

An Exploratory Study into Virtual Learning Environments as a Training Platform in the Workplace

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Abstract—The use of Virtual Learning Environments (VLEs) as training platforms has brought about a new way of delivering education and training to individuals, academic institutions and organisations. Learning that is facilitated through the use of VLEs is commonly referred to as eLearning. A well designed VLE will enhance its effectiveness, and this in conjunction with appropriate implementation and evaluation tools is integral to the overall success of the VLE [2] [4]. A well designed eLearning course will be better complemented through the provision of a well-designed VLE. This study examines VLEs and their usefulness as a training platform in a construction based organisation.

Index Terms—eLearning, perceptions, Virtual Learning Environments

I. INTRODUCTION

The use of training platforms affords countless benefits to both individuals and organisations [10]. Their ability to facilitate training and learning means that organisations can view training as more opportunistic. The ability of Virtual Learning Environments (VLEs) to provide training anytime and anywhere removes many logistical issues that might have been previously viewed as challenging. Such technological advances can pose a positive impact in the corporate sector.

In today's knowledge economy where digitalisation is seen to be the driving force, it is essential that organisations have the necessary resources to meet the ever changing demands they face. It is paramount, therefore, that investments are made in the areas of training and development. Such investments will ensure that irrespective of the demands and the ever changing dynamics of the economy, the organisation is equipped to take on all such challenges while remaining competitive. Having a highly qualified workforce and retaining them is a key success factor in any business. Literature suggests that. Although knowledge is seen as the core resource of innovation, learning is viewed as the most important process [5] [6] [7]. While the VLE has the ability to assist with training and development it also has the capacity to track and monitor individual and groups online training activity. This will allow organisations to monitor performance on a continual basis as well as identifying the training needs of employees and ensuring these needs are met.

This study specifically examines an organisation in the construction industry. The employees in any industry are the people who drive it, and the people employed in the organisation of choice for this study are their greatest asset, according to their company strategy. In order to help ensure this continues it is important that they receive the necessary training, therefore ensuring adequate resources are in place is essential.

II. RESEARCH METHODS AND PROCEDURES

A. Design and Approach

Since the aim of this study was to look at the adoption of VLEs in a construction based organisation in Ireland and investigate the potential they hold for employees and management, a twofold study was conducted. Qualitative and quantitative research methods of data collection were both used. This study utilises quantitative methods to accurately collect, analyse and determine the experiences the employees in the organisation of choice had in using VLEs. Qualitative methods were employed to explore management's perceptions of adopting VLEs as a training platform within the organisation. The quantitative results were obtained from questionnaire responses which were distributed to engineers in the organisation while the qualitative results were derived from interviews conducted with the management.

B. Participants

The participants chosen for the study included engineers and management at the organisation. It was felt that due to the nature of the organisation and the fact that it comprises mainly individuals who are engineers by profession it was deemed appropriate that engineers would dominate the study. A survey sample of 100 site based employees were selected and asked to complete an online questionnaire. Systematic random sampling was employed to select the engineers to complete the questionnaire. Sharepoint, a web application platform which is utilised by the organisation, was used to host the questionnaire. A link was sent out to the participants for ease of access.

A semi-structured interview was conducted with managers to ascertain their perspectives on using VLEs in the organisation for training purposes (See Table 1). To ensure objectivity, probability sampling was employed whereby each manager had an equal chance of being selected. A total of 25 participants were invited to partake. 18 agreed and were interviewed. The interviews were recorded with the consent of the individual participants,

and notes were also taken. The audio recordings were transcribed verbatim. Domain labels were highlighted and applied to emergent themes resulting from the interview responses.

III. FINDINGS

This study required participation from both employees and management in the organisation of choice in order to achieve its objectives. 100 questionnaires were distributed to the engineering staff and a total of 68 responses were received. 93% of the questionnaire respondents were male and 70% of the same population in the 20-40 age bracket. This denotes a fairly young generation of engineers in this organisation. Over half of all respondents are educated to honours degree level. The response was positive when asked if using VLEs would contribute to their roles in the company. When asked how knowledgeable the participants are in the use of computers on a Likert scale the response was above average, therefore indicating confidence in the use of information technology.

Interviews have an ability to provide a broader and more comprehensive reasoning to particular questions. The main themes emerging as a result of the responses included the advantages and disadvantages of using VLEs as well as recommendations for their introduction. These themes stemmed naturally as a result of the semi structured interview question types that were put forward. Some interviewees felt that the organisation has gained technologically in recent years; however it was suggested that much more is yet to be done to sustain the business in the current challenging climate. Others suggested that the organisation was no further forward than their competitors. "We are dinosaurs" was one respondent's comment when asked of their perception of whether or not the organisation was technologically in line with that of its competitors.

The barriers to using VLEs for training purposes that were highlighted included mainly, but were not limited to: cost; computer literacy issues; the elimination of personal interaction; fear of technology; attitudes of people; and connection and broadband issues. The advantages and benefits outlined by interviewees were shadowed slightly by the disadvantages and challenges that the organisation might face in adopting VLEs for training purposes. Although the management interviewed for the purpose of the study did not deny the usefulness of VLEs for training, they did provide valid and realistic reasons why such a transition could pose its own challenges.

Keeping costs down is part of any business objectives and this organisation is no different. Therefore it was no surprise that it appeared as one of the first disadvantages to be highlighted. It was suggested that the costs incurred in the introduction and use of VLEs might be a factor to consider particularly if the return on investment was not guaranteed. In contrast, however, it was noted by many interview participants that the organisation already hosts the fundamental resources necessary for the smooth deliverance of the introduction of VLEs. Areas of administration and support were also identified by interviewees, and their importance was emphasised if such developments in the organisation were to be successfully rolled out. The current resources in place in the organisation were highly recommended for their administrative and supporting roles, particularly in the

TABLE I.
INTERVIEW QUESTIONS

Q1	What is your understanding of Virtual Learning Environments, For example are you familiar with Moodle, Blackboard, WebCT.
Q2	Are any members of staff currently involved in the delivery of training employees via VLEs? If yes in what capacity and in what departments
Q3	Are you aware of any advantages and disadvantages that might be afforded by training via VLEs
Q4	Do you feel Company X have advanced technologically in recent years? If so, in what ways? If not, why in your opinion is this the case
Q5	Do you feel these advances (if applicable) have created a positive or negative impact on the organisation overall?
Q6	Do you think the company are technologically in line with their competitors in terms of training and development and the use of technological equipment? How is this obvious and if not why do you think this
Q7	Do you think it is an important move forward for the organisation to become immersed in training via VLEs and if yes why? If no, why not
Q8	Would you recommend the company makes an investment in eLearning? How important do you feel this is?
Q9	What do you think are the potential barriers to implementing VLEs within the organisation?

area of IT. Although it was felt among interview respondents that this team would need to be increased to support VLEs, they felt that the main structure was solid enough to begin with.

People's attitudes to technological developments and in particular their abilities in the use of Information Technology were highlighted. It was suggested by some respondents that people can be slow to embrace new technology, and that embracing technology for the purposes of training could take considerable time. Particular areas underlined included support for everyday troubleshooting of IT problems, as well as content and material questions that might be raised by the learner during the training, and if they would be available to respond. The need for training on basic troubleshooting was stressed as essential to help the learning process be as smooth as possible. The unreliability of technology can deter individuals and simple usability problems can make life difficult for both the trainer and the learner. Issues of unreliability have been explored extensively within the literature [3] [12]. It was suggested that with the elimination of personal interaction the same support available to the learner might not exist. The distinction between the management's views on their employees embracing technology versus the employee's response from a particular questionnaire question is diverse. This is evident in the responses to Question 6 when they were asked to rate their knowledge in the use of computers on a Likert scale. The results clearly indicated that a fair representation of the respondents consider themselves quite knowledgeable. The conclusion one might draw from such disparity might be that the management are not fully aware of the technological capabilities of their teams, and that the fear of technology identified as a disadvantage to the introduction of VLEs could be something management feels themselves.

The distraction and disturbance associated with carrying out learning online was also discussed, whereby a

busy office environment might not be appropriate for individuals to carry out their online training. It has been suggested that the potential for interruptions is greatly increased through technology delivered instruction [12].

Issues of connectivity were seen to be another potential pitfall for the roll out of VLEs given that there are some locations in Ireland where broadband and connectivity might cause a problem for every day office running. It was suggested that such matters be addressed comprehensively as this would play a vital role in the successful execution of training programmes.

Another area discussed at length by a number of interview respondents was that VLEs might not be suited to all course types. The nature of the construction industry is such that there may be some training courses which have both a practical and theoretical element. When respondents were probed further about this it was suggested that although training via VLEs would certainly be suitable and applicable to some training there might be alternative methods required to accomplish others.

The idea that VLEs would contribute to collaborative learning was identified as an advantage whereby information sharing and the ability to build links among employees from various engineering backgrounds was also strongly emphasised. It has been suggested that eLearning can support collaborative learning through the building of networks [13]. Question 18 (Table 3) of the questionnaire asked employees if they would be willing to use VLEs to allow them to share information openly with their colleagues, 96% responded positively. This suggests a willingness among employees to use VLEs not just for their own training needs but to assist with collaborative learning among them and their counterparts.

The ability of VLEs to offer standardisation of learning was also highlighted as important whereby the employees all receive the same training material to carry out the relevant course. The capability of VLEs to offer training at a time and place to suit the learner was seen to be a positive theme resulting from interview responses. Anytime anywhere learning is a concept that is appropriate for the type of industry they are in. The availability of anytime anywhere learning enables learners to develop their skills as independent learners [1].

IV. RECOMMENDATIONS

The need for the organisation to develop an eLearning strategy was recommended by many interview respondents whereby an overall plan would then be in place for the development of the online course. Learning content and material as well as the support available to learners and the types of technologies used to deliver the content would be addressed within the strategy. The various departments in an organisation must communicate ideas and contribute to the development of the strategy to ensure that online learning is successful and all issues and ideas are addressed and evaluated accordingly. Learning objectives must be clearly defined within the strategy. Not all work arrangements encourage learning [9]. The importance of prior knowledge of the learner as well as learning styles and knowledge needs cannot be over emphasised and therefore needs to be investigated comprehensively before the learning can begin. Learning needs assessment was highlighted in the interviews as being essential to the introduction of learning via VLEs. It

was recommended at interview that the learner's needs be assessed in order to assist with course design. Such an assessment would also aid the design of eLearning courses to ensure they are bespoke to the specific needs of the workforce of a particular organisation. The characteristics of the learners must be reviewed and this has been documented [8] [11]. Commitment and a buy in on any new development at the top level of any organisation is important to ensure its success. This commitment however must be seen to filter through from senior management. Such filtration could start through the use of memos to ensure a regular communication channel exists on the new development and regular updates carried out at crucial times.

Classroom training is no longer the most efficient training method according to [9]. The employees were asked in Question 15 (Table 4) if their role in the organisation required them to receive training at a location other than their normal place of work. The response was that 82% said "yes". This, therefore, would highlight the need to introduce training via VLEs, but more importantly to review the type of training currently given, and ensure that the appropriate delivery method is used to carry out such training. The importance, therefore, of the e-Learning strategy cannot be overlooked as critical issues such as this would be addressed within it. It would seem, therefore, that offering training through a virtual means would result in cost saving for the organisation, and would prove time saving for the employee by eliminating the need to travel. The nature of the construction industry is such that the works takes place at various locations around the country, hence it is difficult for employees to receive training unless they attend a common training centre. Although head office and regional offices located throughout the country make it more accessible, it remains to be both challenging and costly to have everyone at a central location for the purpose of training.

TABLE II.
QUESTIONNAIRE RESPONSE

Q6. On a scale of 1-6 how would you rate your knowledge on the use of computers	
Low	-
Average	94%
High	6%

TABLE III.
QUESTIONNAIRE RESPONSE

Q18. Would you be willing to use VLEs as a technique to allow you and your colleagues to share information	
Yes	96%
No	4%

TABLE IV.
QUESTIONNAIRE RESPONSE

Q15. Does your role in the organisation require you to receive training at a location other than your normal place of work	
Yes	82%
No	15%
Don't Know	3%

V. CONCLUSION

The introduction of VLEs, web 2.0 and 3.0 technologies and the increasing use of social media have seen changes in the way people do business in recent years. The organisation of choice for this study has seen some technological developments in recent times; however there is room for improvement if they are to ensure a confident progression among competitors.

Throughout this study the researcher attempted to investigate the perceptions of management and staff on the introduction of VLEs in the organisation of choice as a means for delivering training. The benefits and the barriers were clearly highlighted and discussed. The employees' responses to the questionnaire at times contrasted with management's opinions and attitudes towards technology. Upon analysis it is clear that the main themes from the interviews were consistent, but that it would be possible to resolve perceived difficulties. The necessary resources, including the expertise it requires, are already in place in the organisation. Maximising these resources to their full potential is imperative if the move forward is to focus on training through VLEs. The results deriving from this twofold study indicate that there is a need to introduce VLEs for the purpose of training employees, however, there is a greater need to ensure that careful planning and execution is essential if it is to be a success.

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FOOTNOTE

There is a large cost associated with bringing employees from their place of work to a central base for training purposes.

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