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Effects of Collaborative Web Based Vocational Education and Training (VET) on Learning Outcomes

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ABSTRACT

Considering the increase in need of skilled human capital, the vocational training and education through e-learning has widely been adopted all over the world. It serves as a major alternative for training and teaching professionals, technicians, skilled workers, amateurs and students who cannot manage regular college education due to time, cost and distance factors. Prior research focuses on learning enhancement from several perspectives like computer mediated methods, learning games, personalized learning environments and web based instructional design. The proposed work contributes to this debate by investigating the role of collaboration i.e. student–student and student–instructor interaction, support material, instructor's feedback and evaluating their effects on learning outcome and students' learning experience. The investigation is performed through a case study presenting four vocational courses offered in three consecutive sessions. The findings revealed that collaborative practices i.e. group work, team effort, in time instructor's feedback and consolidated support material enhances learning experience of student and contributes positively to the learning outcome.

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1. Introduction

E-learning is widely adopted by universities, poly-technique institutes (skill based vocational institutes and industrial homes) in order to gain momentum in skilled work force generation. E-learning makes use of internet and web technologies in order to replace the traditional and conventional learning methods (Nicholas, 2008). Student and instructor can communicate with each other through a human-computer interface using internet/web technologies which can be synchronous or asynchronous (Knowledge, 2000). Interactive human-computer interaction interfaces are like Learning Content Management Systems (LMCS) (Bergstedt, 2003), Course Management Systems (CMS) and, Virtual Learning Systems (VLE) (Nichols, 2003)(Wilen-Daugenti, 2009). These interactive systems make use of collaborative tools and artifacts like emails, interactive chat messengers, messaging e-boards, and virtual classrooms for students–students and students-teacher collaboration. Personalized learning systems using personalized learning environment (PLE) are also in practice these days (Dewan, 2011). The personalization feature of PLE enables the user to grasp the content of his interest from n-dimensional information network.

Collaboration in e-learning is not only limited to communication and knowledge sharing, it has another dimension which is co-construction of ideas (Nitzke, 1999) and shared problem solving using internet or communication technologies (Salmons, 2006). The frequent and easy communication with peers makes it closer to the real world classroom environment. In this paper we have described a collaborative learning experience of students registered in four different vocational training courses in three consecutive sessions in 2010, 2011 and 2012. We have analyzed the effects of collaborative activities i.e. group work in terms of assignments and projects, instructor's feedback and support material on learning outcome and student's learning experience. The findings provide new insights into how actually collaborative activities, course support material and instructor's timely feedback contribute to learning outcome and experience enhancement.

The institute where this research was conducted was an ideal place to conduct this research. It is one of the renowned Vocational Education and Training institute in the country producing number of successful skilled workers every session. The institute supported this research by allowing us to investigate their learning system, class structure, schedule and results.

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Table 1
Discussion of cases implementing E-learning based VET.

Subject	Purpose	Learning mode
Students	Employment seeking, work training	Online
Students	Work training	Online
Beauticians, students, house wives	Employment seeking, work training	Blended
University students from Poland, Finland, Italy, France, Slovakia	Promote citizens' mobility between countries	Blended/hybrid
ICT organizations	Facilitate lifelong learning	
Industry workers	Industry requirements Improve workforce	Blended
Technicians, Skilled workers in Slovenia	Skill level improvement Industry requirements	Online

This paper is organized in such a way: Section 2 describes the background and several cases of Vocational Education and Training through e-learning from literature and the research questions we followed in this study. Section 3 describes the research method used for conducting this research study which includes details about the setting of case study, participants, and procedure. Section 4 explicates the results and discussion on results generated from statistical analysis of students' scores and questionnaire responses followed by conclusion.

2. Background

2.1. Vocational Education and Training (VET)

E-learning for VET makes use of Information and Communication Technologies (ICT) and knowledge management mechanisms (Knowledge, 2000). VET, a part of tertiary education is a career based technical education and skill development training. It is usually considered non- academic related to crafts and skills. The purpose behind VET is to equip the human capital with practical training to overcome employment issues, provide trained workforce and stabilize economy. VET is often offered in countries after k-12 or Intermediate level education. In addition, some poly technique colleges offer courses and diplomas after 10th standard/O levels or Matriculation Exam.

VET is promoted internationally as a measure of unemployment eradication and economic stability gain. The UNESCO International Centre for Technical and Vocational Education and Training (TVET),and Capacity Building International, Germany are the two organizations actively working for the development of VET and skills development for employability and citizenship worldwide (Bünning, 2007). The UNESCO's Second International Conference suggested that VET prepares individuals for employment (Athanase & Jiang, 2008) and plays part in development of a state and economic growth (Lewis & Beach, 2011) (Guo & Qinglong, 2009). Australia is an example among developed countries for adopting serious measures to strengthen VET and having a developed infrastructure (Lewis & Beach, 2011). The e-learning based VET opportunities are open to the students from all over the world in Australia. There are students from China and India working in virtual laboratories and training centers of Australia (Australian Education International, 2009). Vocational education has been taken as a serious measure by many countries to enhance their economic growth. In Africa almost every school offers two paths to the students; general education and vocational education (Oketch, 2007). The VET courses provide skills to the learned people in order to enhance their professional abilities (Nicholas, 2008) and generates occupation specific human capital (Pema & Mehay, 2012). The certifications and diplomas impart benefits to the masses to earn jobs and define careers for themselves. Moreover, effects of Vocational Education and Training have also been observed on wages of several groups of society in Israel (Neuman & Ziderman, 2003). In addition, VET plays an important part in improving job match quality and productivity (Pema & Mehay, 2012).

2.2. Case studies from literature

In this section we have discussed several practical examples of VET available in literature. The cases (shown in Table 1) have variable domains i.e. health, beauty, engineering and industry. The detail of cases is as under:

In Lewis and Beach 2011 an interior design course was studied. The main aim of the course was to introduce a 3-D learning environment to simulate close to reality pedagogies in order to improve the learning experience. The program was designed in such a way that students were provided a virtual system to carry out design assignments for an avatar client. The anonymity of teacher was kept by having an avatar for design assignments. Students participated in these exercises to practice and it was all practiced in a 3-D space to keep it real. The assessment results showed that the students who undertook 3-D exercises scored better in exams than the rest. The practical experience of creating designs in virtual world helped them understand the concepts and perform better in the exam. The virtual anonymous link with client also helped them gain insights of a real world working environment.

In Lewis and Beach 2011 diploma of drug and alcohol assessment cases was examined. The basis of this study was the difficulty reported by trainers in connecting with students in a meaningful way in face to face sessions. The basic outcome of this diploma was to train students to administer the client assessment tool and report the level of seriousness. This kind of applications are accustomed to heavy use of face to face learning but in this case responses showed that eLearning mechanism faced success.

In Brown 2008 beauty related training course was examined. The course was based on electrolysis and electrical therapies. The online course was designed in Moodle[1] with exam and quizzes in Articulate.[2] Blended medium was used for both theory and practice. The students liked the flexibility of online course due to their family issues, distant home towns and busy routine.

[1] An open source community for eLearning tools http://moodle.org/.
[2] An eLearning software and authoring tool www.articulate.com.

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