



Student Readiness for ICT Learning: A Case Study Investigation in a Large Multi-National ICT Organization

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Abstract

The increase of Information and Communication Technologies (ICT) in higher education means that student's readiness plays a critical role for the success of ICT. Readiness towards learning new technologies can be seen as an indicator of the organization's capacity to successfully make changes. This study explores the factors that affect student's readiness towards ICT learning when implementing new technologies in higher educational institutions within fast developing nations. The study undertook a single case study design using multiple qualitative sources of evidence within a large multi-national ICT organization to investigate the perceptions of student's readiness level. Two major themes were identified to inhibit or support a student's readiness towards ICT learning. Both major themes ascertain that, without persuasive communication between the organization and between individuals, can result in uncertainty (or lack of awareness) about a change.

Key Words: ICT, Readiness, Higher Education

Introduction

Both the empirical and anecdotal literature suggests that the main barrier to deploying change strategically is the people, and people are critical in successful organizational change (Samara & Raven, 2014). In most cases, organizational change occurs via the individual (Bercovitz & Fieldman, 2008). Similarly, most organizations that develop and implement successful Information Communication and Technology (ICT) initiatives see learning as an inherently valuable part of the business process (Turvani, 2001; Klimoski & Mohammed, 1994). Consequently, in higher education, ICT initiatives present a new type of conundrum where there is a need to closely interconnect human-resources and the person's knowledge to identify the most effective approaches to achieve change. Technology change not only facilitates desired or planned outcomes but also consists of unforeseen or unexpected outcomes (Scholl, 2003; Samara & Raven, 2014). Consequently, the organization and the individuals in it that must undergo a change, will ultimately impact on their readiness behaviors (Patel et al., 2010a; 2010b). This often hinges on people's cognition, where a strong element of cooperation and reliance upon human behaviours to change is needed (Patel et al., 2010a; 2010b). Most importantly, there is much support of the view that the tendency to resist change lies within the individuals who are experiencing the change (Oreg, 2006; Judge et al., 1999; Weick & Quinn, 1999).

This study explores the factors that affect student's readiness towards ICT learning when implementing new change initiatives in higher educational institutions within fast developing nations. The study undertook a single case study design using multiple qualitative sources of evidence within a large multi-national ICT organization to investigate the perceptions of student's readiness level. To understand the various interpretations, meanings, and patterns of the different influential factors supporting or inhibiting readiness for learning requires a review of the concepts underlying the readiness construct. After presenting the literature, this study will discuss the proposed methodology undertaken and the findings arising from the data collected.

Readiness for learning

There is a growing body of literature on readiness that takes as its premise that readiness is central to the effort of making organizational change (George & Jones 2001, Armenakis et al., 1993 Judge et al., 1999, Prochaska et al., 2001). The origin of readiness lies in Lewin's (1948) concept of 'unfreezing' moving and freezing behaviour' as three sequential factors to successful change. In Lewin's model, unfreezing is the initial stage in the change process. To change, an organization requires confronting the current situation and creating readiness by delivering planned behavioral changes toward the desired change. Lewin's component of readiness defines the process of change in the existing 'mind-set of individuals' that can lead members to become ready to participate in the change process.

Social learning theory argues that individuals tend to direct events that have an effect on their lives, because of the myriad personal and social benefits (Bandura, 1998; 1986). Learning generates greater awareness about the change (Samara and Raven, 2014) and developing readiness has been proposed as a major solution for reducing resistance (Armenakis et al., 2007; Jones et al., 2005; Lehman et al., 2002; Prochaska et al., 2001; Armenakis et al., 1993; Kotter, 1995; Lewin, 1948). Armenakis et al., (1993) suggests that readiness consists of 'people's beliefs, attitudes and intentions' regarding the extent to which changes are needed can then lead to the individuals support for or resistance to the change initiative. George and Jones (2001) found that people's interpretation of change can influence

their understanding of it, which in turn can exert a mediating effect on other individual's readiness-for change. People's perceptions are "significantly predicted by perceptions of their organizations social interaction, culture and by their management's support for knowledge sharing" (Connelly & Kelloway, 2003).

Further, in the field of information systems there have been few attempts to study the concept of readiness, and to date, in the information systems literature there is little on how change at the individual level should be initiated practically (Patel et al., 2010a; 2010b; Holt et al., 2007). This apparent knowledge gap is partly due to the fact that concepts and theories from the organizational change field such as readiness-for change, are not explicitly utilised in the information systems literature to demonstrate the change processes that are inherently involved in the planning of ICT initiatives. In this respect, any preconceived notions of change are also likely to be transmittable to other members in the change phenomena (Quinn, 1996). Similarly, Erez and Gati, (2004) suggested that individual level interpretations at lower levels are likely to be impacted by "higher-level knowledge bases". They add that such phenomenon depends on the level of homogeneity (accounts of social practices), in people's perceptions and beliefs.

Understanding such behavioural origins or roots of individuals' reactions to change is integral to understanding how to manage and support employees going through learning in an organization. Thus, this study suggests that such micro level factors can inhibit or support an individual readiness and subsequently have an impact on their readiness for learning.

Method

The study is qualitative in nature and incorporated the use of a single case study methodology undertaken in a large multinational ICT company. The aim of the study was to establish the perceptions of student's readiness towards learning whilst adopting new ICT initiatives. The data was collected using interview techniques on twelve research participants. Semi-structured interviews were conducted on undergraduate students to explore the readiness for learning behaviours during ICT initiatives. These were conducted for over a period of five days to capture the participants' readiness perceptions towards learning new emerging ICT technologies. A survey was also conducted post-training to capture the participants' view in an unobtrusive manner. During the case study two faculty members were involved as participants. The primary role of the faculty was to observe the learning behaviours of students during and after the training period and to observe students reactions towards emerging ICT technologies. These observations were intended to capture the participant's reactions throughout the practical and theoretical activities. Both faculty members transcribed the interview notes independently to reduce bias and obtain a more honest and valid understanding of the participants' behaviours. These observed behaviours were discussed on a daily basis and were used to develop a contextual background of the concluding survey and interview questions.

Furthermore, the faculty members' secondary objective was to determine the feasibility of incorporating new emerging ICT initiatives into the learning and assessment processes at the higher education institute. This involved exploring opportunities in ways that would enhance the teaching and learning especially in subjects that required technical hands on learning activities. The higher educational institute currently faces many issues relating to the teaching and learning of technical content. These issues include and relate to the delivery of assessments, consistency between campuses, assessing practical work, teaching technical content and many others. The ICT company had numerous ICT initiatives that could potentially alleviate these issues and this study was a preliminary platform to survey and learn

about these. It would also identify the readiness of the college to adopt new and emerging ICT initiatives.

ICT Initiatives explored

Many large ICT companies in the UAE are demanding that students are well equipped for the work environment and that they have the necessary skills to seamlessly integrate into the work environment. Whether this is from the perspective of having sufficient knowledge and expertise with ICT systems integral to the UAE or being well versed with work place ethics, it is clear that more collaboration between industry and the university is required. The university chancellor acknowledged this by iterating that he wanted stronger collaboration between the university, industry and the community. The trip was designed to meet these objectives and was focused on establishing a strong collaboration between the university, industry and UAE based ICT companies. Other objectives of the trip are discussed below.

This study will determine the readiness of UAE students at HCT to adopt new learning approaches and their readiness to adopt new ICT initiatives. One technique to do this was to expose students to ICT learning methods used by a particular multinational ICT company. Students are familiar with semester long, university style ICT learning approaches but have no exposure or experience in industry based ICT learning. This learning approach will play an important part throughout their careers since ICT is a rapidly evolving area in the UAE industry and ICT skills need to be continuously updated. The motive for selecting this particular ICT company lies in the fact that this company has a huge market share and influence in the UAE.

This study would also determine the suitability of incorporating industry based ICT learning methods into the existing HCT bachelor degree programs and the readiness of the university to do this. The proposed idea was to incorporate this learning method into some of the ICT courses and implement new ICT initiatives to support this. It has become evident from UAE based industry that this is integral to the success of the university and a clear push to establish this is evident. During the semester students would be required to attend an industry lead ICT learning event focused on specific areas. This would engage students with industry and new ICT initiatives and equip them with current industry specific skills and knowledge. The students would then be required to engage and search for local businesses that require specific ICT solutions. Once a suitable business is located the students, in collaboration with the ICT Company, the university and the business, would design, implement and test specific solutions. This necessitates a novel approach to learning and a radical rethink of the structure of the programmes at HCT but before such dramatic changes can be made a feasibility and readiness study needs to be carefully conducted.

It is also necessary to identify the current services and tools intended to support ICT on a daily basis within the organization especially in the area of teaching and learning. In this research the available systems that were identified from the participants' point of view were cloud computing, enterprise and cloud storage, LTE and mobile technologies. Research participants also reported that the organization had undergone significant changes and a number of systems needed to be updated or implemented. These include access to data relating to the organization's routine operations such as, student and faculty records, learning and assessments, research data and a plethora of websites that the universities uses to conduct business.

HCT has also acknowledged the need to centralise resources, teaching and learning and certain assessments. There are 17 campuses and the Computer Science department was recently restructured to one division across the 17 campuses. This has led to some issues

which specifically relate to the delivery of learning, assessments, moderation and collaboration. New and emerging ICT technologies possess the potential to alleviate these problems and a private cloud solution was identified as one possible alternative. Other ICT initiatives include smart classrooms, interactive online learning solutions and Virtual Desktop Infrastructure technologies. However, adopting these solutions would require a significant change in the attitudes of the participants and the university. There is also a possibility that resistance could manifest itself and lead to the failure of these initiatives so a thorough study was required to gather the perceptions and readiness of staff to adopt these ICT technologies.

Findings

A significant contribution was made by the ICT Company to the students' adoption of new learning techniques and to their acceptance of new and emerging ICT technologies. This was instigated by learning that engaged the students in a fun and practical way and by using realistic simulations based on real world environments. However, we found gaps in the way the theory was presented to the students. We concluded that when students were engaged in the practical activities they readily accepted new ICT technologies. Furthermore, we realized that during formal lectures their perceptions and acceptance of new ICT initiatives diminished. This was caused by many factors. Language was a barrier for both the students and the ICT company trainers as English was a second language for both parties. Although this didn't cause a significant problem it did impede learning and understanding especially during theoretical lectures. This left a bad impression on the students as they connected the way the lectures were presented to the companies ICT technologies, society and culture. This led to a resistance in accepting new technologies and this resistance was observed and documented principally during the presentations (lectures). This resistance was not necessarily biased towards emerging ICT but more focused on technologies from this ICT company. This confirmed that the perceptions of UAE students are important and play a key part in the adoption of new technologies.

The duration of the lectures and lab activities and intensity of the program tired the students and slowly developed into a negative attitude towards this style of learning. This led to some resistance in adopting this kind of learning and jeopardize the potential of it being incorporated into a bachelor degree program at the university. The behavioral, social and learning methodologies also differed in some ways and contradicted what the students were used to at the university. This didn't necessarily have a negative impact on the students but proved to be beneficial and inspirational to their learning moral. The students engaged with these new paradigms and developed a keen attitude towards this learning style. One thing the students did mention however was they would like the ICT company to be more versatile in the way they support student from different cultural, social and learning backgrounds

Participating in industry based learning greatly benefited the students and provided them different perspectives to new ways of communication, interaction and learning. It provided them with the opportunity to interact with industry peers and engage with emerging technologies in a way that would not be possible in a university environment. The students acknowledged that being immersed in this environment not only enhanced their ICT skills but improved many other skills. They were more confident when interacting with experienced professionals and developed skills necessary to work in a rapidly evolving ICT environment. It became apparent that communications was integral to the success of learning approach and played a significant role in preparing the students for such an activity. Their readiness to learning ICT had to be cultivated at an early stage and without this preparatory activity the students would have been ill prepared and disadvantaged. Moreover, communication between the ICT company and the university had to be established at early stage and

participants had to engage with each other to understand the goals and objectives. However, we found weaknesses in the communication process which had an impact on the student's readiness towards learning.

The significant size and distribution of the ICT company may have also inhibited the necessary communication for enhancing readiness amongst students. The communication was hierarchical and formal in nature and was sparse between the students and the ICT company. It became evident that barriers to communication disadvantaged the students readiness for learning, and most students interviewed identified the need for communication for increasing awareness. Students would have also benefitted from cultural awareness training and industry related activities prior to the training program. Furthermore, without persuasive communication between the organization and between individuals can result in a major block to learning (or awareness) about a change (Stata, 1989). An additional issue that developed over time was the disparity of the training program. This again was due to the lack of awareness between the participants and it became clear that the training must be closely related to students' prior learning and linked to the existing program of study. This requires establishing an effective communication channel between the company and all the participants. Huysman (2000) propose that during the organizational change process mutual learning is necessary whereby, organization learns from individuals' and individuals' mutually learn from the organization.

Conclusion

The general consent among authors is that most challenges during change initiatives lie at the individual or micro-level (Samara and Raven, 2004). As argued by Armenakis et al., (1993) an organization's readiness is constantly being influenced by the readiness of the individual-level comprising it. Social members are always looking for signs concerning the importance of events and circumstances confronting an organization. According to the findings in this study student's readiness towards learning contributes significantly towards the way in which an organizations ICT initiative is communicated. Some of the participants highlighted that they were not adequately prepared for the training and were not ready to engage in emerging technologies. Based on the findings two common themes that appeared during the interviews was the individual's awareness and persuasive communication, which was directly attributable to their readiness for learning. It is the awareness and communication of ICT initiatives as identified by interviewees that may inhibit or increase their understanding and readiness of IT related ICT initiatives.

More research is needed to understand the consequences that can arise at the readiness level during ICT initiatives (Erez and Gati, 2004). There is scope for ICT related research to apply various methods and approaches for building a micro-macro level perspective as well as to advance better understanding of individual level factors that are prerequisites for successful ICT initiatives. At an individual or micro level, however, there has been no sign of research and there is some evidence that residents in the UAE are not always ready for new technology based initiatives. The case study highlights that while some higher educational institutions within fast developing nations such as the UAE may have the ability to invest in emerging technologies the role of an individual's readiness can equally play a significant part during the change initiative. This study contributes towards a better understanding of these factors that inhibit or support an individual's readiness for learning associated in ICT initiatives. This study enables other researchers to extend even deeper on the phenomenon under study and may be applied and extended to other substantive areas related to "organizational technology based initiatives"

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