FRAMEWORK FOR EDUCATIONAL COMPETENCE WITH EMERGING SCENARIO

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ABSTRACT

For effective management and governance of education system, several efforts have been evolving continuously by using Information Communication and Technology for Educational Management. The role of the Information and Communication Technology (ICT) infrastructure particularly services require for the data intensive and communication intensive application becomes more important. Further, due to the massive growth of information, situation becomes difficult to manage these services. The present paper discusses the related issues such as competence building, creation of appropriate ICT infrastructure, ICT acceptance level etc. required for Information Technology for Educational Management(ITEM) competence building framework, considered in an earlier approach for core competences for ITEM. Therefore, it becomes essential to consider the global standard and relevant ICT infrastructure. This effort will help in activities and resource management for effective implementation of the framework.

KEYWORDS

ITEM Competence, Data Centre, Educational Management

1. INTRODUCTION

The use of educational information management system provides a greater degree of standardization of administrative functions. Embedded software enables a kind of automation to some extent the job to be performed without any control. But, policies of decentralization are yet to be achieved. Three levels of training (Donnelly, 2000) have been claimed as appropriate to both the leadership team and administrative staff viz. training in generic software, training in the use of institution specific MIS software, and training in the use of the internet. Strength of Information Technology (IT) has been observed in providing innovation and competitive edge to any organization (Talero & Gandette 1995). Further, using the Management Information System (MIS), many benefits have been observed in the education system (Visscher et.al. 2001) ,that is how the MIS systems affect the control of educational institution and educators performing administrative functions too. In the ongoing work, the leadership team should also be trained to use data or information for the improvements of the educational standards. So, acceptance level of ICT should given top priority among the users.

A Discussion Group was formed during the conference ITEM-2002 of the working group of the International Federation for Information Processing (IFIP) in Helsinki.. This group analyzed that the emerging technologies are not very well adopted by the educational institutions and these institutions became failed to provide the coherent and effective training programs as reported the unsatisfactory use of ICT means for the teaching, learning and administrative purposes (Lambert & Nolan 2002, DfES 2002, Newton 2002). Therefore, relevant ICT infrastructure should be

procured as per the services required. This Group, then, inclined to design a model or framework to enable to plan the ITEM training and achieve an ITEM- competent staff (Ian Selwood & et. al. 2003). The present paper analyzes the emerging ICT scenario, framework educational competence in the following sections covering various related issues ICT acceptance level, ICT infrastructure and competence building framework for its proper implementation. Lastly the conclusion has been drawn.

2. EMERGING ICT SCENARIO

As a great future in using e-Learning, information management system mend for the educational institute is enabling the central education authorities to exercise a form of "control at a distance" over the institutional operation without appearing to intervene directly. In enhancing more e-enabled services, learning capabilities either through asynchronous or synchronous are being observed to fit into the emerging ICT scenario.

The Discussion Group of ITEM-2002 has considered 36 components, across the three dimensions, in designing the framework. The first dimension points for the four inextricably linked dimensions; they are Information, Technology, Education and Management. The second dimension is set for the management and planning concerned. For this purpose, it has three levels viz. operational, tactical and strategic. The last, third dimension defines the stage of growth. Three growth labels are considered i.e. initiation, expansion and embedded. Thus, altogether this form a matrix of 4 * 3 * 3 and out of this, 36 competences/activities have been emerged out. In is analyzed that the aforesaid designed framework can very well adopt the emerging technologies, keeping 36 competences into account.

Applications of IT is fundamental (King & Sethi 1999) for effective global operations, as it coordinates the dispersed activities and establish coalition in between different activities. Building of the collaborative environment under such ambience cannot limit the workability of the users. The effective use of IT has increased tremendously the phenomenon. So, organizations are trying to uncover this potential of usage of IT which could only be achieved if the organization has the appropriate technological infrastructure. For example, issues as proposed (Bhatt, 2007) such as wireless technology, cabling, Ethernet & Asynchronous Transfer Mode (ATM), iSCSI and IPv6 are important to consider to support and integrate e-communication for the massive information. In requiring data intensive and communication intensive applications owing to the massive growth of information, progressive efforts have been evolving recently. Creation of relevant ICT infrastructure particularly data centre with communication components becomes more important to facilitate these services. Therefore, the emerging concept of data centre model (Clabby Analytics, 2008) can be considered to handle data intensive and data communication intensive applications becomes inevitable for the e-learning process. Till data modernization of data centre have been performed in the business organization (Barnett, 2008). But a lot of transformation is needed in the educational institutions. This is because modern data centre are based on object-oriented technology, standard format for data sharing e.g. XML; Java technologies & internet protocol (IP) for interoperability and network communication. During the data intensive applications, large data sets are connected for distribution and may be further connected with intranet, extranet and internet. For this purpose, data centre provides data searching, retrieval and sharing quickly via its data consolidation process. For communication intensive applications, high efficient data search, retrieval and large scale collaborative multimedia system supports are required. For example, real-time multimedia interactive requires high network bandwidth for efficient data transmission in the collaborative working environment. This is achieved with the help of server virtualization process.

Therefore, through consolidation and virtualization, performance of systems and communication network for storage and sharing resources is enhanced for data as well communication intensive applications where increased traffic poses bandwidth constraints. So, to enable network responsible (McGillicuddy, 2012), server virtualization is essential to ease the operation of data centre infrastructure.

In addition to the benefits in providing standardization of administrative functions as discussed above, another kind of standardization should be considered for technological advancement so as to integrate the existing technological infrastructure components with their counterparts to come in future i.e. components should be compatible in their operations with each other. This technological integration would automatically integrate the collaborative and sharing efforts at the interaction level of the defined three axis of the model so that mapping with its existing policies and programs and investigate goodness of fit in accordance to the ITEM competencies can be achieved. In order to control the growth, the feedback process at the management level can be enforced.

3. FRAMEWORK FOR EDUCATIONAL COMPETENCE

Sustainability is a critical challenge (Misuds et.al., 2003) in keeping pace with the emerging technologies which can only be achieved by creating and integrating compatible components. Visscher and Branderhost (2001) have addressed five skill areas - to recognize the information value & policy development, to determine the type of information needed, to discover the information out of the MIS, to interpret information from the MIS, and to make decision and evaluate the policy. But, in addition to these five skills, one more skill is required. It can be named as the feedback-skill and is useful while interacting with the existing MIS at any level which would strengthen the management for its strategic, tactical and operational competences. These levels can be categorized as level-1, level-2 and level-3. The type of levels can be defined as the Level-1 is the type of structured competence; which is a prerequisite for transition to the Level-2, a semi-structured competence and Level-2 competence is a prerequisite for the transition to the Level-3, which is a kind of unstructured competence. So, the order of priority among the competences to be given is a complex task and pertains to the strategic competence; which comes at the top of all these three levels, partly can be matched with the Level-3 competence.

Further, under the axis of stage of growth, it is important to pin point as where to initiate or expand or embed in order to retain the balance for how much time. For example, strategic competence takes less time to take quick decisions; technical competence takes some more time and operate competence takes longer time consumed in providing its services and interactions processes.

Thus, to evaluate the ICT skills and pedagogy for ICT enabled teaching process, following points are needed to be analyzed:

a) The level of acceptance of ICT skill varies from school level to post-graduate level of institutions.
b) The level of ICT skill also reflects the level of procurement and integration of ICT equipments.
c) ICT skill is also influenced by the availability of the ICT facilities exist in the institute.

In considering the above mentioned points as the most important activity, the management team/authority (comprising educationists and technocrats) should have a very broad vision so as to open ICT windows at all levels of learning and teaching to enhance the availability of the ICT usage. This phenomenon will also empower the management process through the feed back

received instantly by building the ICT means besides the ICT skill. However, this empowerment will also be benefited by the advantages from the proposed model (Ian Selwood et.al., 2003) such as it is platform independent, and it is descriptive and prescriptive. In meeting the three-group competencies such as using tools interactively, interacting in heterogeneous groups and acting autonomously, teaching process should also be under the adequate educational environment (Kollee, C. et. al., 2009). Therefore, suitable mapping can be done with the existing activities for its fitness.

The above analysis covering all the three points would help the strategic support to distribute the ICT resources uniformly. Essentially a problem of management, relates with the process of managing the information systems can be implemented by providing best support technologies components to maintain the richness of the information. So, this will ease the management work in the proposed model of ITEM competence by considering the relevance and compatible technology for education and vis-à-vis segregate them (information, technology and education) for strategic, tactical and operational levels of actions. Then the steps towards the initiation, expansion and embedment can be taken accordingly.

This would lead to the ITEM competence building properly. Therefore, it is recommended for the management process to analyze the levels of acceptance of ICT skill, procurement and integration of ICT infrastructure in order to sustain the future activities.

This analysis will help to create and foresee the interplay and its impact of the management with information, technology, and education components individually and combined. This would also improve the base for the ITEM training and achieve an ITEM-competent technology and staff. This will then become easy to anticipate the inevitable changes. Attributed benefits accruing out of it can also be traced and understood.

In this concern, extraction of standards to support teaching and learning for ITEM “Technological Standards for School Administrators”(TSSA collaborative 2001) is suitable approach. Further, Bhatt (2007) has pointed out that the ITEM-competence is also strongly influenced by the appropriate selection and use of information and technological components. Therefore, this kind of integration, the concept of data centre and the TSSA approach can be considered for the better ITEM competence building. Further, the UNESCO ICT Competency Framework (Wallet, 2014) has also been designed for Teachers which is a useful tool to inform education policymakers, educators and providers of professional learning of the role of ICT in educational reform. It is to be noted that UNESCO has also identified the information on the educational parameters have not been captured in a proper way and updated. To meet this requirement, UNESCO has recently created a cell for the creation of relevant statistical data. It also assists Member States in developing national ICT competency standards. Emphasis has been given on to collaborate in problem-solving and creative learning so as to enhance the student outcomes. It this connection, it is also necessary to consider the procurement of standard and appropriate ICT facilities. This will help in the integration of these facilities for the future expansion. This will also enable to create and foresee the impact of the pairing the management with information, technology, and education components individually and combined. These efforts will establish a strong coupling between the ITEM activities and resource management for effective implementation of the framework.

4. CONCLUSIONS

The existing storage and communication support systems should be suitably transformed into modernize the data centre in order to resolve constantly changing demands for various kinds of applications overcoming the interoperability, data sharing problems and quality of information

delivery. The aforesaid efforts could provide the benefits in the proposed structured approach of the model by solving the complex, dynamic and distributed behavior of the information operations with the help of virtualization, data consolidation and network management. Therefore, for the better competences and to accelerate the interactions more effectively for effective management and governance, it is strongly believed that with appropriate implementation of technological components and analyses of management with information, technology, and education components individually and combined; a strong interrelationship can be established so as to manage and govern the education process in a competitive way using the proposed educational competence framework keeping the sustainability into account.

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