# A Case Study on Online Design Workshop Experience: Gamification and Space

Derya Karadag  ⓘ
*Department of Interior Architecture, Faculty of Arts, Design and Architecture, FMV Isik University, Istanbul, Turkey*
Simge Gulbahar  ⓘ
*Department of Interior Architecture, Faculty of Arts, Design and Architecture, FMV Isik University, Istanbul, Turkey*
Betul Ozar  ⓘ
*Department of Interior Architecture, Faculty of Arts, Design and Architecture, FMV Isik University, Istanbul, Turkey*

**Abstract:** Design schools consist of three main axes; courses that provide knowledge in various fields of design, studio courses and internships. Besides, the indisputable fact is the importance of design competitions and informal workshops that feed the designer candidate to gain experience in different fields of the discipline. In addition, another importance of informal workshops is the contribution of researchers in this field to the development of design education. The effects and potentials of Information and Communication Technologies (ICTs) are also another area of research on design education, in particular design studio courses. The use of ICTs in the field of design education has led gamification to come to the fore as an ascending concept. A series of methodologies and tools have been developed, such as gamification, as well as the different kinds of Virtual Learning Environments to ensure the motivation of students and avoid the lack of attention in online courses. In this study, an online workshop, "Gamification and Space", is investigated as a case study. The contribution of the concept of gamification to design education has been evaluated in line with the observations and experiences gained. The data was gathered from the workshop presentations held on the last day and the final manuscripts of the workshops. The collected data was analyzed by the workshop coordination team, and classifications were made regarding the aspects of the gamification used during the workshop. In addition, it is aimed to discuss the potentials of ICTs in design courses. The observations show that the use of gamified elements has the potential to enrich instructional methods, especially when we consider online education, virtual learning environments and visual collaboration tools.

**Keywords:** Online workshop, Gamification, Interior design education, Informal learning environment, Game-based learning.

## 1. Introduction

The informal workshops are interaction-oriented platforms where students, moderators and instructors participate voluntarily. The most significant benefit to design education is that it provides experience in subjects beyond the limits of the curriculum and offers a kind of design education research environment. The workshops remove the limits of disciplinary education and provide an interdisciplinary atmosphere to be dissolved about a specific problem or theme and go beyond restrictions of curriculum. It also helps to create an environment that supports peer learning while embodying creative mental activity.

Being informal education areas, workshops became suitable for expanding the learning

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environments of the participants with the help of today's Information and Communication Technologies (ICTs). In recent years, online platforms are in demand in order to conduct meetings, lectures due to the widespread use of ICTs in many fields. Furthermore, students are actively using digital interfaces in both formal and informal design studio environments to meet each other, to access educational materials and to produce projects. Regarding design education and design studio courses, ICTs stand out not only for being a communication and sharing platform, but also for its contribution to the developments of design thinking and methodologies. In this context, "gamification", which can be defined as 'using game components and game dynamics for a specific purpose' in non-game environments, has emerged as a popular phenomenon for instructional methods of design studio and has an effect to increase student motivation and augment the learning process.

In this research, "Gamification and Space" which is an informal online summer workshop with the participation of 11 workshop groups, 23 instructors and 49 students, is investigated as a case study. The workshop theme "Gamification and Space" has been selected to contribute to educational research in various design disciplines, with a particular focus on spatial design. The informal workshop themes not only help in limiting the problems related to the subject to be discussed in the working environment, but also form the main axis of the research to be obtained at the end of the process. For this reason, the results of the workshop were evaluated as the experiences of the students and the instructors, as well as the gamification aspects of workshop experiences.

The data gathered from the final day presentations and the final manuscripts of the workshops. These collected data were analyzed by the workshop coordination team, and classifications were made regarding the strategies used in the design education process by the concept of gamification. In addition, it was aimed to discuss the potentials of ICTs enabling online interaction between instructors and students. Accordingly, the findings were analyzed under three headings in line with the mentioned above experience types: student, instructor, and workshop.

## 2. Workshops as an Informal Learning Environment in Design Education

In interior architecture education, design studios are the backbone of the curriculum. The creative ideation and production process, which are established in studio education, becomes an atmosphere where intellectual sharing between students and course instructors are ensured. Due to the nature of the design process, students deal with complex problems and different areas of expertise. The design studio content includes different areas of expertise, but in some cases, it may not meet the criteria of interest, at an equal distance to each student. In addition, besides the limited perspective and evaluation process in curricular education, there is a need for the existence of different and free perspectives and design methods. In this respect, the workshops provide support for a collaborative working culture and a free workshop environment.

The workshops contribute to design education by creating an informal learning area (Figure 1). The workshop environment is defined as an experience and interaction-oriented platform



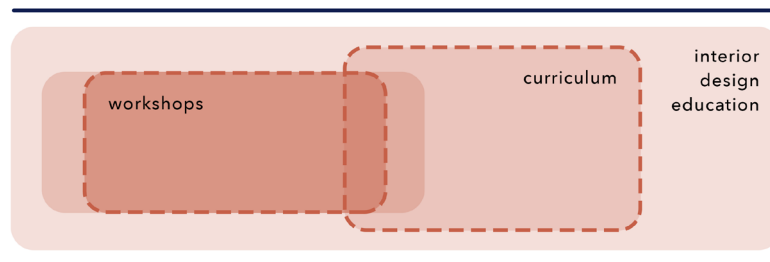*Figure 1:* *Relations of workshop and curriculum in the interior design education*

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where students participate voluntarily, goes beyond formal education restrictions, and depends on the curriculum developed in line with measurement and evaluation systems (Ciravoğlu, 2003; Yürekli & Yürekli, 2004). The workshops allow restrictions of disciplinary education to be dissolved through a specific problem or theme as well as support peer learning and creativity as being educational tools developed to create an understanding strategy for defining and exploring design problems in a short period of time (Turgut & Cantürk, 2015).

Kılıç and Arabacıoğlu (2021) define workshops added to the course contents as a dynamic working environment with the feature of continuous interaction between the instructor and the student. The use of the knowledge and methods obtained from informal workshops, within the 14-week design studio, in order to enable the student to gain experience in the determined subjects, gains importance in terms of the connection that design education will establish with current design issues and innovative technologies.

## 2.1. Information and Communication Technologies (ICTs) in Collaborative Design Workshop Environments

The characteristics of the working environment have a significant impact on the interactions and social presence in the design studio. By the development of the Information and Communication Technologies (ICTs) in the 21st Century, digital tools and virtual reality provide a major contribution to the studio structure and content of design schools by creating new learning environments. Studies investigating the use and contributions of technological innovations in design education and design studio are becoming widespread. These studies are usually carried out experimentally within the scope of informal workshops or design studio courses.

Gül et al. (2008), have developed and experienced a course named "Designing Virtual Worlds", and their experiences shows that 3D virtual worlds have the potential to make a major contribution to design education as constructivist learning. Similarly, Liu (2017) has also proposed the use of virtual environments such as Second Life to enhance the limits of Virtual Learning Environment (VLE) which is mainly defined as a system for delivering learning materials to students via web.

Olmos (2006) has studied the potentials of the virtual learning environment in an introductory design course and mentions that the training model based on the use of virtual learning environment has proven to be an effective tool in the context of virtual design studio. However, the limitations of these studies are common; these experimental courses are non-repetitive experiences in the context of a single course and its scope. Peimani & Kamalipour (2021) mentions that the acceptance of online, blended and hybrid models for course delivery has accelerated the evolution of higher education due to the emergence of COVID-19 pandemic. In other words, after the emergence of Covid 19 pandemic, online design education has become widespread.

The instructors and students start using digital interfaces actively in both formal and informal studio environments. In this way, the number of applied research and shared experiences has increased in online collaborative design studio environments. Gogu & Kumar (2021) has conducted a study focusing on the social connectedness of design students and instructors in virtual design courses during the sudden shift that design schools in India had to make from traditional face to face classes to online classes. The most noteworthy result of the study is the need for practical research to find solutions for online design studios to enhance the students and instructors' social connectedness. Alawad (2021) has worked on online interior design studios to determine the efficient experiences to improve and ensure the quality of design education by using a VLE such as Blackboard. This study emphasizes the importance of creating an online studio culture. (Sadovets et al., 2022) underlines that the opportunities for the use of games in learning technologies have emerged and expanded due

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to the global digital transformation of higher education.

It is an undeniable fact that all studies contribute to online design education from different fields, and publishing and sharing such experiences as research are of great importance. The effects of technology cause many significant developments in the structure of design studios. The use and spread of new approaches and methods has great potential to improve the quality of studio education. In addition to this, as a result of the widespread use of ICTs in many fields to gain the attention of researchers of different design disciplines, 'gamification' has emerged as a popular phenomenon that is used in learning processes.

## 2.2. Gamification of Learning and Instruction in Design Education

Koster (2005) defines "game" as a system in which players take a challenge defined by rules, interactivity, and feedback, that results in a significant outcome and has strong effects on players feelings. Kapp (2012) defines gamification as "a careful and considered application of game thinking to solving problems and encouraging learning using all the elements of games that are appropriate". Today, gamification finds use in training workers, educating students, solving problems, and creating new ideas and concepts in different fields ranging from business schools or government organizations to improving surgeon hand-eye coordination. Gamification of learning has an effect that increases student motivation and augments the learning process (Behl et al., 2022) which is a growing trend, and methods on how to use gamification in a non-game context need to be developed.

Mekler et al. (2013) emphasizes that "disassembling gamification into its components and implementing it in different non-game contexts, we may gain a deeper understanding of how gamification works and how it may be applied to solve real-world problems". To make a game which is motivational and exciting, game designers use game elements. Nah et al. (2014) identifies eight game design elements that are used

broadly in the educational and learning contexts based on their review of the literature: points, levels and stages, badges, leaderboards, prizes and rewards, progress bars, storyline, and feedback. Werbach and Hunter (2012) defines game elements under three headlines.

- game components such as achievements, avatars, badges, levels, points,
- game dynamics such as constraints, emotions, narrative, relationships,
- game mechanics such as challenges, chance, competition, feedback, rewards and win states.

A game system consists of a set of interconnected elements that occur within the "space" of the game, and includes actions and limitations integrated with the game elements. From the instructional point of view, the players of the game are actually the learners. The "space" of the games is an abstraction of reality, and the game elements form the essence of a selected situation. To create a game-based design workshop, the instructors can use a system in which learners engage an abstract challenge, defined by rules, interactivity, and feedback that results in an outcome revealing an emotional reaction such as motivation and excitement.

Kapp (2012) underlines that the gamification process is more than just a superficial game element such as prizes, points, and badges; but to set clear and specific goals and a set of rules to guide students. In addition to this, using time as a motivator, providing as much feedback as possible, storytelling and allowing failure can create efficient learning experiences. According to Kapp's (2012) research based on the findings from the various meta-analysis studies, the effective way to use gamification for educational purposes can be summarized as follows:

- Targeting specific content and precisely defining goals
- Providing information and feedback for students to understand
- Providing instructional support to help students understand how to use the game

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- Involving instructional designers in the educational game development process
- The rewarding game elements such as points and badges can have intrinsic value if it provides feedback to the player/learner

Roy et al. (2021) have used gamification design methodology and its implementation for creating awareness of ancient cultural heritage, and they concluded that gamification is an efficient and powerful educational tool which is also helpful to increase student awareness, motivation, participation, and community building.

In a design studio, students experience the design process within the framework of a design problem. The short form of the design thinking process can be articulated in five steps or phases: empathize, define, ideate, prototype and test. Aşkın (2019) worked on the potentials of gamification during the design process of interior architecture education, and the study shows that gamified method increased the students' motivation and was used as a tool in the problem determination process. It is very important to remake these studies in various ways and to ensure that the advantages of gamification in the field of education are also used in the design studio. For this purpose, the main theme of the summer workshop held at Işık University in 2021 was determined as "gamification and space".

**3. Case Study: Gamification and Space Workshop**
For this research, an informal and online workshop which was organized with the theme of "Gamification and Space", hosted by Işık University in the Department of Interior Architecture and Environmental Design, between 26th-30th July 2021 is investigated as a case study. The framework of the study is designed as an informal educational environment, which is a voluntary learning environment where grading is not used as an evaluation and success criterion.

Within the scope of the theme of gamification, a call for the instructors and researchers, who wanted to organize a workshop group in the context of "gamification and space" theme, was made for the workshop with certain questions as listed below:

- What kind of interfaces can be developed to increase the interaction between the designer-user-space with gamification?
- How can the perception of the city and the recording of historical processes be made accessible to everyone in an easy and lively way?
- How can online and face to face courses and design research be enriched by using gamification methods?
- What kind of potential does the interaction between gamification elements and spatial elements have?
- What can be designed based on "gamification" in order to understand and create the space?

After the call for the workshop groups, the timeline of the workshop started with the applications of the instructors. 23 workshop instructors contributed to the workshop with 11 different workshop themes. 53 students applied as participants and 49 completed the workshop. It should be underlined that only 8 of them were included in this study because data could not be obtained from the other workshops. Among 8 workshop groups, 5 workshops (W.01, W.02, W.04, W.05, W.08) were scheduled weekly, and 3 workshops (W.03, W.06, W.07) were scheduled as single-day. Students who participated in the weekly workshops were allowed to attend single-day workshops at the same time, upon their request. On the first day of the workshop, two seminars titled "Gamification and Space" and "Gamification for the Conservation of Historical Sites and Awareness" were held. On the last day of the workshop week, the process and the results of the workshops were shared by the instructors and participants (Figure 2).
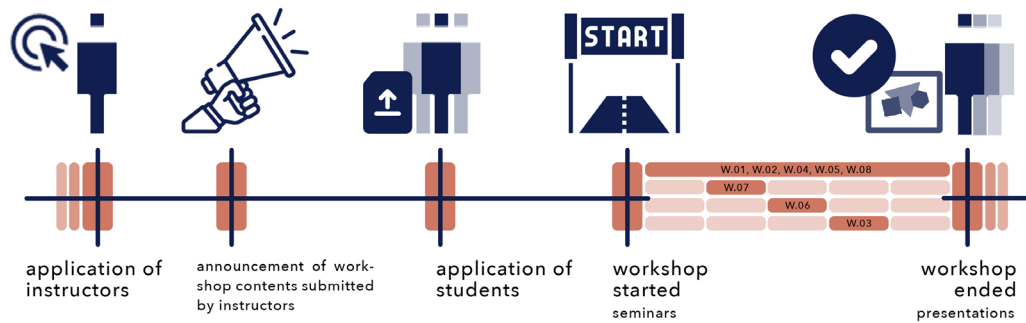
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*Figure 2:* Timeline of gamification and space workshop

The themes of the workshops addressed by the academics who responded to the call in the context of gamification and space consisted of a wide range of fields from archeology and the preservation of historical sites, user-oriented design, urban design, and space-body studies. The diversity of the workshop subjects and approaches demonstrated that the concept of gamification has a great potential on design education and design thinking. In the framework of the workshop timeline, the instructors' applications were received firsthand, after that each workshop title was determined. Following this process, the call for participation was launched by targeting to receive students' applications.

On Blackboard Platform, which is a well-known Virtual Learning Environment system used by most universities in online education, collaboration sessions were opened for each workshop group. Besides the workshop groups support Blackboard collaboration systems by some other virtual meeting and working environments such as Miro or Zoom when needed.

### 3.1 Data Collection
Data for the evaluation of the workshops were collected from the following sources:

- The final presentations made by the instructors and the participant students,
- The workshop evaluation texts.

The groups that completed the workshop to the end and submitted full evaluation texts were included in the evaluation process. Therefore, eight workshop groups were included in the evaluation of the research.

### 3.2 Analysis
As stated in the literature, our main aim is to reveal and share the potential of informal workshops on the contribution of education, technology use and gamification to design education, with the evaluations made under three main headings: student experiences, instructor experiences and workshop experiences. The results of the first data collection procedure on course contents were analyzed using qualitative research methods. In particular, the coding method as described by Strauss and Corbin (1990) was followed for qualitative data analysis. This way we were able to analyze the student experiences and instructor experiences in the context of informal workshops, the use of online tools and the contribution of the gamification concept.

Through this conceptualization, the representations and gamification aspects in different workshop groups were compared with each other, and similar ones were collected under the same category. Each category was, then, defined as a separate theme, and in-depth analysis was made under these themes. The definitions and classifications have been prepared by using Kapp (2012), Nah et al. (2014) and Werbach&Hunter (2012).

Three distinct approaches have been identified that have emerged specifically on the concept of gamification. These three different approaches, which we categorize as gamification aspects of workshop experiences, are as follows (Table 1).

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***Table 1:*** *Categorisation of gamification aspects of workshop experiences*

| gamification of the design process | gamification of the learning process | using the concept of gamification as a design theme |
|---|---|---|
| Using game elements and gamification techniques to create a frame and methodology for the design thinking process. | Using game elements and gamification techniques for teaching a specific subject to student or raising their awareness on a concept. | Designing a product or space that has game elements and gamification mechanics. |

- Gamification of Design Process
- Gamification of Learning Process
- Using the concept of gamification as a design theme.

By evaluating the different gamification methods used by the instructors separately, we were able to discuss the potentials of the game elements and gamification methods in the context of design studio education under the different gamification aspects of workshop experiences.

## 4. Findings
### 4.1 Student Experiences
The experiences of the participant students were evaluated both socially and theoretically. The fact that the workshop provided an informal experience and was based on volunteerism required the participant students to demonstrate their self-discipline. In addition, the instructors stated that they observed that the informal working environment helped students feel freer and behave comfortably during the design process.

The online structure of the workshop affects the social interactions of the workshop participants. During the workshop, students benefited from the opportunities offered by the online environment. For this reason, students both learned to produce with digital tools and tried to solve the problem of transferring the products they produced with physical tools to an online environment. Thus, they gained experience in combining different design and visualization tools.

The approach of the workshop groups to the concept of gamification from different perspectives contributed to the formation of different theoretical foundations. Thus, the participants were given the opportunity to experience different ways of thinking and producing by obscuring the boundaries of their own disciplines.

In the one-day workshops, working areas such as performance art and computational thinking were carried to the design processes, thus expanding the perspectives of the participants. Characteristics which are positive impact on participants of workshop are summarized below:

- Gaining new technical knowledge,
- Presentation skills through virtual environment and digital interfaces,
- Interdisciplinary criticism
- Teamwork,
- Experience in different ways of thinking and producing,
- Expanding the viewpoints on performance art, computational thinking, and motivation to choose the content they are interested in.

However, some difficulties of being online in the social context have created handicaps for communication. In one workshop, being online created inconsistencies in workshop participation for some participants. For this reason, the workshop group study was discontinued.

### 4.2 Instructor Experiences
Workshop groups have instructional processes designed by the instructors based on the concept of gamification. The instructors put the concept of gamification and game elements in their instructional process within their discipline or area of expertise. Additionally, they work with students who want to improve their skills in the instructors' area of expertise.

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On the closing day of the workshop, the works produced by workshop groups were presented by the instructors and students to all participants. Thus, instructors living in different cities had an opportunity to come together and share their knowledge. The establishment of these sharing environments is important in terms of providing potential for future interdisciplinary scientific studies. There are positive impacts of the workshop on instructors such as meeting a wide range of student profiles who have interests; creating a communication platform among instructors who are living in different locations; and increasing sharing knowledge about a particular topic.

### 4.3 Workshop experiences

The fact that a workshop is based on a specific theme enables all participants of it to approach the same subject from different perspectives. In terms of workshop experiences, it was examined in which aspects of the concept of "gamification" was included in the design of the instructional structure of the workshop groups. In this context, workshop presentations and manuscripts demonstrated that gamification differs in terms of the chosen instructional method. As a result of the data gathered from the manuscripts, the workshop groups using similar approaches and methods were divided into three separate categories as gamification aspects of workshop experiences; gamification for the design process, gamification for the learning process; using the concept of gamification as a design theme. Under the framework of the analysis of the workshop texts, the context of differing gamification approaches, and the effects of the gamification methods on students, as well as included types of the game elements in the instructional process are discussed. The characteristics and potentials of these three categories were analyzed in depth and the following results emerged (Table 2)

*Table 2: Gamification aspects of workshop experiences*[1]

| workshop no. | gamification aspects | instructional strategies | gamification elements | outcomes |
|---|---|---|---|---|
| W.01 | gamification of the design process | analyzing sample, organizing, elaboration. | rules, do over, feedback | systematization of the process, increase motivation, creating a base for the design product. |
| W.02 | gamification of the learning process | theoretical presentation, discussion, case study, visualization, mind mapping, checklist, repetition. | storytelling, instant feedback, levels, reward structures, leader board, goals, replay, role play, badges. | facilitating the use and transfer of knowledge, increasing the visibility and perceptibility of knowledge. |
| W.03 | gamification of the learning process | discussion, asking questions, speculating, conceptualization. | cooperation | promoting collectivity and interactivity, creation of simultaneously shaped performance products. |
| W.04 | gamification of the design process | discussion, conceptualization, representation. | storytelling cooperation | supporting holistic thinking, creating different perspectives |
| W.05 | gamification of the design process | case study, analyzing sample, encouraging participation, group moderation. | role play, rules, goals, points, badges, leader board, characters. | increase motivation and excitement, facilitating compromise and cooperation with gamification elements |
| W.06 | gamification of the learning process | theoretical presentation, discussion, observation, sketch. | goals, rules. | criticizing, evaluating, transforming the current situation, Increasing awareness of ergonomic design. |
| W.07 | gamification of the design process | inductive method, theoretical presentation, analyzing sample. | goals, rules. | strengthening interdisciplinary interaction, supporting the holistic thinking, learning and development process. |
| W.08 | using the concept of gamification as a design theme | inductive method, case study, group moderation, conceptualization. | role play, storytelling, feedback, rules. | using alternative design and presentation tools, increasing experience and interaction through the design product. |

[1] The definitions and classifications in the table have been prepared by using Kapp (2012), Nah et al. (2014) and Werbach&Hunter (2012).

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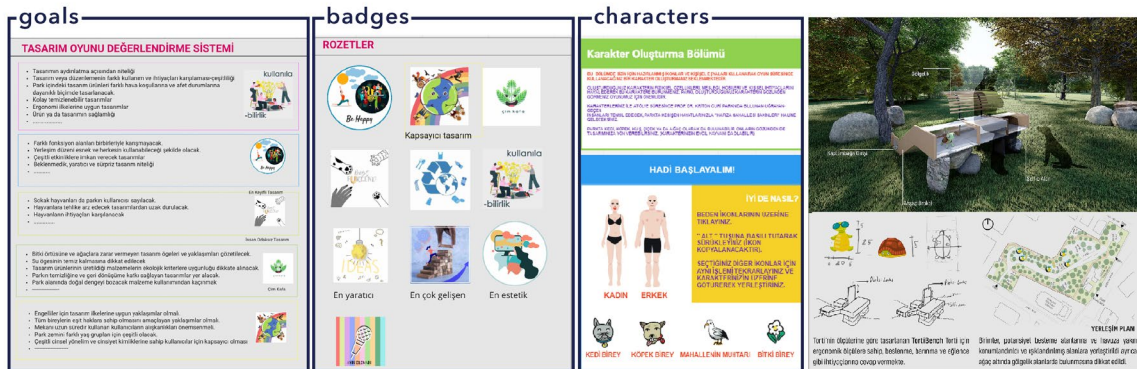
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*Figure 3: Gamification elements used by W.05 and sample student project*

Four workshop groups, (W.01, W.04, W.05, W.07) classified as gamification for the design process used game elements and gamification techniques to create a frame and methodology for the design thinking process to motivate creativity and ideation. The instructional process designed with this approach has been workshops that include product design, spatial narrative, practices for spatial perception, and conceptual design.

Considering the characteristics of the concept of gamification, it has been beneficial for the participants to realize the design process is more enjoyable and motivated in workshops where a product is actually designed. In addition, the instructional process has included experiences that will increase empathy with the user through role-playing elements. In the workshops on spatial narrative and conceptual design, in-group integration was maintained by the participants through graphic representation methods and gamification.

In the context of gamification's contribution to the design studio, it is concluded that using the gamification for the design process has the following potential.

- Systematization of the design process,
- Creating a framework for the design process and product,
- Supporting holistic thinking,
- Creating different perspectives,
- Facilitating compromise and cooperation between students with gamification elements,
- Strengthening interdisciplinary interaction,

- Supporting the learning and development process.

To create a framework by gamification for the design process, rules, badges, goals, points, leaderboards, feedback, do over and characters is used as game elements as well as storytelling, cooperation and role playing (Figure 3)

Workshop groups (W.02, W.03, W.06) under the category of gamification for the learning process, are investigated in order to find out how the process of workshop contributes to the learning activity of students. Three workshop groups used game elements and gamification techniques for a specific subject such as archeological areas and conservation to students or raising their awareness on a concept. Thus, gamification themes were used to become a holistic framework for the accurate and analytical transfer of information. In this way, learning ability is supported to explore and inhale the dimensions of space. In these workshop groups, various suggestions were presented on the use of gamification elements for the transfer and reproduction of a theoretical knowledge.

In the context of gamification's contribution to the design education, it is concluded that using the gamification for the learning process has the following potential.
- Facilitating the use and transfer of knowledge,
- Increasing the visibility and perceptibility of knowledge,

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- Promoting collectivity and interactivity, creation of simultaneously shaped performance products.

To create a framework by gamification for the learning process, storytelling, instant feedback, levels, reward structures, leaderboards, goals, replay, role playing, badges, cooperation and rules is used as game elements.

Workshop group (W.08) was using the concept of gamification as a design theme to design a product for a public space. The expectations from the students were to design a product for a public space with game elements and gamification mechanics. Concept of gamification ensured that design products were creatively produced as original pieces.

In the workshop where the design product was gamified, the participants created a requirement list suitable for their own scenario. In this way, the user-space relationship was strengthened, and the ground was prepared for cooperation.
As seen from the results of workshop experiences which are categorized as gamification for the design process, using the concept of gamification as a design theme emerged as a process-oriented approach. Continuing the interaction of the design product with the user through the concept of gamification offered a different method proposal.

In the context of gamification's contribution to the design education, it is concluded that using the gamification as a design theme has the following potential.

- Using alternative design and presentation tools,
- Increasing experience and interaction through the design product.
To create a framework by using the gamification as a design theme, role playing, storytelling, feedback and rules is used as game elements as well as the inductive method, case study, group moderation and conceptualization for instructional strategies.

## 4. Discussion & Conclusion
In the study, the potential contributions of the concept of gamification to design education were evaluated in line with the observations and experiences achieved during the workshop. Besides, the informal structure of the workshop and the current potentials of ICTs that allow online interaction were discussed.

In line with the previous studies, continuation of the workshop in an informal environment provided the positive effects as it has been observed that the level of knowledge and experience of the students has increased with different approaches of design disciplines in a more independent and creative environment.

The ICTs used in the workshop groups were varied throughout the workshop process. The Blackboard Platform was used as a well-known Virtual Learning Environment in the beginning of the online studio process. After that, in line with the requirements of the workshops, instructors added online meeting interfaces such as Zoom or online whiteboards for visual collaboration such as Miro to support their studio works. Besides, it has been observed that workshops which are supported by computer-aided design tools and methodologies contribute to enriching the informal learning.

The fact that the workshop was held online has a positive impact in terms of facilitating the meeting of coordinators and students from different cities. However, there is a risk of disruption in the progress of individual or group work when the session time schedule is not followed. It is necessary to develop methods to strengthen the communication between the students and the instructors in online platforms. On this basis, we conclude that it's important to regulate the instructional methods for online design education with the data obtained from applied research revealed by the evaluation of various design courses and informal workshop results. Future research on online design education might extend the use of ICTs and computer-aided design technologies in this context as well as a comparative analysis between online and face-to-face learning environments is necessary.

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The literature review demonstrates that the theme of gamification was mostly used to motivate the instructional process. Besides, using gamified elements in the learning process has a great potential especially when we consider online education, virtual learning environments and visual collaboration tools. The inclusion of gamification in design education and studio courses with various methods gains importance in this context. Within the scope of the "Gamification and Space" workshop, game elements and gamification methodologies are used for the instructional process of workshop groups in an informal environment.

The findings of this study can be understood as using various online tools and interfaces in a design studio environment with the help of gamified strategies has promising potentials for the development of online design education. Eight workshop groups have dealt with the gamification theme through different approaches. The concept of gamification is observed to be mainly associated with processes considering the instructional and design methods of the workshop groups. In conclusion, it would appear that by analyzing the instructional approaches of the groups in comparison with each other, three separate categories of gamification aspects of workshop experiences emerged: gamification of design process, gamification of learning process and using gamification as a design theme.

Overall, it might be concluded by underlining that our results demonstrate a strong effect of game elements and gamification on the design thinking process and design process of workshop groups. Four out of eight groups use game elements to create a framework for the design process to increase creativity and motivation. From the results, it is clear that in the workshop groups using gamification for the design process, the game elements that form a design studio framework were role-playing, storytelling, rules and goals, while points, badges and leaderboards motivated peer assessment and increased the interaction and excitement about the design process.

Three of eight groups use gamification for the learning process during the theoretical presentations and discussions as well as analyzing samples and encouraging participation. In these workshops, game elements such as storytelling, role-playing and instant feedback increased visibility and perceptibility of theoretical knowledge, while goals and rules strengthened the interdisciplinary interaction.

One of the workshop groups used the concept of gamification as a design theme. To compose creative experiences and increase interaction through the design product, the workshop group used role-playing, storytelling, feedback, and rules as game elements. As revealed in Mekler et al (2013)'s research, the results of the workshops also showed that the use of the gamification context for instructional purposes can also be the use of some of the game elements partially.

In conclusion, the gamification concept seems to improve various design education and studio methodologies. Future studies might fruitfully explore this issue further by organizing informal design workshops in the context of gamification or fourteen-week design courses with this framework. In addition to this, the methodology has potential for constructing informal activities that feed theoretical lessons as it offers the opportunity to experience theoretical knowledge in applied fields. Comparative analysis between the online and physical environment of the workshops is necessarily a topic for future studies in order to explore their contributions to the educational environment. Further studies should investigate the development of digital interfaces suitable for the design education. It is especially important that the interfaces provide interactivity/synchronization and have a customizable interface, supporting the creativity of both the instructors and the students.

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**Notes:**
1. This study has been presented with the title of "Online Workshop Experience As An Informal Learning Environment: Gamification And Space" as an extended abstract at the İÇMEK 5th Congress in June 2022.

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