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Key Success Factors of eLearning in Education: A Professional Development Model to Evaluate and Support eLearning*

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Technology has changed the way that we live our lives. Interaction across continents has become a forefront of everyday engagement. With ongoing enhancements of technology, people are now able to communicate and learn in a virtual environment similar to that of the real world interaction. These improvements are shared in the field of education, where eLearning is becoming less static and more socially interactive. However, even though technology enhancements are enabling us to be more eLearning successful, there is still an enormous amount of uncertainty in how to implement eLearning successful. This is particularly the case in education for secondary schools. There is an evident struggle for schools to successfully implement eLearning effectively. With this in mind, the goal of this paper is to outline a professional development model, created to evaluate and support eLearning in education.

Keywords: eLearning, successful components, KSF (Key Success Factors)

Introduction

The purpose of this paper is to introduce the KSF (Key Success Factors) model of eLearning to support and evaluate eLearning in secondary schools. Essentially, this research looks at eLearning in education, identifying the important characteristics of eLearning and the factors needed for successful eLearning. This research is determined by two main factors: originality and significance. The originality is based on the development of a KSF model of eLearning in education, while the significance been that by developing such a model, governments and educators can begin to provide a successful form of eLearning in education.

This research clarifies many of the misconceptions associated with eLearning and enlightens readers on all levels about the factors that must be established in order for successful eLearning to take place.

Literature Review

It is claimed that the “e” in eLearning stands for electronic, however, it would better stand for “evolving, enhanced, extended, everywhere, every time, and everybody” (Li & Masters, 2009). Since eLearning has emerged as a new technology for delivering online, hybrid, and synchronous learning (Nagi & Vate-U-Lan, 2009), new definitions are needed to match the rapidly expanding technological world. In particular, the growth of the Internet has leaded the WWW (World Wide Web) being a defining element of eLearning. This is

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apparent in Asanok, Kitrakhan, and Brahmawong's (2008) definition of eLearning as any learning that is done utilizing an Internet or Intranet connection. Alternatively, the ASTD (American Society for Training and Development) refers to eLearning as anything delivered, enabled, or mediated by electronic technology for explicit purpose of learning (Fee, 2009).

The beauty of eLearning is that it can be done anytime and anywhere (Charmonman, Brahmawong, & Vate-U-Lan, 2009). It is affordable, and it saves time and produces measureable results (Vecchio & Loughney, 2006). These can be considered as imminent advantages of eLearning over traditional classroom-based learning. However, even though eLearning is becoming the preferred mode of learning, there still exists numerous disadvantages associated with it. The main problem identified is the requirement of having a connection to the WWW (Vecchio & Loughney, 2006). Since the Internet plays a major role in eLearning, the lack of a connection means a vast part of the eLearning experience will be lost.

Many authors have attempted to understand the reasons for success or failure of eLearning. As a result, there exists many factors as being important in determining the success of eLearning. As Oliver (2005) pointed out, numerous eLearning projects have failed to realize their aims and goals, leading many to question the quality and capabilities of this form of education. According to Levy (2006), full understanding of the factors contributing to effectiveness of eLearning systems will help facilitate institutions to channel funding accordingly; eliminating the misuse of funding on non-effective factors. Alavi and Leidner (2002) concluded that research which helps uncover the important factors of eLearning will be critical to the understanding of eLearning effectiveness.

In relation to the KSF of eLearning, Soong, Chan, Chua, and Loh (2001) conducted their research by performing a sample survey of students in three online courses. It was seen that the following five factors positively influenced results in eLearning courses: (1) Human issues: The instructor needs to be skilled in motivating the students online and creating an enthusiastic online environment; (2) Technical skills: Both the instructor and the student need to possess the necessary skills to work efficiently in an online setting; (3) Technical support: Any form of technical difficultly needs to be address in order for the full utilization of the course to be had; (4) Collaboration: The authors highlight that a strong indicator of success is to have high levels of communication and collaboration; and (5) Attitude: The instructor and student need to have a positive approach towards learning online.

Additionally, Khan (2005) argued that in order to create an effective, flexible, and distributed eLearning environment for diverse learners, one needs to fully explore the KSF encompassing the various dimensions of eLearning environments. Khan (2005) clustered the KSF into eight categories: (1) Institutional: The appropriate infrastructure needs to be in place to complement the successful operation of the eLearning environment; (2) Management: Managing the content, the delivery, and the maintenance of the eLearning system; (3) Technological: The correct hardware and software is used; (4) Pedagogical: The method and process of teaching needs to be analyzed; (5) Ethical: An overview of social, political, culture, geographical, and legal issues needs to be considered; (6) Interface: The actual site design and content navigation system must be easily accessible and usable; (7) Support: Both communication and resource support need to be in place; and (8) Evaluation: This includes the evaluation of the eLearning content development process, the evaluation of the eLearning program and the assessment of the students' learning.

Through extensive research, Peslak (2003) was able to formulate and test his KSF of eLearning. Peslak pointed out that by adhering to the following six KSFs, an increasing level of success is had throughout

eLearning: (1) Variety: In order to facilitate different learning styles, the instructors need to incorporate multiple pedagogical methods; (2) Communication: The author emphasizes communication to be upfront and concise by means of clear written documents in course syllabus, Forums, Emails, and Instant Messaging; (3) Technology: A solid technical foundation in course communication, delivery and support is essential for the success of any eLearning course; (4) Empathy: There are many difficulties and challenges facing students when learning online. It is vital that the instructor understands these problems and incorporates that empathy in both course design and course issues; (5) Clarity: Clear understanding with unambiguous instructions should be the focus in all phases of eLearning; and (6) Content: Careful inspection of content needs to be considered. Course content should closely match course objectives in order to facilitate students meeting their learning goals.

Methodology

As a continuation of the KSF identified from the literature review, the researcher conducted in-depth interviews with experienced experts in the field of eLearning. The interview process consisted of four groups of experts: (1) eLearning policy makers: Those who make decisions about eLearning; (2) Education policy makers: Those who make the learning frameworks in education; (3) eLearning instructors: Those who educate the fellow teacher and student of the progress involved in eLearning; and (4) Teachers: Those that facilitate students in acquiring and understanding new knowledge. Content analysis was undertaken on the qualitative data from the transcribed interview data, where content analysis is an interpretive method, allowing for themes to emerge from the texts and the voice of the respondent to be heard. Furthermore, the researcher used a questionnaire on three groups of people: (1) students (N = 394); (2) teachers (N = 45); and (3) experts (N = 22), so that quantitative analysis could be performed and the underlining components of each of the factors could be established. This allowed for the development of the KSF model of eLearning to be organized into factors and their components. Moreover, the data collected and analyzed in SPSS produced a Cronbach's Alpha of 0.887, indicating a very reliable result.

Results and Findings

The first group of interviews highlighted that marketing, quality, infrastructure, reliability, qualifications, rules, and motivation are critical for the success of any eLearning model. The eLearning policy makers also believed that eLearning in the future will be modelled through new technologies of social networking. It follows from the second group of interviews that support, collaboration, encouragement, reliability, demonstrations, and attitude all play a key part in the success of an eLearning model. In particular, there is a concern over the attitude teachers have towards eLearning. The third group of interviews stressed that technology, infrastructure, personal, social, instruction, communication, training, design, and feedback are vital for the success of eLearning. The third group also believed that in the future the Internet will expand and eLearning will be further developed through the advances of mobile technology. Finally, the fourth group of respondents indicated that support, compatibility, reliability, structure, design, language, and resources are key in making eLearning successful. Though it was also uncovered that teachers feel that the power of eLearning as a tool for learning really depends on the motivation of the student.

The data from the questionnaire provided further insights into the successful factors and components of eLearning. It is demonstrated by Table 1 that students, teachers, and eLearning experts viewed above a mean value of 3.40, for each of the KSF deliberated. Since the p-values associated with each of the means is less than

the significant value of 0.05, implies that we reject the null hypothesis that the opinions of students, teachers, and eLearning experts toward the KSF model of eLearning are equal to mean value of 3.40. Therefore, students, teachers, and eLearning experts have a favourable opinion toward the KSF model of eLearning, which is statistically significant.

Table 1

Mean Analysis of Participants' Opinions Towards the KSF Model of eLearning ($p < 0.05$)

KSF	Groups of participants									Average mean	Sig.
	Students			Teacher			Expert				
	Mean	Std. Dev	Sig.	Mean	Std. Dev	Sig.	Mean	Std. Dev	Sig.		
Technology	4.15	0.60	0.000	4.09	0.72	0.000	4.05	0.31	0.000	4.10	0.000
Human	4.09	0.58	0.000	4.19	0.52	0.000	3.92	0.35	0.001	4.07	0.000
Design	4.12	0.59	0.000	4.09	0.62	0.000	4.07	0.33	0.000	4.09	0.000
Support	3.89	0.62	0.000	4.11	0.69	0.000	3.98	0.27	0.000	3.99	0.000
Evaluation	4.02	0.64	0.000	3.91	0.79	0.000	3.70	0.22	0.006	3.88	0.001

From this data, the researcher can extract the ranking of the KSF of eLearning (see Table 2). It can be seen that the technology factor was deemed the overall highest KSF with an average mean score of 4.097, while the design factor was closely follow with a score of 4.094. It follows that the human factor ($\mu = 4.068$), support factor ($\mu = 3.996$), and evaluation factor ($\mu = 3.873$) are ranked in third, fourth, and fifth place, respectively.

Table 2

Ranking of the KSF of eLearning

KSF	Students mean (rank)	Teachers mean (rank)	Experts mean (rank)	Average mean (rank)
Technology	4.154 (1st)	4.085 (4th)	4.053 (2nd)	4.097 (1st)
Design	4.121 (2nd)	4.093 (3rd)	4.068 (1st)	4.094 (2nd)
Human	4.090 (3rd)	4.189 (1st)	3.924 (4th)	4.068 (3rd)
Support	3.893 (5th)	4.111 (2nd)	3.985 (3rd)	3.996 (4th)
Evaluation	4.015 (4th)	3.907 (5th)	3.697 (5th)	3.873 (5th)

In order to get a more detailed understanding of the factors and reveal the underlining components, the author depicts Table 3 to enhance the strength of this study. It shows the list of components considered for this study, with their mean scores perceived by each of the three participating groups: students, teachers, and eLearning experts. The final column shows the combined mean scores of the three groups.

A 5-point-Likert scale was applied to questionnaire items with the meanings of the scales as: "5" representing the most effective to "1" representing the least effective ranking of the participants' opinions.

Table 3

Components' Mean Value of Each Group

Components	Students mean	Teachers mean	Experts mean	Average mean
1. Prompt feedback	3.92	4.02	4.05	4.00
2. Training of eLearning	4.06	4.18	4.23	4.16
3. Resource support	4.04	4.20	3.91	4.05
4. Technical support	3.91	4.07	3.95	3.98

(Table 3 to be continued)

5. Government support of eLearning	3.84	4.13	3.64	3.87
6. Institutional support of eLearning	3.59	4.07	4.14	3.93
7. Availability of fast Internet connection	4.35	4.38	4.41	4.35
8. Security of eLearning system	4.28	4.11	3.86	4.08
9. Highly developed IT infrastructure	4.20	4.22	4.73	4.38
10. Use of newest technologies	4.10	4.00	3.64	3.91
11. Technology reliability	4.33	4.13	3.95	4.14
12. Cross-platform compatibility	3.66	3.67	3.73	3.69
13. Attitude towards eLearning	4.11	4.22	3.91	4.08
14. Motivation of correspondents	3.84	4.09	3.91	3.95
15. Effective online communication	4.24	4.11	4.41	4.25
16. Accommodate different learning styles	4.22	4.22	3.86	4.10
17. Commitment of all involved	4.00	4.27	3.77	4.01
18. Teacher as facilitator	4.13	4.22	3.68	4.01
19. Interactive course design	3.97	4.07	4.18	4.07
20. Up to date course information	4.25	4.18	4.41	4.28
21. User friendly eLearning system	4.28	4.29	4.09	4.22
22. Inclusion of social media	3.98	3.96	3.91	3.95
23. Platform personalization	3.90	3.87	3.95	3.91
24. Simplicity of language used	4.36	4.20	3.86	4.14
25. Assessment of students' attainment	4.01	3.82	3.77	3.87
26. Evaluation of eLearning system	3.94	3.93	3.55	3.81
27. Usability analysis	4.09	3.98	3.73	3.93
28. System error tracking	3.88	3.82	3.27	3.65
29. Evaluation of IT services used	3.90	3.96	3.64	3.83
30. Quality of the eLearning program	4.27	3.93	4.23	4.14

It is clear to see that there are some components viewed more important than others. It emerges that the following components are deemed the most important for the success of eLearning: feedback (μ = 4.00), training (μ = 4.16), resources (μ = 4.05), availability (μ = 4.35), connectivity (μ = 4.38), reliability (μ = 4.14), attitude (μ = 4.08), communication (μ = 4.25), pedagogy (μ = 4.10), framework (μ = 4.28), interface (μ = 4.22), content (μ = 4.14), assessment (μ = 3.87), usability (μ = 3.93), and quality (μ = 4.14).

KSF Model of eLearning

The literature research conducted along with the findings from the in-depth interviews and questionnaire has enabled the researcher to develop the KSF model of eLearning (see Figure 1). The influential factors and their corresponding components of this model are: (1) technology: availability, connectivity, and reliability; (2) human: pedagogy, attitude, and communication; (3) design: content, interface, and framework; (4) support: feedback, resources, and training; and (5) evaluation: assessment, usability, and quality.

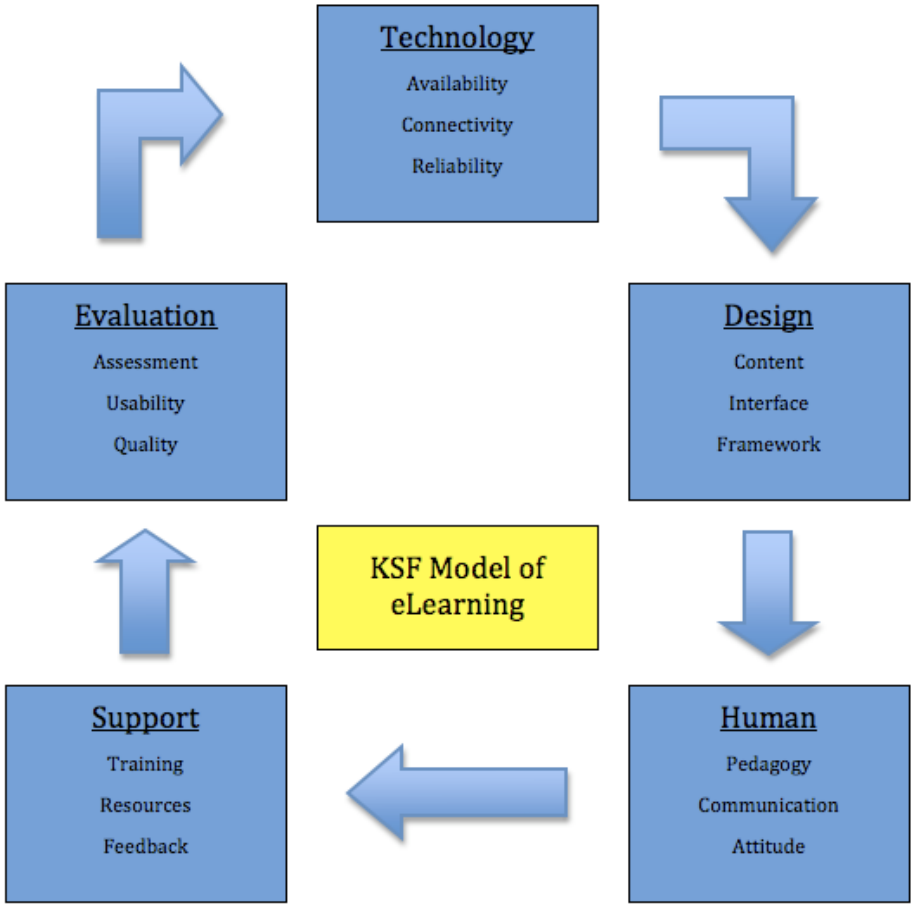

Figure 1. KSF model of eLearning.

Conclusions

This study has clearly defined eLearning. Furthermore, the problems of eLearning have been identified and the ways of overcoming the barriers to eLearning have been addressed. In particular, eLearning is seen to be a powerful way of enhancing teaching and learning, but one that has not been greeted well by all respondents. Lack of training and technology provided has hindered the establishment of an effective form of eLearning taking place in education.

Before governments and schools can establish a successful mode of eLearning in education, an understanding of the KSF needs to be had. From the literature review, in-depth interviews and questionnaire, the researcher was able to develop a model that evaluates and supports eLearning. It follows that the dominate factors of successful eLearning that emerged from this study are: (1) technology; (2) human; (3) design; (4) support; and (5) evaluation.

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