**BSC 203**

Assignment 1 – Literature Review

**Topic:**  E-Learning

**Facilitators’ Name:** Tanya McGill

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Student Names: Ananth Kadekodi

Student ID Numbers: 32920719

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# INTRODUCTION

E-Learning is the usage of telecommunication technology in the delivery of information for educational and training purposes. It may be a combination of campus delivery, distance learning (like OUA) or a combination of online technologies (Volery & Lord, 2000). However the definition of e-learning is still somewhat unclear. It has been defined in multiple ways, with these definitions often overlapping (Moore et al., 2011). Some researchers have viewed e-learning as the delivery of teaching materials via technological/electronic mediums such as internet, extranet, audio/video tapes and CD-ROM (Engelbrecht, 2005), but others have viewed it as a tool educating users through web technologies. These involve web-based communication, knowledge delivery, collaboration/interactions and training to educate learners (Kelly & Bauer, 2004).

The resources used in e-learning are generally the same as that found in traditional courses such as books and notes. They are often enhanced by multimedia presentations and audio/video conferencing available over the internet. Some advantages of e-learning include: flexibility; accessibility; learner convenience; cost savings for institutions; consistency and timely content (Cantoni, Cellario, & Porta, 2004; Kelly & Bauer, 2004). E-learning can take place anywhere, anytime and at any pace. It can be customized based on the learners’ requirement (Engelbrecht, 2003). It’s multimedia features have been demonstrated to readily attract more learners’ attention (article 11). However, there are still drawbacks to e-learning. Some of these include: limited course offerings; high course development cost; infrastructure requirement; security and the teachers’ and learners’ self-discipline (Cantoni et al., 2004). One of the most important goals of e-learning implementation is to make it equivalent, or better than the traditional methods of learning provided.

This literature review explores the effectiveness of e-learning and the learning outcomes of participants by combining, examining and discussing the research conducted by various researchers.

# EFFECTIVENESS OF E-LEARNING

A review of various articles shows that there is a mixed consensus about the effectiveness of e-learning. Sandra, Karia, Sanfilippo, and Clifford (2014) stated that e-learning has been highly effective in increasing pharmaceutical knowledge and has been recognized as a highly acceptable instructional format for pharmacists and students. However, research conducted by Lahti, Hatonen, and Maritta (2014), showed no difference between e-learning and traditional learning. E-learning was not considered superior to traditional learning but has been suggested as an alternative method of education. It had no impact on increasing the knowledge, skills and satisfaction of students. Moreover, research also conducted by Leung showed no significant differences in the performance between e-learning and traditional learning groups. Hence, there is currently a mixed consensus on the effectiveness of e-learning in the present society. However, a majority of articles suggest the implementation of certain factors to increase the effectiveness of e-learning.

Sun, Tsai, Finger, Chen, and Yeh (2008) stated that learner’s satisfaction is directly correlated with e-learning effectiveness. A stepwise multiple regression was utilized to analyse the data, with the results indicating that: computer anxiety; instructor’s attitude (towards e-learning); course quality; perceived usefulness; ease of usage and assessment diversity, affected the learners’ satisfaction and the eventual e-learning effectiveness. Course quality was determined to be the most important factor for learner satisfaction. A well designed course allows students to have an increased perceived usefulness and makes the course easier to use, leading to an improvement in satisfaction. Moreover, easy accessibility and a positive instructor’s attitude were also shown to enhance student satisfaction. These motivate students and therefore increase the effectiveness. But the overall effectiveness was reduced with learner’s anxiety, which can be resolved by building confidence and making the educational process more enjoyable.

**Figure 1 – Factors affecting Learners’ satisfaction and E-Learning effectiveness, reviewed by Sun, Tsai, Finger, Chen, and Yeh (2008)**



Sun, Tsai, Finger, Chen, and Yeh (2008) also state that e-Learner satisfaction can be achieved through different dimensions and antecedents. This is demonstrated through figure 2.

**Figure 2 – Antecedents and Dimensions, affecting e-Learner satisfaction and eventual effectiveness of e-learning (Sun, Tsai, Finger, Chen, & Yeh, 2008).**



Additionally, research conducted by Zhang, Zhuo, Briggs, and Nunamaker (2006), showed that making e-learning more interactive can lead to increased levels of satisfaction and effectiveness. Students engaged with traditional learning achieved equal test scores and satisfaction levels to those in the e-learning group without the interactive video. However, making the video more interactive resulted in increased learner satisfaction. This is further supported by the participant’s comment on their fondness of the interactivity implementation and their demonstration of greater levels of e-learning uptake. These findings are further supported through findings by Zhang (2005), which stated that an e-learning environment with more content interaction will lead to increased learning performance and greater learning satisfaction. The interactive element e-learning in this research, enabled learner-centered activities and provided the necessary learner content interaction to increase the learning outcomes achieved.

Findings by Wu, and Hwang (2010) suggest that ease of usage and media richness of e-learning play a role in increasing the learner’s satisfaction and the overall effectiveness of e-learning. These are achieved by implementation of the content aspect of e-learning such as sufficiency, richness, presentation (learning content) and the use of multimedia. Implementation of the content aspect, leads to a better learning attitude and creates an intrinsic motivation towards e-learning. Additionally, Rovai, and Barnum (2004) also support the findings of Wu, and Hwang (2010) by suggesting a direct correlation between usability and e-learning effectiveness. The students from the experimental group of this article reported reduced learning outcomes from e-learning as compared to the traditional education due to reasons which included: delays in online settings; excessive independence in their studies and communication through text/messages (deemed to be tedious and inefficient). Additionally, the study also stated that increased course interaction levels correlated with improved effectiveness of e-learning and learning outcomes.

Johnson, Hornik, and Eduardo (2008) suggested that effectiveness of e-learning increases with increased social presence. Social presence is defined as the participant’s perception of a warm, personal, sociable and active environment (Biocca et al., 2003). It can be further summarized as a shared learning space, along with the facilitation of a shared learning environment. It allows students to be perceived that they are part of a learning community. This allows them to exchange greater and more complex information and make knowledgeable discussions (Johnson, Hornik, & Eduardo, 2008). They are also more likely to effectively judge the quality of peer inputs, place higher value on the messages and process messages to a greater extent. But ultimately the perception of presence increases the learning effectiveness, by allowing participants to connect deep and engage actively (Johnson, Hornik, & Eduardo, 2008). This makes them see their course as being very valuable. Lastly, social presence reduces the feelings of isolation and strengthens their connection to the community. All the above, improve the learner satisfaction and the overall e-learning effectiveness (Gunawardena and Zittle, 1997; Arbaugh, 2001). These findings are also confirmed by those of Stonebraker, and Hazeltine (2004), affirming that perceptions of cohesiveness and social interaction cause an improvement in the perception of learning, satisfaction and course persistence. Therefore usage of social presence techniques such as: group discussion breakouts; interactions on common job-related concerns, and timed competitions to solve and report problems could improve the sense of community, satisfaction and lead to increased e-learning effectiveness (Stonebraker, & Hazeltine, 2004). Additionally, the sense of community could also be improved through the encouragement of the entire class participation in discussions (as opposed to groups). Moreover, article also supports the presence of extrinsic motivation (encouragement, praise and reward) from key people such as the lecturers in encouraging students’ usage of e-learning and enhances their motivation (Stonebraker, & Hazeltine, 2004). This is also confirmed by Lee, Yoon, and Lee (2009), with findings confirming the correlation between appropriate instructor characteristics and positive e-learning usage intention.

In addition to the above findings, Al-Qahtani, and Higgins (2013) state that a blended learning approach provides a clear advantage in learning effectiveness as compared to the utilisation of a single learning approach. A blended learning approach allows the advantages of face to face conventional learning and e-learning to be combined. This allows learners to thoroughly review instructional material and undertake independent activities (Al-Qahtani, & Higgins, 2013). But the disadvantages regarding the absence of a course instructor was prevalent in certain e-learning contexts. Overall, the combination the structural and authoritative teaching method (conventional) and that of self-directed study (e-learning), increased the effectiveness and learning outcomes of the students.

**CONCLUSION**

The effectiveness of e-learning over the traditional teaching methods is still a debatable topic in the current society. Some articles states that e-learning is a more effective teaching method but others contradict this view point. But all the articles agree on a common view that learners’ satisfaction is related to the effectiveness of e-learning, and a number of factors can influence this satisfaction, e-learning effectiveness and the learning outcomes of the participants. Some of the suggested factors that may contribute to increased effectiveness and better outcomes include: course quality; perceived usefulness; ease of usage; assessment diversity; course interactivity, sense of presence and blended learning. However, other factors such as: delays in online settings; excessive independence in their studies and communication through text/messages (deemed to be tedious and inefficient) reduced this effectiveness. All articles concluded on one view point, that more qualitative and quantitative research needs to be conducted on the effectiveness of e-learning.

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