Assessing E-Learning Readiness at the Kenya Technical Teachers College

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Abstract

The purpose of this survey was to assess the level of e-learning readiness at the Kenya Technical Teachers College (KTTC). This was part of an institution-wide strategy to guide the adoption and implementation of e-learning at KTTC. The main objectives of the survey were, to: assess the level of e-learning readiness by establishing a baseline aggregative index; and, recommend activities to improve the readiness that facilitate effective deployment of e-learning technologies in teaching, learning and research. Various models used for measuring e-readiness within the ADDIE model of instructional design were reviewed. Engholms' model for assessing e-learning readiness provided the conceptual foundation for the survey and informed its objectives and methodology. A survey was used to capture the respondents' perception of the level of e-learning readiness along five dimensions adapted from Engholm using a five-point Likert scale. Samples were collected based on quantitative and qualitative methods using self-administered questionnaires and interviews.

Introduction

The expansion in the use of the Internet in the mid-1990s has substantially changed the characteristics of distance education, initially in developed countries and increasingly in developing countries. The change involves updating or replacing earlier modes of distance education, such as correspondence courses, radio-based courses, video-taped lectures with Internet and computer based modes of delivery (NCES, 1999). Recent studies (Hussin, Manap, Amir, & Krish, 2012; Eslaminejad, Masood & Ngah, 2010) emphasize the importance of the readiness of e-learning enablers and learners for the successful implementation of e-learning. E-learning readiness is the assessment of certain organizational and individual factors that should be considered if organizations hope to be successful with the introduction of an e-learning strategy (Chapnick 2000; Redmon and Salopek 2000; Hall 2001:2; Rosenberg 2001).

The Kenya Technical Teachers College (KTTC), located in Nairobi, Kenya, has a mandate to train technically skilled personnel; not only to teach in technical and vocational institutions but also for employment in all sectors of the country's economy. In its bid to transform its distance learning programmes to incorporate flexible and blended approaches as part of its development agenda, the college embarked on a process to initialize and operationalize its e-Learning programme. The KTTC (2013) e-readiness study was intended to provide data on readiness of users, enabling technology, institutional culture and the environment. To achieve the objectives of this study, Engholm's model of e-learning readiness was found to be suitable, as it focused on similar readiness factors at the institutional level, and, within each of these factors, there are several determinants of e-learning readiness used to generate an index.

The main objective of the study was to establish a baseline aggregative e-learning readiness index for KTTC and derive recommendations to improve e-learning readiness and facilitate effective deployment of e-learning technologies.

Literature Review

E-Learning readiness assessment helps organizations to design e-learning strategies comprehensively and to implement its ICT goals effectively (Kaur & Abas, 2004). Learners must also be e-ready so that a coherent and achievable strategy, tailored to meet their needs, may be implemented (infodev, 2001).
E-learning readiness assessments provide key information to organizations to supply solutions that can cater to the specific needs of each learning group (McConnell International, 2000). Reports from e-readiness surveys also help in the achievement of UN Millennium Development Goals (MDG) (UN, 2000).

In the context of KTTC, the imperative to analyze the need for e-learning is contained in the performance contracting targets for 2012-2013. This represents the first step in the redesign of instruction at the college - away from the predominant face-to-face model to the blended model and later to the pure e-learning model. As presented in Figure 1, showing the ADDIE model of instructional design, assessing e-learning readiness is a prerequisite to the design, development and implementation of a new instructional method.
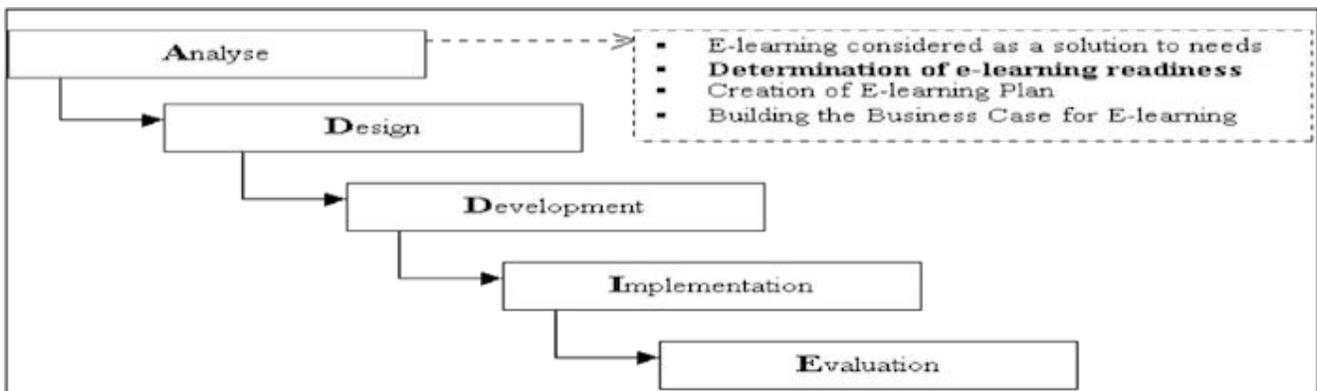

Figure 1: Theoretical Framework

The literature on e-readiness is replete with models that may not capture the essence of e-learning as innovative instructional design. While some models assess e-readiness at the national level, some assess e-readiness of institutions, lea The literature on e-readiness is replete with models that may not capture the rners or teaching staff. No model is ideal and it is necessary to adopt a model that covers all possible challenges and delivers a complete set of required data (Smith, 2005).

No.	eLearning Readiness Models	eLearning Readiness Factors
1	Bakry's STOPE model (2007)	1. Strategy 2. Technology 3. Environment 4. Organization 5. People 6. Development

2	Fetaji and Majlinda Fetaji's Model (2009)	1. Learners' education and cultural background, 2. Learners' Computing skills, 3. Learners' learning preferences, 4. The quality of e-learning content, 5. Viable learning environment and its e-learning logistics, 6. Learners' motivation, 7. Students' attitudes toward technology
3	Chapnick's Model (2000)	1. Psychological 2. Sociological 3. Environmental 4. Human resources 5. Financial readiness 6. Technological skill (aptitude) 7. Equipment, 8. Content readiness
4	Li-An Ho's model (2009)	1. E-learning system quality 2. Technology readiness 3. Learning behaviour 4. Learning outcome
5	Haney's Model	1. Human resources 2. Learning management system 3. Learners 4. Content 5. Information technology 6. Finance 7. Vendor
6	Chai Lee et al's	1. Organizational factors

	Model (2009)	2. General factors 3. Cognitive factors
7	Rodgers's Diffusion Model (2005)	1. Relative advantage 2. Compatibility 3. Image 4. Visibility 5. Ease of use 6. Results demonstrability 7. Trialability
8	Engholm's model (2001)	1. Organisation's culture 2. Individual learner 3. Technology 4. Content 5. Organisational and industry factors

Conceptual Framework for e-Learning

Engholm's (2001) model provides factors considered appropriate for KTTC, which has adopted a blended e-learning strategy that is commensurate with its level of integration of ICT in training and management. The model is simple to understand and useful as a tool in an organisation's e-learning readiness assessment, but is also comprehensive in that it summarises a wide range of organizational and individual issues.
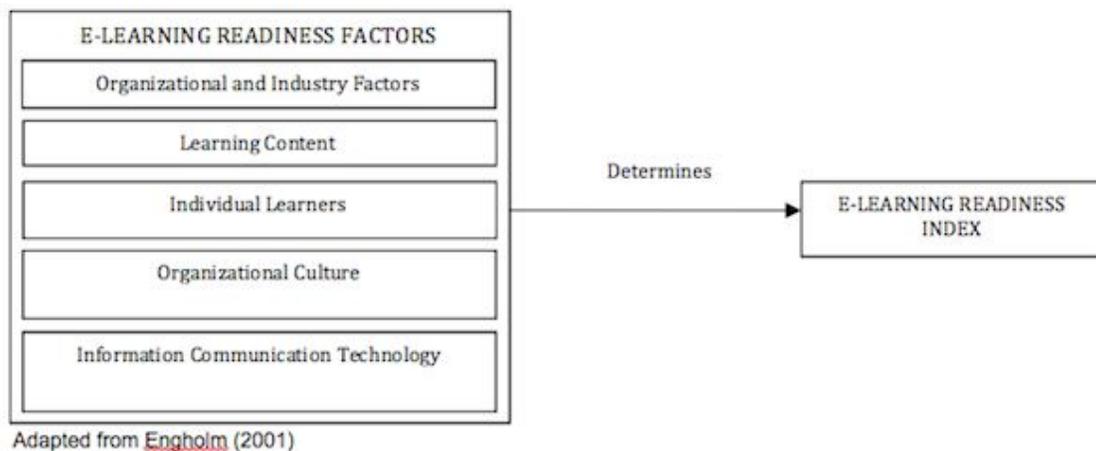

Adapted from Engholm (2001)

Figure 2: E-learning Readiness Conceptual Framework

Methodology

A survey design was used to capture the respondents' perception of the level of e-learning readiness along

five dimensions using a five-point Likert scale. The population under study was 1724; 114 lecturers, 591 regular students and 1,019 holiday students. The sample included 172 respondents (102 holiday students, 59 regular students and 11 lecturers), representing 10% of the population. Self-administered questionnaires and interview schedules were used to collect data from the respondents. The study was carried out in two phases starting with the holiday students, during the final week of the 2013 April holiday session, followed by the regular students in the last week of June 2013.

Analysis and Findings

E-learning readiness for each dimension of the five factors considered was measured by asking respondents to rate the extent to which they agreed with statements on the sub-factors considered in each category on a five-point Likert scale, where 1 represented Strongly Disagree and 5 Strongly Agree. In determining the percentage of relative readiness, agree and strongly agree were aggregated as agree. An index of 56.2% readiness level was arrived at by aggregating the individual readiness levels of the five factors:

Readiness Factors	Aggregate Level of Readiness
Individual learners	86.7 %
Content	62.8 %
Information and communication technologies	66.4 %
Organizational culture	33.0 %
Organization and industry	32.1 %
KTTC's baseline e-learning readiness	**56.2 %**

Individual Learners

Individual learners at KTTC are ready for e-learning at an index of 86.7 %. Given that that 94.6 % of the learners were willing to collaborate, share information and share knowledge, 92.5 % can take responsibility and manage time for own learning, 91.4 % are motivated and willing to use computers for learning, 91.4 % see the need for e-learning, 84.8 % see e-learning as a viable alternative to traditional methods and 66.3% of

the learners are positive about themselves, KTTC learners aspirations concur with constructivist, connectivist and andragogist theories and are thus ready for e-learning.

E-Learning requires that learners have basic literacy skills that would enable them to comfortably use ICT for learning. Given that 93.5 % have basic computer skills, 88.0 % have basic computer literacy skills and 78.0 % are comfortable using computers indicate that KTTC learners are ready for e-learning.

Information and Communication Technologies

KTTC's ICT infrastructure is e-ready, at an index of 62.8 %. Accessibility to internet while in college (78.6 %), on mobile phones (71.5 %) and when not in college (53.8 %) were pointed out. Respondents also indicated that they have access to computers while in college (68.8 %) and when not in college (50.0 %). Wireless internet connectivity is also available within the college precincts through broadband connectivity. However, accessibility to the internet and computers when not in college is comparatively low. Such learners access computers and the internet through cyber cafes that are available in virtually every market centre throughout the country, though at exorbitant cost.

Internet connectivity within the college is reliable (71.5 %), learners and teachers have easy and fast access to the network (66.3 %), learners have difficulty accessing reliable internet connectivity when they are not in college (48.4 %), and bandwidth issues do not hamper the e-learning effort (28.7 %). Use of fibre optic cables enabled fast and reliable internet connectivity within the college precincts, though a challenge when they are not in college because fibre optic cables have only been laid in major cities. The findings also imply that over 70 % of the respondents were in agreement that bandwidth limitations hamper e-learning efforts.

ICT department is well resourced and used (67.4 %), communication with the ICT department is strong (68.2 %) and, ICT infrastructure can efficiently host its e-learning content (67.4 %). Security issues are also resolved, as 71.5 % stated that network systems and components are compatible. Requisition for ICT equipment is done using the bottom-up approach. Policies relating to use of ICT equipment are available for all users through the institution's website.

Content

On aggregate, a 66.4 % readiness level was established for content development. KTTC's e-learning content that is taught is interactive (68.1 %), attracts and keeps learners using the system (67.4 %), appropriately targets learners (73.3 %) and accommodates different learning styles (70.8 %). The e-learning content is feasible enough to be taught over the computer, as the design is simple, user-friendly, flexible, intuitive and conducive (61.2 %), up-to-date, relevant, appealing and user-friendly (61.1 %), and, it is user-friendly, well structured, and interesting (65.2 %).

KTTC has initiated the development of content suitable for e-learning (61.0 %), which is easy to create and distribute over the network (62.5 %) and is easy to update and modify (73.6 %). Management, teaching staff and technical staff have undergone capacity building programmes aimed at implementing flexible and blended approaches to teaching and learning. Institutional policies for flexible and blended skills development are also being developed, as it is assumed that the four modes of delivery are identical, not just similar.

Organizational Culture

While a supporting culture is an important determinant of e-learning readiness, KTTC's readiness score on this factor stood at 33.0 %. Top management support is evident from the practice in which each department

conducts a skills gap analysis and, thereafter, prepares five-year and yearly training plans for building capacity of staff in various skill areas. E-learning is also included as the forerunner for increasing access to quality technical training at KTTC in the 2012-2017 Strategic Plan. Furthermore, the institution's 2012-2013 performance contract sets out a target that by July 2013, its Higher Diploma in Education Management course will be digitized and hosted on its e-learning platform.

Results of the study point to a low level of 30 % of organizational culture readiness, and perhaps this may be attributed to lack of knowledge by staff and students owing to inadequate policy dissemination. Results also show that 60.6 % of respondents agree that top management supports the use of the internet for learning purposes. This may be attributable to deliberate government efforts to embed ICT infrastructure in all TIVET institutions in the country, coupled with donor support. Further, data shows that 52.4 % of the respondents agree that learners are given time and opportunities to learn, a reflection of the fact that the ICT & Open Learning department allows time and opportunity to learn using internet at the KTTC's Learning Resource Centre (LRC).

Results suggest that 45.9 % of respondents agree that learning using the internet is accepted and communicated at all levels. However, only 30.0 % of the teachers and trainees surveyed agree that the requirement to do some e-learning is explained to learners at orientation, yet only 25.1 % of learners have previous knowledge about e-learning. While 32.2 % agree that from the support for use of the internet, training and learning using the internet is seen as an investment and not as a cost. The conventional view at the institution is that e-learning is about continuous integration of ICT into teaching and learning, yet e-learning involves more than use of ICT. Perhaps this explains why 42.1 % of the respondents were of the view that the right people for implementing e-learning were in place.

Indeed, the results point to the low level of exposure to an LMS at KTTC, with only 27.8 % agreeing that there is a Learning Management System that support learners in accessing e-learning content, such as lecture notes and PowerPoint slides. Only 27.3 % of the respondents agreed that there is an e-learning initiative that enables employees and students to purchase computer equipment for a heavily subsidized price. Perhaps these respondents did not distinguish between the current policy on acquisition of infrastructure and that envisioned in the study. The study envisions a project that will transfer ownership of equipment to users who acquire it through institutional credit facilities as they join the college. The current model of financing involves students paying a minimal amount to cover for the cost of internet connectivity and the use of the institution's computers at the library, computer labs or the LRC.

There was a further point of confusion by 23.4 % of the respondents who agreed that e-learning strategy is aligned to broader KTTC goals and strategies, and 16.4 % who may have mistaken the existence of an ICT policy for an e-learning strategy and concurred that e-learning processes and logistics are clearly articulated and followed.

Organization and Industry

A readiness level of 32.1 % was determined for the organization and industry factor at KTTC. The low readiness level suggests that the internal environment may hinder efforts to adopt e-learning as a mode of delivery. Despite being the only institution that offers technical teacher training in the region, it is facing generic competition for students following the massification of university education in Kenya.

Only 45.5 % of respondents agreed that KTTC environment was dynamic enough, while 43.8 % acknowledged the high level of competition in the technical training industry and 31.0% felt that KTTC operates in an environment where its e-learning solution needs to meet legal requirements such as licenses.

As a public institution, KTTC has a need for quick delivery and access to knowledge and information (18.7 %), which is facilitated by its organizational structure (45.9 %) in a high risk, high compliance technical teacher training market requiring continuing skill development (32.0 %). Only 41.8 % of the respondents agreed that KTTC is mainly funded by the government and is relatively financially stable, with a budget for large short-term expenditures for e-learning and adequate resources for the introduction of e-learning (27.0 %). Initially, the Government used the KESSP programme to embed ICT infrastructure in tertiary institutions, as evidenced at KTTC by the construction of the ICT centre and the acquisition of computers and related accessories. Currently, the Directorate of e-Government facilitates internet connectivity to TIVET institutions through fibre optic cables, hosts the institution's LMS and provides institutional support. It is also a requirement from government that each tertiary institution allocates 10 % of its budget to development of ICT, which is good enough to initialize and operationalize e-learning.

Conclusions

These findings are significant for institutions in developing countries that aspire to introduce e-learning for increased access to quality education anywhere, anytime and at reasonable costs. Inasmuch as the results point to an average readiness index of 56.2 %, there were high scores for what most organizations, managers and individuals perceive as essential for introduction of e-Learning – readiness of learners (86.7 %), availability of ICT infrastructure (66.4 %) and online content (62.8 %). Concerted efforts should be geared towards enhancing organizational culture (33.0 %), and, organization and industry factors (32.1 %) that most people shun when introducing e-Learning. Assessment of e-Learning readiness levels depends on models used and the context of the educational institution.

Recommendations

- The ADDIE model should be considered when initializing and operationalizing e-Learning. During the analysis stage of the model, surveys should be carried out to determine e-Learning readiness of the organizations and individuals.
- Learners should be e-ready by having basic ICT literacy skills so that they focus on learning, not the technology.
- Organizational culture conducive for e-Learning is inherent when there is top management support and communication systems are clear. Institutions should develop e-Learning strategies that are in concord with overall organizational goals and strategies. Leadership of e-learning initiatives should be entrusted to people who have the requisite technical and pedagogical skills.
- e-Learning initiatives should consider an institution's level of ICT integration. Technology used should be reliable and compatible.
- Content used should be interactive, up-to-date, relevant and user friendly. Where possible, Open Educational Resources (OER) should be used.
- e-Learning strategies, policies, workplans, work instructions and budgets should be prepared for successful implementation.
- It is also imperative to consider the readiness of teachers and technical staff.

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