Designation of teacher candidates' self-efficacy and success level in designing multimedia

Vasfi Tugun*, Computer Education & Instructional Technology, Near East University, Nicosia, 98010, North Cyprus.

Fezile Ozdamli, Computer Education & Instructional Technology, Near East University, Nicosia, 98010, North Cyprus.

Abstract

This research aims to determine the self-efficacy and success levels of teaching candidates on developing multimedia to the Docebo learning management system through integrating various online tools in developing multimedia courses and using this method in a project-based learning process. Second year students from the department of Computer Education and Educational Technology participated in this research. Random selection method was used in order to assign the students to the groups. Online (30 participants) and blended (30 participants) groups were constituted for this experimental study. Based on the pre-test results of the students participating in the study, it was investigated as to whether there was a difference between the groups. Since pre-test success scores of the students from the two groups would affect the results of the research, the difference between the two groups was examined by applying a t-test. There was no significant difference in the pre-test scores of the teaching candidates in the group. Data from the research were collected with demographic information forms and 5-point Likert-type scale developed by authors.

Keywords: multimedia designing, teacher candidates, internet based learning, learning management systems, online learning.

*ADDRESS FOR CORRESPONDENCE: Vasfi Tugun, Computer Education & Instructional Technology, Near East University, Nicosia, 98010, North Cyprus. *E-mail address*: vasfi.tugun@neu.edu.tr / Tel.: +90-392-223-64-64/110

1. Introduction

Innovations in communication technology are as effective in education as in all areas. Education environments provide a more qualified education-instruction environment to students through changing and developing rapidly with these technologies. Based on the development and changes in the educational materials in parallel with these innovations in technology, transformation of the technologies used in the area of education into a contemporary technology at an advanced level is one of the primary issues (Karasar, 2004).

We can mention many different uses of the Internet in educational environments. The first one of these is internet-supported education and the other one is internet-based applications. In the first of these applications, the internet is used to support face-to-face interactions. In internet-based education, all of the learning activities are achieved on the internet. Different methods are used in these environments which support learning in both computer and internet applications (Horzum & Cakir, 2008). Therefore, instructors need to apply methods which will allow them to use information in a desired way in the future (Kurnaz, Sunbul, Sulak & Alan, 2006).

Learning Management Systems (LMS) are software programs which ensure the management of online learning activities. They enable functions such as presenting learning materials, sharing and discussing the presented learning material, organizing the learning materials, keeping the records of student, teacher and system and receiving report.

Web-supported instruction can be defined as a program which benefits from computer networks for education environments supporting permanent learning and increasing effective learning. Web-supported instruction delivers the whole or a part of the instruction to students through using some related technologies. The web is an electronic learning environment which enables individuals from the same or different environments to share information and documents with each other by connecting with computer networks and provides teacher-student-lecture interaction as well (Altuncekic & Aksu, 2011).

Nowadays, technology has entered the educational environment and it provides the opportunity to design instructional materials appropriate to the characteristics of different student profiles. In addition, technology facilitates the availability of educational environments, provides rich instructional variation and enables the formation of educational environments for different student profiles (Akkoyunlu & Yilmaz, 2005).

Researchers emphasize that educational environments supported by multimedia material are more successful (Uzunboylu & Ozdamli, 2008). According to many researchers, multimedia development settings have many educational effects such as creativity, social interaction, cooperation, increasing motivation and reducing social anxiety through virtual environments (FitzGerald, 2007). Multimedia encompasses computer programs including text with at least one video, photograph, voice, animation or three-dimensional graphics (Maddux, Johnson & Wills, 2001).

As it can be understood from the information provided above, learning-teaching activities are supported by the internet in the information age and new learning-teaching methods are used. According to the literature review, there were not too many studies related to self-efficacy and success of teacher candidates developing multimedia in internet-based (online) and internet-supported (blended) project-based learning process.

2. Aim

This research aims to determine the self-efficacy and success levels of teaching candidates on developing multimedia to the Docebo learning management system through integrating various online tools in developing multimedia courses.

3. Method

This research is an experimental study and it was designed based on pre-test and post-test models with two groups.

3.1. Creation of the Study Group

Second year students from the department of Computer Education and Educational Technology participated in this research. Online (30 participants) and blended (30 participants) groups were constituted for the experimental study. Based on the pre-test results of the students participating in the study, it was investigated whether there is a difference between the groups. Since pre-test success scores of the students from the two groups would affect the results of the research, the difference between the two groups was examined by applying a t-test.

There was no significant difference (p>.05) in the pre-test scores of the teaching candidates in the group. It was revealed that the groups are appropriate for the experimental study and there was no significant difference in the self-efficacy of the teaching candidates on developing multimedia based on the pre-test results.

3.1.1   Internet-Supported Education Group

76.7% (23 participants) of the teaching candidates participating in this research from the blended group were male and 23.3% (7 participants) of them were female.

3.1.2   Internet-Based Education Group

86.7% (26 participants) of the teaching candidates participating in this research from the online group were male and 13.3% (4 participants) of them were female.

3.2. Data Collection Tool and Data Collection

Data from the research were collected with demographic information form and 5-point Likert-type scale developed by Ozdamli (2009). This scale includes 6 dimensions formed with preparation stage (7 questions), organizations stage (9 questions), software development stage (10 questions), adding the guidance tools stage (8 questions), interface design stage (16 questions) and adding references stages (11 questions). The Cronbach alpha value of the scale including six dimensions was calculated as α = .93.

3.3. Preparation of the Education Environment and Application

Learning management systems named Docebo, Livestream and Adobe Captivate, Crazy Talk and Camtasia Studio for the projects of the students were used in this study.

3.3.1. Application

Learning management systems named Docebo as a virtual environment, Livestream and Adobe Captivate, Crazy Talk and Camtasia Studio for the projects of the students were used in this study.

Lectures were conducted as project-based learning during the semester. Multimedia development self-efficacy pre-test scales were administered to both groups at the beginning of the semester.

Online groups only participated in lectures in a virtual class of 4 hours per week. Students could watch the lecture videos from www.livestream.com/ceit251 address or Docebo learning management systems offline whenever they want and download the lecture materials from there.

Blended education groups participated in internet-based virtual class lectures of 2 hours per week and they participated in the class environment with face-to-face education for two hours as well. Teacher candidates from both groups generated teams with five people.

In the project-based learning process, instructional technologies and material design subjects were discussed and all teams were expected to develop educational multimedia at the end of the process. Teaching candidates shared their projects in the lecture groups opened for their group names found in the Docebo learning management system. Every team contributed to the projects through discussion on Wiki and forums about their projects with both their team and other teams in cooperation. Team leaders from both the online and blended groups presented their projects in the last lecture in a lab environment. A multimedia development self-efficacy scale was administered to the teaching candidates again at the end of the study.

4. Interpretation of the Data

4.1. Success Levels of Teaching Candidates Receiving Education in Online and Blended Groups on Multimedia Development

Evaluations of multimedia developed by teaching candidates was carried out by experts scoring out of 100 points. Experts evaluated without knowing which groups prepared the projects. Independent t-test analysis was applied to evaluate the success levels of the two groups. Results of the analysis are provided in table 1.

Table 1. Success Levels of Teaching Candidates Participating in the Study of Developing Multimedia

| Group	Mean	N	SD	df	t	p
Online	75.00	30	8.17	58	6.372	.000
Blended	86.66	30	5.81			

According to the results, it can be clearly seen that teaching candidates developing their projects in the blended learning group (M=86.66, S=5.81) have been more successful than teaching candidates studying in the online group (M=75.00, S=8.17). There was a significant difference between the success levels of the two groups based on the applied independent t-test (t=6.372, p>.05).

Availability of the lecturer in the class environment might be considered a reason of teaching candidates studying in blended learning process for being more successful. Teaching candidates from the blended group had the opportunity to meet with the lecturer face-to-face in the class environment for 2 hours per week to ask about the sections that they did not understand. Based on these results, it can be said that a well-designed blended learning environment increases success in multimedia development courses.

4.2. Distribution of the Self-Efficacy of Teaching Candidates on Developing Multimedia Based on Groups

The *Repeated Measures Anova* test was used to determine whether there was a significant difference in the self-efficacy in relation to the multimedia development of teaching candidates after studying in an e-learning environment. According to this, the multimedia development of self-efficacy

of teaching candidates participating in two separate groups did not reveal a significant difference; in other words it was detected that being in different groups and common effects in the self-efficacy in repeated measures were not significant (F= 29.612, p> 0.05). This result shows that participating in online and blended groups has similar effects in increasing the multimedia development self-efficacy of teacher candidates.
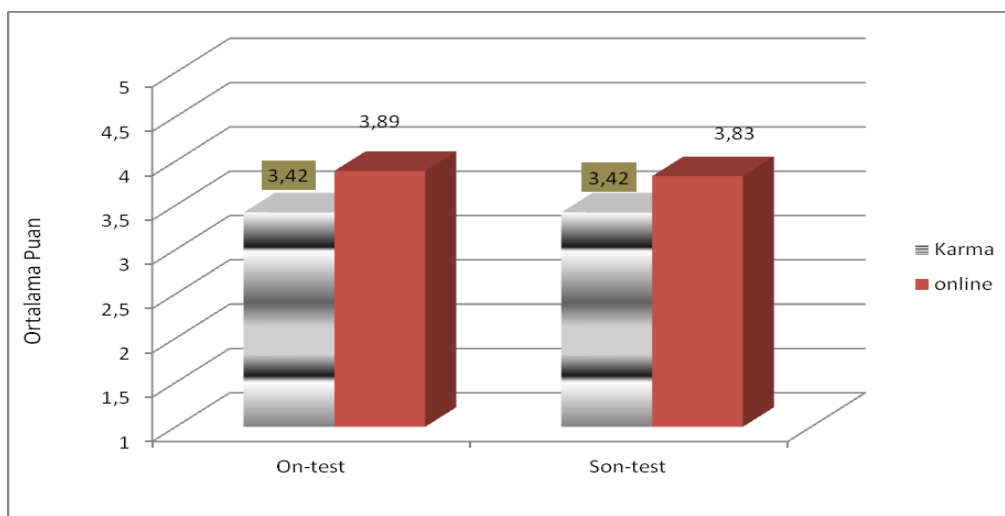
Graphic 1. Distribution of the Self-Efficacy of the Teacher Candidates in Multimedia Development Based on Groups (p < 0.05).

It is seen that the two groups are effective in increasing the multimedia development self-efficacy of teacher candidates who obtained more gains prior to the experiment.

5. Conclusion and Recommendations

This study is important in terms of evaluating teaching candidates' multimedia designs through using a project-based learning process and making the instruction more interesting through facilitating the learning process by using multimedia design and providing the opportunity to teaching candidates to develop their skills in multimedia design.

According to the results of the study, it was determined that the success levels of teaching candidates studied based on the blended learning model in the project-based learning process are higher than the success levels of teacher candidates studied based on the online learning model.

Another important result of the study showed that the multimedia development self-efficacy of teaching candidates from both groups became significantly higher at the end of the study.

According to the results of the study, no significant difference was found in the self-efficacy of multimedia development preparation stage, software development stage, adding guidance tool and interface design between the two groups. However, there was a significant difference in self-efficacy towards organization and adding references in favor of teaching candidates studying in the blended learning group.

The internet has provided international working opportunities to individuals and removed boundaries. It has provided the opportunity to obtain instant information related to individuals or events from a different geographical location. Students present in the education system fulfill their learning needs independent of time and place with the use of the internet in education.

New methods have emerged with the integration of the internet into education and researchers have begun to examine the effectiveness of these methods. In this study, project-based learning, blended (mixed) learning and online learning are the methods used.

Teaching candidates have been more successful when e-learning applications were used as a support for project-based applications in the class environment. Program developers should develop a mixed model related to the integration of e-learning applications by working cooperatively with academics from other areas of educational technologies.

Teaching candidates should be encouraged to use these applications effectively and be open to innovations in terms of supporting their occupational developments in the future. Nevertheless, the number and quality of lectures including e-learning might be increased in the department of Computer Education and Educational Technology.

This study is limited to teaching candidates receiving multimedia design courses in the department of Computer Education and Educational Technology at NEU. It would be beneficial to conduct similar studies with different samples.

Student attendance at the maximum level was ensured through facilitating the attendance of the students who were not able to come to lectures based on this education method applied to the blended group in multimedia development course in the department of Computer Education and Educational Technology. In this context, the blended education method is recommended for all lectures in the department of Computer Education and Educational Technology.

Lecturers from the department of Computer Education and Educational Technology were able to use the Docebo learning management system which was used during the study, livestream or similar tools as support for their lectures. Lecturers in this department are able to organize various activities with their students, share their course materials and make announcements related to the course to their students through using the name and area which would be opened for their names by school rectorship based on learning management systems.

References

Akkoyunlu, B., & Yilmaz, M. (2005). Generative theory of multimedia learning. *Journal of Hacettepe University Faculty of Education, 28*, 9-18.

Altuncekic, A., & Aksu, L. (2011). Web destekli oGrenme ortamlarının internet kullanımına yonelik tutum duzeyleri uzerine etkisi. *Kastamonu Egitim Dergisi*, *1*(19), 239–250.

FitzGerald, S. (2007). Virtual Worlds - What are They and Why do Educators Need to Pay Attention to Them? Retrieved August 9, 2015, from: http://seanfitz.wikispaces.com/virtualworldsenetworks07

Horzum, M. B., & Balta, O. C. (2008). Students ' Achievement , Motivation and Computer Anxiety Level in Different Web Based Learning Environments. *Journal of Hacettepe University Faculty of Education*, *34*(34).

Karasar, S. (2004). Egitimde yeni iletisim teknolojileri. *Educational Technology*, *3*(4), 117–125.

Kurnaz, A., Sunbul, A. M., Sulak, S. A., & Alan, S. (2005). Proje Tabanli Ogrenme Yontemi Ilkeleri Acisindan Ilkogretim 4. ve 5. Sinif Fen ve Teknoloji Dersi Programinin Incelenmesi, 18.

Maddux, C.D., Johnson, D.L., & Willis, C. W. (2001). Educational computing: Learning with tomorrow\'s technologies.

Uzunboylu, H., & Ozdamli, F. (2008). Attitudes of Teacher Candidates Towards Technology Supported Collaborative Learning. *Cypriot Journal of Educational Sciences*, *3*(1), 28–36.

Ozdamli, F. (2009). A cultural adaptation study of multimedia course materials forum to Turkish. *World Journal on Educational Technology*, *1*(1), 30-45.