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TECHNOLOGY ACCEPTANCE OF E-LEARNING WITHIN A BLENDED VOCATIONAL COURSE IN WEST AFRICA

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ABSTRACT

Replacing lecture-based learning content with online information can augment learner-content interaction and facilitate greater mastery over a subject. The success of online delivery will depend on the readiness of learners to use and accept technology as well as the readiness of the organizational infrastructure to support a learner-centric learning culture. Successful implementation and adoption of online learning can be indicated by technology acceptance. In this project, lecture-based learning content for a healthcare vocational training course in West Africa was replaced with e-learning and applied to learners who had little or no prior computer experience. E-learning content was combined with practical and peer-based pedagogy to provide a blended learning course. This paper describes the acceptance of technology-assisted learning during the project.

KEYWORDS

Blended learning; Technology Acceptance Model (TAM), medical fieldwork, Africa

1. INTRODUCTION

E-learning can provide flexibility and cost benefits over traditional teaching methods (Bouhnik 2006) by increasing the quality of learner-content interaction (Anderson 2003). A buffet of online and offline pedagogies is increasingly expected from vocational learners as learner-centric quality control becomes more important (Hood 2013). Employing learner-centric blended vocational training allows strategies to increase learner control and engagement (Johnson et al. 2010), circumvent learning degradation through cost-effective refresher training (Chizmar 1999) and reduce attrition (Salmon 2004).

The prevailing paradigm for fieldworker development in The Gambia before this project was classroom-based, lecture-driven teaching incorporating information delivery and practical skill-based pedagogy. Refresher training was rarely possible due to time and cost constraints. This paper details the application of blended learning to vocational training in the context of Gambian medical fieldwork, changes in IT confidence in new IT users and subsequent technology acceptance. During this project the course content was unchanged, but the format of delivery was altered from classroom-based delivery to online delivery, with practical pedagogies unchanged. During implementation of the course, fieldworkers were asked about their perception of the course to determine technology acceptance.

2. TECHNOLOGY ACCEPTANCE

The Technology Acceptance Model (TAM) (Davis 1989) with subsequent adaptations (Venkatesh et al. 2003, Liaw et al. 2006, Venkatesh 2010) is the most widely cited and validated model of determinants to acceptance and subsequent successful adoption of technology. TAM adapts the Theory of Reasoned Action (TRA) which indicated that intention precedes behaviour (Ajzen 1980). TAM can be applied to technology-assisted learning: perceived ease of use and perceived usefulness (Lee 2005, Liaw 2008) of e-learning indicate intention to reuse e-learning, and therefore acceptance. Learner self-efficacy affects perceived ease of use and engagement (Ong 2004). Perceived enjoyment also serves as a motivator, incorporating flow, playfulness and enjoyment which affect intention to reuse e-learning (Byoung-Chen et al. 2009, Padilla-Melendez et al. 2013).

2.1 Method

The existing core vocational syllabus for fieldworkers was modified to replace lecture-based content delivery with e-learning modules and online examination. Interactive diagrams, audio, video and text were used online to enhance learner-content interaction within each e-learning module. Problem-based offline assignments for self-regulated study accompanied each e-learning module. Peer interaction was facilitated through the addition of scheduled group discussion workshops using real case study examples for each module. Practical training and marking procedures remained unchanged in the new syllabus. The UK control group consumed e-learning modules only.

Participants were 195 medical fieldworkers native to The Gambia who participated in both online and offline components of their vocational training. A paper-copy questionnaire was provided to all fieldworkers before (with 21 questions, n=110) and after (with 31 questions, n=140) learning was undertaken, including demographic information and questions on satisfaction and technical functionality which are not included in this paper. 74% of respondents were male, and 71% of the group had no experience with online training. A comparable front-line operational group in the UK was given the same questionnaires before and after their vocational training, with 10 questionnaires returned. This control group was 57% male and 74% had experienced online training before.

Participants responded to items on perceived usefulness and perceived ease of use on a 5-point Likert scale ranging from 1 – strongly disagree to 5 – strongly agree. All questions were in English and were adapted from published sources with advice from the fieldworker manager. Pearson correlation was completed to determine relationship strength and direction.

2.2 Results & Discussion

Preference for online training was much higher in the Gambian fieldworker cohort than the UK front-line group, and fieldworker preference for online training increased through the use of online training (Figure 1). Reported preference remained low (below the response midpoint of 3) in the UK group, and remained positive in the Gambian group. All mean responses from Gambian Fieldworkers were over the midpoint of 3, indicating positive satisfaction.

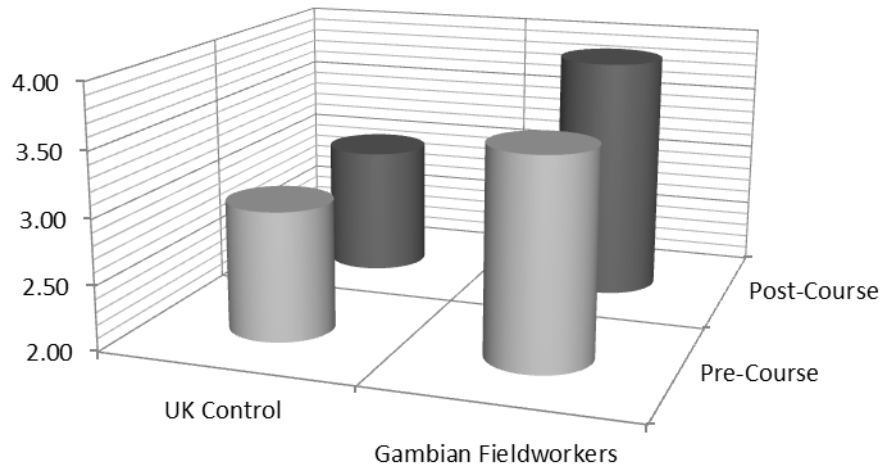

Figure 1. Preference for online training

Reported confidence increased in the fieldworker group through the consumption of e-learning, whereas the high level of confidence reported by UK workers remained unchanged through the project (Figure 2).

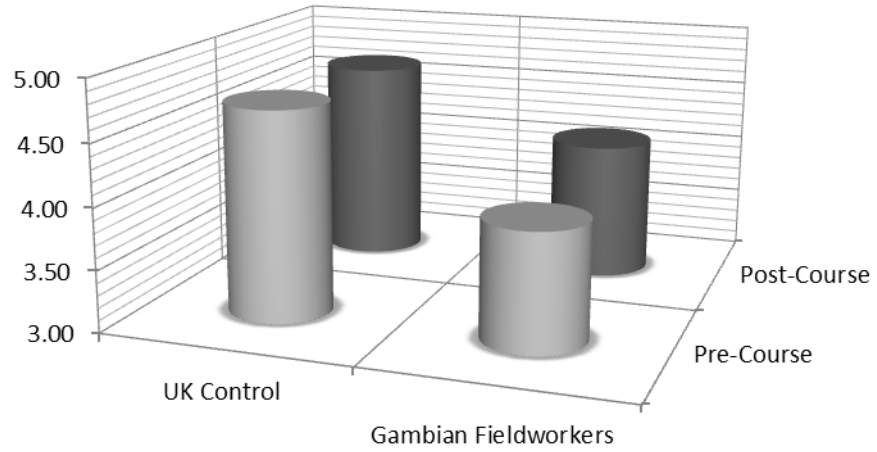

Figure 2. Computer self-efficacy changes through the use of technology-enhanced learning

Table 1. Reported technology acceptance determinants

Question number	Mean Pre-learning Score	Mean Post-learning Score	Question wording	Correlation (Post-course answers only)								
				3.2	4.1	2.3	6.1	7.5	7.4	7.2	6.7	7.6
3.2	**3.59**	**3.88**	**I prefer online training to classroom training**	-	0.4	0.3	0.3	0.4	0.2	0.1	0.2	0.1
4.1	**3.96**	**4.13**	**I feel confident using computers or mobile devices**		-	0.3	0.1	0.3	0.1	0.0	0.4	0.2
2.3	*	**4.10**	**The method of delivery was easy to use**			-	0.4	0.4	0.5	0.4	0.4	0.5
6.1	*	**4.07**	**The module was easy to access**				-	0.5	0.5	0.4	0.4	0.5
7.5	*	**3.99**	**The module was easy**					-	0.5	0.4	0.4	0.5
7.4	*	**4.47**	**The module was enjoyable**						-	0.7	0.5	0.7
7.2	*	**4.47**	**The learning was relevant**							-	0.5	0.6
6.7	*	**4.02**	**The content** was useful**								-	0.5
7.6	*	**4.40**	**I intend to reuse the module for information purposes**									-

* Question was only asked in the post-course questionnaire
** Content was specified as glossary and reference materials

E-learning enjoyment correlated moderately with ease of use and ease of access, but not with preference for online delivery or with self-efficacy (Table 1.). All responses for perceived usefulness and perceived ease of use were above the midpoint, indicating technology acceptance, however, the strongest correlations was between relevance and enjoyment. Intention to reuse online learning correlated strongly with perceived ease of use and perceived usefulness responses but not with preference or self-efficacy, supporting the technology acceptance model.

Self-efficacy correlated strongly with computer usage outside work which correlated strongly with use at work (Table 2.), indicating that fieldworkers confident with computers use them as part of their daily lives, either inside or outside work; those who are less confident are less likely to use computers. Self-efficacy had little effect in this study, as participation was mandatory (as part of vocational training) and fieldworkers reported enthusiasm for the blended learning course, therefore observations based on participation or engagement were not possible.

Table 2. Reported computer self-efficacy

Question number	Mean Post-learning Score	Question wording	Correlation (Post-course answers only)		
			4.1	4.2	4.3
4.1	**3.96**	**I feel confident using computers or mobile devices**	-	0.7	0.4
4.2	**3.68**	**I use a computer outside work**		-	0.6
4.3	**3.43**	**I use a computer at work**			-

3. CONCLUSION

Introducing technology-enhanced learning as part of mandatory vocational training for Gambian fieldworkers provided a blended-learning outcome, which was accepted by fieldworkers. Fieldworkers reported preference and self-efficacy increases during the project, and reported technology acceptance as a positive intention to reuse e-learning correlated to perceived ease of use, perceived usefulness and perceived enjoyment, supporting Davis' technology acceptance model. Further research is needed to determine the variables that influence perceived ease of use, enjoyment and usefulness within the fieldworker community, the social influences on technology acceptance in West Africa and the effect of infrastructure on perceived ease of use.

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