The Effects of E-Portfolio Implementation on Motivation in an Online Collaborative Learning Setting[1]

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Abstract

The purpose of this study was to determine the effects of e-portfolio implementation in an Operating Systems and Applications course on students' motivations in an online collaborative learning setting. The differences between motivation pre-test and post-test scores of the experimental and control groups were examined. Student opinions were also analyzed. Qualitative and quantitative data were collected together. The experimental group consisted of 35 students and the control group consisted of 33 students. Only the experimental group students' opinions were gathered for the qualitative aspect of the study. The study was conducted through the course web-site and within the virtual classroom setting. Motivation was observed to be high before the implementation on the experimental group and after the implementation on the control group. In addition, while there were no changes in the motivation levels of the experimental group before and after the implementation, according to before the implementation, a decrease in control group motivation was observed after the implementation. Also, students were observed to state motivation decreased as reported on the qualitative dimension of the study. These two results supported each other. The course settings, which can minimize or annihilate the factors stated by the students that caused motivation decreases, should be reorganized and students should be sufficiently informed. Settings that support each other should be designed through face-to-face education opportunities in virtual and online systems.

Keywords: *collaborative learning, e-portfolio, experimental study, motivation, online collaborative learning, virtual setting*

İnönü University
Journal of the Faculty of Education
Vol 20, No 3, 2019
pp. 963-975
DOI: 10.17679/inuefd.524591

Received : 08.02.2019
Accepted : 31.12.2019

Suggested Citation

Erten, P., Özdemir, O., & Kazu, İ. Y. (2019). The effects of e-portfolio implementation on motivation in an online collaborative learning setting, *Inonu University Journal of the Faculty of Education*, *20*(3), 963-975. DOI: 10.17679/inuefd.524591

[1] This study is derived from Pınar ERTEN's doctoral thesis.

Çevrimiçi İşbirlikli Öğrenme Ortamında E-Portfolyo Uygulamasının Motivasyona Etkisi[2]

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Öz

Bu çalışmanın amacı, çevrimiçi işbirlikli öğrenme ortamında e-portfolyo uygulamasının işletim sistemleri dersinde öğrencilerin motivasyonlarına etkisini belirlemektir. Araştırmada, deney ve kontrol gruplarının motivasyon öntest ve sontest puanları arasında anlamlı farklılık olup olmadığına bakılmıştır. Ayrıca öğrencilerin bu yöndeki görüşlerine de yer verilmiştir. Nitel ve nicel veriler birlikte toplanmıştır. Uygulamanın deney grubu 35 öğrenci, kontrol grubu ise 33 öğrenciden oluşmaktadır. Uygulamanın nitel basamağı için yalnızca deney grubu öğrencilerinin görüşlerine başvurulmuştur. Araştırma, uygulama için hazırlanan web sayfası ve sanal sınıf ortamında yürütülmüştür. Yöntemin uygulamasından önce motivasyon deney grubunda daha yüksek çıkarken, uygulama sonrası kontrol grubunda daha yüksek çıktığı saptanmıştır. Ayrıca, deney grubunun uygulama öncesi ve sonrası motivasyonları arasında bir değişim bulunmazken, kontrol grubunda uygulama sonrasında motivasyonda uygulama öncesine göre bir düşüş gerçekleştiği bulunmuştur. Buna ilaveten, araştırmanın nitel boyutunda da motivasyon düşüklüğü vurgusunun öğrenciler tarafından yapıldığı görülmüştür. Bu iki sonuç birbirini destekler niteliktedir. Öğrenciler tarafından belirtilen motivasyon düşüklüğüne yol açan sebeplerin en aza indirgeyecek veya ortadan kaldıracak ortamların düzenlenmesi ve öğrencilerin bilgilendirilmelerinin yeterli düzeyde yapılması sağlanmalıdır. Sanal ve çevrimiçi sistemlerde yüz yüze eğitimin de olanakları kullanılarak birbirini bütünleştiren ortamlar tasarlanmalıdır.

Anahtar Kelimeler: *İşbirlikli öğrenme, e-portfolyo, deneysel çalışma, motivasyon, çevrimiçi işbirlikli öğrenme, sanal ortam.*

İnönü Üniversitesi
Eğitim Fakültesi Dergisi
Cilt 20, Sayı 3, 2019
ss. 963-975
DOI: 10.17679/inuefd.524591

Gönderim Tarihi : 08.02.2019
Kabul Tarihi : 31.12.2019

Önerilen Atıf

Erten, P., Özdemir, O., & Kazu, İ. Y. (2019). Çevrimiçi işbirlikli öğrenme ortamında e-portfolyo uygulamasının motivasyona etkisi. *İnönü Üniversitesi Eğitim Fakültesi Dergisi*, *20*(3), 963-975. DOI: 10.17679/inuefd.524591

[2] Bu çalışma, Pınar ERTEN'in doktora tezinden türetilmiştir.

INTRODUCTION

Program development is dynamic and changes rapidly in the field of education and educational settings need to be organized accordingly to reflect methods that are student-centered and where students actively participate. In this respect, many instructional methods have started to be revised.

Collaborative learning, which a student-centered teaching method (Hiltz, 1998) is preferred because it creates settings where students can freely express and discuss their ideas and pay attention to each other's opinions. Research indicates teaching-learning activities are also more effective and productive (Bayrakçeken, Doymuş, & Doğan, 2013). Collaborative learning refers to students working together by helping each other's learning in small groups based on a common goal. Achievement is gained according to the effort students expend for their own learning and other group members (Açıkgöz, 1990). Giving group awards for the success of the members is important for achieving high quality, for protecting against negative outcomes, and for student motivation (Slavin, 1987; Slavin, 1995). Motivation is critical for achieving learning (Bonk, Wisher, & Lee, 2004) and goals (Johnson, Johnson, & Holubec, 2010). Personal development, social skills, self-confidence, and student visions increase along with their motivations (Özer, 2005, p. 127).

Important components of motivation (reward/structure of purpose) include social adaptation, levels of development, cognitive elaboration, repetition of implementing, and organizational classroom effectiveness and an increase success in collaborative learning (Slavin, 1995). Students undertake the responsibility of their own learning, encourage each other in fulfilling their duties, contribute to achieving the group objective and to the group success through the roles assigned to them and promote feedback (Gross Davis, 1999). Along with this success, interpersonal positive, and supportive relationships, collaborative work with friends, gaining individual responsibilities, psychological self-esteem, and developing stress-coping skills occur through collaborative learning (Slavin, 1988; Johnson, & Johnson, 1999).

Collaborative learning offers advantages such as creating alternatives for developing critical thinking skills, developing classroom products, assigning responsibilities to students during the learning process, using problem solving techniques, increasing motivation, social support, establishing learning societies, decreasing student anxiety, developing self-esteem, and teacher-student evaluations in the fields of academic, social, psychological, and evaluation (Panitz, 1999a; Panitz, 1999b; Bayrakçeken et al., 2013). The learning experiences and communication skills of students have also increased (Reeves, Herrington, & Oliver, 2004).

Taking individual's learning needs and interests into consideration, enabling them to participate in the educational process, and supporting them in using technologies have become even more important. Including technologies in every stage of education helps create new educational settings; such as e-learning, distance education, computer assisted learning, internet based learning, online learning, and web assisted learning. Technology is being integrated into education settings and processes where learners structure and manage the information and individualized education is offered were established.

Offering courses and programs through the internet and access to online resources has changed the nature of education. Educational changes introduced by new technologies have gone beyond the classical understanding of education and have started to create new educational understanding by providing settings which vary according to students' differences, where there may be no compulsory face-to-face courses and where participation in the course can be made at different times. It has introduced the reality of ubiquitous education. Educators and educational institutions should move towards the Online Collaborative Learning (OCL) method which has been proved to be an effective learning and teaching technique in online settings.

Using instructional collaborative techniques together with online settings has demonstrated successful results. Drawbacks such as classroom size and student differences have been minimized together with the use of information and communication technologies. Thus, every course and subject is more effectively taught by the teachers. Online settings also reduce the time and space limitations of the traditional method by providing a working space and time for collaborative learning. With the flexibility it provides in learning and the online tools, it offers new opportunities for student collaboration and teacher support for group collaboration. Distant participation is enabled through learning management systems, smartboard, online communication and presentations, tools for synchronous and asynchronous implementations, discussion

forums and group activities. It enables teachers to collaborate with students and ensures students to collaboratively work with their friends at difference places and at different time by helping the students, who have attended the class, to participate to the course and communicate whenever they want regardless of the setting (Bennett, 2004).

Technologies increase collaboration and communication between group members (Johnson, & Johnson, 2014). In addition, the collaborative learning method showed positive effect on student motivation and thus on their achievement after computer and internet were integrated with learning settings (Kurtuluş, & Kılıç, 2009).

OCL has positive effect in increasing student motivation, academic performance and self-efficacy concerning their communication skills throughout the process, in improving their problem solving skills and in sharing their learning experiences. It also encourages students for working together and helps them in attaining their learning goals (Kaur, & Kaur, 2005).

Interactions are made with internet technologies and methodologies and are distributed in the content. Access to data, repeatability, controlling at one's own pace, offering individual learning flexibility and learning independent from a certain place and time is ensured. Online settings allow people to interact with each other synchronously and asynchronously in collaborative settings (Jung, 2000). In these settings, the course content requires using texts, images, simulations, sound and image files interactively according to web-technologies (Eogrenme.net, 2012).

Online learning settings should be assisted by appropriate approaches to increase learning effectiveness. Using online technologies for learning in electronic settings increases learning effectiveness. Ensuring collaborative learning in online settings is crucial for socialization and communication, for peer access and collective thinking (Stacey, 1999). There should be a balance for enabling the student to learn most effectively and productively and take benefit from online settings (Uluyol, & Karadeniz, 2009).

Evaluation of learner success and performance should be carried out in the most accurate and effective way in a learning environment designed as an online collaborative setting. The works of students and their outputs should be collected and presented in electronic settings. With this respect, "Electronic Product Files (E-Portfolios)" should be created to digitally collect and save the unique products of the students in electronic settings. These documents are attached to course plans and learning effectiveness is increased (Gülbahar, & Köse, 2006, p. 77).

The e-portfolio process; is carried out based on the content, goal and process components. Motivation is crucial for learner sustainability during this process. The e-portfolio process positively affects student motivation based on its understanding of teaching and the education it offers to the students (Gürol, & Demirli, 2006).

The interests and skills of each individual is broad and extensive. Carrying out education in electronic settings had gained constant pace and new educational settings are being introduced each day. Thus, developing OCL settings and using e-portfolio implementations in these settings is crucial for learning effectiveness. With this respect, the effects of the e-portfolio implementation in the Operating Systems and Applications course carried out in an OCL setting on student motivation were examined and results and suggestions were stated in the study. This study is thought to be unique and contribute to the field.

With this respect, the purpose of this study is to determine the effect of the e-portfolio implementation in the Operating Systems and Applications course on students' motivation in the OCL setting. In this study, it was determined how e-portfolio application in OCL environments affected the motivation of students. Whether there is a significant difference or not between the pre and post motivation scores of the experimental and control groups was examined. Student opinions were also illustrated.

Importance of the Study

The needs and demands of individuals and societies have changed after the developing and changing information and communication technologies. With this respect, the learning-teaching approaches also changed and diversified. Student-centeredness was emphasized in this diversification. Students are also

expected to academically and socially contribute to themselves and to each other. These have become possible through OCL settings.

OCL is an approach which enables active student participation, promotes social interaction and develops skills and knowledge independent from time and space. Because assessment-evaluation and e-portfolio implementations are included in the educational process, it is considered that blending these programs with OCL will contribute significantly to the field. Such a method is crucial for analyzing the effects on student motivation. In an online collaborative learning environment, it may be preferable to evaluate students with e-portfolio, which is a complementary evaluation method, rather than using traditional assessment methods. In this way, it can be considered that the motivation of the students will increase because the students are given the consciousness to evaluate everything they do in the OCL environment. This possibility is of special importance in terms of scientific proof.

Research questions include:

- Is there a significant difference between the pre and post motivation scores of the experimental and control groups?

- What are the advantages of the implemented learning environment?

- What are the disadvantages of the implemented learning environment?

METHOD

Research Model

The qualitative and quantitative data were collected together in this study. Therefore, the study was prepared according to the mixed research method. The experimental pretest-posttest control group model was used in collecting quantitative data, the cause-effect relations between the variables were examined (Büyüköztürk, 2011). The e-portfolio implementation in an OCL setting was conducted on the experimental group; an implementation was carried out on the control group by the course instructor based on the course plan. In the study, qualitative data were only collected from the experimental group. For this, phenomenology has been used as a qualitative research pattern. In this way, we have found out the results that will help us to understand a phenomenon better. In order to carry out the study within a specific period of time and to identify the availability of the program implemented by detected the problems of this implementation and their solutions, the action research was used and these data were collected through the interview technique (Yıldırım, & Şimşek, 2011).

Study Group

The study group of the implementation consisted of students studying in Fırat University, Faculty of Education, Department of Computer and Instructional Technologies Education (CEIT) during the 2012-2013 academic term and who took the Operating Systems and Application course. These students were selected because they are sufficient in recognizing and using online settings. The most effective factor in selecting this course and class was that there were no studies related to the method being used in this course and in addition, because the course content was found to be appropriate for the method. With this respect, from the group consisting of 93 students in the department of CEIT, a clustering analysis was carried out based on impartiality criteria (the students' university entrance scores, their grade point average scores, their score averages for the Computer Hardware course and pre-test scores) and the groups were determined. clustering analysis is one of the multi-variable statistical analyses which groups units and objects according to their similarities, which examines and describes these common features and which facilitates explaining the cause-effect relationships between the variables (Çokluk, Şekercioğlu, & Büyüköztürk, 2012: 137-141). The experimental group consists of 35 students and the control groups consists of 33 students. That the digital quantity of the groups are similar is a positive state for the study.

Operations Carried Out During the Research Process

The study was conducted in the website prepared for the implementation and on the virtual classroom setting. The website enabled to communicate with the students and to carry out the e-portfolio implementation by including the course content and activities. OCL was carried out in the virtual classroom setting. Because the Jigsaw II among collaborative learning techniques was used, the implementations of the students in the virtual classroom were prepared according to this technique. A motivation scale was created for the implementation and conducted on experimental and control groups as pre and posttests. In addition, opinions of the experimental group on the method implemented were gathered. The implementation took six weeks.

Data Collection Instruments

Student motivations concerning the Operating Systems and Applications course was gathered through the scale developed by the researchers. This scale is a five point Likert scale aiming at determining to what extent the implementation affects the students' motivation levels. The motivation scale consists of 23 items and two factors (Examples of the item include: "I enjoy doing homework and projects of the Operating Systems and Applications course"; another oitem "I don't like to help my friends in the Operating Systems and Applications" like these). The Cronbach Alpha coefficient of the scale was observed to be .946, the total variance explained was 57.529%, KMO test value was .912 and Bartlett test value was 1994.091.

The forms created with the semi-structured interview technique were used in collecting the qualitative data. This form was applied on only the experimental group students through the web-site and data were collected through this website. Based on the free answers individuals give to open-ended questions, it is possible to identify their opinions, feelings and thoughts correctly (Türnüklü, 2000). Thus, a descriptive data collection is made based on the statements of the individuals themselves and a perspective on how individuals interpret this world can be achieved through this information (Uzuner, 1999).

Data Analysis

Computer assisted programs were used in analyzing the quantitative and qualitative data of the study. The content analysis method was used in evaluating the qualitative data. During the analyses, the cluster analysis, independent group's t-test, matched groups t-test and MWU test were used for pre and posttest comparisons. The significance level was determined as .05 in evaluating and interpreting the data:

Table 1
Value ranges for likert type scales

Value Range	Level of Agreement
1.00 – 1.80	I Strongly Disagree
1.81 – 2.60	I Disagree
2.61 – 3.40	I Somewhat Agree
3.41 – 4.20	I Agree
4.21 – 5.00	I Strongly Agree

FINDINGS and COMMENTS

Findings Related to the Qualitative Dimension

Findings Related to the Motivation Scale

The total pre-motivation and post-motivation scores of the experimental and control groups obtained from the motivation scale were compared in accordance with the study purpose. The independent group's t-test was conducted for this comparison. Findings obtained from the analyses are given on Table 2.

Table 2
Results of the independent groups t-test concerning the total pre-motivation scores of the experimental and control groups

Groups		n	$\overline{X}$	sd	df	t	p
Pre-motivation	Control Group	33	3.22	.33	66	-.268	.789
	Experimental Group	35	3.24	.28			
Levene= .333	p= .566						

No significant differences observed between the pre-motivation scores of the experimental and control groups (t(66)=-.268, p>.05). The pre-motivation means of the experimental ($\overline{X}$ =3.24) and control ($\overline{X}$ =3.22) groups were almost at the same level. The MWU test was conducted because the post-motivation scores of the groups were not distributed homogenously.

Table 3
Results of the MWU test concerning the total post-motivation scores of the experimental and control groups

Groups		n	Mean Rank	Sum of Ranks	MWU	p
Post-motivation	Control Group	33	35.23	1162.50	553.500	.768
	Experimental Group	35	33.81	1183.50		
Levene= 10.882	p= .002					

No significant differences were detected in the MWU test conducted to test the post-motivation scores of the experimental and control groups (U=553.500, p>.05). It was observed that the mean rank values of the experimental group (MR=33.81) were lower than the mean rank values of the control group (MR=35.23). Based on this finding, it can be said that the motivations of the experimental group who were subject to the implementation were lower than the control group after the implementation. This result can be linked to the various technical problems that occurred due to implementing on an online settings, due to the setting being virtual and the implementation being different from other methods.

The paired samples t-test was used for within-group comparison of the pre-motivation and post-motivations scores of the groups. Analysis results are given on Table 4.

Table 4
Results of the paired samples t-test concerning the total pre-motivation and post-motivation scores of the experimental and control groups

Groups		n	$\overline{X}$	sd	df	t	p
Control Group	Pre-motivation	33	3.22	.33	32	-.311	.757
	Post-motivation		3.19	.41			
Experimental Group	Pre-motivation	35	3.24	.28	34	-.062	.951
	Post-motivation		3.24	.24			

No significant differences were observed between the control group students' pre and post-motivation scores at the p>.05 significance level (t(32)=-.311). In addition, there was a decrease in the post-motivation ($\overline{X}$ =3.19) scores of the students when compared with the pre-motivation ($\overline{X}$ =3.22) scores. No significant differences were observed in the experimental group students' motivation levels before and after the implementation (t(34)=-.062, p>.05). The arithmetic mean values of the pre ($\overline{X}$ =3.24) and post-motivations ($\overline{X}$ =3.24) remained the same. Thus, it can be said that there were no changes in the motivations of the experimental group before and after the implementation.

Findings Related to the Qualitative Dimension

Findings on Which Advantages are offered by the Implemented Learning Setting

The first question asked for collecting the qualitative data was "What do you think the advantages of this learning setting are?". According to the opinions, the learning setting implemented has a crucial advantage related to learning and this learning is carried out through various learning methods. In addition, based on the student opinions, it can be said that it has advantages about place, time, being a comfortable setting, socialization, interaction, motivation, communication, saving, technical support, being active, repeatability, sense of responsibility, flexibility and persistency. There was only one negative opinion. Examples of student opinions helping us to reach this result are:

S1: "Learning the subjects without the school setting."

S20: "...it helps us create more intimacy with our friends."

S11: "I believe that those who can't express themselves in the classroom setting can express themselves better..."

S12: "...the individual can work independent from time and space..."

S27: "...When we consider the problems and the virtual setting, I believe that our communication skills have improved very well."

S2: "...it maximizes our motivation."

S26: "Because we feel ourselves comfortable we gain self-esteem."

Findings on Which Disadvantages are offered by the Implemented Learning Setting

Necessary analyses were conducted on the answers after the question of what the disadvantages of the implementation are was asked to the students. It is observed that the main disadvantage is based on the system and technical field. Being a virtual setting and not being social was observed to be at the top rows

among the other disadvantages. These drawbacks are observed to affect the perspectives, behaviors and opinions of the students towards the method being implemented. Students were observed to express their opinions on readiness, group based problems, discipline problem, time-consumption, communication, physical distance and absence of the teacher. These are thought to be among the other disadvantages that are encountered. Examples of student opinions that helped reaching these conclusions are given below:

S11: "Disruptions in the system can disrupt the course…"

S15: "Lack of technical opportunities. Due to problems related to internet connection."

S27: "…A problem with your friend, who has a problem with his/her microphone, negatively affects or even stops the learning of all group members…There may be individuals who cannot participate in the learning activity due to the internet, microphone and camera… Because there is no traditional learning environment, it may be difficult to focus and provide motivation for two hours."

S20: "...Because there is no face-to-face training in this learning environment, I think it is a little more difficult to solve problems with the instructor…"

S21: "The individual may go into the state of being passive. Reluctance may begin in the individual due to the non-realistic environment."

S10: "Asocial environment."

S1: "I believe the only disadvantage is that it creates a problem in teacher-student communication."

S13: "Internet disconnection can be encountered because it is an internet dependent setting and this can decrease motivation and attention."

These disadvantages stated by the students can be prevented by overcoming the deficiencies of the setting and by better introducing the system. It can be seen that these disadvantages may be the main reason for decreasing the motivation of the students. Although a student stated that he only increased motivation, a large number of students stated that they had decreased motivation in the disadvantages section.

CONCLUSION and DISCUSSION

Motivation was observed to be high before the method related to the Operating Systems and Applications course was implemented on the experimental group and after it was implemented on the control group. In addition, while there were no changes in the motivation levels of the experimental group before and after the implementation, a decrease in control group motivation was observed after the implementation. Also, students were observed to state motivation decrease at the qualitative dimension of the study. These two results support each other. Although collaborative learning settings positively affect internal motivation and performance (Tauer, & Harackiewicz, 2004), the present study observed motivation decrease in the experimental group. Chang (2008) conducted a web-portfolio implementation and found that motivation has no effect on success; Dağ (2011) observed that motivation increases more in students with high motivation than in students with low motivation.

The qualitative findings of the study are in line with the quantitative findings. The present study underlines that the implemented learning setting has advantages concerning place, socialization, comfortable environment, learning, interaction, motivation, communication and time consumption. Hiltz (1998) stated that one of the biggest advantages is that OCL settings offer learning feasibility in every place and every time. In addition, the study also illustrated that there are advantages concerning technical learning support, learning diversity, being active, repeatability, sense of responsibility, flexibility and persistency. While online tools play a role in supporting the collaboration among group members who are scattered between time and space, it also meets the conditions for a successful team work and learning (Bennett, 2004). Social interaction and activities are directly effective in online collaboration (Bonk et al., 2004; Graham, & Misanchuk, 2004; Treleaven, 2004). It was also observed that other advantages offered by the setting is that it enables individual, collaborative, group, research based, distant and student centered learning. There are

various studies emphasizing that these learning types are carried out through online collaborative settings and tools (Bennett, 2004; Bonk et al., 2004; Muukkonen, Hakkarainen , & Lakkala, 2004). That there was only one participant stating the method has no advantages indicates that the advantages of the implementation are more than the disadvantages. Multiple purposes (academic, social and personal) are met when motivation in collaborative settings is high, positive interpersonal relationships, high social support, high self-esteem and high psychological health emerges (Johnson et al., 2010). Such environments have positive effects on leaner motivation, learning experiences, undertaking responsibility, improving collaborative working skills, encouragement, dependence on group members, communication and interaction (Graham, & Misanchuk, 2004). It offers a flexible learning setting (Sorensen, 2004; CoopLearn.org, 2007). Students were observed to communicate easily with their friends and develop social relationships in web platform based e-portfolio processes and these processes were suggested to have positive effects on motivation (Gürol, & Demirli, 2006). According to the study conducted by Korkmaz (2013), advantages offered by OCL settings are group members can easily come together, communication processes are started easily, students can work more effectively on a shared document, individuals who are anxious in face-to-face settings can be more comfortable in online settings and the discussion forms created during group work can be accessed later on. These results are in line with the results of this current study. In many studies conducted by various researchers, it was stated that there are similarities between the results concerning the advantages of OCL settings and the results of this present study (Macdonald, 2003; Kaur, 2005; Kaur, & Kaur, 2005; Gümüş, 2007; An, Kim, & Kim, 2008; Nam, & Zellner, 2011; Lee, & Bos, 2011). Because online collaborative settings have positive effects because they offer feedback (Zumbach, Hillers, & Reimann, 2004). Similarly, web-based portfolio systems also offer feedback and help creating high quality portfolios (Öner, & Adadan, 2013).

With this respect, the disadvantages of the implementation were put forward. On the other hand these disadvantages were observed to be stated as failing to be social, physical distance, lack of teachers, systematic and technical problems, communication, time-consumption, discipline problem, group based problems, motivation, virtual setting and student readiness. Failing to solve technical problems will be a drawback for collaborative group activities (Bonk et al., 2004). Students emphasized that the majority of these disadvantages are due to online feature. Lack of social relationships is one of the drawbacks of online courses when compared with the traditional courses. Low level of social structure emotions of teachers and group members will decrease motivation and interest and thus, negatively affect learning outputs (Hiltz, 1998). According to another study, difficulty of teacher control and guidance, technical problems and deficiencies related to the internet connection and insufficient discussion of the subject during group work were stated as the disadvantages of OCL settings (Korkmaz, 2013). With regards to the limitations of online settings, problems related to geographical distant and technology are encountered. Thus, it can be more advantageous than face-to-face settings with respect to coping with emotional disappointment and personal conflicts. Thus, supportive designs and strategies should be established (Jahng, 2012). Readiness of the students is crucial for collaborative learning group works (Brindley, Walti, & Blaschke, 2009). All these disadvantages cause the students' motivation to decrease. It reduces the students' interest in the course and the effectiveness of the environment. The results of the interview and the results obtained from the quantitative data of the research support each other.

Suggestions

1- Necessary technical infrastructure should be reinforced, problems should be minimized, thus effectiveness and quality can be increased.
2- The study shows that student motivations after the implementation were low. Settings, which can minimize or annihilate the factors stated by the students that cause motivation decrease, should be reorganized and students should be sufficiently informed.
3- Learning settings should be created as places where students feel themselves comfortable, where they don't have difficulty expressing themselves and where they can learn individually and in groups.
4- Settings that support each other should be designed through face-to-face education opportunities in virtual and online systems. Various implementations and activities that can prevent online settings from lacking interaction, communication and socialization should be included.
5- Such implementations should be carried out in the long-term and more comprehensively and the results should be examined. Different results can be obtained from long-term studies.

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