learning objectives
2. Relating the learning outcomes evaluation criteria alignment to the learning objectives
3. Relating the learning objectives to the 3C-Model components to suggest the learning arrangement
4. Simplifying the learning outcomes evaluation criteria to determine to measurement for training effectiveness

The BBU-TF is meant to facilitate the planning process underlying the Blackboard user-training project. It may be a helpful tool for the design of the training program but does handle the parallel training concept.

The framework is conceptualized for the perspective of the Blackboard Academic Suite – learning system, however, it is not limited only this flavor of the Blackboard learning systems series. The framework can be used to facilitate planning for other Blackboard learning and management systems with slight adaptation to some of the content and construction components.

The does not necessarily assume only a single training project, nor is it limited to small training groups or trainers.

The framework does not provide a list of learning materials, resources or learning content, which should or should not be included in the training sessions. Developing the training material is out of the scope of this research.

The framework is not limited to assume the Type of audience and can be extended to any variation of the trainee group. The type of audience may be

The framework provides guidelines to deem the combination of components: content, communication and construction. However, it does not intend to provide the proportions and time intensity of the prescribed components.

The underlying principles of the framework draw upon inferences and concepts established in the conceptualization section 3.2; one of which relates learning needs as one of the determinants of the training needs. Needs can be directly translated into objectives by stating the path(s) to address the stated needs.

Learning Needs  $\Leftrightarrow$  Learning Objectives

Learning Needs  $\subseteq$  Training Needs

Training Needs  $\Leftrightarrow$  Training Objectives

Training Objectives can be determined based on the set of factors listed in 3.3.vi which are related to the learning needs, product training parameters, training project execution, resource, delivery and most importantly design.

The factors mapped to the 3C-model have a relationship that provides the basis for the constitution of the Blackboard User-training arrangement as shown in Figure 3.2.iv. The different factors, which are inherently direct or indirect parameters of the Training objectives, have many-to-one relationships with the components: content, communication and construction. This is the basis for the decision rules of the framework.

Table 3.4.i Combination Determinants for Components			
Components	Top-Level Variables	2 <sup>nd</sup> -Level Variables	Combination Determinant
Content	Type of Audience	Level of Training	Level of Training + Language
	Language		
Communication	Mode		Mode + Number of trainees
	Number of Trainees		
Construction		Evaluation	Evaluation + Repeat Level
		Duration	
		Repeat Level	

## Working Principle

The top-level training objectives provide the criteria for decisions related to the second level training objectives; which in turn determine the arrangement of the components: content, communication and construction of the training are inferred based on the Training needs, and the evaluation criteria for measuring training outcomes.

Training Objectives = { Top-level variables }  $\Rightarrow$  { Second-level variables}

{Training Objectives} + {Evaluation Criteria  $\Rightarrow$  {Training Objectives}

$\Rightarrow$  {Training Components}

= Training Arrangement

Underlying ideology across the principle: Maximizing training transfer (the learning level element of outcome) is all about minimizing waste  $\Rightarrow$  reducing the in-effectiveness of the transfer by ensuring that the training arrangement address the training objectives as far as possible.

## Pre-requisites

The objective of the framework is to facilitate the part of the planning process underlying Blackboard user-training related to definition of the training objectives, outcomes, evaluation criteria and from a design per se the training arrangement.

The framework requires the training planner to have values available for the top-level variables (Table 3.4.i) and any preferences or limitations related to these.

The Type of Audience is described by the Blackboard user-role the group is generally to, example instructor, student, Dean, others, plus the level of understanding the audience group generally possesses, for instance Beginner level, Intermediate or Advanced level group.

The Mode is described by the type of approach expected to be used for training for example, purely Face-to-face (FTF), purely Computer-Led-Training (CLT) , Online Collaboration (OC) , or a Blended approach (BA).

The Language required for the medium of instruction and content delivery in the training, either English, Arabic or Bi-lingual.

The Number of trainees targeted described the expected turn-out or total actual size of the audience. It depends on the manner of planning training execution whether pre-registration is

required or will the training treat attendees on a first-come-first-serve basis. A proper figure indicating the size of the training audience is a critical feed to the framework.

The framework does not intend to guide the planning functions of resource allocation, scheduling, organization and communication and a pre-requisite to application of the framework is to have the other planning functions related to gathering the information needed as inputs, without depending on the framework. The training planner must have a means to conduct these functions.

#### The Decision Rules

The relationship between the factors associated with the learning from the conceptualization section 3.2 and weighted independent factors is the foundation of the criteria for making decisions related to elements in the Table 3.4.i.

Based on combinations of the determinant values, prescriptions are drawn aligned to the relationships between the related factors of the learning arrangement.

The prescription is one or more values determined of the dependent factor based on the value of the determinant. The values in the prescription may be separated by "OR / AND " or "AND" connectors represented by the symbols "+" and "\*" respectively. "OR / AND" suffices the need for "OR" also.

#### *Decision Tier 1*

Determining Second Level Variables based on Top-level Variables is relatively straightforward.

In determining the Level of Training, if the Type of audience is those users who are associated with the Instructor role in Blackboard LMS, depending on the level of expertise possessed by the audience choose either beginners level Instructor oriented functional (Instructor : Beginners) training for low-skilled, intermediate level Instructor oriented functional (Instructor: Intermediate) training for medium-skilled and advanced level Instructor oriented functional (Instructor:Advanced) for the high-skilled type;

If the audience is typified as those users who have a student role on the Blackboard system then the Level of training is chosen as Student oriented functional (Student) training.

If the type of audience is depicted as Administrative , for those users associated with the course schedule management, student enrollments, user administration tasks on the Blackboard LS, the Level of training would be Administrative oriented functional (Admin:Functional) training.

If the answer to the type of audience is System Administrators then the Level of training is Blackboard System administrator oriented Technical Training (System Admin: Technical).

From this it is also implied that in an effective training scenario the members of the audience best belong to the same type.

The Duration is described as a range of number of hours per training (hrs pt). Based on the number of trainees and the mode a prescription of the Duration is made. Based on the mode the number of hours per training for a group of 20-25 learners is defined. This can then be multiplied with number of such groups (based on the total number of trainees) to get the total Duration of the training, with the exception of the Computer-led training, in which case the Duration is maintained in 'hrs pt'.

Table 3.4.iii

Decision rules for Duration calculation Selection

Duration Prescription Rules			
	Determinant	Determinant Value	Method / Tool prescription
	Mode	Face to Face (FTF)	HPT = 1 hr pt to 5 hrs
		Computer-led-training (CLT)	HPT = 3 hrs pt to 10 hrs
		Online Collaboration (OC)	HPT = 1.5 hrs pt to 5 hrs
		Blended Approach (BA)	HPT = 1.5 to 5 hrs
	Number of Trainees (N)	< =25	HPT x1
		> 25	HPT x (N/25) [except if Mode = CLT]

The number of hours per training, come in one of the given ranges depending on the complexity of the training.

The Repeat level is identified based on the Level of training and the Mode. Possible indications of Repeat levels is as follows, determined by the Mode  $\in$  {FTF; CLT; OC; BA} and the Level of training  $\in$  {Instructor : Beginners/ Intermediate/ Advanced; Student; Admin: Functional; System Admin: Technical}.

- a. Face-to-Face (FTF) or Computer-led-training (CLT) for any level of training , will demand a high Repeat level i.e. frequent retraining, maybe as less as 3 months or even 1 month depending on the IT orientation of the end-users

- b. Online Collaboration (OC) will demand lower repeat levels for Student, Admin: Functional and Instructor: Intermediate/Advanced levels of training. In the order of between 3 to 6 months would be appropriate.
- c. Blended approach (BA) will demand lower repeat levels from any level of training, in the order for a frequency ranging from 4 to 6 months.

The Components selection is detailed next in Decision Tier 2.

The selection of Evaluation methods is detailed later in Decision Tier 3, however it is important to mention the influence of the Mode chosen on the evaluation approach. For the FTF Mode a problem-solving based approach or scenario based evaluation is possible. With the CLT mode the options are confined to problem-solving using structured approaches. In the CLT and OC modes electronic assessments / online exams can be employed. The BA mode provides the largest number of options to approach evaluation of learners.

*Decision Tier 2*

Determining Components for the training learning arrangement is based on the earlier relationships drawn in Table 3.4.i

Table 3.4.iii

Decision rules for Components Selection

#	Component		
1C	Content		
	Determinant	Determinant Value	Method / Tool prescription
	Level of Training	Instructor: Beginner/Instructor/Advanced	Step-by-step learning material of instructor –oriented Blackboard features and functions from simple to complex based on level
		Student	Quick reference + step-by-step learning material for student-oriented Blackboard features
		Admin:Functional	Step-by-step learning material oriented to Scenario based functional procedures
		System Admin: Technical	Detailed System Administration oriented Technical material
	Language	English	English media
		Arabic	Arabic media



		English + Arabic	English and Arabic media
2C	Communication		
	Determinant	Determinant Value	Method / Tool prescription
	Mode	Face to Face (FTF)	Bidirectional * (Trainer-led Presentations + Discussions + Printed Workbooks )
		Computer-led-training (CLT)	Unidirectional * Digitized learning objects
		Online Collaboration (OC)	Bidirectional * ( Online Collaboration + Digitized learning objects )
		Blended Approach (BA)	Bidirectional * (Trainer-led Presentations + Discussions + Printed Workbooks + Hands-on practice )
3C	Construction		
	Determinant	Determinant Value	Method / Tool prescription
	Evaluation	Face to Face (FTF)	Trainer observations of learner's participation + observation over time + interviews over time to assess change, relevance and sustainability of change
		Computer-led-training (CLT)	Electronic form of Psychoanalytical assessments + observation over time to assess change , relevance and sustainability of change
		Online Collaboration (OC)	Trainer observations of learner's interaction + observation over time to assess change, relevance and sustainability of change
		Blended Approach (BA)	Trainer observations of learner's interaction + observation over time + interviews over time to assess change, relevance and sustainability of change
	Duration	HPT = 1 hr pt to 5 hrs	The HPT helps determine the number of times the training session(s) must be conducted based on the calculation
		HPT = 3 hrs pt to 10 hrs	
		HPT = 1.5 hrs pt to 5 hrs	
		HPT = 1.5 to 5 hrs	
	Repeat Level	1-3, 3-6 months	Plan for future re-training as per need

### *Decision Tier 3*

The criteria for the evaluation of the effectiveness of the learning arrangement involves is based on the four-levels of the Kirkpatrick model. Determining what and how will be measured involves checking the possible evaluation tools and measures on conditions of the determinant values.

Table 3.4.iii

Decision rules for Evaluation criteria

#	Level		
1	Reaction		
	Determinant	Determinant Value	Method / Tool prescription
	Mode	Face to Face (FTF)	Trainer observations + verbal reactions + post-training feedback through surveys (written or verbal)
		Computer-led-training (CLT)	Post-training feedback through electronic surveys
		Online Collaboration (OC)	Trainer observations + Post-training feedback through interactive or electronic surveys
		Blended Approach (BA)	Trainer observations +Verbal reactions + Post-training feedback through verbal, written or electronic surveys
2	Learning		
	Determinant	Determinant Value	Method / Tool prescription
	Mode	Face to Face (FTF)	Verbal or written pre and post assessments / tests + post-training 'transfer' check on utilization of Blackboard by the learners
		Computer-led-training (CLT)	Electronic pre- and post- assessments/test + post-training 'transfer' check on utilization of Blackboard by the learners
		Online Collaboration (OC)	Electronic pre- and post- assessments/test + post-training 'transfer' check on utilization of Blackboard by the learners
		Blended Approach (BA)	Written or electronic pre- and post- assessments/tests + post-training 'transfer' check on utilization of Blackboard by the learners

3	Behavior		
	Determinant	Determinant Value	Method / Tool prescription
	Mode	Face to Face (FTF)	Trainer observations of learner's participation + observation over time + interviews over time to assess change, relevance and sustainability of change
		Computer-led-training (CLT)	Electronic form of Psychoanalytical assessments + observation over time to assess change , relevance and sustainability of change
		Online Collaboration (OC)	Trainer observations of learner's interaction + observation over time to assess change, relevance and sustainability of change
		Blended Approach (BA)	Trainer observations of learner's interaction + observation over time + interviews over time to assess change, relevance and sustainability of change
4	Results		
	Determinant	Determinant Value	Method / Tool prescription
	None	By Default	Measuring academic or institutional performance indicators such as program effectiveness, blackboard course utilization, student performance, etc.

NOTE:

"+" in the Method / Tool prescription stands for "or / and"

"\*" in the Method / Tool prescription stands for "and"

The evaluation criteria generated based on these guidelines would come up with a listing of methods or tools to evaluate the training arrangement effectiveness on all four levels. The prescription will indicate a choice of options across the levels, and it is still at the discretion of the training arrangement to use all or some depending on the flexibility of other factors such as information availability, time, cost, human resource, or other project resource limitations.

## *Framework SWOT*

A quick SWOT Analysis on the framework illustrates Strengths, Weaknesses, Opportunities and Threats attached with it:

### Strengths

**Focus:** The framework provides working principles specific to Blackboard User training planning. The framework does focus on training for Blackboard end-users rather than at a generic level and provides elementary

**Multi-tier approach:** Its multi-tier approach enables addressing decisions related to the constitution of the training arrangement, the content type and structural arrangement as well as the evaluation criteria.

**Parameterization:** The framework at its core parameterizes the training needs, which come in the form of learning objectives, expected learning outcomes, preferences and Blackboard training related factors and equates the elementary factors to the core components of the training arrangement.

**Neutral:** The framework provides an unbiased approach to co-relate, compare and decide on the best-fit training learning arrangement for the Blackboard user-training based on the inputs and factors.

**Self-corrective nature:** The framework provides the prescriptions for devising Blackboard User-training arrangement as well as the evaluation criteria to measure the effectiveness of derivatives against the promised outcomes. In this regard the proposed framework is self-corrective in nature.

**Adaptability:** The framework can be applied across all the different versions of the Blackboard LMS and its features. Moreover, the framework is flexible enough to be applied to future versions and upgrades of the Blackboard product.

**Flexibility:** The underlying principles of the framework enable it to be flexible enough to apply to user-trainings oriented to more than the Blackboard learning system products. For example it can be easily applied to a scenario for the Moodle open source system by possibly modifying the content factor outputs.

## Weaknesses

### Partially addressed training delivery

The BBU-TF provides guidelines to make subjective decisions about the determinants of the training execution and delivery, such as the mode, duration and type of sessions. The framework does not decompose the attributes related to the Training delivery from a project execution perspective, which encompasses the decisions related to ownership, sponsorship, human resource, and scheduling matters.

### Absence of decomposition of environmental factors

The propositions of the framework encompass factors all related to the training arrangement or the planning of the training, but do not include a breakdown of institutional factors, which may or may not influence the decisions related to the training arrangement and evaluation criteria.

## Opportunities

### Basis for complete training execution planning

The framework provides the fundamental for an end-to-end design of the Blackboard User-training. The propositions underlying the frameworks working principles can be extended to the end of creating complete training

## Threats

### 'Blind faith' on inputs provided

In a scenario where the training planner or facilitator does not have a clear understanding of the Blackboard end-users characteristics, it would threaten the quality of the outputs of the framework in addressing the real needs. For example if the inputs provided indicate that the audience is advanced level instructors, whereas in reality the instructors are basic level, then the whole training arrangement drawn from the framework would not suit the true need, because of dependency on false inputs.

## Chapter 4: Application of the BBU TF: An Experiment

### *4.1 The Experiment: Scope and Execution Plan*

The objective of the experiment is to pragmatically apply the propositions of the framework conceived by this study to a realistic setting. For the purpose of this exercise the University of Sharjah has been chosen with the kind permission from the Dean of Academic Support Services (Appendix VI).

The context of the experiment is the Institution, the Stakeholders including the Blackboard User base, and the Blackboard technology implementation, supporting services and the institutions academic activities. These form the environment for the experiment and have more or less important influences on the conduct of the experiment.

#### The Institution

The University of Sharjah (UOS) is established in the UAE since 1997, launched its implementation of the Blackboard Learning System, Enterprise edition in the Fall semester of the academic year 2004 – 2005. UOS main campus is at the University City of Sharjah comprising of buildings separated by College and Gender, and other Community College branches in Khorfakkan, Kalba, Sharjah, Dibba al-hisn and Al Meleiha. In all the UOS caters to more than 10,000 students and hosts over 500 faculty members.

Mission and Objectives: The University of Sharjah aims to fulfill its obligations and responsibilities towards its students; add to human knowledge and scientific research; meet the needs of society; and enhance higher education in the country in coordination with other institutions of higher learning (UOS 2007).

#### *Support services within the Institution*

#### *The Academic Computing Services of the Computer Center at UOS*

As an integral part of the Academic Support Services the Academic Computing Services (ACS) Unit activities are driven by the key goal to enhance 'academic technology' experience and ultimately deepen the integration of technology with teaching.

The Instructional technologies team, under the ACS, is responsible for supporting the seamless integration of technology with academia. With the growing importance of the role of academic computing technology for instruction, the Instructional Technologies unit has been established to align the academic technology implementations and support, to the broader academic institutional goals and mapping these to the faculty requirements at UOS.

Instructional Technologies offers technology support to the academics through the implementation of a University Wide Learning Management System on the web, Blackboard 7. The University of Sharjah academia are regarded as a rich faculty base who bring together a vast range of experiences, quality teaching, innovative learning methods all under one umbrella.

#### Academic Activities

The UOS course programs are offered across 13 Colleges, further divided into over 30 departments at both under-graduate and post-graduate levels. Most except some of the programs at the Colleges of Health Sciences and Dentistry, are offered to male and female students separately.

At the UOS courses are generally delivered using a form of blended approach combining instructor-led teaching in classrooms, with online learning materials delivery, traditional evaluation tools, practice labs and elements of self-paced learning.

A study by the author brought to light that about 30 % of the courses require Arabic language as either a medium of the course or for instruction.


#### The Stakeholders

The Head of Academic Computing Services, the Instructional Technologies team, the Blackboard end-users and the author of this study hold a stake with respect to the Experiment. The academia and students constitute the User base for the Blackboard LMS in implementation at the University.

The Blackboard Technology

Figure 4.1.i

Blackboard in a Strategic Role at UOS on the path to transformative E-learning

Exploratory	Supported	Strategic	Mission Critical	Transformative
<p><b>Independent Initiatives: Course Web sites</b></p>	<p><b>Commercial Enterprise LMS: Some collaborative Software Tools</b></p>	 <p><b>Online Courses, organizations, and institutional services integrated with Back-office systems</b></p>	<p><b>A Full online Campus with E-learning communities</b></p>	<p><b>An Online Learning Environment:</b></p> <p><b>When any student or teacher can view instructional content, collaborate with educators &amp; peers, evaluate academic performance, access learning resources at any time to achieve their educational</b></p>

At the UOS Blackboard learning system is in use since 2004, to address the online learning needs of the graduate, under-graduate and other course programs delivered at the UOS. With the current version of the product, the LMS caters to the entire audience of academic users including the native and Arabic speaking users.

Context Assumptions

It may appear to be a lengthy exercise of filling space with the jargon about the Institution and the context of the experiment, however, there is purpose. Having established that at the University of Sharjah, there is a concerted effort towards supporting the Blackboard learning system and its users and that even before this experiment, there have been efforts made to the end of training Blackboard users in a general way, it is safe to assume that the factors which influenced the



effectiveness of training efforts in the past are the same or similar in effect to the current context for the training arrangement.

The assumption in this context made is : The institutional, environmental and academic factors which may have an impact on the results of the training conducted, as part of the experiment remained the same as has been for similar training initiatives in the past.

The project methodology used for planning, including the application of the framework, execution and feedback collection is assumed to bear no influence on the training outcomes.

Another key inference made based on earlier part of the study including the findings projected in Narwani et al (BBSummit 2007) is that increase in user adoption is a measure of the effectiveness of the of Training efforts.

#### Scope of the Experiment

The experiment aims to apply the propositions made by the Blackboard User-training framework to derive the learning arrangement based on the inputs provided as needed, employ the derived training arrangement at the University of Sharjah and measure the effectiveness of the arrangement using the evaluation criteria prescribed.

By application of the framework propositions with the inputs, the training objectives, outcomes and arrangement with criteria for evaluating the effectiveness of the training arrangement devised, are defined.

The training arrangement which is the input to the execution of the training project, is then put into action. For the purpose of experiment ACS team at the UOS handled the project initiation, planning, and execution in order to employ the training arrangement derived by application of the framework. The ACS team supported the study by providing the preliminary data required forming the inputs for the framework and providing the project setting aligned to the purpose of the experiment.

Based on the criteria for evaluation prescribed by the framework for the experiment's training arrangement, the data collection is carried out to measure the Reaction and Results levels.

*Application of the Blackboard User-training framework*

The inputs for the experiment's first part were provided by the ACS team, responsible for the facilitation of training efforts related to the Blackboard learning system at UOS.

Top-level variables:

Type of Audience: New Faculty members , most of them with only basic Blackboard skills

Mode: The preferred mode is Blended

Language: English and Arabic are both required

Number of Trainees: The estimated turn-out of attendees is roughly 75 or more

Using the input variables, Decision Tier 1, 2 and 3 are fed with the required values for determinants.

Table 4.1.i

Decision Tiers 1, 2, 3: application of the Blackboard user training framework in experiment

Variable under Decision	Determinant Variable or Condition	Determinant Value	Decision rule applied
<b>Tier 1</b>			
2 <sup>nd</sup> Level Variables			
Level of Training	Type of Audience	New Faculty members with mostly basic Blackboard skills	Instructor + Beginner = beginner's level faculty-oriented functional Blackboard training
Duration	Number of Trainees	>= 75	1.5 to 2 contact hours for each learner
	Mode	Blended	
Evaluation	Mode	Blended	Problem solving based
Repeat Level	Level of Training	Instructor: Beginner	4-6 months
	Mode	Blended	
<b>Tier 2</b>			
Components			
1C-Content	Level of Training	Instructor: Beginner	Bi-lingual + printed + step-by-step procedures
	Language	English and Arabic	

2C-Communication	Mode	Blended	Oral interaction + computer-aided teaching
3C-Construction	Evaluation	Problem solving based	Practice sessions + workshops + plan for repeat or upgrade
	Duration	1.5 to 2 hrs pp	
	Repeat Level	4-6 months	
<b>Tier 3</b>			
<b>Evaluation Criteria</b>			
Reaction Level	Mode	Blended	Trainer Observations + Post-training feedback through verbal, written or electronic surveys
Learning Level	Level	Instructor: Beginner	Written or electronic pre- and post-assessments/test + post-training 'transfer' check on utilization of Blackboard by the learners
	Mode	Blended	
Behavior Level	Level	Instructor: Beginner	Trainer Observation of learners' participation + Interviews over time to assess change, relevance and sustainability of change
	Mode	Blended	
	Number of Trainees	>= 75	
Results Level	<i>None</i>	<i>Default</i>	Institutional performance indications such as the Blackboard course utilization

As per the framework's propositions it is not considered mandatory to include each mentioned prescription in the training arrangement nor the evaluation criteria. The framework provides a pragmatic approach to identification of options which form elements of the purpose.

Based on the prescriptions the elementary output of the framework process is defined by adapting the prescriptions to the specific functions or tasks chosen:

*Training objectives:*

To provide faculty at the University with a beginner's level faculty-oriented functional Blackboard training for more than 150 faculty members, by providing Seminars and Hands-on workshops in both English and Arabic, using a simple problem solving based approach.

*Training outcomes:*

Increased knowledge and capability of faculty members to use the Blackboard learning system at their disposal and therefore possible increased utilization of the LMS overall.

*Training Arrangement:*

Using a blended approach the training arrangement components suitable for this regards include printed step-by-step procedures for practice and for future reference to the trainees, trainer led presentations, which offers interactivity and practice workshops.

*Training arrangement evaluation criteria:*

In order to evaluate the effectiveness of the training arrangement on the levels of Reaction and Results, the trainer observations, post-training feedback through surveys are chosen for the former and the blackboard course utilization statistics are used to examine the level of the Results.

It was established through discussion with the stakeholders in the project, that more than 60% of positive reaction outcome would reflect positive effectiveness of the training arrangement derived for the experiment.

Based on the understanding of the context at UOS, it had been agreed that increase Blackboard course utilization is one the goals of institutional effectiveness measures.

Getting a positive on both these levels will deem the Experiment successful in offering a training arrangement derived based on the framework proposed by this study.

Execution

Using this arrangement, the Blackboard Faculty Orientation Week was planned for using the project management functions of resource allocation, team organization, work-breakdown and scheduling.

The Experiment was coined "Blackboard Orientation Week Spring 2006-2007" (© University of Sharjah 2007) and was executed between 23<sup>rd</sup> January 2007 to 26<sup>th</sup> January 2007 due to the constraints in schedule and resource limitations.

Based on the definition of the training arrangement derived from the application of the framework, the training experiment involved two presentations followed by a series of Workshops covering the duration recommendations. The workshops used a Blended approach combining the use of

presentations, discussions, hands-on technical practice, and workbooks. Based on the guiding prescriptions the learning materials were specially designed for this project.

A total of 57 Faculty and Teaching staff attended the Blackboard Orientation Week Workshops, which was not as high as the turn-out expected.

In all, from the time of inception to collection of results, the project took over 8 working weeks.

#### Data Collection and Results

Prior to conducting the training in this experiment, the UOS has conducted a semi-structured evaluation of existing Blackboard LMS skills among instructors and the level of utilization. The former is pertinent information for the University, and only the latter forms the basis of the comparison of results.

At the end of every Blackboard Orientation workshop attendees were requested to respond to a brief survey. The survey was designed with multiple purposes, of which the questions 1,2, 7 and 8 are relevant to the experiment's evaluation objectives. The survey is attached in Appendix V.

### *4.2 Experimental Results and Inferences*

Qualitative methods combined with quantitative ones can provide particularly rich and robust inquiries. Based on the prescriptions of the Blackboard user-training framework applied in experiment, two levels are chosen to measure the effectiveness of the Training arrangement; i.e. the Reaction level and Results (which inherently evaluates the learning and behaviour) level of outcomes.

Reaction evaluation is how the learner felt, and their personal reactions to the training or learning experience, for example whether the learner felt the training was provided good use of his time. Using post-training feedback forms through a survey trainee reactions were collected for this measurement.

Results evaluation is the effect on the academic environment resulting from the improved performance of the trainee, in the provided context one of the factors translated to institutional effectiveness is level of utilization of the Blackboard LMS at UOS.

*Reaction Level outcomes analysis through Hypothesis Testing*

The Reaction level outcome is qualitative in nature, which can be examined using Hypothesis testing to confer the extent of effectiveness of the experiment training arrangement on this level.

Data collected is from the post-training feedback questions, included as part of a post-training survey specially designed during the course of this experiment. Questions 1,2,7 and 8 for the basis in this regard. Examining the responses to Question 7, “What do you think about the Training you have already received in University of Sharjah?” on a scale from Not Useful to Extremely Useful, gives a direct reflection of the reaction of the learners in terms of their perception of the utility of the training to them. A positive reaction is reflected if the response was Useful, Very Useful or Extremely Useful, and negative reaction is the response was Somewhat Useful or Not Useful.

Table 4.2.i  
Responses to Question 7 from a Sample of 50 responses

Response to Question 7	No. of responses
The training was useful, very useful, extremely useful	38
The training was only Somewhat or Not useful	7
No answer	5
Total No. of responses	50

The missing answers render the sampled response invalid. The 5 responses excluded from the sample set.

Hypothesis testing

Involving categorical values, Hypothesis testing of Proportion can be applied for the purpose of the statistical analysis. The two possible outcomes are “finding the training useful” or “find the training not useful” described by the question-answer outcomes in Table 4.2.ii.

Table 4.2.ii

Type of Response (response)	No. of responses	% of responses
Positive Reaction Response: The training was useful, very useful, extremely useful	38 from 45	84.44 %
Negative Reaction Response: The training was only Somewhat or Not useful	7 from 45	15.56 %

For this sample of 45 responses (n=45), 84.44 % of the training attendees found the training to be useful, very useful, or extremely useful and 15.56 % projected that they found the training to be somewhat or not useful.

Before the execution of the experiment it was established by the stakeholders that more than 60% of positive responses would ascertain the experiment as Successful, and consequently imply that the framework is validated.

For The Hypothesis testing, the responses reflecting a positive reaction related to the outcome “finding the training useful” are interpreted as “Successes”.

The sample provides a Sample proportion ( $p_s$ ) of 84.44 %

Measuring the Reaction level outcome of the sample provides an indication of the effectiveness of the training arrangement for the superset of the sample, that is the population of training arrangements prescribed the framework given the input variables in contexts of similar factors.

Using the *Z-test Hypothesis test* for the proportion and the sample an inference for the population can be drawn to establish whether the positive reaction responses will always be above 60% for the outcome application of the framework.

*The Claim for this case is the positive reaction responses will always be equal or more than 60% of the training attendees.*

Before testing the proportion, it is necessary to ensure that the sample is suitable for the test in the first place.

When both  $np$  and  $n(1-p)$  are at least 5,  $p_s$  can be approximated by a normal distribution with mean and standard deviation and therefore the sample can be used for the test.

The condition check affirms that the test can be made using the sample.

Taking  $P=0.6$  based on the agreement of 60% positive feedback from the learners as the reaction reflection, established in the Training evaluation criteria description.

Z-test for Proportion:

Establishing the Null Hypothesis and Alternative Hypothesis. The Null Hypothesis  $H_0$  begins with the assumption that the null hypothesis is true. The alternative hypothesis  $H_1$  is the opposite of the Null hypothesis which may or may not be accepted based on the test.

The objective is to test whether the proportion of successes (positive responses category) will drop below 60%, that is be 59% or below with respect the population.

Table 4.2.iii

Summary of Hypothesis Test Calculations

Response to Question 7	No. of response	% of responses
Sample Size	n	45
Sample Proportion	$p_s$	0.8444 (84.44%)
Proportion Mean	P	0.60 (60%)
Proportion Standard Deviation (approximated)	$\sigma$	
Level of Significance	$\alpha$	0.50 (50%)
Level of Confidence	1- $\alpha$	0.95 (95%)
Critical Value	CF	1.645
Null Hypothesis	$H_0$	$p \leq 0.59$



Alternative Hypothesis	$H_1$	$p > 0.59$
Test Statistic	Z	3.4701
Z-Test Condition	If $Z > CF$ Then Reject $H_0$	
Test Result	Rejected $H_0$	

Inference:

The test statistic Z value is 3.4701 which is more than the Critical Value 1.645, therefore the null hypothesis of this case is rejected, which implies that there is a 95% surety that the population proportion of positive reaction will not drop below 60 %.

Based on the hypothesis test, it is conferred that there exists a positive outcome on the Level of Reaction for the experiment and that the propositions made the framework laying out the training arrangement, have been effective in delivering the promised outcomes in terms of reaction from the learners.

#### *Before and After Analysis using Descriptive Statistical tools*

For the purpose of measuring the effectiveness of the training arrangement executed by the Experiment conducted at the UOS, on the fourth level from Kirkpatrick's model, which is the Results level.

The measure of the active courses per semester is used as a direct indication of the level of utilization of Blackboard. Increasing Blackboard course utilization is a performance target for the Academic support services and consequently a plus for Institutional Effectiveness.

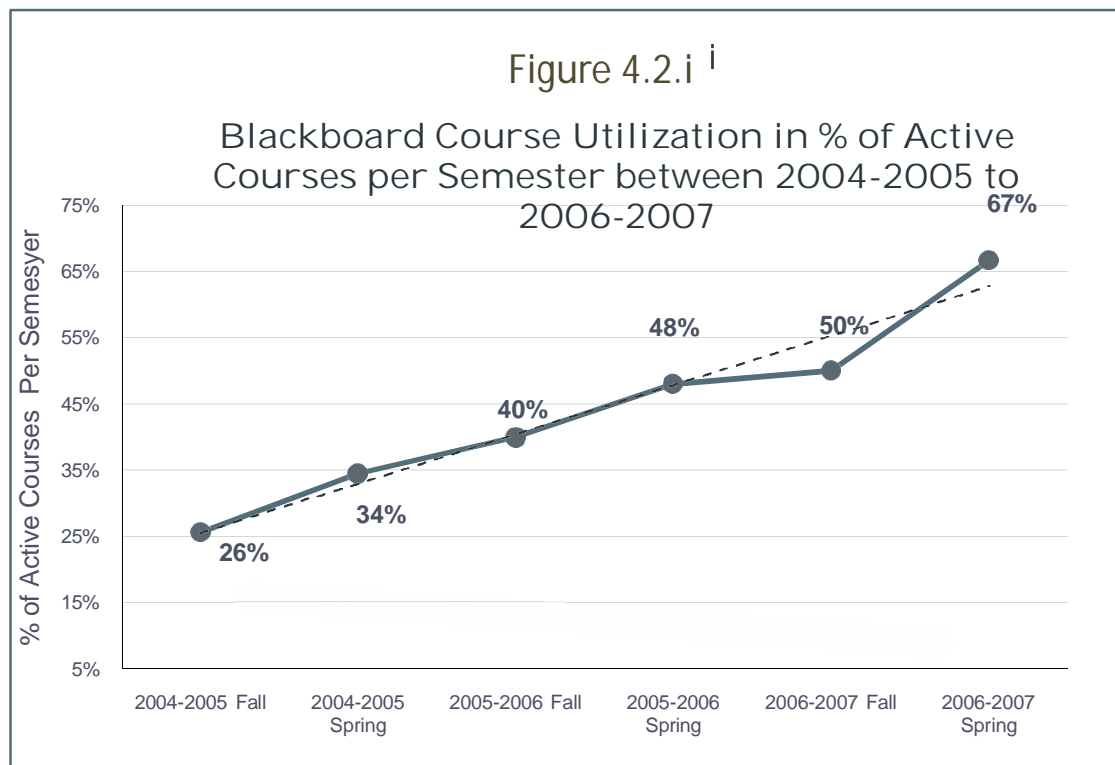
"Before"

When Blackboard was launched in Fall 2004, the users were not only skeptical but also quite resistant to the system. Some faculty felt quite strongly about using the system initially. Before the introduction of Blackboard, a small percentage of faculty used a home-grown method of creating

course websites for sharing materials with their students using the web. This method however was cumbersome and to many difficult to manage. Still, because many were already used to this primitive method it was not easy to convince them to embrace the new LMS. However with some, but limited, seminars and announcements about the LMS, academia was made aware about the Blackboard learning system technology. The earliest adopters of the Blackboard LMS were the Departments from the Colleges of Arts & Science, Engineering and Business Administration, mostly those with IT related courses. In the beginning it was most difficult to get the Colleges delivering courses in Arabic medium to accept the system, because of the absence of an Arabic interface.

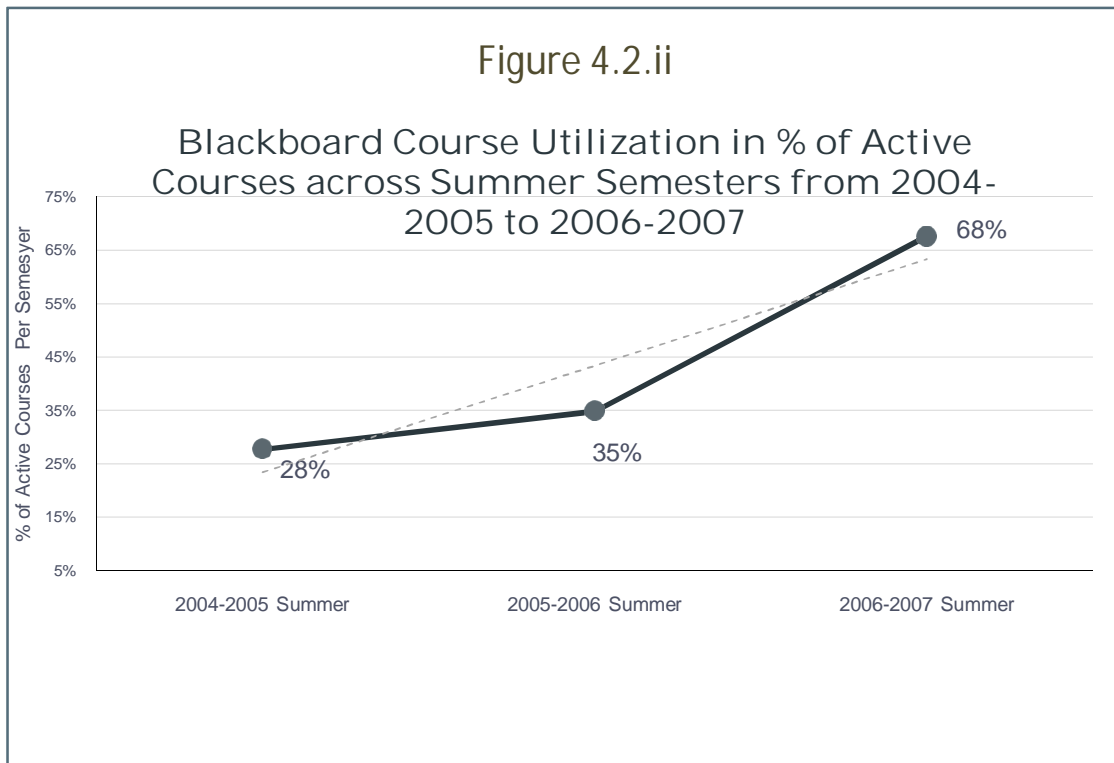
More than 30% of UOS faculty members Teach in Arabic Language. It was observed that the utilization of Blackboard at the UOS increased after the introduction of the Arabic-locale for the Blackboard interface, in Fall 2005-2006.

A Summary of the events across the semesters from Fall 2004-2005 when Blackboard was introduced at UOS, to the execution of this Experiment, to the last semester of the a 2006-2007 academic year.



The above represents the progression in number of courses active on Blackboard in each semester which is a direct indicator of the increase in course utilization. Active courses here refer to those wherein the instructors are uploading learning materials for student access and at-least 30% of the course's students access the course on the Blackboard LMS.

The percentage of active courses per semester is deduced by computing the proportion of active courses from the total number of courses offered in the given semester. The data underlying the illustrations is documented in Appendix V.



During the non-summer semesters the trend indicates some increase in the Blackboard courses utilization from 2004-2005 Summer then to 35% from 28% in Summer of 2005-2006.

During the summer semesters less than 1/3<sup>rd</sup> of the regular semester courses are offered. Even so the trend is positive across the summer semesters.

The highest percentage of active courses in 2006-2007 is related to the influence of the training conducted in Fall 2006-2007 prior to the summer semester, as part of the experiment in this study.

The increase in the course utilization, reflected by the rise in the proportion of active courses can be linked directly to the conduct of the experiment in the Training at UOS in Fall 2006-2007.

Table 4.2.iv

Summary of Semester wise events related to Blackboard LMS at UOS

Semester	Event
2004-2005 Fall	Launch of Blackboard 6
2005-2006 Fall	Upgrade to Arabic supported version Training during IT Year events and one-on-one support
2006-2007 Fall	Know Blackboard site
2006-2007 Spring	The implementation of the Experiment: Blackboard Orientation Trainings at the beginning of the semester

“After”

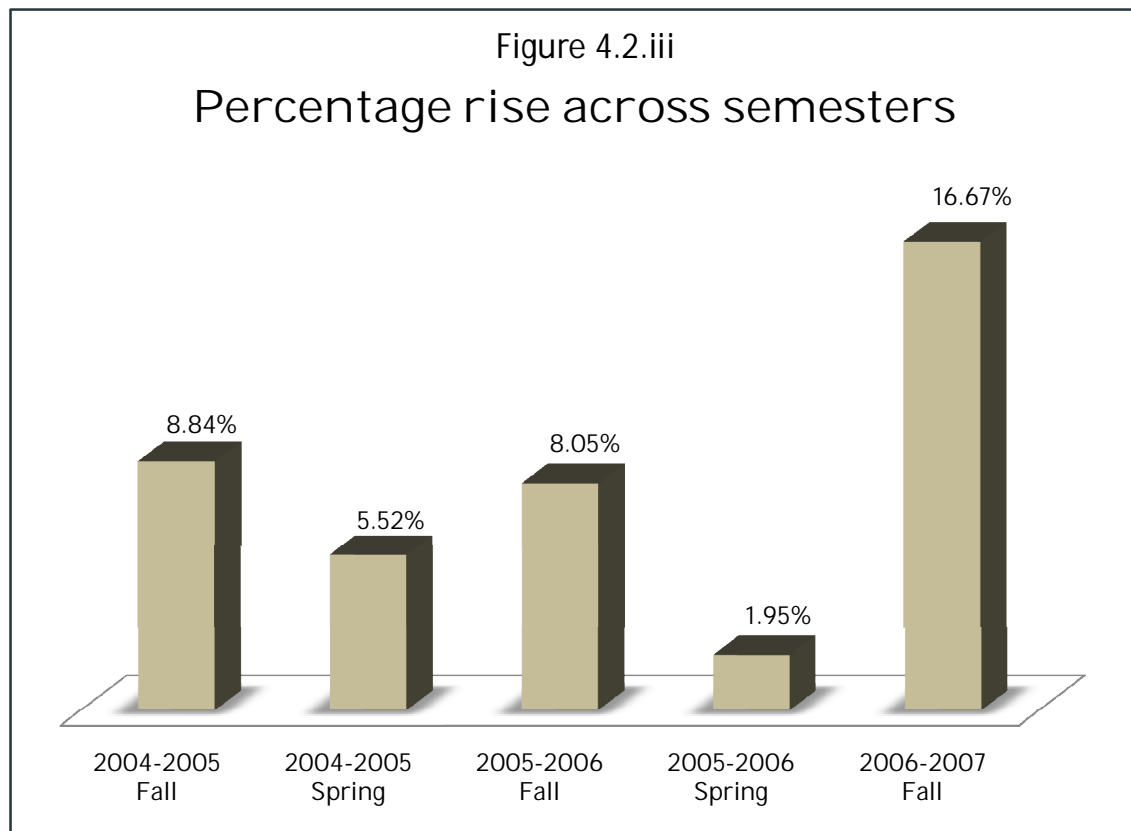
Both figures 4.2.i and 4.2.ii highlight the substantial increase in the Blackboard course utilization figures represented by the percentage of active courses.

Percentage of courses active on Blackboard is a direct indication of the level of utilization.

The rise in the percentage of active courses across the semesters provides a direct indication of the increase in Blackboard courses utilization.

The level of utilization of Blackboard LS at UOS is considered as a factor influencing measures of Institutional Effectiveness (IE).

One such academic measure of Institutional effectiveness is the proportion of Students not failing i.e. students achieving Pass or Higher grade. This measure is taken on a semester basis. Based on IE measurement data shared by UOS for the purpose of this study, it was found that the Pass or Higher grade proportion measure correlates to the increase of the levels of utilization across semesters. The IE measure referred here as the Pass percentage is defined as the proportion of students not failing or achieving a Pass grade or Higher than pass grade every semester. Due to limitations by permission all the detailed semester student performance data could not be published in this study, however necessary information for analysis of this outcome level has been provided in Appendix V.



The above represents the rise and fall in Percentage of actives courses since the launch of the Blackboard LMS at UOS.

Included among the events of the IT year at UOS in 2005, Blackboard faculty-oriented trainings were delivered by Blackboard certified partners in the UAE. The resultant rise was of about 8.05 % as a result of the efforts then.

The next semester saw a depression in the rise of Blackboard course utilization by a drop from an 8.05 % rise in number of actives courses to only 1.95% incase.

The 2006-2007 Fall semester, which is the milestone of this experiment showed a 16.67% rise in the active courses, which is the highest increment seen in the last three years. Also the 2006-2007 Summer figures are substantially higher than the previous records.

There is relevance of the hike in rise of proportions of active courses to the Blackboard Orientation week Trainings conducted based upon the guiding principles of the framework established in this study and put to experiment at UOS.

This significant achievement is an indication of the effectiveness of the training experiment at the Results level of outcomes.

The correlation between the measure of institutional effectiveness in terms of Pass percentage and the Level of blackboard utilization in terms of percentage of active courses has been established using regression analysis and ANOVA (Appendix V).

Table 4.2.v

Summary of Regression and Anova to correlate Pass percentage with Blackboard Utilization

Variable	Statistics	Value
Pass percentage	Y (dependent variable)	$Y_i$
Blackboard active courses %	X (independent factor)	$X_i$
R square	$r^2$	0.992987 (99.29%)
Level of Significance	$\alpha$	0.50 (50%)
Level of Confidence	$1 - \alpha$	0.95 (95%)
Observations	N	4
Intercept	$\beta_0$	0.75731
X variable	$B_1$	0.133691
Equation for Sample regression line	$Y_i = \beta_0 + \beta_1 X_i$	$Y_i = 0.7573 + 0.1337 X_i$
Null Hypothesis	$H_0$	$\beta_0 = 1$
Alternative Hypothesis	$H_1$	$\beta_0 \neq 1$
Test Statistic	F	283.22328

Critical Value	CF	18.81
Degree of Freedom	df1	1
Degree of Freedom	df2	4-2 = 2
Z-Test Condition	If $F > CF$ Then Reject $H_0$	283.22 > 18.81
Test Result	Rejected $H_0$	

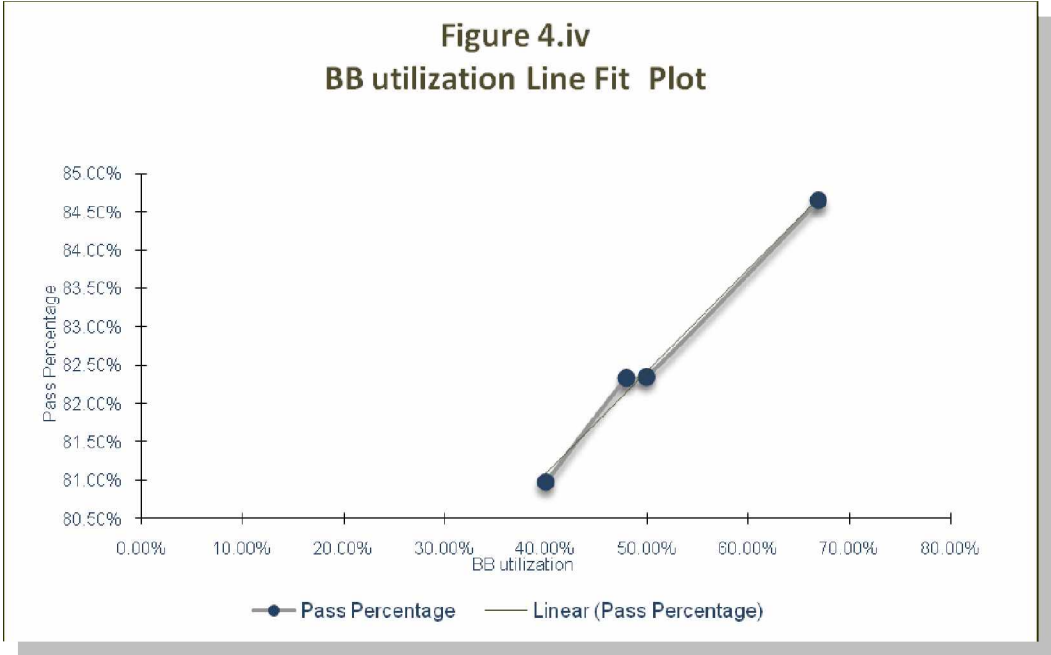
The regression statistics depict 99% of the variability in Pass percentage (Y) can be explained by the Blackboard utilization in terms of Blackboard active courses percentage (X). For every unit change of X the average of Y is predicted to increase by 0.1336 units i.e. for every 1 % increase in Blackboard utilization represented by percentage of active courses, the measure of institutional effectiveness in terms of Pass percentage is predicted to increase by 13.36 % students.

Having established the correlation, we observe the change in Pass percentage for the available data from Fall 2005-2006 all the way to Spring 2006-2007 by semester.

Table 4.2.vi

Change in Pass percentage with Change in Blackboard Utilization		
Semester	Blackboard Utilization (in terms of Percentage of active courses on Blackboard each semester)	Pass Percentage (Proportion of students every semester gaining Pass grade of Higher)
2005-2006 Fall	40 %	80.98%
2005-2006 Spring	48 %	82.34%
2006-2007 Fall	50 %	82.36%
2006-2007 Spring	67 %	84.65%

**Figure 4.iv**  
**BB utilization Line Fit Plot**





### Analysis Inference:

The positive findings proven using a mix of qualitative and descriptive statistics fulfill the objective to analyze the results of the application of the framework in the experiment, in turn providing statistical evidence that the Blackboard user-training framework defined in this study has the ability to provide effectiveness in its purpose.

The Blackboard user-training framework propositions facilitate the process of devising the training arrangement in the context of Blackboard users of Higher educational Institutions in the UAE.

The framework central to this study provides the pervasive prescriptions for elements of the training arrangement as well as the evaluation criteria to measure the effectiveness of derivatives against the promised outcomes. In this regard the proposed framework is self-corrective in nature.

The experimental analysis shows by evaluating the results against the criteria for effectiveness prescribed at the onset of the training, that the experiment of the application of the Blackboard user-training framework at the University of Sharjah is successful.

### Experiment Summary:

Table 4.2.vii

Summary of Experiment and Validation Results (does not include the details of the project methodology functions scoped by the UOS team)		
Purpose	Validate the Blackboard User-training Framework proposed by the study	The experiment aims to apply the propositions made by the framework in the process of devising the learning arrangement based on the inputs provided as needed, employ the derived training arrangement at the University of Sharjah and measure the effectiveness of the arrangement using the evaluation criteria prescribed.
Context	The University of Sharjah (UOS)	Set in Sharjah University City, UOS hosts 13 Colleges across multiple campus locations, with over 500 faculty members catering to over 10,000 students, using Blackboard LMS since 2004. The experiment is set in the Fall Semester of 2006-2007 academic year at UOS.

Table 4.2.vii cont.		
Application of Framework		
Input Variables	Type of Audience	New Faculty Members
	Mode	Blended mode preferred
	Language	Bi-lingual (Arabic and English) required
	No. of Trainees	Estimated fore than 75
Output Variables		
	Training Objectives	To provide faculty at UOS with a beginner's level faculty-oriented functional Blackboard training for more than 75 faculty members, by providing Seminars and Hands-on workshops, in both English and Arabic, using a simple blended mode and problem solving based approach.
	Training Outcomes	Increased knowledge and capability of faculty members to use the Blackboard learning system at their disposal and therefore possible increased utilization of the LMS overall.
	Training Arrangement	Using a blended approach the training arrangement components suitable for this regard are, 1.5 hr sessions across a week involving seminars and workshops, included printed step-by-step procedures for practice and for future reference to the trainees, and trainer led presentations, which offers interactivity and practice workshops, with simple post-training QA and feedback forms.
	Evaluation Criteria	On the levels of Reaction and Results outcomes: the trainer observations, post-training feedback through surveys are chosen for the former and the blackboard course utilization statistics are used to examine the level of the Results. It was established through discussion with the stakeholders in the project, that more than 60% of positive reaction outcome would reflect positive effectiveness of the training arrangement derived for the experiment.
Experiment Validation	Reaction Level Outcome	Z-Test: Hypothesis for Proportion, showed that there is more than 60% promised
	Results Level Outcome	Analysis of the level of course utilization at UOS, Before and After the execution of the Training composed in this Experiment, shows that there was more than 16% increase in the rise of the percentages of active courses, which is the highest percentage increase since the launch of Blackboard at UOS. The Blackboard utilization factor positively correlates to measure of institutional effectiveness in terms of percentage of students not failing., This is a positive outcome and implies the success in effectiveness of the framework at this outcome level.
Result	Validated	

## Chapter 5: Conclusion and Recommendations

The research provides evidence of a strong drive towards Knowledge reproduction and the intrinsic use of Information Communication Technology (ICT), as educational technology in the UAE higher educational system and the need for training as a tool for ICT triggered Change management.

Higher educational institutions, specifically Universities, are being driven by environmental and internal factors towards the adoption of learning management systems (LMS), most commonly in the form of Blackboard learning system products.

The need for smooth change management in terms of making effective use of educational technology, and provisioning return on investment produces a demand for effective Blackboard User-training in the context. This need is visible in the UAE-based higher education space, in part because of the spurred momentum of LMS adoption and partly because of the absence of a body of knowledge catering to the contextual needs.

As is true for any other IT system, it is true for the Blackboard LMS also, that effective user-training is a key to the successful implementation and effective utilization of the system. From the literature reviewed, there are multiple approaches described for training at more generic levels , but very limited research published for trainings oriented to Blackboard users, specially for the UAE or Middle-east region.

Yet there are key elements, which go into the planning of a generic user-training, common to training oriented towards Blackboard users. The manner in which the training is evaluated has a close relationship with the effectiveness of the training itself.

The congregation of E-learning experts towards addressing the user training needs is visible from the various initiatives made by both educational technology providers and by training and development institutions.

Very recently Blackboard along with its regional partners, organized the Blackboard e-Learning day in November of 2006, which proved to ignite a lot of discussion and enthusiasm toward developing a body of knowledge for the Middle-eastern Blackboard user community. Following this, Blackboard Inc. had the first Middle-east summit this year, BBSummit Middleeast 2007. Blackboard chose Dubai as the location of this second BbSummit because of the broad and deep commitment in the UAE to

develop an education hub, analogous to Singapore's efforts to create a new economic foundation for that city-state (Blackboard Inc).

The fact that the UAE's UAE-based Blackboard clientele is catered to by a single distributor makes it easier to comprehend the overall situation. Situational analysis of Higher educational institutions spells out clearly the need for an insight to the Blackboard Users' Training needs.

The study fulfills the objectives outlined at the level of Research Study, Proposition, Experiment and Analysis. Through conduct an extensive study of existing literature and provision of a comprehensive understanding of concepts which basis of this research work is formed.

Based on the groundwork and substantial evidence, is established the need for a working framework focusing on Blackboard User-trainings to facilitate change management in UAE-based higher educational institutions. By study of the concepts, factors and forces related to Training, Information communications technology (ICT), and the Blackboard Learning System implementations triggering change in the UAE the foundation for the proposition is made, to describe the subject framework and provide guidelines for measuring effectiveness in design.

Using a disciplined approach through conceptualization and AHP approach the determinants for the framework are short listed, based on which the proposition is drawn as a multi-tier decision path.

The guiding principles for implementing a Blackboard User-training are based on the 3C-model for learning arrangements by Kerres and Witt (2003) and the Kirkpatrick training-evaluation model originally established in 1959 and revised in 1975 by Donald Kirkpatrick.

The framework delivered in this research study does not intend to provide a technical guide for Training facilitators on how to write the training materials, however, this framework does provide an structuring guide to best fit the training materials to the audience's learning needs and objectives, as a tool for ICT triggered change management in UAE-based Higher educational institutions. Content and construction of the training modules assumed in the scope of instructional designers. Training facilitators and program developers require a set of dimensions to measure the training objectives against before presaging the training execution plan.

The propositions underlying the framework of study, address these key questions for the process of devising the Blackboard Users Training arrangement in the context of the UAE-based Higher education institutions and characteristic Blackboard user-training needs.

“The training arrangement is shaped by training objectives, outcomes and the evaluation criteria for measuring effectiveness in outcomes, their determinants and constituents” is the fundamental underlying the working definition of the framework.

The study uses learner and trainee synonymously based on the established notion and establishes that learning needs can be converted to learning objectives that can be directly translated to Training objectives, whereby the addressing of learning needs is expected to be the training outcomes. The proposition and focuses on the ‘transfer’ component of the outcome

Through an experiment the framework application, results revealing a positive measure of effectiveness across the Reaction (Kirkpatrick’s Level 1) and Results (Kirkpatrick’s Level 4) outcome levels, the framework is validated.

The Experiment and validation stage fulfilled the objective to apply the framework for Blackboard User Training by application of the propositions made to a realistic setting and collect results. The experiment was conducted at the University of Sharjah, in the form of a series of workshops designed on the prescriptions of the working framework.

Using a combination of qualitative and quantitative statistical analysis tools, through Hypothesis testing for the Reaction level and Before and After descriptive analysis of the Results Level outcomes of the experiment, the effectiveness of the framework in action is exhibited. The positive results of the experiment validated the working framework in the context.

The framework developed in this study claims a pragmatic and systematic approach involving decomposition of factors determining the Blackboard user-training for a given setting, and providing prescriptions about the Training objectives, Training outcomes, Training arrangements components and Evaluation Criteria for measuring effectiveness.

The objective of the study to make an attempt to fill some of the void of the body of knowledge in the context of Blackboard user-trainings to facilitate change management through training in UAE – based higher educational institutions is made.

However, the framework derived in this study is not limited to training only users of the Blackboard LMS. The framework can be easily oriented to cater to any the user-training of other IT systems within the domain of higher educational institutions similar to those based in the UAE.

#### *Highlighted Characteristics of the proposed Framework*

The framework has certain characteristics, which are its strengths. The framework has focus on training for Blackboard end-users rather than at a generic level and provides elementary which sets it apart from existing training models and guidelines.

Its Multi-tier approach enables addressing decisions related to the constitution of the training objectives, outcomes and training arrangement, including the content type and structural arrangement as well as the evaluation criteria, filtering the appropriate prescriptions along a multi-level path.

Its underlying use of Parameterization lends the framework the advantage of dealing with a simplified form of the factors in the decision process, thus enabling a more reliable prescription. Fundamentally, the framework parameterizes the training needs, which are perceived as training objectives, training outcomes, preferences and Blackboard training related factors and equates the elementary factors to the core components of the training arrangement.

The framework has a Self-corrective nature. The framework provides the prescriptions for devising Blackboard User-training arrangement as well as the evaluation criteria to measure the effectiveness of derivatives against the promised outcomes. In this regard the proposed framework is self-corrective in nature.

The framework provides the fundamental for an end-to-end design of the Blackboard User-training. The propositions underlying the frameworks working principles can be extended to the end of creating complete training, thus providing Basis for complete training execution planning.

#### *Limitations of the proposed Framework*

The BBU-TF provides guidelines to make subjective decisions about the determinants of the training execution and delivery, such as the mode, duration and type of sessions. The framework does not

decompose the attributes related to the Training delivery from a project execution perspective, which encompasses the decisions related to ownership, sponsorship, human resource, and scheduling matters.

The propositions of the framework encompass factors all related to the training arrangement or the planning of the training, but do not include the institutional factors that may or may not influence the decisions related to the training arrangement and evaluation criteria. For instance, having a dedicated staff unit for providing local IT support to the University Blackboard users, may influence the level of Blackboard expertise of existing University staff or students, or may not if the support services do not include support on Blackboard.

### Recommendations

Capitalizing on the existing strengths, there is potential to extend the framework to provide greater depth at the 'component' level of the training arrangement prescriptions produced. The framework prescribes the type of component, be it seminar, workshop, presentation, written step-by-step workbooks, but does not currently provide for example, the list of Blackboard features that the beginner level instructor needs to be trained on. There is thus purpose in the recommendation to include composition of training material mapped to the training needs as a prescription provided in output of the framework.

Environmental factors may or may influence the needs and effectiveness of the training in the context of Blackboard user-trainings in UAE Higher educational institutions. Making decisions based on criteria including environmental factors would leverage more reliability of the framework. These factors may be availability of academic calendar and recent events, support services, availability and enforcement of Blackboard administrative policies and procedures, level of involvement of management in Blackboard LMS usage promotion, level of adoption of the LMS, existence of units for measuring institutional effectiveness and quality, total number of course programs/users at the University, social-cultural-gender proportions, and possibly others.

In order to combat the threat of false inputs, and safeguard consequently producing ineffective prescriptions, it is ideal to have a 'truth' check on the inputs, possibly having a crosschecking method or additional pre-top-level variables. Taking the instance where the input provided is that the audience type is beginner level instructors, an option to verify this would be to have questions

specified by the framework which crosschecks this; for example, Is Audience is expert in IT?, Do the Audience members regularly use Microsoft Document Processing?, followed by What is the level of Blackboard training required (Advanced/Intermediate/Beginner?. This way false inputs can be identified before the entire process begins.

#### Further research potential

The fundamental of the framework, central to this study, focuses on certain functions of the Training project which are involved in devising the Blackboard user-training plan and design. It is a working framework for facilitation of the process and not a project methodology. This study does not go too deep into the understanding of the training project resource allocation, scheduling, execution and organization. There is potential for extending the framework to encompass the project planning and execution functions on the basis of PMBOK guidelines to deliver not only prescriptions on the training arrangement and related training project elements, but also the project elements.

The work of research central to this study does not include literary evidence of whether the efforts concerted towards Training and execution of training projects are the responsibility of the Human resource development (HRD) or the sections similar to the Academic computing services at the UOS facilitating Blackboard LMS training, in the context of Higher educational institutions in the UAE. Literature reviewed reflected the significance of staff development and training as an HRD function and training as a tool for change management, not excluding faculty training and continuous development. This would be of interest for extended research to examine the best-fit Organizational department for the training responsibilities.

The several streams of Human capital engineering and Knowledge engineering overlap along many aspects. Examining the better practices to conclude which stream of study would help identify Continuous Learning and development program planning as a key business process.

#### *Interests*

Blackboard™, the leading provider of a the Blackboard Learning management suite to Higher Education Institutions worldwide, after acquiring, its earlier competitor, WebCT, devised a program called the Greenhouse Exemplary Course Program. This program has been launched to bring together experiences from E-learning practitioners, Training developers, Course Coordinators in order to devise a basis for building exemplary courses. This program has gradually taken the form of



providing incentives to faculty to encourage the development of courses exceeding in quality and effectiveness of delivery (Blackboard Inc.).

It is more of a collaborative continual learning process, more than one or two workshops or a series of trainings arranged in a program, which serve the purpose of Blackboard User-Training. This work of research has been one step in the direction of providing a framework relating UAE-based Blackboard-user needs, providing a basis for understanding the range of demands from the cycle of continuous learning.

In this onward and upward Knowledge-enabled environment, the role of training is significant and the presence of learning management systems in Higher education inevitable.

## Notes of Appreciation

To Dr Kasim Randeree, I sincerely thank Dr Randeree for instilling the elements of project organization and project methodology in my thought process during the course of my academic work. I highly appreciate the valued experience Dr Randeree has shared and the teaching he has given me which will remain with me life-long.

To Dr Mohammed Arif, For instilling the will and the fundamentals which I required for undertaking this dissertation, for his continual support, guidance, expert advice and patience I sincerely Thank Dr Arif and wish to express my deep gratitude to him.

To Dr Mohammed Fadhil Dulaimi, I wish to thank Dr Dulaimi for his constructive feedback which provided me the direction to improvement and one of the reasons for choosing this research study.

To Ms Shameema Parveen, For the positive thought provocation which triggered me to dwell on the subject that has led me to take up this dissertation I sincerely Thank Ms Shameema Parveen. For her insight and the support she bestowed on me during the teething phase of my work I will always Thank her.

To The University of Sharjah, I wish to extend a note of sincere appreciation to the University of Sharjah Management for giving me the opportunity to closely study and learn from the Academic Computing Services processes and support team.

To Dr Nabil Kallas and the ACS team, for their continual support and cooperation in supporting me to conduct my study with the case of the University of Sharjah Blackboard implementation.

To Dr Esam Agamy for facilitating the Analysis of my Experimental result by providing valuable support though the department of Institutional Effectiveness.

To Mr Bashar Idrees, I wish to sincerely Thank Mr Idrees for providing me with a better understanding of the applications of quantitative analysis.

To Dr Ashraf Mahate, For instilling in me the fundamentals of statistical analysis which have supported me in conducting the required qualitative and quantitative work demanded by the study.

To The British University in Dubai; Last but not the least, I wish to thank The British University In Dubai for providing me with the opportunity to learn in the Master of Project Management at the

College of Engineering, with the support of the University of Manchester; and for engaging in my research dissertation which I hope will be my step for completing the requirements for the Masters program.

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# Appendix I: Interviews with e-learning and educational technology specialists

## *INTERVIEW # 1*

### Blackboard Questionnaire

Interview with Ms Dina Nasser, Acting Head of Academic Computing Services Unit at the University of Sharjah (2007)

The objective of this questionnaire is to collate facts about the UOS BB implementation & training

Q1. When was the Blackboard LMS implemented at the UOS? Month/Year

Sep 2004 , Fall semester of the 2004-2005 Academic year

Q2. Which version of Blackboard was the first installation?

Blackboard Enterprise 6.0

Q3. Was there a/Which course management system in place prior to Blackboard?

Web pages maintained by Faculty independently as their course sites. These lacked course management and student management features.

Was hosted on Netwise; Faculty were trained to use Frontpage or Dreamweaver and given access to Netwise to upload their course materials/sites to the webserver

Very few faculty used this; this system was in place for a period of about 1 year and a half

Q4. Did UOS install a pilot for Blackboard before building the Production Environment?

Yes

Q5. Did the Blackboard Launch include announcements and introductory sessions?

Yes

Q6. What did the Blackboard Launching feature?

A small inauguration function to announce the launch. Official letters were dispatched at Colleges level to make faculty aware

Q7. How did faculty and students initially react to the Blackboard LMS?

Initially the reaction was not very positive, because faculty felt they now needed to learn a new system and many of the faculty were not familiarized with using IT in teaching. The faculty of Computer engineering , Computer Science departments and English departments were most positive at the onset. Some of the faculty who had used either Blackboard or a similar LMS in the past were most positive and proud.

Q8. What were the initial hiccups/challenges from a user perspective?

The absence of Arabic language support in the system posed the longest challenge. Why we regard this as longest is that although Arabic was introduced at a later stage the period it wasn't available was a struggle for many faculty to get a grip of the system

Faculty IT literacy was and is low

Difficult to change the mind-set and build a positive attitude towards using PCs for teaching.

Q9. What were the efforts resourced for Training the faculty in the beginning?

In-house Trainings? Yes

Blackboard vendor training workshops? Yes

One on one sessions? Yes, This was most often and most time intensive until Nov 2006

Q10. What was the next step after the launching?

Management of the real time system ,administration of courses and enrollments and managing consistency with the SIS. There is not automated sync between the BB system and the SIS which is a continual challenge in terms of managing data against time. There is still a technical limitation as to how and when this will be achieved.

Q11. Until end of 2006 how would you sum up the training and developments? *Has the Arabic locale support improved the adoption of the system?*

Weak. Never promoted blackboard until Fall of 2006 -2007 Year. This year we have seen 5 times the improvement in Blackboard with the approaches implemented including Blackboard orientations at the beginning of semesters for new staff Scheduled Faculty Training sessions (presentations & workshops for 25 to 30 people batches) On -demand (Special Request) training sessions were always there Promotion of BB among students in the form of Group sites, Student union sites, etc on Blackboard

Q12. What's the 1st question that comes to your mind to plan Blackboard training

Who is the training for?

Q13. What the next 4 questions that you consider

Which part of the academic year is the right time?

Only work-shops or seminars also?

How many people in at one time?

Who will give the session

Q14. Would you like to add any further comments

Yes. There is more insight to the approaches applied which changed the acceleration of the adoption of the LMS in-spite of the continuous challenges of new staff, low it literacy, non-acceptance to use a system for teaching, etc. A key to involve faculty in a system which has proven itself atleast in one way to gain popularity.

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## INTERVIEW # 2

### Blackboard Questionnaire

Interview with Ms Anissa Bettayeb, E-learning support at the University of Sharjah (2007)

The objective of this questionnaire is to collate facts about the UOS BB implementation & training

Q1. When was the Blackboard LMS implemented at the UOS? Month/Year  
?/2004

Q2. Since when have you been supporting the Blackboard users at UOS?

After the Blackboard Support lady left the University in around March 2006

Q3. Was there a/Which course management system in place prior to Blackboard?

Computer Center provide unlimited space for Faculty members to create their own pages which contains there courses divided for each department/college and Semester.

Q4. Do faculty members appear to be happy with Blackboard as compared to the earlier system?

Most of People that were using the old system where happy after a while.

The faculty members that were not using the old system , at the beginning they where not using BB since it was only in English . But after releasing the Arabic version the number of users using BB become much higher day after day.

Q5. What are the advantages compared to the earlier system from a user perspective?

Much more features (Announcements – Collaboration tools – submit assignments – send emails - ...)

Dynamic pages

User Friendly

Able to archive and Import courses. If a user has a basic IT skills he/she doesn't need to spend time and effort each semester in Building the same course..

Can monitor students and view course statistics.

Privacy (Instructor can put any information he wants to students without worrying that public users is seeing it. )

No prerequisites is compulsory to be able to use Blackboard (dreamweaver or front page knowledge) . any faculty member can read a short guide or attend one of our training sessions and he can use BB easily.

Q6. What are the disadvantages compared to the earlier system from a user perspective?

Some of the faculty members felt that they need to spend more time in building the course in BB rather creating one html page which contains all there content.

Their courses will not be shared for others.(anyone rather than the students course)

Can't view old semesters courses

Not fully arabized and some Arabic words are not the words which are common used.

Q7. How did faculty and students initially react to the Blackboard LMS?

I joined the University in October 2005 after the BB was lunched so I don't know what people feel first about it..

But I was supporting the BB when the Arabic version release and many people where happy about it since some of them where asking about it from the beginning of launching BB..

Q8. What were the initial hiccups/challenges from a user perspective?

Please refer to question 6

Q9. What were the efforts resourced for Training the faculty in the beginning?

*In-house Trainings and Blackboard vendor training workshops?*

At the beginning there was a very few sessions (around 1 or 2 sessions a year) since no dedicated staff were assigned to support or administer BB ..

In the IT year 2005 there was a full schedule for Blackboard Workshops during the year for faculty members.

Also the beginning of the fall 2006/2007 academic year there were many training sessions and workshops for Faculty Members

*One on one sessions?*

At the beginning, Some of the faculty members were requesting one to one training since there where a few training sessions.

Q10. What's the 1st question that comes to your mind to plan Blackboard training

Arabic or English

Q11. What the next 4 questions that you consider

Who is the trainer?

Faculty or Students?

How many?

When?

Q12. Has the Arabic locale support improved the usage of the system?

Around more than 30% of our faculty members Teach in Arabic Language which most of them has low IT skills..

Q13. Using an English system even if its too easy, is not accepted for them.

Day after day those faculty members are becoming more interesting in Using Blackboard after adding the Arabic version to it.

Q14. Would you like to add any further comments

Great thanks to you Anjli and to all efforts that you made to improve the use of the Blackboard at University of Sharjah .

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## Appendix II: Research Papers presented at the EIAE '07 Conference and the Blackboard Middleeast Summit '07:BBSummit 2007

### The CIS2E – EIAE '07 Conference

The International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering (CIS2E 07), held December 3 - 12, 2007 was technically Co-Sponsored by Institute of Electrical & Electronics Engineers (IEEE) and the University of ; CISSE is the first high-caliber Research Conference in the world to be completely conducted online in real-time via the internet. Among multiple other conferences CIS2E organized the International Conference on Engineering Education, Instructional Technology, Assessment, and E-learning (EIAE 07).

EIAE 07 is a virtual forum for presentation and discussion of the state-of-the-art research on computers, information and systems sciences and engineering. This international conference was held entirely on-line. The accepted and presented papers will be made available after the conference both on a CD and as a book publication (Springer publication).

The author of this dissertation presented the joint paper "Blackboard Adoption and Adaptation Approaches" on December 8th 2007 at EIAE 07. The CISSE 2007 Book Proceedings will be published by Springer after mid of 2008.

### The BBSummit Middleeast '07

The inaugural Blackboard Middle-east summit was held in Dubai. The BBSummit Middleeast '07 was the first dedicated Blackboard conference for the Middle East region. It combined the users from both the Blackboard and former WebCT product communities.

The inaugural event was brought under the kind sponsorship of H.E. Sheikh Nahayan Mubarak Al Nahayan and the Higher Colleges of Technology, Dubai Men's College, Dubai, United Arab Emirates.

The programme for this event included presentations from the Blackboard executives and the users across the region, giving the opportunity for Blackboard and former WebCT user communities to network, present and facilitate new ways of collaboration within and across the communities.

The author of this dissertation participated during this event by co-authoring three research submissions for the BBSummit Middleeast '07 and presenting two of these during the sessions.



## *Paper # 1: Blackboard Adoption and Adaptation Approaches*

Anjli Narwani & Dr. Mohammed Arif,  
British University in Dubai

Abstract- Multiple approaches can be employed to achieve the single objective of implementing the Blackboard Learning management system (LMS) in the UAE educational institution. In institutional management terms this could mean a pre-implementation plan and preparedness. In Project Management terms this could mean customized project life cycles. In institutional effectiveness terms this could mean post-implementation value and system utilization. This paper talks about the Blackboard Adoption and Adaptation approaches on these 3 levels, from the project implementer's perspective.

Kaplan-Leiserson has developed an online e-learning glossary and provides the following definition of LMS:

Learning management system (LMS): Software that automates the administration of training events. The LMS registers users, tracks courses in a catalog, and records data from learners; it also provides reports to management. An LMS is typically designed to handle courses by multiple publishers and providers. It usually doesn't include its own authoring capabilities; instead, it focuses on managing courses created by a variety of other sources [1].

### INTRODUCTION

If you are an educationist engaged with learning management systems, or a technologist involved in the implementation of learning management systems, or someone who identifies with the likes of any of these, it would not be difficult to recognize the challenges surrounding the successful execution of a learning management system (LMS) implementation in an educational environment. This paper is worth your read to know about approaches in action, which plausibly address the challenges from an implementer's perspective.

As an LMS, by principle, the Blackboard Learning system is designed for training online. In application, the 'teaching and learning' objectives take shape in the form of course delivery, learning objects management and evaluations in the context of Higher Educational Institutions. According to the Blackboard Inc. sources [2], the presence of the Blackboard LS is visible in the United Arab Emirates(UAE) and MEA Universities and educational institutions.

According to the DEST/JISC e-framework for Education and Research [3], the LMS technology implementation using a Service Oriented Approach (soa) is two-fold: one aspect dealing with the adoption of technology and the second with adaptation of environment to benefit from investment. However, this framework does not provide prescriptions to tackle the challenges in using the approach.

### LEARNING MANAGEMENT SYSTEM IN DEFINITION

Learning Management System is a broad term that is used for a wide range of systems that organize and provide access to online learning services for students, instructors, and administrators. These services usually include access control, provision of learning content, communication tools, and organizations of user groups. Learning system(LS) is another term used synonymously with LMS.

The challenges in the adoption and adaptation are a multitude; these can be classified as those related to

the information technology environment and infrastructure, the institutional readiness and organizational configuration, teaching pedagogy or the user-adoption and acceptance. With the aim to implement the Blackboard LS at a University in the UAE, the project objectives must address each of these classified challenges in addition to the project management challenges of managing resources, aligning project tasks to goals and schedules, monitoring progress and reporting.

One argument would favor that the initial step in the process of implementation would involve clear focus on the reasons for adoption; and the other that the higher precedence is for ensuring smooth and constructive adaptation of the intra-university environment. Yes, it would be ideal to first check Institutional readiness on all levels, ensure resources are in place, user base is trained and enthusiastic about the LMS and only then move forward towards LMS execution. However real-time circumstances rarely, if ever, give this luxury to the implementation. Conditions for adoption of the system may be satisfied prior to implementation, or may be planned to be addressed during the implementation of the LMS. Some of these may include acquisition of technical resources and human resources for implementation, users' Information Technology (IT), in addition to that specific Blackboard, skills. Even before considering the detailed technical and human factors, is the important variable of Institutional Readiness.

Imagine, as the IT administrator at a University, the scenario, that within a few months the academia, all not even used to building lectures through power-point, must be equipped with an LMS; the decision being triggered by accreditation requirements. Yes, the decision would result in the University achieving a milestone, and becoming part of the knowledge management motion supported by educational technology; but for the implementation

to be successful in its own right, this sudden move would require large efforts to help the university members (or users) and academic programs adapt to the adoption of the system.

#### THE FACTORS

The factors which impact the Blackboard LMS's adoption and adaptation of the learning environment, are not independent of the external economical, information technology, technological, cultural and social factors. The authors maintain the assumption from the implementer's stance that these exterior factors are supportive, if not all affirmative.

Institutional readiness and organization

It is not easy to ascertain the Institutional readiness of a University for the Blackboard LMS implementation, or even for the implementation of any other educational technology. Universities, like other higher educational institutions are being driven to make decisions to incorporate IT in teaching by many external and internal forces.

Blackboard LMS implementation would appear to be smooth if the university has either been using some form of course sharing and course building educational technology and academia is aware about online course delivery and communication tools. Management foresight to develop the use of IT in its framework is very positive for the Blackboard LMS adoption and adaptation.

The worst case scenario would be a university with little or no presence of IT tools in the current teaching methodology, or management not having envisioned the introduction of educational technology systems. In such a case the implementation would need to maximize its efforts towards bridging the digital divide.

Ideally the organizational structure should have room for introduction of roles or delegation of human capital for the purposes of Blackboard administration, Support to users, infrastructure

administration and Blackboard users' training.  
IT environment and infrastructure  
It would seem impossible to have a Blackboard implementation start off without at least an Intranet and client (instructor and student) PCs in place first. But let's not forget the wise saying "nothing is impossible", here its implication in a rather negative context. The presence of a well built and supported IT infrastructure is the key to the smooth completion of the technically bound tasks of the Blackboard implementation.

#### Teaching methods and pedagogy

Just like teaching and learning in their meanings represent the give and take of education, online learning technology and related concepts tend to align themselves accordingly. The element of IT providing the platform for this teaching – learning experience creates a complex compound made of student retention, faculty interest, subject expertise, course design, content, its construction, communication and quality. How to deduce the right combination of computer aided teaching & learning tools with face-to-face teaching is a challenge in front of the educationist and the program developers. The 3C-model of didactical components – Content, Communication and Construction, described by Kerres and Witt (2003) is a useful reference point for drawing optimal blended learning arrangements.

It is not expected for the LMS to intelligently evolve to adapt to the changing human learning needs, however, it can be desired to customize the system to adjust itself to procedures and requirements of the learning environment, specially the existing teaching pedagogy.

#### User adoption and acceptance

As is true for most IT solution introductions in organizations, in the course of implementation of an LMS at a University, is a key driver, which ironically is the key resistant –the user. Research resonates this. E-learning models and IT

Solution project implementation methodologies give heavy emphasis to the 'user' factor. The Blackboard learning management system, in its right, demands a cycle for the management of the human factors, including the promotion of user-adoption of the system and adaptation of the user base. Orienting the users to take advantage of the Blackboard LMS functionalities at their disposal requires training, support and promotion efforts.

The level of user interest is an interesting variable, which is difficult to deduce accurately, but even a gauge of its value describes the stage of adaptation to the technology. The level of utilization is the direct representative of adoption of the system. Prior IT adoption studies have included utilization as a dependent variable (e.g., [5], [6]). The utilization construct, when linked to technology performance, provides a metric of post-adoption usage behavior [7].

Each of the discussed factors is very closely linked to the local economical, social and technological cultures. One cannot ignore the external environment's impact on the internal web of project links if a true picture is required. Over time online learning management systems, institutions and IT solution developers have each, at their own pace and with their own styles, evolved to incorporate the respective best-fit methods, modules and mechanisms for purposes of effective delivery of courses online and management of learning outcomes systematically.

#### APPROACHES

Using action research methodology, through examination of five University implementations of the Blackboard LS in the UAE, an understanding of the current practices in UAE-based universities was drawn. The Blackboard LMS implementation can be approached using a sequenced phase-wise approach or an ad-hoc approach. In a sequenced phase-wise project approach the Blackboard LMS implementation would generally include:

- The initiation phase: With the established aim for the implementation, implying Blackboard adoption the negotiation of contract, sign offs and project team allocation are features of this phase. The deliverable here is usually a scope of work (SOW) and contract.
 

The phases might bear an overlap or at time some run in parallel. However, the deliverables would still be tangible and later phases would depend on outputs from the preceding ones, thus still maintaining a sequential characteristic.
- The planning phase
 

The allocation of time, technical, human and financial resources in line with the scope defined. This phase deliverable defines the project schedule and allocation of resources.

The ad-hoc approach, as expected, does not have definite boundaries to identify phases, however, generic reference points would be:

  - Initiation, usually signified by a contract sign-off
  - The technical deployment, marking the physical implementation of the LMS architecture and ensuring the LMS is ready to be made available to users
  - The execution, usually the formal launch of the system
  - The training and/or support
  - An upgrade
- The design phase
 

Blackboard LMS requirements from user, institution, program and infrastructure point of view are clarified and an architecture-level diagram produced along with an optional customization- requirements report. The customizations may be immediate, short-term or long-term requirements.

There is an overlap of challenging factors across the phases, and in many cases one modification in the approach of implementation has multiple effects on more than one element in the educational environment surrounding the LMS and directly on the Blackboard implementation itself. The tradeoffs between the positive and negative effects of certain decisions are subjective and variable.
- The technical deployment phase
 

Acquiring the technical resources, installation, configuration and customization based on the design phase deliverables for the purpose of the Blackboard deployment in the immediate future. The technical integrations may or may not be all customized and completed within the term before execution, depending on the requirements and feasibility.

More realistic approaches, which address the described challenges, do accommodate for some sequence phases and attempt to provide flexibility in project tasks based on circumstantial requirements.
- The execution phase
 

This is the stage during which Blackboard is made accessible online to the user-base targeted by the Blackboard LMS execution deciders. In addition to a functional LMS a technical document for the administration, backup plan, monitoring and maintenance procedures should be produced.

The user engagement and the extent to which the user base embraces the Blackboard LMS is both a cause and effect of the Approach type used for Execution Phase (/ Point) :
- The training phase
 

This may or may not be a one-time planned training. In addition to at-least an initial starter training, this phase should be accompanied with a training agenda and resourcing document as a deliverable.

The pilot approach: This approach not only gives the implementation the advantage of getting user feedback in time, it also provides the opportunity to the learning environment to adapt itself in one or more ways towards the use of Blackboard in teaching. A preferable approach for experienced
- The maintenance and support phase
 

The phase is on-going post-execution.

project management, with the option of building conducive conditions before a formal launch of the LMS is to first deploy a Pilot of the system using a sample user base. This user base sample may be selective, for instance a specific college or department, random sample or a selective blend of some colleges and department representatives. This approach gives the implementation the advantage of understanding and mapping the LMS to the real academic and institutional needs. The one visible downside is giving faculty an early-adopters seat which, not always, all users are ready for and this might open doors to early negative reaction. It is important here to pay close attention to ensure that the users give an un-biased opinion and are made aware that the Pilot system is not yet customized to the University's unique needs yet. The partial launch approach: this is the second choice if the possibility of a Pilot does not suit the time-frame for a University's requirement, or if it is not possible to select a balanced sample. This approach provides the opportunity to learn the lessons from a selective part of the University before introducing the system to the rest. The advantages of this approach are similar to that of the Pilot approach; however the training and support efforts get called for sooner in this form of execution.

The in-one-go approach: launching the system across the entire university in one go would entail reactions of different levels depending on the size of the academia. This would be the classic case of least in-time user awareness and involvement and this approach usually maximizes the user resistance to the adoption of Blackboard. The most effort would be required for the training and support and to promote the adoption of the LMS by the teaching staff. Not an easy task, those who have seen this would agree.

"The comment that the "E" in E-learning should stand for "Evil" rather than Electronic has been heard around", Ms Poonam Chotelal an education technology specialist commented during a debate on e-learning and online exams; in order to ensure this "E" is perceived as "Enhanced" by a majority of the user base, it is important to give due

emphasis to user-needs mapping in implementation of the Blackboard LMS. The best way to know what the user wants is to ask them. The first two execution approaches aim to leverage maximum user engagement before the complete revamp of the teaching style with the introduction of the LMS element.

Those Blackboard LMS project implementations with a consistent view on the factors affecting Blackboard adoption and adaptation, goal-orientation, blended with user base involvement and promotion of change management are more likely to succeed.

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*Paper # 2: Strategies for Promoting Blackboard User Adoption at the University of Sharjah*

By:

University of Sharjah, U.A.E

Authors:

Anjli Narwani, Dr. Nabil Kallas, Anissa Bettayeb

Presented By:

Anjli Narwani

Presented At:

BBSummit Middle-east 2007, Dubai Mens College, Auditorium

Presented On:

5<sup>th</sup> September 2007

# Strategies for Promoting Blackboard User-Adoption at University of Sharjah

20<sup>th</sup> July 2007

University of Sharjah: Dr. Nabil Kallas, Anissa Bettayeb & Anjli Narwani

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## Abstract

The users are the customer and the user adoption of an IT System is a direct indicator of the success or failure of that system's implementation. The process of promoting user adoption of the Blackboard learning management system (LMS) is not a short-term nor a one-time project. It is an iterative and evolving process. This paper discusses the strategies and approaches used for promoting user acceptance and utilization of the Blackboard LMS at the University of Sharjah(UOS).

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Computer-aided learning and Computer-aided Teaching are interpreted to be two sides of the same coin, and there is theoretical evidence to support this perspective. In reality, the two terms spell user acceptance and utilization of the system quite differently.

Depending on the overall institutional readiness and level of presence of computer-aids in teaching and learning, the above two scenarios might seem very challenging or not challenging at all. Moreover, the challenges across an educational institution are never consistent.

As a faculty, having to not impart education verbally nor interactively, rather to create online learning material which requires transposing the instructor's expertise to digital content, might not seem simple. And as a student having to take exams online might appear more challenging than paper based ones.

The Blackboard user base, comprising mainly of academic staff and students, has its own special characteristics. The malleability of this academic user base is difficult to judge. It is not difficult to assess the user's readiness for the LMS based on a calculation of level of users' IT skills. The ground reality, however, is quite different, since it is not only a user's competency with computers that determines his/her interest in using an LMS for the purpose of teaching or learning. The simple comment by faculty, "Why should I need to use an LMS? I'm able to teach perfectly well without it right now.....", is difficult to address aptly.

User adoption of an LMS within an educational institution setting is a combination effect of the level of user resistance to the system and the level of user acceptance. Building user interest and attracting higher utilization of the LMS are the challenges posed in front of those striving to promote user adoption at their Universities.

The level of utilization is a direct representative of adoption of the system. The extent to which the instructors and learners adapt to incorporate the use of the LMS is a factor which heavily impacts the adoption of the system. Also, the adoption of the system affects the degree of adaptation; difficult to select which factor comes first. It is a subjective decision to give higher priority to the promotion of adoption of the system before creating an adaptive process for its usage first.



A classic example of user adoption patterns is that of the University of Sharjah (UOS). User adoption here is directly related to the LMS utilization by students and academic staff. A study by the authors of this paper demonstrated the initial lack of user acceptance of the LMS and the change in user-adoption with respect to multiple approaches towards promotion of it.

Adoption Curve of the Learning Management System

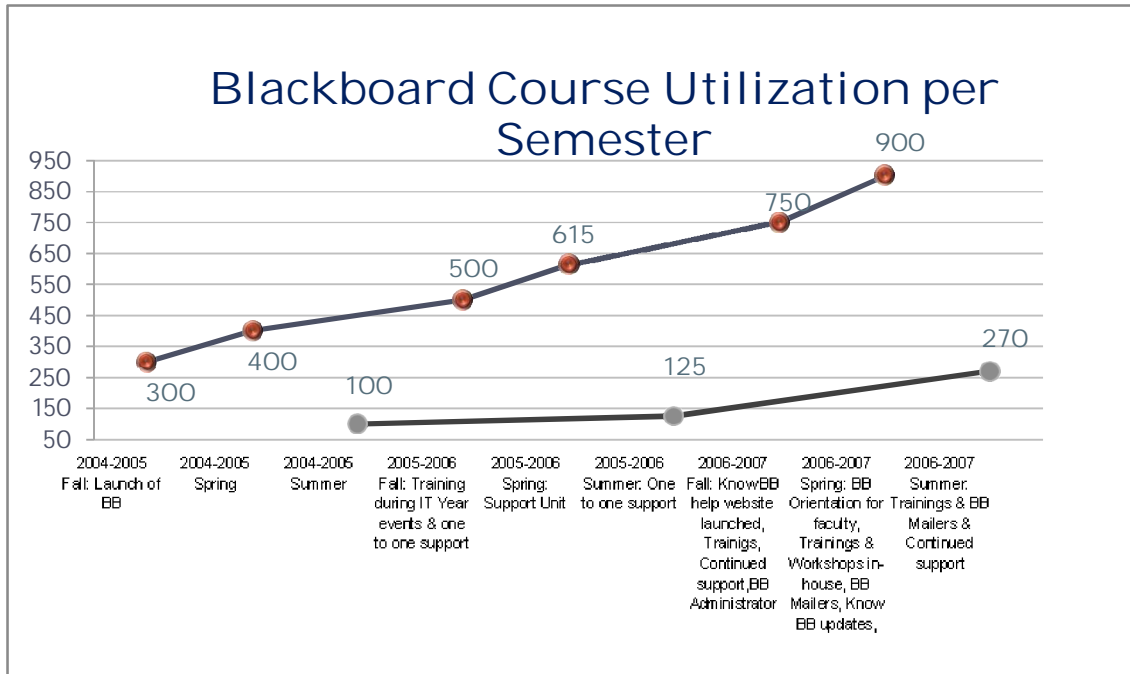


FIGURE 1.1: The above represents the progression in number of courses active on Blackboard in each semester. During the non-summer semesters the trend indicates a continual increase in the Blackboard courses utilization from 2004-2005 Fall until the recent 2006-2007 Spring. During the summer semesters less than 1/3<sup>rd</sup> of the regular semester courses are offered. Even so the trend is positive across the summer semesters.

Several approaches to promote the effective use of LMS surface:

- Training, in-house or by the professional training providers
- Online workshops
- One-on-one and on-demand training sessions
- LMS User Support
- Access to knowledge base, FAQs, User guides, Help-sites
- Surveys and suggestion system
- Propaganda including home-grown website to highlight university Blackboard engagement
- Mailers to Blackboard user community within the university
- Opportunity to join or created Clubs and committees



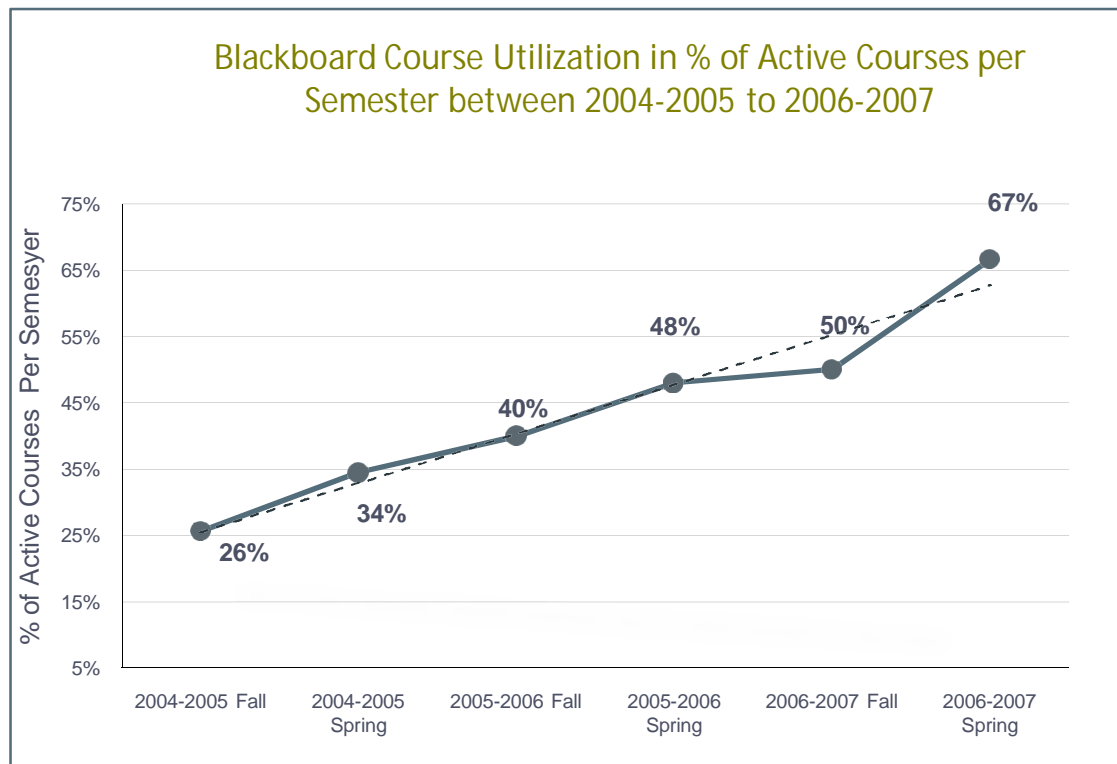


Figure 1.2: With the progression of each semester, and the additional efforts towards promotion of Blackboard usage, the above demonstrates the rise in Proportion of Active courses on the Blackboard LMS (% of active courses each semester from total courses offered in the respective semester).

When Blackboard was launched in Fall 2004, the users were not only skeptical but also quite resistant to the system. Some faculty felt quite strongly about using the system initially. Before the introduction of Blackboard, a small percentage of faculty used a home-grown method of creating course websites for sharing materials with their students using the web. This method however was cumbersome and to many difficult to manage. Still, because many were already used to this primitive method it was not easy to convince them to embrace the new LMS. However with seminars and workshops about the LMS, academic staff were made aware of the advantages of the LMS at work. The earliest adopters of the Blackboard LMS were the Departments from the Colleges of Arts & Science, Engineering and Business Administration, mostly those with IT related courses. In the beginning it was most difficult to get the Colleges delivering courses in Arabic medium to accept the system, because of the absence of an Arabic interface.

During the early phase there were challenges on both the technical and functional aspects of academia working with the LMS. These challenges were dealt with by out with Training initiatives driven by the support team early the year following the launch of the system. We believe that an earlier training plan would have helped a long way. Nonetheless, with the establishment of in-house support services the University slowly and steadily engaged more and more faculty and students.

An interesting factor, which is very important for Universities operating in the UAE, is the language support factor. The absence of Arabic language interface in the Blackboard system, posed the

strongest challenge. More than 30% of UOS faculty members Teach in Arabic Language. It was observed that the utilization of Blackboard at the UOS increased after the introduction of the Arabic-locale for the Blackboard interface. Even so, many faculty still disapprove of the currently available Arabic-language support in Blackboard and expect more improvements before they can depend on the LMS.

The above statements are drawn based on valuable inputs from the support team at the UOS, whose staff are an integral part of the Academic Computing Services.

The presence of support services including IT helpdesk or online support units, training and continuous development units, institutional effectiveness, research & quality units all have a positive impact on the user-adoption of the Blackboard LMS.

A feedback mechanism is an important constituent of the scheme for involving the users' with the Blackboard LMS as a system at their disposal. The psychological factor is important to engage. Giving the users the opportunity to suggest changes for the system or the way the system is being used, gives them a feeling of ownership. Giving the LMS execution this layer of flexibility might seem threatening and complex to manage to some, however, this would appear to be a way of ensuring that the system caters to their real needs.

There is more than what meets the eye, to the approaches applied which change the acceleration of the adoption of the LMS despite the continuous challenges of new staff and non-acceptance to use a digital system for teaching and learning.

Maximizing Blackboard user-adoption is all about minimizing user resistance and maximizing user acceptance of the LMS. The process is an ongoing effort to promote the adoption of Blackboard and improve its effectiveness and role in teaching and learning and to capitalize on the investment the University has made in acquiring the system.

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*Paper # 3: Blackboard Adoption and Adaptation Approaches by BUiD*

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Presented On:

5<sup>th</sup> September 2007

# Blackboard Adoption and Adaptation Approaches

20<sup>th</sup> July 2007

British University in Dubai : Dr.Mohammed Arif, Anjli Narwani

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## Synopsis

Multiple approaches can be employed to achieve the single objective of implementing the Blackboard Learning management system (LMS) in the UAE educational institution. In institutional management terms this could mean pre-implementation planning and preparedness. In Project Management terms this could mean customized project life cycles. In institutional effectiveness terms this could mean post-implementation promotion of the system utilization. This paper talks about the Blackboard Adoption and Adaptation approaches on these 3 levels, from the project implementer's perspective.

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If you are an educationist engaged with learning management systems, or a technologist involved in the implementation of learning management systems, or someone who identifies with the likes of any of these, it would not be difficult to recognize the challenges surrounding the successful execution of a learning management system (LMS) implementation in an educational environment. This paper is worth your read to know about approaches in action, which plausibly address the challenges from an implementer's perspective.

The challenges are a multitude; these can be classified as those related to the technology environment and infrastructure, the institutional readiness and organization, the teaching methods and pedagogy or the user adoption and acceptance. With the aim to implement the Blackboard LMS at a University in the UAE, the project objectives must address each of these classified challenges in addition to the project management challenges of managing resources, aligning project tasks to goals and schedules, monitoring progress and reporting.

Some would argue that the first step in the process is concentrating on the reasons for adoption and some that the higher precedence is for ensuring smooth and constructive adaptation of the intra-university environment. Yes, it would be ideal to first check Institutional readiness on all levels, ensure resources are in place, user base is trained and enthusiastic about the LMS and only then move forward towards LMS execution. However real-time circumstances rarely, if ever, give this luxury to the implementation.

Conditions for adoption of the system may be satisfied prior to implementation, or may be planned to be addressed during the implementation of the LMS. Some of these may include acquisition of technical resources and human resources for implementation, users' IT (plus in specific Blackboard) skills. Even before considering technical and human factors, is the important variable of Institutional Readiness. Imagine, as the IT administrator at a University, the scenario, that within a few months the academia, all not even used to building lectures through power-point, must be equipped with an LMS; the decision being triggered by accreditation requirements. Yes, the decision would result in the University achieving a milestone, and becoming part of the knowledge management motion

supported by educational technology; but for the implementation to be successful in its own right, this sudden move would require large efforts to help the university members and programs adapt to the adoption of the system.

The factors which impact the Blackboard LMS's adoption and adaptation of the learning environment, are not independent of the external economical, information technology, technological, cultural and social factors. The authors maintain the assumption from the implementer's stance that these exterior factors are supportive, if not all affirmative.

#### Institutional readiness and organization

It is not easy to ascertain the Institutional readiness of a University for the Blackboard LMS implementation, or even for the implementation of any other educational technology. Universities, like other higher educational institutions are being driven to make decisions to incorporate IT in teaching by many external and internal forces.

Blackboard LMS implementation would appear to be smooth if the university has either been using some form of course sharing and course building educational technology and academia is aware about online course delivery and communication tools. Management foresight to develop the use of IT in its framework is very positive for the Blackboard LMS adoption and adaptation. The worst case scenario would be a university with little or no presence of IT tools in the current teaching methodology, or management not having envisioned the introduction of educational technology systems. In such a case the implementation would need to maximize its efforts towards bridging the digital divide.

Ideally the organizational structure should have room for the introduction of roles or delegation of human capital for the purposes of Support to Blackboard users, Blackboard administration, IT System administration and Blackboard users' training.

#### Information Technology environment and infrastructure

It would seem impossible to have a Blackboard implementation start off without at least an Intranet and client (instructor and student) PCs in place first. But let's not forget the wise saying "nothing is impossible", here its implication in a rather negative context. The presence of a well built and supported IT infrastructure is the key to the smooth completion of the technically bound tasks of the Blackboard implementation.

#### Teaching methods and pedagogy

Just like teaching and learning in their meanings represent the give and take of education, online learning technology and related concepts tend to align themselves accordingly. The element of IT providing the platform for this teaching – learning experience creates a complex compound made of student retention, faculty interest, subject expertise, course design, content, its construction, communication and quality. How to deduce the right combination of computer aided teaching & learning tools with face-to-face teaching is a challenge in front of the educationist and the program developers. The 3 Cs – components, criteria, categories highlighted by Clark (2006)<sup>1</sup> in his study of

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<sup>1</sup> Donald Clark, Evaluation of Learning, Epic UK, 2006

the questions to be addressed to design, develop and deliver optimal blends are a useful reference point for drawing the method of building instructional material for online course delivery.

It is not expected for the LMS to intelligently evolve to adapt to the changing human learning needs, however, it can be desired to customize the system to adjust itself to procedures and requirements of the learning environment, specially the existing teaching pedagogy.

#### User adoption and acceptance

As is true for most IT solution introductions in an organization, in the course of implementation of an LMS at the University, there is one key driver, which also is ironically the key resistant – the user. Past research resonates this. E-learning models and IT Solution project implementation methodologies give heavy emphasis to the ‘user’ factor. The Blackboard learning management system, in its right, demands a cycle for the management of the human factors, including the promotion of user-adoption of the system and adaptation of the user base. Orienting the users to take advantage of the Blackboard LMS functionalities at their disposal requires training, support and promotion efforts.

The level of user interest is an interesting variable, which is difficult to deduce accurately, but even a gauge of its value describes the stage of adaptation to the technology.

The level of utilization is the direct representative of adoption of the system

Each of the discussed factors are very closely linked to the local economical, social and technological cultures. One cannot ignore the external environment’s impact on the internal web of project links if a true picture is required.

Over time online learning management systems, institutions and IT solution developers have each at their own pace and with their own styles, evolved to incorporate the respective best-fit methods, modules and mechanisms for purposes of effective delivery of courses online and management of learning outcomes systematically.

The Blackboard LMS implementation can be approached using a sequenced phase-wise approach or an ad-hoc approach. The type of approach is determined more often by thrust rather than by choice, from the project implementer’s standpoint.

In a sequenced phase-wise project approach the Blackboard LMS implementation would generally include:

- *The initiation phase*  
Following a consensus on the aim of the implementation, the Blackboard adoption which implies the negotiation for contract the sign offs and the project team allowance are features of this phase. The deliverable here is usually a scope of work and contract.
- *The planning phase*  
The allocation of time, technical, human and financial resources in line with the scope defined. This phase deliverable defines the project schedule and allocation of resources.

- *The design phase*  
Blackboard LMS requirements from user, institution, program and infrastructure point of view are clarified and an architecture-level diagram produced along with an optional customization-requirements report. The customizations may be immediate, short-term or long-term requirements.
- *The technical deployment phase*  
Acquiring the technical resources, installation, configuration and customization based on the design phase deliverables for the purpose of the Blackboard deployment in the immediate future. The technical integrations may or may not be all customized and completed within the term before execution, depending on the requirements and feasibility.
- *The execution phase*  
This is the stage during which Blackboard is made accessible online to the user-base targeted by the Blackboard LMS execution deciders. In addition to a functional LMS a technical document for the administration, backup plan, monitoring and maintenance procedures should be produced.
- *The training phase*  
This may or may not be a one-time planned training. In addition to at-least an initial starter training, this phase should be accompanied with a training agenda and resourcing document as a deliverable.
- *The maintenance and support phase*  
Like for most IT systems, for a Blackboard LMS it too stands true, that the maintenance phase is an on-going process.

The phases might bear overlap, and in some cases two or more phases could end up running in parallel. However, the deliverables would still be tangible and later phases would depend on outputs from the preceding ones, thus still maintaining a sequential characteristic.

The ad-hoc approach, as expected, does not have definite boundaries to identify phases, however, generic reference points would be:

- The initiation, usually signified by a contract sign-off
- The technical deployment, marking the physical implementation of the LMS architecture and ensuring the LMS is ready to be made available to users
- The execution, usually the formal launch of the system
- The training and/or support
- An upgrade

There is an overlap of challenging factors across the phases, and in many cases one modification in the approach of implementation has multiple effects on more than one element in the educational environment surrounding the LMS and directly on the Blackboard implementation itself. The tradeoffs between the positive and negative effects of certain decisions are subjective and variable.

More realistic approaches, which address the described challenges, do accommodate for some sequence phases and attempt to provide flexibility in project tasks based on circumstantial requirements.

The user engagement and the extent to which the user base embraces the Blackboard LMS is both a cause and effect of the Approach type used for Execution Phase (/ Point) :

*The pilot approach:* This approach not only gives the implementation the advantage of getting user feedback in time, it also provides the opportunity to the learning environment to adapt itself in one or more ways towards the use of Blackboard in teaching. A preferable approach for experienced project management, with the option of building conducive conditions before a formal launch of a finalized deployment of the Blackboard LMS is to first deploy a Pilot of the system using a sample user base. This user base sample may be selective, for instance a specific college or department, random sample or a selective blend of some colleges and department representatives. This approach gives the implementation the advantage of understanding and mapping the LMS to the real needs of the faculty, staff and students before finalizing the design and customization of the Blackboard functions. The one visible downside is giving faculty an early-adopters seat which, not always, all faculty are ready for and this might open doors to early negative reaction. It is important here to pay close attention to ensure that the users give an un-biased opinion and are made aware that the Pilot system is not yet customized to the University's unique needs yet.

*The partial launch approach:* this is the second choice if the possibility of a Pilot does not suit the time-frame for a University's requirement, or if it is not possible to select a balanced sample. This approach provides the opportunity to learn the lessons from a selective part of the University before introducing the system to the rest. The advantages of this approach are similar to that of the Pilot approach; however the training and support efforts get called for sooner in this form of execution.

*The in-one-go approach:* launching the system across the entire university in one go would entail reactions of different levels depending on the size of the academia. This would be the classic case of least in-time user awareness and involvement and this approach usually maximizes the user resistance to the adoption of Blackboard. The most effort would be required for the training and support and to promote the adoption of the LMS by the teaching staff. Not an easy task, those who have seen this would agree.

"The comment that the "E" in E-learning should stand for "Evil" rather than Electronic has been heard around", Ms Poonam Chotelal an education technology specialist commented during a debate on e-learning and online exams; in order to ensure this "E" is perceived as "Enhanced" by a majority of the user base, it is important to give due emphasis to user-needs mapping during the implementation of the Blackboard LMS. The best way to know what the user wants is to ask them. The first two execution approaches aim to leverage maximum user engagement before the complete revamp of the teaching style with the introduction of the LMS element.

Those Blackboard LMS project implementations with a consistent view on the factors affecting Blackboard adoption and adaptation, goal-orientation, blended with user base involvement and promotion of change management are more likely to succeed.



*Paper # 4: Overcoming the LMS language impediment By the UoS*

By:

University of Sharjah, U.A.E

Authors:

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Presented By:

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Presented At:

BBSummit Middle-east 2007, Dubai Mens College, L-115

Presented On:

6<sup>th</sup> September 2007

## Overcoming the LMS Linguistic Challenge

23<sup>th</sup> July 2007

By Anjli Narwani & Anissa Bettayeb

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### Abstract

Electronic education is strongly influenced by the language used as the medium of communication. The benefits of an LMS would be fully utilized only when it is compatible with the language receptiveness of the users targeted by the system. In the Arab oriented Universities, to not have multi-language IT Systems becomes an impediment. This paper discusses the language and IT interdependency within UAE-based Universities and provides several ways to overcome the handicaps related to technology language support.

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In most of the Arab-world countries the Arabic Language is the language that is most popular. Agreeably, it is the second most commonly used language in a lot of them, since English is a widely accepted medium and introduced across the education system.

In the digitized world, English becomes the first language while the other languages, Arabic and French or other popular languages take the second seat. These secondary languages are most often, provided only as a language variation to the systems and online/digital content.

Without meaning any offence, it would not seem realistic to teach a native English speaker Physics in lets say, Korean, unless of course he were an exception and had mastered Korean for some lucky reason. Imagine giving such a non-Korean literate CD content in the foreign language to study from. In the same way, native Arabic speakers are unable to take advantage of learning management system functions due to the absence of dependable Arabic interfaces.

The need for multi-language e-learning systems continues to increase globally, and within the UAE-based market this need has turned into a necessity for many institutions, wanting to embrace advanced educational technology to support academics. Especially in the middle-east, higher education institutions continue to deliver Arabic medium courses and programs. Not all learning management systems technologies recognize the core need for multi-language support.

Academic users expect the system to support the use of existing applications with Arabic content, and expect access to the system facilities through Arabic interfaces. The challenge is more than providing for one extra language, it is more about ensuring that the language variation meets the environment.

### *Why the need to have Multi Languages “Arabic” enabled LMS?*

With the spread of information technology, it is not new to find Web sites and content online in Arabic and its derivatives. Users are habituated to view Internet content in Arabic language; including educational material, entertainment material, search and general web sites. The convenience factor is high on their list of ‘what makes a system attractive to Arabic users’.

Generally we find many Arabic oriented users having difficulty in grasping content delivered in English; Their learning curve would be more effective in their comprehension of arabized digital content.

In UAE-based universities, or even those, which have roots in the Arab-world countries, courses continue to be taught in Arabic. A classic example is that of the University of Sharjah in the UAE where about 1/3<sup>rd</sup> of the academic strength is communicating in Arabic. This is a significant proportion of academic users and the University’s LMS is ideally expected to address their needs too. To increase the number of the people who will benefit from the use of the online learning system, Arabic language support is therefore a very important feature. If the system is limited to English then the Arabic users depend on the traditional way of Teaching without the incorporation of IT in teaching, and the purpose of adopting an LMS University-wide seems partially defeated.

There is a visible need for leaders on shaping the technology to be suitable for our local environment and cultures. Yes, there are some developers from the Middle east, who have created an Arabic-oriented LMS.

Apart from the absence or presence of language support in the LMS, the learning technology implementation has other linguistic challenges:

- ✓ Many of the Arabic Users have very basic IT skills
- ✓ Limitations in the system itself. Many systems support only one language.
- ✓ In most cases there isn’t enough people-support for the Multilanguage system
- ✓ People who work on the system may not be Arabic speakers or they might not have good command of the language
- ✓ There are people who are not interested on adding other languages, beside English to the system, because they believe English is widely used all over the world
- ✓ Some of the Multilingual systems, don’t give great attention and support to their non English versions, for example in the Arabic version of Blackboard the Arabic content in written form left to right instead of right to left .

- ✓ Most of the resources and help documentation are written in English, it's hard to find support materials on other languages.
- ✓ Arabic content in the Arabic version of the system are not very meaningful most of the time you need to rephrase them.
- ✓ Still some Arabic users are afraid of using the e-learning system concept
- ✓ Some operating systems don't support the Arabic characters and language
- ✓ Some browsers don't recognize the Arabic characters, which require additional installations of plug-ins or latest software.
- ✓ There is a big gap in the e-learning market between the English version of the system and other Languages especially the Arabic language.

Blackboard LMS, to the good, has sought to address this issue. There is yet a long way to empower the system with full support to the linguistic derivatives.

Ways to success:

- ✓ Dedicated Support Team for the system
- ✓ Provide One-on-one and on-demand training sessions in regular basis
- ✓ Build a Help site where you can post system announcements, FAQs, and User guides.
- ✓ Don't depend on the supplied system guides. Instead build your own version using easy ways to deliver the content by adding: clear text, screen shots and videos.
- ✓ Categorizing the guides by the level of difficulty
- ✓ Be more interactive with users and involve them by, Sending Mailers to the Blackboard users' community within the university or sharing decisions and future planes by having monthly Interviews or Building Blackboard Clubs and committees
- ✓ Ensuring that the interface is user friendly and always look from the user's point of view
- ✓ Try to have new enhancements each semester or year and inform the user of the new features
- ✓ Talk to the user and understand their point of view regarding the system and the ways to improve it
- ✓ Place visible buttons that help the user switch from one language to another
- ✓ Provide typing applications for the users who use Operating Systems that doesn't support a certain language, for example an Arabic keyboard ( created with java script) can help users who use Microsoft Windows -that doesn't have Arabic language installed on it to- type in Arabic

- √ Provide the user with appropriate ways to view the contents of the pages by suggesting web browsers and/or plug-ins or Technical Settings

### *UOS Success Story!*

More than 30% of our faculty members teach their subjects using the Arabic Language, and most of them have low IT skills. At the beginning of 2004 when the Blackboard LMS was launched at the University of Sharjah, the Arabic-speaking faculties weren't using the English system, even though it was very easy to use.

In Fall 2006 when the Arabic language was added to the system more of the Arabic speaking faculty members were becoming interested in Using Blackboard, and

Today we have all our system's support and documentations in both languages Arabic and English, that broke the language barrier, and gave the faculty members the opportunity to use the system in the language that he feels more comfortable with or its used in teaching the course, and appreciate the simplicity and efficiency of the system.

What makes this case a success is that by-far UOS is the only University in the Middle East which has a formal Arabic implementation of the Blackboard LMS and Blackboard courses are being delivered in Arabic; with a fully functional Support unit, regular Training programs and user-friendly documentation tailor-made by the UOS Blackboard team.

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## Appendix III: AHP Survey

Survey Begin>> -----

Based on your opinion, kindly rate each of the factors, which impact the planning of the Blackboard User-Training. In each combination list provided below, mark the relative importance of each variable against the other.

The number rating is interpreted as follows:

- § 1: both are equally important
- § 3: one is moderately more important than the other
- § 5: one is strongly more important than the other
- § 7: one is very strongly more important than the other
- § 9: one is extremely more important than the other

Here is an example: For instance, if you consider the Type of Audience are much more important than the Number of trainees, then you would mark as follows

A	←A is more important than B					B is more important than A→					B
	9	7	5	3	1	3	5	7	9		
Type of Audience				5						Number of Trainees	

For instance, if you consider the Type of Audience are moderately more important than the Number of trainees, then you would mark as follows

A	←A is more important than B					B is more important than A→					B
	9	7	5	3	1	3	5	7	9		
Type of Audience				3						Number of Trainees	

Kindly make your choices Below:

A	←A is more important than B					B is more important than A→					B
	9	7	5	3	1	3	5	7	9		
Type of Audience										Language	
Type of Audience										No. of Trainees	
Type of Audience										Mode	
Language										No. of Trainees	
Language										Mode	
No. of Trainees										Mode	

Notes:

Type of Audience : Eg. Who is the training for? Faculty /Students/Staff/etc?

Language: Medium for communication En or Ar

No. of Trainees: How many people will be trained?

Mode of Training: Blended workshops or online classes

---

Thank you for your cooperation and valuable inputs.

Kind regards

Anjli Narwani (20040034@buid.ac.ae)

Student ID: 20040034, The British University in Dubai

Survey End>> -----

The Surveys were distributed to a small sample of Educational Technology specialists selectively chosen by the author of the study.

The sample Surveyed were selected either because they directly worked on the implementation of Blackboard learning management system end-user training or were involved in projects of similar trainings.

The Survey responses were collected between 10/June/2007 to 30/June/2007.

The Responses to the Surveys Attached:

**Research Survey:**

Based on your opinion, kindly rate each of the factors, which impact the planning of the Blackboard User-Training. In each combination list provided below, mark the relative importance of each variable against the other.

The number rating is interpreted as follows:

- 1: both are equally important
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- 5: one is strongly more important than the other
- 7: one is very strongly more important than the other
- 9: one is extremely more important than the other

Here is an example: For instance, if you consider the Type of Audience are much more important than the Number of trainees, then you would mark as follows

A	← A is more important than B    B is more important than A →									B
	9	7	5	3	1	3	5	7	9	
Type of Audience				✓						Number of Trainees

For instance, if you consider the Type of Audience are moderately more important than the Number of trainees, then you would mark as follows

A	← A is more important than B    B is more important than A →									B
	9	7	5	3	1	3	5	7	9	
Type of Audience				✓						Number of Trainees

**Kindly make your choices Below:**

A	← A is more important than B    B is more important than A →									B
	9	7	5	3	1	3	5	7	9	
Type of Audience				✓						Language
Type of Audience			✓							No. of Trainees
Type of Audience					✓					Mode
Language				✓						No. of Trainees
Language					✓					Mode
No. of Trainees						✓				Mode

Notes:

- Type of Audience :    *Eg. Who is the training for? Faculty/Students/Staff/etc?*  
 Language:            *Medium for communication En or Ar*  
 No. of Trainees:     *How many people will be trained?*  
 Mode of Training:    *Blended workshops or online classes*

Thank you for your cooperation and valuable inputs.  
 Kind regards  
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A	←A is more important than B      B is more important than A→									B
	9	7	5	3	1	3	5	7	9	
Type of Audience				✓						Number of Trainees

For instance, if you consider the Type of Audience are moderately more important than the Number of trainees, then you would mark as follows

A	←A is more important than B      B is more important than A→									B
	9	7	5	3	1	3	5	7	9	
Type of Audience				✓						Number of Trainees

**Kindly make your choices Below:**

A	←A is more important than B      B is more important than A→									B
	9	7	5	3	1	3	5	7	9	
Type of Audience			5							Language
Type of Audience	9									No. of Trainees
Type of Audience				3						Mode
Language					1					No. of Trainees
Language						1				Mode
No. of Trainees							1			Mode

Notes:

- Type of Audience :      Eg. Who is the training for? Faculty /Students/Staff/etc?  
 Language:                Medium for communication En or Ar  
 No. of Trainees:        How many people will be trained?  
 Mode of Training:      Blended workshops or online classes

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	9	7	5	3	1	3	5	7	9	
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	9	7	5	3	1	3	5	7	9	
Type of Audience				✓						Number of Trainees

**Kindly make your choices Below:**

A	←A is more important than B					B is more important than A→				B
	9	7	5	3	1	3	5	7	9	
Type of Audience				✓						Language
Type of Audience	✓									No. of Trainees
Type of Audience			✓							Mode
Language					✓					No. of Trainees
Language					✓					Mode
No. of Trainees						✓				Mode

Notes:

- Type of Audience : Eg. Who is the training for? Faculty /Students/Staff/etc?  
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Thank you for your cooperation and valuable inputs.

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## Appendix IV: Analytical Hierarchy Process (AHP) Approach

The Analytical Hierarchy Process (AHP) model consists of a goal and elements that contribute towards its achievement (Saaty, 2005).

The analytic hierarchy process (AHP) has been accepted as a leading multi-attribute decision-aiding model both by practitioners and academics. The foundation of the AHP is the Saaty's eigenvector method (EM) and associated inconsistency index that are based on the largest eigenvalue and associated eigenvector of an ( $n \times n$ ) positive reciprocal matrix. The elements of the matrix are the decision maker's (DM) numerical estimates of the preference of  $n$  alternatives with respect to a criterion when they are compared pair wise using the 1–9 AHP fundamental comparison scale. The components of the normalized eigenvector provide approximations of the unknown weights of the criteria (alternatives), and the deviation of the largest eigenvector from  $n$  yields a measure of how inconsistent the DM is with respect to the pair wise comparisons (Gassa and Rapcsák, 2004).

AHP consists of a matrix of judgments  $A=(a_{ij})$  indicating respondents' preferences (Saaty 2005). These comparative judgments are made among a set of homogeneous objects organized in a group. A judgment scale ranges for 1 to 9, and represents relative dominance in terms of importance and/or preference (Saaty 2005).

One common scale (adapted from Saaty 2005) is:

Scale IV. i

Intensity Of importance	Definition
1	Equal importance
3	Somewhat more important
5	Much more important
7	Very Much more important
9	Absolutely more important
2,4,6,8	Intermediate values

A basic, but very reasonable, assumption is that if attribute A is absolutely more important than attribute B and is rated at 9, then B must be absolutely less important than A and is valued at 1/9.

These pair-wise comparisons are carried out for all factors to be considered, usually not more than 7, and the matrix is completed.

The following is a matrix form for AHP:

$$A = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \dots & \dots & \dots & \dots \\ a_{n1} & a_{n2} & \dots & a_{nn} \end{bmatrix} = \begin{bmatrix} w_1/w_1 & w_1/w_2 & \dots & w_1/w_n \\ w_2/w_1 & w_2/w_2 & \dots & w_2/w_n \\ \dots & \dots & \dots & \dots \\ w_n/w_1 & w_n/w_2 & \dots & w_n/w_n \end{bmatrix}$$

where  $n$  is the number of variables.

The next step is the calculation of a list of the relative weights, importance, or value, of the factors, technically, this list is called an eigenvector.

Saaty (2005) suggested two indexes, the Consistency Index (CI) and Consistency Ratio (CR) to check the consistency of the responses, where CR is the ratio between CI and the Random Index (RI).

#### The AHP calculations

There are several methods for calculating the eigenvector. Multiplying together the entries in each row of the matrix and then taking the  $n$ th root of that product gives a very good approximation to the correct answer. The  $n$ th roots are summed and that sum is used to normalize the eigenvector elements to add to 1.00 (Coyle, 2004).

The highest eigenvalue row is the element with most importance; the others follow in order of value.

## AHP Application to Survey Results

The Survey collects responses from 4 Educational Technology specialists, on the relative importance of the factors enlisted. The factors were chosen based on the descriptions in Section 3.2 part 1.

The factors which are drawn based on the study earlier, are classified on two levels

1. Independent Variables
2. Dependent Variables

Only the Independent Variables are addressed through the AHP Survey.

Independent Variable	Key
Type of Audience	T
Language	L
No. of Trainees	N
Mode	M

For each response we derive 1 AHP Matrix, which is the ratings on the specified scale for the set of variables (or factors).

The responses to the Survey provide the following relative weights for the factors studied. The AHP Matrices are derived for the ratings given by each of the 3 Respondents:

Number of Factors

$$n = 4$$

Number of Respondents

$$N = 3$$

Order of Matrix for each set of responses

$$n \times n$$

Scale based on Scale IV.i

Respondent 1				
	T	L	N	M
T	1	3	5	1
L	1/3	1	3	1
N	1/5	1/3	1	1/3
M	1	1	3	1

Respondent 2				
	T	L	N	M
T	1	5	9	3
L	1/5	1	1	1
N	1/9	1	1	1
M	1/3	1	1	1

Respondent 3				
	T	L	N	M
T	1	3	9	5
L	1/3	1	1	1
N	1/9	1	1	1/3
M	1/5	1	3	1

In order to evaluate the factors, their means were computed using AHP, which helped to prioritize the rank of the factors and distinguish the generally more important factors than the less important ones. AHP was involved in grouping the factors into different matrices, which were rated by the Educational Technology experts who responded to the survey based on the scale specified.

The mean Eigenvalues of the factors from the matrices were then computed. The higher the mean weight the more relative importance that factor would get.

$$\text{Mean Eigenvalue of an Independent factor } (M_x \text{ where } x \in \{T, N, D, L, M, E\}) = \sum e_i / N \quad (i=1, 2, \dots, n)$$

$N$  is the total number of respondents and  $e$  is the Eigenvalue associated with the factor

Variable	Mean Eigenvalue
T	0.55723
L	0.159131
N	0.089978
M	0.193661

The “Type of Audience” factor has the highest relative importance, followed by the “Mode”. The “Language” and the “Number of Trainees” have lower relative importance.

The next stage is to calculate  $\lambda_{\max}$  so as to lead to the *Consistency Index* and the *Consistency Ratio*.

We first multiply on the right the matrix of judgments by the eigenvector, obtaining a new vector.

This vector of 4 elements is the product  $A\omega$  and the AHP theory says that  $A\omega = \lambda_{\max}\omega$  so we can now get four estimates of  $\lambda_{\max}$  by the simple expedient of dividing each component of  $A\omega$  by the corresponding Eigenvalue element.

The mean of these values, for each matrix, is our estimate for  $\lambda_{\max}$ . If any of the estimates for  $\lambda_{\max}$  turns out to be less than  $n$ , or 4 in this case, there has been an error in the calculation.

The Consistency Index for a matrix is calculated from  $(\lambda_{\max} - n) / (n - 1)$ .

The final step is to calculate the Consistency Ratio for this set of judgments using the CI for the corresponding value from large samples of matrices of purely random judgments using the table below,

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0.00	0.00	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.48	1.56	1.57	1.59

Derived from Saaty’s book, in which the upper row is the order of the random matrix, and the lower is the corresponding index of consistency for random judgments

Random Index for a Random Matrix of order 4 = 0.90

$$CR = CI / RI$$

	Response 1 $\lambda_{max}$	Response 2 $\lambda_{max}$	Response 3 $\lambda_{max}$
T	4.1808	4.1723	4.1248
L	4.12056	3.9943	4.2251
N	4.0094	4.1033	4.2627
M	4.1434	4.1657	4.1305
Mean $\lambda_{max}$	<b>4.1136</b>	<b>4.1089</b>	<b>4.1858</b>
CI	<b>0.037867</b>	<b>0.036313</b>	<b>0.061935</b>
CR	<b>0.042075</b>	<b>0.040347</b>	<b>0.068817</b>

Saaty (2005) argues that a  $CR > 0.1$  indicates that the judgments are at the limit of consistency though  $CRs > 0.1$  (but not too much more) have to be accepted sometimes. In this instance, we are on safe ground.

A CR as high as, say, 0.9 would mean that the pair wise judgments are just about random and are completely untrustworthy (Coyle 2004).

All 3 Response sets produce a CR within the safe-range, that is within 10% of the Random Index(RI) 0.9.



# Appendix V: Experimental Training at UOS: Survey and Statistical Data

Survey Begin >>-----

Blackboard Orientation Week Spring 2006-2007Faculty-Survey

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Kindly fill in the following survey by marking the answers/choices below

## General Information:

**1. Which category best describes your job function at University of Sharjah?**

- a. New Faculty at College of .....Department of .....
- b. Existing Faculty at College of .....Department of .....
- c. Teaching Assistant at College of .....Department of .....
- d. Other (*please specify*)

**2. How would you rate your expertise as a computer user?**

- a. Beginner
- b. Intermediate
- c. Advanced
- d. Expert

## Your Use of the System:

**3. Have you ever logged in to your account in Blackboard:**

- a. Yes
- b. No
- c. I don't know how to login

**4. How many online courses in Blackboard from the overall number of courses that you were teaching have you create within the last semester?**

- a. All my courses
- b. Not all but more than one course
- c. Only one course
- d. None of them were created

**5. My primary focus in using Blackboard is to:** (*you may select more than one choice*)

- a. Announcements
- b. Organize and distribute course materials.
- c. Post student grades
- d. Facilitate communication - Increase interactivity amongst students outside the classroom.
- e. Manage course assessments – test and mark students online.
- f. Others (*please specify*) \_\_\_\_\_

**6 Please indicate which of the following features you have used on Blackboard:** (*you may select more than one choice*)

- a. Course Documents
- b. Course Announcements
- c. BB Emails/Messages
- d. Digital Dropbox
- e. Course Gradebook
- f. Online Assessments
- g. Surveys
- h. Discussion Boards
- i. Course Glossary
- j. Course Tasks
- k. Course Calendar
- l. Course Copy/Archive/Import/Export
- m. Other (*please specify*)

## Training:

**7. What do you think about the Training you have attended?**

- a. Not Useful
- b. Somewhat Useful
- c. Useful
- d. Very Useful
- e. Extremely Useful

8. What type of training would you prefer to receive? (you can choose more than one choice)

- a. One-to-one training      b. General training sessions and workshops  
c. Online tutorials      d. No training required      e. Other (please specify)

**Support:**

9. How many times in the years have you had contact with Blackboard Administrator or Support?

- a. Daily      b. Once/week  
c. Once/month      d. Once in each semester  
e. Only Once      f. No contact

10. What method of communication do you prefer to use when you need a Support in the system?

- a. Call department security or computer center help desk  
b. Call Blackboard Administrator or Support main number.  
c. Email other person to email Blackboard Administrator or Support.  
d. Email Blackboard Administrator or Support.  
e. Face-to-face or walk-in.

11. When you contacted the Blackboard Administrator or Support, were you satisfied with the response you received?

- a. Very Dissatisfied      b. Dissatisfied      c. Neither Dissatisfied nor Satisfied  
d. Satisfied      e. Very Satisfied

12. If you answered Extremely Dissatisfied or Dissatisfied to the question above, please provide suggestions for improvement.

13. Anything you would like to add?

Thank you for spending your time in filling the survey.

## إستبيان لأعضاء هيئة التدريس معلومات علمية:

1. هل أنت عضو هيئة تدريس مستجد أم لا و في أي كلية أو قسم؟

2. كيف تصنف نفسك من حيث إستخدامك للكمبيوتر؟  
نادر الإستخدام      مبتدئ      متوسط      متطور      خبير

## إستخدامك للنظام:

3. هل فمت بالدخول من قبل إلى النظام؟  
نعم      لا      لا أعرف طريقة الدخول

( إذا كانت إجابتك السابقة نعم تستطيع إكمال الإستبيان و إلا فلا يمكنك إكماله )

4. كم عدد المساقات ي النظام التي قمت بتطويرها من مجمل المساقات التي كنت تدرسها في الفصل الماضي؟

- جميع المساقات التي كنت أدرسها قمت بتحديثها في النظام.
- ليس الجميع ولكن أكثر من مساق واحد
- مساق واحد
- لم أقم بتحديث أي من المساقات على النظام
- 5. من أهم الأدوات و المميزات التي أهتم بتحديثها في النظام هي:

- رسائل الإعلام
- إضافة محتوى المساق من ملفات
- إضافة علامات الطلبة
- وسائل الإتصال المختلفة
- إمتحانات للطلبة باستخدام النظام.
- أخرى

6. أي من الأدوات و المميزات التالية قمت باستخدامها في النظام:

- رسائل الإعلام
- بناء وإدارة محتوى المقررات
- بناء وإدارة الاختبارات
- دفتر التقديرات
- صناديق الملفات الرقمي
- لوحة معلومات الأداء
- التقويم
- نسخ / تصدير / أرشفة / استيراد الدورات التدريبية
- تغيير تصميم المساق و طريقة العرض
- سرد / تعديل المستخدمين
- مشاركة
- لوحة المناقشات
- أخرى

### الدورات التدريبية

7. ما رأيك في الدورات التدريبية السابقة للنظام التي وفرتها جامعة الشارقة ؟

8. ما نوع التدريب الذي تفضل في تلقيه:

- غير مفيدة
- مفيدة نوعا ما
- مفيدة جدا
- لا جواب
- شخص لشخص
- دورات تدريبية عامة و ورش عمل
- تدريب بواسطة الإنترنت
- لا يوجد الحاجة للتدريب
- أخرى

### الدعم:

9. كم مرة في السنة تقوم بالإتصال بمسؤول النظام أو المسؤول عن دعم مستخدمي النظام؟

- كل يوم
- مرة بالأسبوع
- مرة إلى مرتين بالشهر
- مرة بالفصل الدراسي
- مرتين إلى ثلاثة بالسنة
- وقت حاجتي إلي ذلك
- لا أقوم بالإتصال أبدا

10. أي طريقة تفضل الإستخدام عند طلب الدعم حول النظام؟

- الإتصال بسكرتير القسم أو بأي شخص أعرفه في مركز الحاسوب
- أتصل بمسؤول النظام مباشرة عن طريق الهاتف
- أقوم بإرسال بريد إلكتروني لشخص ما وهو بدوره يقوم بإرسالها إلى بريد المسؤول عن النظام
- أقوم بإرسال بريد إلكتروني إلى مسؤول النظام مباشرة
- أذهب إلى مكتب المسؤول عن النظام

11. عندما تقوم بالإتصال بمسؤول النظام هل أنت راض عن إستجابة المسؤول؟

غير راض تماما غير راض ليس بالتحديد راض راض تماما

12. إذا كنت غير راض تماما أو غير راض أرجوا تزويدنا ببعض الإقتراحات للتحسين.

13. أية أمور أخرى ترغب بذكرها

(Copyright University of Sharjah 2007)

Survey End>>-----

Table V.i

Response to Question 7	No. of responses
The training was useful, very useful, extremely useful	38
The training was only Somewhat or Not useful	7
No answer	5
Total No. of responses	50

Hypothesis Testing for Proportion using Z-test:

Sample size,  $n = 45$

Sample Proportion is the success category proportion

$$p_s = \text{Number of success} / \text{Sample Size} = 38 / 45 = 0.8444 \quad (84.44\%)$$

$p = 0.6$  based on the agreement of 60% positive feedback from the learners as the reaction reflection, established in the Training evaluation criteria description.

Condition Check for sample suitability for test:

$$\text{IF: } np \geq 5: \quad np = 45 (0.59) \quad = 26.55 \geq 5 \quad \text{Therefore OK}$$

$$\text{AND: } n(1-p) \geq 5; \quad n(1-p) = 45 (0.41) \quad = 18.45 \geq 5 \quad \text{Therefore OK}$$

$$\text{Therefore, } \mu p_s = p \quad \text{and} \quad \sigma p_s = \sqrt{p(1-p)/n}$$

Level of Significance is chosen as  $\alpha = 0.5$ , for level of confidence  $(1 - \alpha)$  as 95%

Therefore, Critical Value is 1.645

For the sake of this case, the Hypothesis is as follows:

$$H_0 : p \leq 0.59$$

$$H_1 : p > 0.59$$

$$\text{Test Statistic, } Z = (p_s - p) / \sqrt{p(1-p)/n} = (0.8444 - 0.59) / [ \sqrt{0.59(1-0.59)/45} ] = \underline{3.4701}$$

Test Condition:

If the Test Statistic is less than "1.645", then the  $H_0$  cannot be rejected; If the Test Statistic is more the Critical Value, then it is in the rejection region and the  $H_0$  is rejected.

When the test statistic moves into the rejection area, the null hypothesis can be rejected at the given level of significance.

Test Result:

The null hypothesis is rejected with a 95% level of confidence

Table V.ii

Blackboard Course Utilization Figures from Fall 2004-2005 to Summer 2006-2007

Semester	No. of active courses	Total No. of courses	% of Active courses
2004-2005 Fall	300	1170	25.64%
2004-2005 Spring	400	1160	34.48%
2004-2005 Summer	100	360	27.78%
2005-2006 Fall	500	1250	40.00%
2005-2006 Spring	615	1280	48.05%
2005-2006 Summer	125	359	34.82%
2006-2007 Fall	750	1500	50.00%
2006-2007 Spring	900	1350	66.67%
2006-2007 Summer	270	400	67.50%

Table V.iii

Rise in Proportion of Active Courses across Summer Semesters

2004-2005 to 2006-2007

Semester	% of Active courses	Rise in % across semesters
2004-2005 Fall	25.64%	
2004-2005 Spring	34.48%	8.84%
2005-2006 Fall	40.00%	5.52%
2005-2006 Spring	48.05%	8.05%
2006-2007 Fall	50.00%	1.95%
2006-2007 Spring	66.67%	16.67%

Table V.iv

Rise in Proportion of Active Courses across Summer Semesters (2004-2005 to 2006-2007)

Semester	% of Active courses	Percentage rise across semesters
2004-2005 Summer	27.78%	
2005-2006 Summer	34.82%	7.04%
2006-2007 Summer	67.50%	32.68%

Table V.v

Change in Pass percentage across semesters

Semester	% of Active courses	Pass percentage
2005-2006 Fall	40 %	80.98%
2005-2006 Spring	48 %	82.34%
2006-2007 Fall	50 %	82.36%
2006-2007 Spring	67 %	84.65%

Table V.vi

Regression and ANOVA Output from Excel								
Regression Statistics								
Multiple R	0.996487807							
R Square	0.99298795							
Adjusted R Square	0.989481925							
Standard Error	0.001562258							
Observations	4							
ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	0.000691	0.000691	283.2233	0.003512			
Residual	2	4.88E-06	2.44E-06					
Total	3	0.000696						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.757310009	0.004146	182.6805	3E-05	0.739473	0.775147	0.739473	0.775147
BB utilization	0.133690989	0.007944	16.82924	0.003512	0.099511	0.167871	0.099511	0.167871

## Appendix VI: Letter of Permission

Dear Sir

(Dean of Academic Support Services)

I am pursuing Master of Project Management, at the British University In Dubai. As part of the course I am working on a Research Thesis, which will discuss the approaches for user training, inputs and outputs.

I would request access to information related to Blackboard LMS user trainings conducted in the University including the structure, frequency, pre-training steps, outcomes evaluation method and target audience type, and Survey Results indicating the level of expertise among a sample of users, in use of IT and Blackboard for teaching.

Please be assured I would be using this information solely for educational purposes and under ethical guidelines. I would like to assure you that the reflection of the data in my thesis work will not compromise any secure or copyright information proprietary to the University of Sharjah.

Please find attached a Request for Permission restating this.


Looking forward to your support

Thank you

With Kind Regards

Anjli



Dear Ms. Anjli  
Approved  
As per underlined promise  
Best wishes  
  
9/8

8<sup>th</sup> August 2007

Dr. Nabil Kallas  
Dean of Academic Support Services  
The University of Sharjah  
P.O. Box 27272, Sharjah  
UAE

Dear Dr. Nabil

In fulfilment of the requirements of her Masters degree programme, Anjili Narwani with ID number 20040034, a registered part-time student for the MSc in Project Management programme at The British University in Dubai, will be working on her dissertation on User Training in Educational Technology with special focus on Learning Management Systems (LMS) related training and is requesting access to information related to

- Blackboard LMS user trainings conducted in the University including the structure, frequency, pre-training steps, outcomes evaluation method and target audience type.
- Survey results indicating the level of expertise among a sample of users, in use of IT and Blackboard for teaching

Any information given will be used solely for academic purposes and under ethical guidelines. Reflection of the data in her work will not compromise any secure or copyright information proprietary to the University of Sharjah.

Your support would be much appreciated. This letter is issued at the student's request.

Yours sincerely



Lorna J Nairn  
Head of Academic Services



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