



## The Effect of Activities Carried Out in Concept Design Course on Course Engagement and Students' Opinions Towards These Activities\*

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### ABSTRACT

In this research, it was aimed to determine the effect of activities carried out in concept design course on course engagement, and to get the opinions of the students in order to make the course more effective and efficient. The case study design was used in the research. While determining the participant group of the study conducted with 14 students, convenient sampling method, which is one of the non-random sampling types was used. Implementation activities lasted eight weeks. In this process, students made hand drawings on paper with a pencil or brush, digital drawings with two-dimensional (2D) graphics programs, and three-dimensional (3D) projects with the Unity game engine. "Classroom Engagement Scales for University Students" and "Student Opinion Form for Concept Design Course Activities" were used as data collection tools. Data were analyzed using Wilcoxon (2-Related Sample) test and descriptively. As a result of the analyses, the concept design course activities significantly increased the course engagement of the students. Although the students generally expressed positive opinions about the course activities, they made some suggestions for increasing the effectiveness and efficiency of the course.

**Keywords:** Concept design, course engagement, students' opinions on course activities

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## 1. INTRODUCTION

Students spend most of their time in the classroom with their friends and teachers rather than their families. Peer and teacher support is an important factor in course engagement and contributes to the learning process (Furrer & Skinner, 2003). Course engagement is also known as course participation. Teachers' attitudes in the classroom are an important factor in controlling student course engagement and learning (Jimerson, Campos, & Greif, 2003). In order to ensure student engagement, teachers should consider students' prerequisite learning and offer them appropriate course content. Course engagement is closely related to active learning, social learning, constructivism and problem-based learning (Conrad & Donaldson, 2004). Student course engagement is as important as students' academic success in learning environments and is a requirement for effective learning. According to Christenson, Reschly and Wylie (2012), course engagement is the active involvement of students in learning activities. Course engagement of students is examined in three categories as behavioral, cognitive and emotional (Fredrick, Blumenfeld, & Paris, 2014; Reschly & Christenson, 2006; Wang, Bergin, & Bergin, 2014). Behavioral engagement refers to the orientation of learners to extra-curricular activities at school and to take an active part in learning processes. Emotional engagement indicates the willingness to be involved in the activities, the feeling of belonging to the school, and the attitude towards academics. Cognitive engagement refers to the mental effort towards learning in activities, the establishment of the relationship of course topics with the future and daily life, and associating new information with old information. Briefly, the course engagement of students requires their physical, mental and emotional presence in the educational environment. Apart from these three types of engagement, the concept of *agency* has also been mentioned (Reeve, 2013; Reeve & Tseng, 2011). *Agency* means that students actively ask questions based on their own subjective experiences and convey their wishes to the teacher. In other words, it is defined as the constructive contributions of students to the teaching flow. Harper and Quaye (2009) emphasized that students' emotions and feelings are related to course engagement. The concepts of engagement, which is defined as the bond between the activity and the person, and motivation, which is expressed as the energy in the behavior, are intertwined with each other. The low or high level of students' desire for engagement indicates their motivation level for engagement.

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The level of engagement of students in the learning process is one of the best indicators of the quality of the teaching activity. If students cannot be encouraged to engage in the lesson, it can be said that there are problems in the teaching activity carried out or the quality of the teaching activity is low. In this respect, the most important problem is not the academic success of the students, but the inability of course engagement (Newman, 1992). Students with low level of course engagement get bored easily, have difficulty in focusing on the lesson, want to get away from the school, think about extracurricular issues by being distracted, and cannot relate the information they learned at school with life. Thus, students cannot be successful in their educational life. Considering this situation, course activities that enable students to enjoy the learning process and increase their learning are important.

Within the scope of this study, course activities were prepared that could increase students' participation in the concept design course. Concept design course has been given in the Cartoon and Animation Departments of Art and Design Faculties for the last few years. The course content is included in the curriculum as follows: It is to visualize any concept or idea, using two- and three-dimensional techniques, by making use of traditional painting and photography. In addition, learning how the produced compositions are used in different media environments such as film, TV, animation and game design is another subject of the course. When the literature is examined, studies have not been found in concept design field since the concept design course is very new. For this reason, what kind of activities can be effective in increasing the participation in the concept design course has created curiosity. This study is the first in the literature in the context of the course. In this respect, it is anticipated that the results of the research will contribute to the literature.

### **1.1. Purpose and Importance of the Study**

The aim of the study is to determine the effect of activities carried out in concept design course on course engagement. In addition, it is to reveal what kind of remedial activities should be carried out in order to make the course more effective and efficient in line with student opinions. If students attend the course more willingly, their motivation towards the course may also increase. Thus, students will be able to learn while having fun during course activities. The study is important in this context. The study sought answers to the following research problems:

1. Is there a significant difference between the course engagement scores of the students after the concept design course activities?
2. What are the student experiences towards the concept design course?
3. What are the suggestions for conducting the concept design course more effectively and efficiently?

## **2. METHODOLOGY**

Considering the problem situation and research problems, case study design was used in the research. In the case study design, factors such as individuals, environment, processes and events related to a situation are handled with a holistic approach. In addition, it focuses on how these factors affect the relevant situation and how they are affected by the relevant situation. Due to the nature of case studies, both qualitative and quantitative data can be used together (Yıldırım & Şimşek, 2011).

### **2.1. Participants**

14 students participated in the research, studying in the second class of Art and Design Faculty Cartoon and Animation Department in the 2021-2022 spring semester. The participant group consists of nine male and five female students. While selecting the participant group, the easily accessible (convenient) sampling method was used. According to this sampling method, researchers choose situations and study groups that are close to reaching them (Patton, 2014).

### **2.2. Implementation**

Implementation activities lasted eight weeks. During the implementation process, different media concepts were created with the students in hand drawing on paper with pencil or brush, digital drawing in Photoshop or Illustrator programs and Unity game engine. During the theoretical lectures, presentations were made to the students on concept design techniques and different art movements. Informative course videos were shown to the students from time to time. Sample cartoons and digital game environments were examined in the field of concept design. During the first two weeks of the activities, the students chose one of the art movements taught to them and made their drawings using charcoal, dry paint or watercolor (Figure 1). In the third and fourth weeks, after the theoretical lectures, the students drew an art movement of their choice according to Western Art Movements digitally using Photoshop or Illustrator program (Figure 2). In the next four weeks, the students were given information on how to design three-dimensional (3D) environments in the Unity game engine, how to create terrain like in nature, how to create 3D models in the project, how to create models in Unity, how to make material assign, environmental lighting and how to move in the environment. After the students became familiar with using Unity in the fifth week, they started to prepare their 3D concepts. Students are given premade 3D models that they can use. Students created their original models by assigning colors to these models as they wished. The students created their first project (teen room concepts) with the Unity game engine (Figure 3). At the end of the eighth week, as a final project, each of the students

developed a game environment that they designed in their minds with the Unity game engine (Figure 4). Students have experienced the happiness of being able to navigate in the environment they have created in the Unity game engine. Thus, the course activities have been made more fun and learnable. Students walked around in their own project as if they were playing a game. Students took great pleasure in their work and became more willing to engage in course activities.

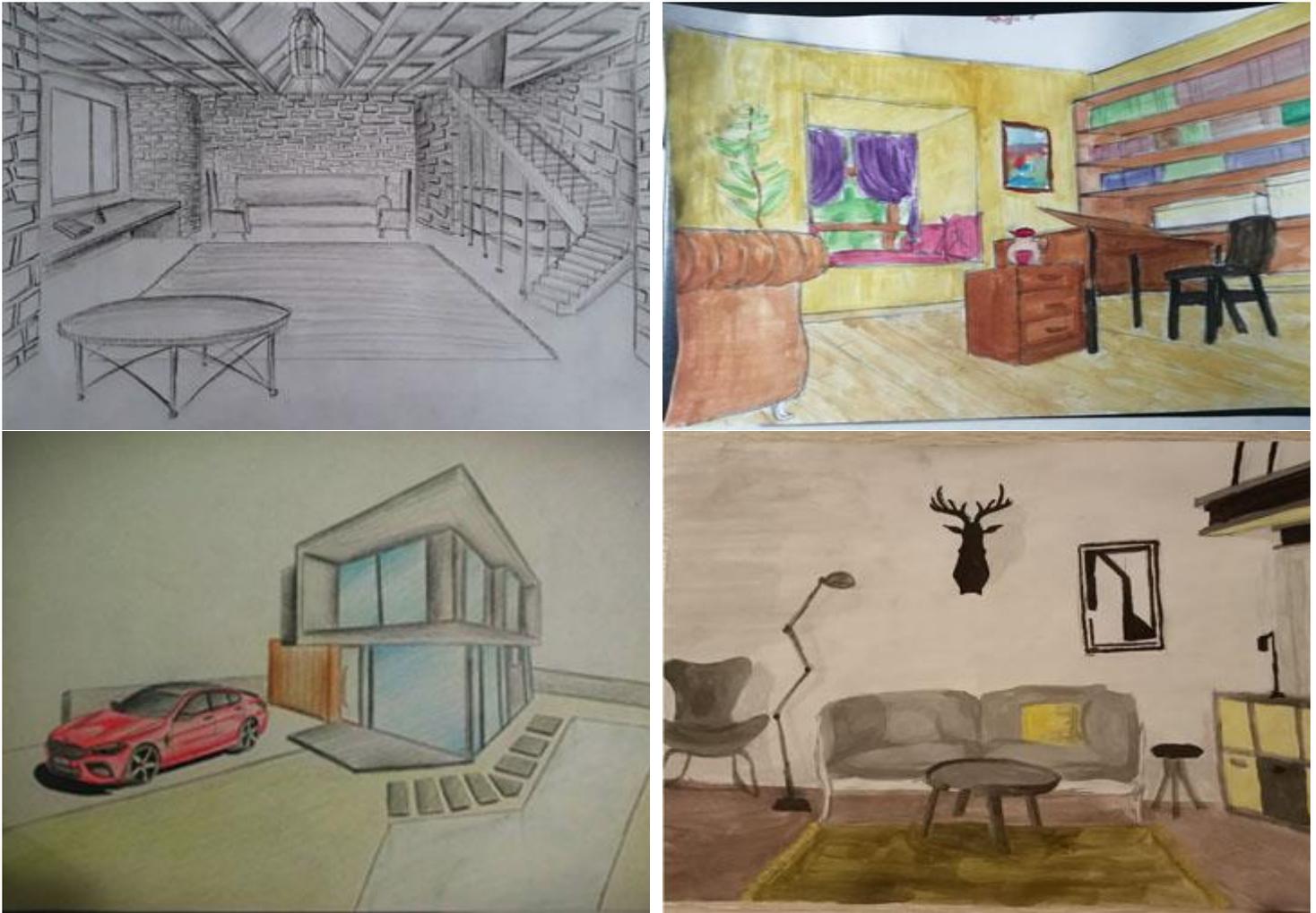


Figure 1. Hand drawing concepts on paper with charcoal, dry paint and watercolor



Figure 2. Sample digital drawings created with Photoshop and Illustrator

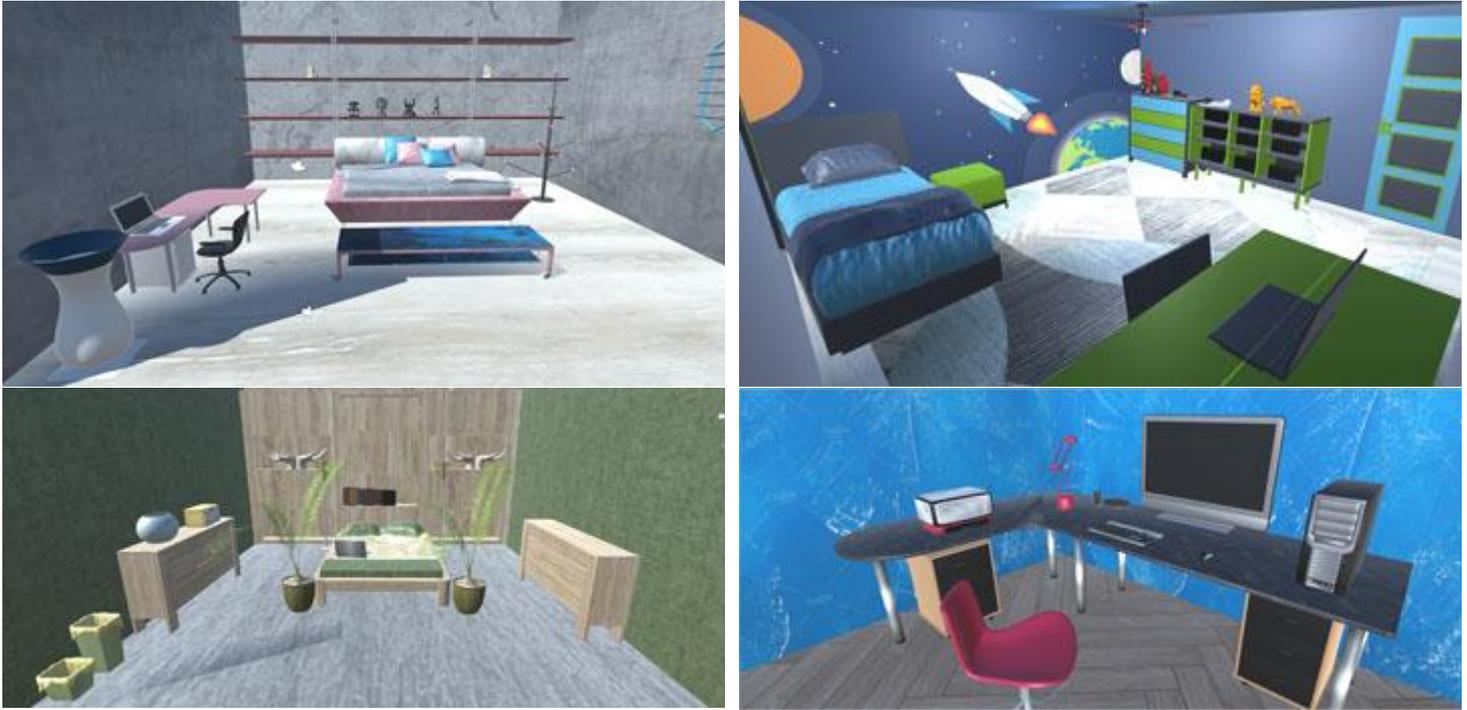


Figure 3. Teen room concept designs developed with Unity game engine



Figure 4. Game scenes developed with the Unity game engine

### 2.3. Data collection instruments

In the study, as data collection tools: 1) "Classroom Engagement Scales for University Students" developed by Eryilmaz (2014) and 2) "Student Opinion Form for Concept Design Course Activities" developed by the researcher were used. "Classroom Engagement Scales for University Students" consists of two scales, "General Class Engagement Scale" and "Specific Class Engagement Scale". Both scales measure the same items and consist of three dimensions: behavioral, emotional and cognitive. The internal reliability coefficient (Cronbach Alpha) of "General Class Engagement Scale" was calculated .92; "Specific Class Engagement Scale" was calculated as .93. "Student Opinion Form for Concept Design Course Activities" consists of three open-ended questions. Open-ended questions were examined by four different field experts and their approval was obtained. Before starting the implementation process, the "General Class Engagement Scale" was applied to the students. At the end of the eight-week implementation period, the "Specific Class Engagement Scale" was applied to the same student group. Students responded to items measuring exactly the same characteristics in these scales. As the difference between the two scales: The first scale measures the general characteristics of the students for their courses, the second scale specifically measures the

items related to concept design course activities. At the end of the implementation process, the students also answered the open-ended questions in the "Student Opinion Form for Concept Design Course Activities" directed to them. "Student Opinion Form for Concept Design Course Activities" consists of the following questions: 1) To what extent do you find useful the activities you carried out during the implementation of concept design course? 2) What were the things that you found unnecessary or that forced you while the implementation process? 3) What are your suggestions for conducting the concept design course more effectively and efficiently?

## 2.4. Data analysis

Within the scope of the first research question, whether there was a significant difference between the students' course engagement scores was analyzed with Wilcoxon (2-Related Sample), one of the non-parametric tests (Field, 2009). In the context of the second and third research questions, the qualitative data obtained from the students were analyzed descriptively. The students' opinions were divided into categories and frequency counting was done in the data. In addition, qualitative data were reported in a way that supports quantitative data.

## 2.5. Validity and reliability

In the implementation process of the study, some precautions were taken to ensure internal validity (Fraenkel, Wallen, & Hyun, 2012). All participants carried out the activities in the same environment in order to prevent the "Location" threat. In order to eliminate the "Instrumentation" threat, data collection tools was prepared in a way that will not bore the participants. In order to prevent the "Implementation" threat, the course content in the groups was carried out by the same instructor. In addition, the data obtained from the participants were collected by the same researcher.

Findings are described with direct quotations in order to ensure transferability in the study. The research results were supported by the quotations obtained from the participants. The researcher did not add their own interpretation to the data in any way while transcribing the qualitative data in order to provide dependability. The participants were informed about the working environment and process for the confirmability of the study. The raw data set was stored after being read twice.

## 3. FINDINGS

### 3.1. Examining the differentiation between the course engagement scores of the students after the concept design course activities

Since the number of participants in the study was less than 30 and the data were not normally distributed, non-parametric test was used instead of the parametric test when analyzing the data. In the study, whether there was a significant difference between the general class engagement score and the concept design course engagement score of the students was examined by Wilcoxon (2-Related Sample) (Table 1).

Table 1.

*Wilcoxon (2-Related Sample) Test Results*

Concept Desing - General Classes	N	Mean Rank	Sum of Ranks	z	p
Negative Ranks	2	1.5	3	-2.97	.00
Positive Ranks	11	8	88		
Ties	1				
Total	14				

When Table 1 is examined, the students' eight-week concept design course participation scores (Mdn = 67) are significantly higher than their general participation scores (Mdn = 54),  $z = -2.97$ ,  $p < .05$ ,  $r = -.79$ . Regardless of the sign of the  $r$  value, 0.1 is considered a small effect, 0.3 is considered a medium effect, and 0.5 is considered a large effect (Field, 2009). When the  $r$  value is examined, the effect size of the significant difference is large. The  $r^2$  value shows how much the independent variable explains the change in the dependent variable. Since  $r^2 = .62$ , 72% of the total variance is explained by the independent variable. According to these findings, concept design course activities (independent variable) significantly increased students' course engagement (dependent variable).

### 3.2. Student experiences towards concept design course

While determining the students' views on the activities in the concept design course; 1) the level of usefulness of the activities, 2) the features that are deemed unnecessary during the course activities and that force students are revealed. Student views on how beneficial the course activities are given in Table 2, and the features that are deemed unnecessary or challenging for students during course activities are given in Table 3. Frequency counting of the codes that emerged for the answers given by the students was made. The total numbers in the frequency represent different student numbers. Opinions of different students were expressed as S1, S2, S3, S4....

Table 2.  
*Contribution of Course Activities*

<b>Codes</b>	<b>Frequency</b>
Beneficial	8
Efficient	7
Enhances learning and understanding	6
Lecturer contribution	6
Enjoyable	5
Occupational contribution	4
Learning new information	3
Learning additional programs	3
Increasing lesson motivation	3
Attracting	2
Increasing retention	2
Activates the lesson	2
Provides individual development	1
Increases creativity	1

When Table 2 is examined, concept design course contents are described as useful, efficient, entertaining, intriguing, enhancing individual development and creativity. The students stated that the lecturer presented useful course content to them, thus making it easier for them to learn. It has been stated that the information learned through these activities increases the retention. During the implementations, the students emphasized that they learned additional information and alternative programs. Activities that make the course active have increased the motivation of the students. The students also stated that the course activities will contribute greatly to their professional lives in the future. Student opinions supporting these statements are given below.

*We taught a theoretically conducted course by making practice. I gained a lot of knowledge in the field of concept. I fully understood the concept design and tried to implement it [S3].*

*I believe that the programs we experience in the concept design course will have an important contribution to our career [Q4].*

*Our lessons were active. We were not bored in the lessons. We developed ourselves by making designs. We learned a lot in a very short time [S6].*

*The activities we carried out during the term were very useful. Learning new things was fun [Q8].*

*The lesson was fun, fast and efficient. I was very interested and curious about the lesson. I was never bored while designing [S11].*

*Thanks to the interest of the lecturer, I saw how easy the Unity game engine and design were. My interest in concept design increased [S13].*

*Course activities were both educational and entertaining. The students' course engagement, the materials presented by the instructor and the information he taught were really sufficient [S14].*

Table 3.  
*Complicating Factors in Course Activities*

<b>Codes</b>	<b>Frequency</b>
No complicating factors	7
Program interface difficulty	6
Unnecessary theoretical course content	5
Computer performance problem	1
License problem in programs	1
Confusing theoretical knowledge	1
Providing information in a short time	1
Difficulty using alternative programs	1
Long breaks between courses	1
Note-taking requirement	1

The students expressed the factors that they find unnecessary and that force them during the course activities (Table 3). The majority of the students stated that there were no features that they found challenging and unnecessary in the course activities. Some students complained that the Unity game engine's interface was difficult and the theoretical course content was unnecessary because it was confusing. There were students who needed to take notes because too much information was given in a short time. Performance problems in computers and licensing problems of Adobe programs were a problem for some of the students. The use of alternative programs together in the course has forced some students. Opinions were also expressed that course breaks should be shorter.

*There weren't many unnecessary and challenging parts. The fact that the theoretical part of the lesson is less and the practical part is more makes the lesson enjoyable [S1].*

*There was no problem other than the difficulty of the Unity interface. We are having a performance problem because Unity force too much our computer. Since Adobe programs are expensive, we have to download cracks. Cracks fail [S3].*

*I messed up the shortcut keys of the Unity program a bit. I had a little trouble with this. The long breaks between lessons affected us a little [S6].*

*I struggled a bit until I got used to the Unity game engine. After getting used to it, I overcame this difficulty [S11]. It was difficult for me to keep all the concept designs in mind and to master all the art movements as theoretical knowledge [S12].*

*Except for exporting objects from the 3DS Max program to the Unity game engine, nothing forced me [S13].*

### 3.3. Suggestions for conducting the concept design course more effectively and efficiently

The suggestions of the students for the concept design course to be carried out more effectively and efficiently are given in Table 4. When the data were examined, the majority of the students found the course activities sufficient. Students stated that the course was conducted effectively and efficiently. Some of the students stated that the duration of the lessons and the activities in the lessons should be increased. It was emphasized that students should be brought together with experts in the cartoon, animation and game sector. It was stated that the lecturer should be given technological and information support. There were students who wanted to produce projects by working in groups and wanted their projects to be exhibited. A suggestion was made that the lecturer should develop his artistic side. A student expressed her opinion that the course breaks should be increased even more.

Table 4.

#### *Suggestions for Effectiveness and Efficiency*

Codes	Frequency
No suggestions, everything is fine	7
Activities should be increased	2
Course duration should be increased	2
Bringing students together with experts	1
Technological and information support to the lecturer	1
Creating projects by working in groups	1
Exhibition of student projects	1
Lecturer should develop his artistic side	1
Course break times should be increased	1

*Course activities should be increased. Students should be brought together with experts in the sector. Full technological and informational support should be given to the lecturer [S2].*

*I would like to work on projects in groups. It can be beneficial for us to be exhibited our projects and are evaluated them by other people [S3].*

*It may be beneficial to increase the duration of our lessons and to improve the artistic side of the instructor [S4].*

*The concept design course was very effective and productive. I have no suggestions [S5].*

*We get confused because we learned so many things in a short time. Course breaks can be increased [S6].*

*I think the activities carried out are sufficient. However, it would be beneficial to add more course hours [S10].*

## 4. RESULTS AND DISCUSSION

In the study, it was examined how different course activities in the concept design course affect the course engagement. Concept design course activities significantly increased students' course engagement. Students actively answered the questions asked by the lecturer during the course. At the same time, they prepared themselves for the course and asked questions to the lecturer. They listened to the lectures happily and with interest. Their sense of curiosity towards the course increased and they became integrated with the course. The students found the course activities enjoyable and stated that they would interpret the information they learned and use it in their daily work.

According to Furrer and Skinner (2003), the support that students receive from their teachers and peers is very effective in their course engagement. In addition, course engagement increases motivation and positively affects the development of learning. In this study, the students expressed a similar opinion and drew attention to the positive effects of course activities on their course engagement, their motivation levels and their learning. At the same time, they expressed the importance of the

support given to them by the lecturer. In this study, the effect of course activities on course engagement was examined. Similarly, there are studies examining the effects of teachers' methods, techniques and activities, learning environments, and students' motivation levels on course engagement (Sever, 2014). In addition, it has been found that course engagement has a positive relationship with academic achievement (Hijazi & Nagvi, 2006), and the positive effects of the qualities of learning objects and the appropriate techniques of teachers on course engagement (Sever, Ulubey, Toroman, & Türe, 2014). Concept design course activities also had a positive effect on the academic achievement of the students, similar to the findings in the literature. The course activities were evaluated by the students as useful, efficient, entertaining, intriguing, enhancing individual development and creativity. This is an indication that the course contents make learning fun. Students whose interest and motivation towards the course increase will naturally increase their course engagement. Students who learn and absorb the information given to them by attending the classes regularly can put this information into practice in their professional lives.

Most of the students found the concept design course activities useful, effective and efficient. In order to be improved course activities, students stated that sample design activities should be increased even more. The perception level of each student is not the same. Students who expect more activities in the lessons may think that their friends are slowing them down. While some of the students stated that the course breaks should be extended because their cognitive load increased during the activities, some students wanted the break times to be shortened. This is another indicator of the difference in student levels. Some students were not satisfied with what they learned in the course and demanded that students and experts in the sector should be brought together. They suggested working in groups, producing projects and exhibiting their products. The lecturer was asked to educate himself in the field of art and to provide extra information to their students. Thus, students predict that their vision will increase even more.

## 5. RECOMMENDATIONS

Considering student expectations, project activities can be carried out in groups while the concept design courses are being conducted in the following years. Experts in the field or academicians can be invited to the courses as guests and share their experiences with the students. Various game and concept design studios can be visited with students. In this way, students' visions can be developed. Students can be transformed from passive listeners to active learners by giving them research tasks. Alternative learning techniques can be tried to reveal the talents of the students. In addition, each student's personal computers cannot perform at the same level while performing activities in the Unity game engine and have heating problems. Although the computers in the computer laboratories of the faculty have high processing power, students prefer to work with their own personal computers. It is thought that this problem can be eliminated by encouraging the students to work with desktop computers in the laboratories by the lecturer of the course.

### Research and Publication Ethics Statement

The article was written considering the principles of research and publication ethics. Ethics committee approval was obtained for this study from Mehmet Akif Ersoy University, dated 02.03.2022 and numbered GO 2022/538.

### Contribution Rates of Authors to the Article

This research was prepared by a single author.

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