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Quality Assessment of E-Learning Programs and Courses using the Benchmarking Approach by Hafte Abera and Asrat Mulatu Addis Ababa University, Ethiopia

Abstract

As ICT is touching every aspect of our life the traditional teaching and learning systems is not an exception. E-learning has become part and parcel of the traditional learning systems, to say the least. In this work an attempt has been made to assess, using the benchmarking approach, the existing e-learning programs, courses, and the systems in three local universities. The data collected and further analyses shows that even though all value the importance of e-learning platforms they lack some specific strategic and technical dimensions of its planning and management to sustain it and harvest all the fruits.

Keywords: e-learning, quality assessment, benchmarking approach, e-learning programs and courses.

Introduction

Over the past decades technology coupled with the increasingly wide-spread use of the Internet and mobile devices becomes the enabler for business and academia. United Nations Educational, Scientific and Cultural Organization (UNESCO) statistics show that over 455 million people around the world received education and training through the Internet in 2008 [1] [27]. Over 70% of universities in the USA were providing e-learning courses, and more than 6.1 million university students were taking at least one e-learning course during the fall 2010 term, which accounted for over 31% of the total number of university students in the USA [4][5]. E-learning has emerged onto the global higher education stage as one means of gaining a respected education.

Moreover, e-learning has become an increasingly important teaching and learning mode in educational institutions and corporate training. The evaluation of e-learning, however, is essential for the quality assurance of such programs and courses. Quality in education is one of the main issues examined by modern scholars and practitioners who operate on the international education and resources market. To this end, quality education, regardless of its modes, is the main competitiveness indicator [6].

Based on our online survey on the availability of using an e-learning system we found out that only two private academic institutes, currently, claim they are using such a platform. One has to remember that there are around 106 private higher education institutes registered and recognized by HERQA and regional Education Bureaus. It is also known that there are 33 public universities in Ethiopia where we found 16 of them claiming the use of an e-learning platform [6]-[13]. It includes Addis Ababa University, Haramaya University, Jimma University, Gonder University, Mekelle University, Hawassa University, and Ethiopian Civil Service University are among the 16 public universities using an e-learning platform. From these two public and one private university is considered in this study.

Though the majority of institutions evolved when the mode of study was face-to-face and campus-based, new modes of learning offered through ICT prompted institutions to review their strategies to take into account increased blended learning and training modes. However, as can be seen in research papers [1][2][3][29], institutions don't have defined policies and management processes that can be used to establish strategic institutional objectives and evaluation mechanisms. Besides most of the institutional strategic plans fail to consider the roles that e-learning can play in the overall development of the institution and set the context for production of the plans of academic departments, administrative and operational divisions. They lack to outline options for the use of e-learning in teaching and capacity building of their employees [20]-[25].

Therefore, in this study an attempt has been made to evaluate the quality of e-learning programs and courses in the aforementioned institutes. The Benchmarking approach has been used as a tool for the assessment of e-learning programs and the systems that support them.

The primary objective of this research is to evaluate the quality of the implemented e-learning programs and courses based on the Benchmarking Approach. The quality of the existing e-learning programs and courses in the three institutes will be judged against the benchmarks and performance indicators of the benchmarking approach. Ultimately, some recommendations and suggestion are given so as to improve the pitfalls observed.

The approach covers six critical quality criteria of e-learning programs and support systems, viz., Strategic Management, Curriculum Design, Course Design, Course Delivery, Staff Support, and Student Support. Each of these pillars constitutes contextualized benchmarks, performance indicators and guidance notes.

We selected this approach because it is hoped that course developers, teachers and managers will see the approach as a useful development and/or improvement tool in their own institutions for monitoring, evaluation and enhancement of such programs and systems. In addition, it is hoped that other researchers to further evaluate e-learning quality from the perspective of the core components of the benchmarking approach [18][22]-[28].

The rest of the paper is organized as follows: in 2 quality of e-learning from general perspective is presented followed by what e-learning quality factors are significant in general and specifically in the benchmarking approach is discussed in 3. Section 4 discussed the quality standards e-learning for programs and courses. Sections 5 and 6 presents the methodology employed in this work and the results obtained and the discussions made. Finally, section 7 presents the conclusions, challenges and some recommendations.

Quality of E-Learning

Quality is always a difficult term to define and agree with. In broad terms, that is specific to education and training, quality can be define as *having the characteristics of being well thought out, prepared with care, and implemented with responsibility; having a firm direction but flexible enough to cope with contextual variation; and being positively responsive to comment and criticism*[27]-[29]. It is also better re-defined and understood visa-vise on specific organizational policy and framework.

We can enumerate some items that bring consensuses what we mean by quality of an e-learning system. Quality of content, availability of materials, support for user (both students and instructors), well-managed system, availability of skilled and dedicated support staff, monitoring mechanisms,

feedback mechanism employed, availability of interactive features and the extent of their usage, availability and usage of assessment techniques are the main.

E-Learning Quality Factors

There are many issues related to assuring quality in e-learning systems. There are also many approaches used to evaluate and assess the quality of such systems [16]-[25].

In this work we have used the Benchmarking approach to evaluate the e-learning systems and activities in local universities. In this approach there are six quality criteria, a set of benchmarks, performance indicators and guidance notes against with an e-learning programs and its support systems can be evaluation [18].

The six quality criteria are Strategic management, Curriculum design, Course design, Course delivery, Staff support and Student support. The benchmarks provide a set of general quality statements covering a wide range of contexts in which program designers and others work. The intension is the benchmarks will be relevant to all e-learning scenarios. Some items might need contextualization during usage. The performance indicators focus on particular relevant topic of the benchmark statement. These performance indicators are designed in two levels, general and excellent, to simplify the identification of the quality of the system under investigation. The guidance notes shade some light on how to improve and continue keeping the good standard in the future.

Quality Standards of E-Learning Programs and Courses in Universities

E-learning programs and courses in academic institutes need to comply with specific standards to keep providing what is expected of them from the various stakeholders. These standards are used as a common ground for content and the platform specifying how courses are created, delivered and managed across different platforms so that they interoperate seamlessly. Moreover, getting feedbacks, a single repository of educational resources, support for appropriate authoring tools, and ease of generating reports of usage and other measurements are the benefits of such standardized teaching and learning systems. The following four bodies that work in the standardization of e-learning artifacts are prominent.

Advanced Distributed Learning (ADL) Initiative is government funded organization engaged in research, development, testing and evaluation of enhanced distributed learning across the USA. Among the various standardization works of ADL is SCORM (Sharable Content Object Reference Model) [17]. It is designed to address the interoperability, reusability and durability of training and learning management systems.

The IEEE (Institute of Electrical and Electronics Engineers) Learning Technology Standards Committee (LTSC) is chartered by the IEEE Computer Society Standards Activity Board to develop internationally accredited technical standards, recommended practices, and guidelines for educational technology [14].

IMS (Instructional Management Systems) Global Learning Consortium is an international body working on digital curriculum, learning apps and tools, educational data and analytics, and e-assessment, among others [15].

Alliance of Remote Instructional Authoring and Distribution Networks for Europe (ARIANDE) is a European project to create tools and methodologies for producing, managing, and reusing computer-based pedagogical elements and telematics supported training curricula [16].

Off course, having standards isn't the ultimate aim. It is rather the first step in the process of creating a framework against which implementations are guided, managed and assessed.

In Ethiopia HERQA [5] is a government body for setting standards, performing quality audits and taking improvement measures at higher educational settings. Our investigation of the office and online documents reveal that e-learning is cited very much rarely. This suggests that a lot has to be done in the development of a framework or guideline in launching e-learning platforms and its content – programs and courses and managing the overall system.

Methods

This topic presents the methods to collect data from respondents regarding to e-learning quality assurance mechanisms in the three Ethiopian Universities.

Research Method

An in depth case study method is used. It involved onsite interviews, self-administered questionnaires, and observations. Questionnaires were developed and distributed to the Respondents through researcher's contacts. Respondents for the paper-based questionnaire were required to return the completed questionnaires before the deadline given. By doing this, the time required to wait for completion of questionnaire was controlled with the help from the researchers' contacts, and a higher response rate within limited time frame was ensured.

Interviews helped to gather wider opinions and in-depth information on e-learning programs and courses. With the time allocated for interviews with staff from institutions of higher learning, fruitful discussion, and generous feedback were collected.

Through the interviews, a clearer picture of the current e-learning programs and courses offered were grasped. Furthermore, a deeper understanding of the programs implementation and stakeholders' views were obtained.

Study Population

The study population covers two public and one private university, Addis Ababa University, Ethiopian Civil Service University and St. Mary's University. They are selected based on judgmental sampling method and their willingness to participate in this study.

Sampling Technique

A non-probabilistic sampling method is considered. After conducting a consultative meeting among educational experts and lecturers two public Universities and one private university were chosen using judgmental sampling method. These universities were selected based on their success of usage of e-learning platforms and their willingness to participate in this study.

Data Collection Method

We collected data across various campuses together with ICT heads and e-learning administrators across the selected institutes. Major facilities were checked including network capacity, video and audio equipment capability, electricity and the like. Document analysis of reports, guidelines/policies, equipment inventory reports and other e-learning documentations issued by the university were investigated. Questionnaires were used for three respondent categories: managers, technical/support staff and students and 30 questionnaires were distributed and about 23 questionnaires were responding, that is, 76.6 percent response rate. Interview guides with thirty five essential questions in the six categories of quality criteria for 20 respondents in three respondent categories: managers, technical/support staff and students, which are adapted based on the circumstances, are used.

Areas of Research

On the basis of the objectives described above, this study looks six critical quality criteria of e-learning programs and support systems, viz., Strategic Management, Curriculum Design, Course Design, Course Delivery, Staff Support, and Student Support. These quality criteria were investigated on the basis of contextualized benchmarks, performance indicators and guidance notes.

Results and Discussions

This topic presents the findings of the universities status and trend of the use and institutionalization of e-learning quality assurance mechanisms in the mirror of the benchmarking approach.

Strategic Management

Introduction

The majority of institutions evolved when the prevalent mode of study was face-to-face and campus-based. New modes of study offered through ICT should prompt institutions to review their strategies to take into account increased use of ICT, both in institutional and public online spaces. The institution should have defined policies and management processes that are used to establish strategic institutional objectives, including those for the development of e-learning. In a mature institution, strategic management will operate over several time horizons.

The institutional strategic plan should identify the roles that e-learning will play in the overall development of the institution and set the context for production of the plans of academic departments, administrative and operational divisions.

The institutional plan should outline options for the use of e-learning in teaching that may define a spectrum of "blends" of e-learning and more established teaching mechanisms. Institutional plans should also consider issues of resourcing, information systems, innovation and collaboration with partners.

Faculty and departmental plans should aim to best match the student requirements of their particular market sector (national/international focus) in presenting e-learning/blended learning options.

The institutional strategic plan should ensure that plans of academic departments are consistent with each other. Student mobility between departments should not be restricted by major differences in policy or implementation with respect to e-learning.

Status and Trends

All the institution we have interviewed has identified group of key staff responsible for formulating, evaluating and developing institutional policies and plans relating to e-learning. These policies and plans are set out clearly for the benefit of all participants and stakeholders. In addition the institution has a means for communicating legal and ethical responsibilities to staff and students. Each departmental and faculty plans address issues of resourcing, staffing and staff development for those involved in delivery and support functions and also they operate and secure standards for all aspects of the provision of online services are defined. All the institutes who have participated in the interview recognized the benefits of e-learning. However, some of the institutes mentioned above didn't have clear e-learning strategy rather usage policy, access rights and privileges policies for users. All the institutes investigated were actively monitors emerging technologies in the field of e-learning and they try to integrate in the existing e-learning environment.

Moreover, as one of the institution respondents indicated the e- learning project contract shared lack of documentation that can show budget and time accomplishment. There are informants who argue that since the project was developed in house by an expert sponsored by GIZ, it is difficult to allocate an ear-marked budget for its undertaking. Other informants have noted that even if it was an in house project, incurring cost for its development is inevitable while it is difficult to know how much the university did spent.

Curriculum Design

Introduction

An important aspect of the quality of e-learning concerns the design of the curriculum. It is assumed that curriculum design is broadly constrained by expectations or requirements on the knowledge, skills and professional outcomes-based curriculum elements; these may be set at regional, national and international levels.

The major challenge that institutions face is that of designing curricula that combine the flexibility in time and place of study offered by e-learning without compromising skills development or the sense of academic community that has traditionally been associated with campus based provision. Key challenges and opportunities include: program modularity, online assessment methods, building online academic communities, and integration of knowledge and skills development.

Curriculum design should address the needs of the target audience for e-learning programs that, in the context of growing emphasis on lifelong learning, may differ significantly in prior experience, interest and motivation from the traditional young adult entrant to conventional universities.

Status and Trends

According to the respondents curriculum design follows the institutional policy for course development to which curriculum designers stated they considered the curriculum designers consider the needs of their target audience. All the institution we have observed employed a blended learning and has assigned clear educational functions to the components of the program

when they design the curriculum and these match well with the delivery mode envisaged. 2 out of three of the institution have a clear and consistent policy in respect of modular program design. All the institutions have standardized and widely available statements of module learning outcomes. Curriculum designers specify clearly the educational role that student-student interaction plays in their program. The criteria for the assessment of student online collaboration exist and are applied consistently across program and courses. The institutions have a clear policy regarding the acquisition and assessment of core transferable skills, including e-skills, which apply to all programs including those delivered by e-learning. The responsibility for delivery and assessment of outcomes related to professional knowledge and skills is clearly assigned to particular components of the program. The institution's processes for curriculum design leads to an appropriate balance of formative and summative assessment, taking advantage of the opportunities of online assessment for providing timely feedback to students. Assessment processes are well documented and all those involved in marking are trained in their role, work to common marking schemes and are subject to effective monitoring and appropriate security arrangements are applied to summative components of continuous assessment and examinations.

Course Design

Introduction

The course design process should demonstrate a rational progression. The need for the course within the overall curriculum should first be established. Then a conceptual framework for the course should be designed, followed by the detailed development of course materials.

Each course should include a clear statement of the learning outcomes to be achieved on successful completion. These outcomes will be specified in terms of knowledge, skills, vocational/professional competencies, personal development, etc. and will usually be a combination of these.

The development of each course should include a clearly documented course specification which sets out the relationship between learning outcomes, learning activities and assessment. A course may include a blend of e-learning and face-to-face components; the choice of components should take account of appropriate assessment methods, levels of interactivity and provision of feedback.

Aspects of course design and implementation may be delegated to an outside agency (a consortium partner, commercial developer or through use of OER). However, the parent institution should retain oversight and responsibility.

Status and Trends

More than fifty-eight (58.6) percent of the respondents agree that the staff understands the advantages and disadvantages of using e-learning for knowledge and skills development in a particular course context while 31.4 percent of the respondents are indifferent. The blending is such that different methods and media are well chosen within and between courses, both in distribution over time and extent of use and access to tutors is provided on a regular and sufficient basis, known to both tutors and learners. The course design requires tutors to monitor learners' progress on a regular and on-going basis and to contact learners to discuss progress. The availability, function and purpose of independent learning materials is clearly defined and communicated to students. Course planning and approval takes place within a structured curriculum framework. The objectives and learning outcomes for the course and its methods of assessment are compatible with those of courses delivered by other means. The rationale for use

of e-learning and the level of support provided is clear to staff and learners alike. Detailed prerequisites and student learning outcomes Course design (both knowledge and skills-based) are specified. There are clear statements regarding the use of e-learning within the course. The specification of course content demonstrates appropriate matching of e-learning media with educational objectives. The e-learning content is well structured with clear relationships between components and signposting of study routes through the course materials. Course materials and other online services are designed to operate effectively on clearly specified equipment and connectivity platforms. The technical aspects take appropriate account of the locations and circumstances in which students may access the learning materials. Course materials and components have a consistent user interface, with a common use of styles, formats etc. All interfaces comply with applicable usability and accessibility standards. In all institutes there is no process for tracking intellectual property rights associated with e-learning components. Student assessment, both summative and formative, is considered as an integral part of the course design process. Appropriate measures are in place to ensure fairness and consistency in marking, and timely feedback to students. This is monitored on regular basis. Course design and materials are subject to independent review and there is evidence that the course designers respond appropriately to reviewer comments. There are appropriate feedback mechanisms in place to support the improvement and development of the course.

Course Delivery

Introduction

Course delivery encompasses the Virtual Learning Environment and/or other interfaces through which students receive their course materials and communicate with fellow learners and staff.

These systems represent a very significant investment of financial and human resource in their acquisition and on-going support. The selection of a particular system, which may influence teaching developments for many years, should be driven by both educational and technical requirements. Educational requirements include delivery of learning resources, facilities for online communication and tools for assessment. Technical requirements include reliability and security standards. The delivery system should be reviewed and monitored to ensure it continues to meet these requirements. Effective course delivery requires collaboration between academic and operational divisions of the institution. Technical infrastructure should serve the educational requirements of the academic community, both students and staff

Status and Trends

The technical infrastructure is well defined and supports institutional e-learning objectives. The system meets the equipment and connectivity requirements of users. There are clear operating standards and management processes. Operating standards are implemented effectively. There is sufficient server capacity and bandwidth to handle the planned usage. The technical requirements of the system are monitored on a regular basis. The e-learning system is appropriate for the type of learning and the requirements of learners. The system provides robust privacy, and this applies to personal data and interactions. The e-learning system and resources demonstrate lack of ease of use for the full range of target users, like people with disabilities. Policies for delivery of materials are consistent with the technical infrastructure available to students. Course materials and delivery systems are technically tested under realistic conditions. There is a system for securing and but there is no system implemented for recording the rights necessary for use of third party resources in teaching materials. Learners are provided with full information on sequence, timing, and options

within their intended program of study. Details of course delivery are provided to learners and staff in a clear and accessible way. Responsibilities of the different staff groups (teachers, tutors, etc.) involved are specified and clear to learners. The provision of information is managed consistently at program level. Assessment methods are appropriate to the program and topic. Learners are informed about the conditions and outcomes of the assessment before and after completion. Appropriate arrangements are made for security of assessments. Feedback is relevant, contains appropriate depth and is timely. Progress details are available to the individual involved. Distribution systems for physical materials operate effectively and meet student needs in terms of time and cost.

Staff Support

Introduction

The objective of staff support services is to enable all members of academic, administrative and technical staff to contribute fully to e-learning development and service delivery. Institutional adoption of innovations from the media and technical landscape will trigger the need for specific staff development activities.

There is also a need for ongoing dissemination of good practice. Academic staffs need particular support to make the transition from traditional face-to-face teaching to effective teaching using an online environment; this support should encompass both educational and technical aspects without demanding that academics become ICT or media specialists in their own right.

Teaching through e-learning should be acknowledged when managing staff workload. Career development incentives should promote the use of e-learning. It is important to address the needs of both full time and non-full time staff who may be employed in a number of teaching and administrative roles.

Status and Trends

All staff has access to technical support services in selection, acquisition and maintenance of their ICT equipment and networks. Responsibility for the provision of training is clearly defined and adequate resources are allocated. Newly appointed staff is provided with induction in the use of software and systems. The institution offers to its staff an online information service on uses of e-learning. Staff is encouraged to provide mutual support, in cross-professional groups, in the development of e-learning materials. Staff is supported in the educational uses of digital technologies (including web oriented tools) in teaching. Staff has opportunities to provide and receive feedback on their experience of teaching a course. The experience of tutorial and other support staff is valued and acknowledged by the institution. Student feedback is used extensively in review of new teaching and learning developments. The technical infrastructure supports teachers by providing online access to materials, administrative data and communication facilities. Support is available for course design staff in locating and evaluating online resources for student use. The administrative impact of e-learning and e-learning systems on the workloads of all staff groups has been assessed and adjustments are needed as required. Administrative support at study centers facilitates effectively the teaching function, meetings with students and other stakeholders. Inputs by staff to e-learning program are recognized in career progression structures.

Student Support

Introduction

Student support services are an essential component of e-learning provision. Their design should cover the pedagogic, resource and technical aspects that affect the online learner. Support services should be accessible in the first instance via the student's homepage or other entry route to the institution's online learning system. Students should be provided with information about their specific courses and the range of generic services available.

Students are likely to be working to flexible schedules. Static information such as course specifications on web pages are always available but help desk and advisory services should also be provided at times appropriate to student need. Students should be provided with an identified academic contact that will provide feedback and support. Students may also be supported through online communities, through either an internal VLE or possibly via external social networking sites.

Status and Trends

We found out that in two of the institutes the online service is available and fully functioning 24 hours per day, seven days per week over the learning period, except for planned maintenance. Students and prospective students are clearly informed on: what kind and level of personal equipment they require; what technical support is available; and when and from whom it can be obtained. A technical help desk service is provided. Maintenance and updating work temporarily preventing use of the online service is performed as quickly as possible, and at the time of lowest student demand, with all users clearly notified in advance. Support for students who lack required skills and knowledge is provided by appropriate trainings. The support needs for the main learner groups have been analyzed and addressed. Students are informed through course information of the study skills they will be expected to use and develop during their study. Materials for the acquisition of required learning skills are built into the course or are available to students in advance. Students are informed of the expectations on them in respect of e-learning skills prior to the start of their program. Resources are available for delivering training to students in information literacy and the use of online materials. The institution makes clear where participation in collaborative activities is encouraged or required. Each study program and course has a description of its content, learning and assessment methods used. Navigation through possible course combinations is facilitated by online curriculum maps. Advisory notes are available informing students of the consequences of particular choices. Advice and counseling over choice of courses and progression through a program is provided. There is provision for human intervention in administrative processes and these interactions are appropriately initiated and delivered. There are mechanisms in place for the training and development of staff undertaking the above functions. The job descriptions for all staff contain specific references to responsibilities for learner support. Student materials describe the roles undertaken by those staff categories engaged in student support activities, and the levels of support which can be expected by students.

Conclusion and Future Work

A proper monitoring and evaluation should be designed and implemented to ensure the quality and continuity of the implemented e-learning system. Like any other ICT enabled field, e-learning is also a rapidly growing field and a dynamic quality assurance mechanism should be designed.

As stated in status and trends in any of the institutes there is no any e-learning quality assurance mechanism or e-learning quality department observed. Introducing e-learning into higher education institution brings about changes on organizational, economical and technical level; however, the practice shows that e-learning has been introduced into such institutions in various ways which resulted in different quantity and quality of the education processes using e-learning technology.

Challenges

There is no quality assurance mechanism/procedure/guideline available for the institutions .The general challenges observed include:

- E-learning is not part of the university's quality improvement strategy;
- There is no dedicated unit responsible for quality assurance related to e-learning;
- Universities do not periodically measure the impact of e-learning on staff, and
- Universities do not periodically measure the impact of e-learning on student learning.

Future Work and Recommendations

To improve the effectiveness of eLearning, the need occurred for developing the quality management system in the field of e-Learning. Those standards like the ISO/IEC 19796 or SO/IEC 19796-3:2009 which provides methods and metrics required implementing quality management and quality assurance systems for stakeholders designing, developing or utilizing eLearning technology must be consulted seriously when thinking about quality assurance methods. Some universities have recommended that biannual staff evaluation criteria should incorporate utilization of e-learning.

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