

Student Perceptions Regarding the Blackboard Learning System Applied in Interior Architecture Project Courses During Covid-19

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Abstract – This article describes students' perceptions and satisfaction levels towards the Blackboard application, which they experienced as a learning tool throughout the design studio course they took during the Covid-19 pandemic. By making sketches, transferring ideas, sharing clear images, and accepting criticism in terms of satisfaction with the Blackboard system of instruction, it is attempted to understand the effects of features such as internet connection, technical infrastructure, and trainer. It has been observed that the lower grades of interior architecture students have a higher level of satisfaction with learning interior design through blackboard than the upper grade students.

Keywords – interior design studio, distance education, blackboard learning system, user satisfaction, Covid – 19.

1. Introduction

With the technological developments, the tendency towards distance learning in education and innovative learning and teaching methods have become widespread.

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Thus, the traditional studio model has begun to be considered as having internal elements that should be viewed critically and the results should be evaluated at different levels [23]. The incorporation of ICT into the traditional Design Studio model in the late 1990s resulted in significant reforms in the teaching of interior architecture, the location of learning, and the length of study for students. Distance Education is also used in education to create a learning environment in which students participate synchronously and asynchronously in the design phases of a project by processing and exchanging information using digital technologies [20]. Although these tools have been used in different fields in the historical process, an increase in the use of LMS systems has been observed in the courses of many universities after the nineties. However, they did not have general dissemination effects until the pandemic. With the effect of the pandemic, almost every university has had to continue education by applying such solutions. Following this critical point, online education was viewed as an alternative to certain aspects of the face-to-face education model, and the quality of the course provided became far more important for the course's effectiveness [9]. For example, it was argued that the technical difficulties experienced in the system will slow down the learning process in online education [15]. The effect of students' perceptions of online learning management systems and their experiences on their level of participation in the course was examined [6]. Researchers also emphasized the importance of examining the user perspective, as the efficiency of teaching is also dependent on the students' level of active participation and satisfaction with digital applications. Students' perceptions and success towards online education are related to their comfortable use of LMS systems such as Blackboard has been observed [13]. In order to make online education effective, the need to focus on the use of digital technologies that can effectively facilitate educational processes has arisen and the pros and cons are discussed before adopting an e-learning tool

[10]. The factors influencing student satisfaction with online learning in education were investigated in this study using the Blackboard management system.

Distance education is defined as a learning environment in which instructors and students are separated by time, distance, or both. In distance education, network technologies have been used to enable, promote, and disseminate learning at any time and from any location. It was stated that distance education includes three different generations [8]. The first generation (Web1.0) from 1994 to 1999 consisted of simply converting traditional materials into an online format, static pages and passive use of the internet. With the development of Web2.0, which is the second generation web platform since 2000, the pages started to gain a dynamic structure and users took a more active role in sharing information and ideas in cooperation with each other while developing content. The ongoing third phase is being incorporated into the next generation via tools such as increased collaboration, socialization, project-based learning and reflective practices, e-portfolios, blogs, social bookmarking and networking, and online simulations. The purpose of web-based applications was not to completely replace face-to-face interaction, but to increase students' learning from different platforms [26]. Since the use of digital education platforms has an impact on the performance of learning, and it is difficult for students to obtain information under stress, attention has been paid to their perceptions as well as their technical needs so that they can take the lessons efficiently. During the COVID-19 crisis, studies were conducted to identify student stressors. Researchers investigated topics such as exams (exam type and location), the internet, course duration, and the environment, and recommended measuring students' perceptions and attitudes toward online learning in various contexts using Blackboard [22]. Another study on the quality of online one-to-one lessons, examined teacher behaviours and showed that teachers' effectiveness in online lessons is high [9].

As in many areas of education, the distance education process in interior architecture has been the longest and most intensively with the pandemic. In the 2018 – 2019 periods, all courses started to be given with the distance education method and programs with certain management systems (Zoom, blackboard, Google classroom, etc.). However, for users who are accustomed to drawing on white surfaces, line aesthetics and expression on the Blackboard screen have made the aspects specific to architectural teaching controversial in the design process [21]. Interior Design studio has been a course where students develop their interior design skills and learn about materials and details. According to

the curriculum, from the first week to the last week, the students researched the given design problem, presented their concepts, analysed and sketched the existing building and its environment, made suggestions for materials and furniture using programs such as Sketch Up and Photoshop AutoCAD for 1/100 and 1/50 scale plans and section drawings. These studies were carried out with the help of the university-provided Blackboard program, which is an online educational tool that allows students to present their teaching/learning materials in the form of Power Point slides, MS Word, Acrobat, PDF documents, and video files, which students can access at any time and from any location. Interior architecture students also uploaded their presentation papers to the Compass System before the scheduled lesson time and presented them via Blackboard Collaborate. Blackboard Collaborate is a simple and reliable virtual classroom tool widely known in the educational processes of many universities around the world, used to support your online teaching and web conferencing needs that connects instructor, students and external guests. In 2006, it reached a usage percentage of over 70% with twelve million users in US colleges. The Blackboard homepage provides general course information such as the syllabus, textbook information, assessment, and other course-related information, and teaching/learning materials such as PowerPoint slides, MS Word documents, Acrobat PDF documents, and video files can be presented through Blackboard. In the Discussion Board, both instructors and students interact and announcements are made [18]. In shared virtual classrooms, students can interact directly with each other and with professors participating in video chat discussions. The discussion board allows teachers and students to interact during the learning process; Instructors can publish their instructions for the next lesson. Students can express any questions that may be related to the subject on the website, from questions about homework to technical issues, by raising their hands [5]. The Blackboard Learning System is frequently integrated with the Student Information System (SIS) in many university education systems, with lessons from the SIS (Pusula in this study) displayed in the Blackboard menu. Measuring and determining the factors that predict user satisfaction with the Blackboard learning system is regarded as one of the most important issues in the evaluation of e-learning systems.

Distance education in interior architecture was commonly associated with the separation of the learner and the trainer according to time or distance, the interaction between the trainer and the learner through electronic equipment, and the opportunity for the learner to earn a degree [5]. In addition, four

components that were considered very important for successful distance education programs in interior design; needs assessment, presentation technology options, interaction, and instructor involvement. It was stated that, despite the fact that collaborative competence is one of the critical skills that interior design departments are expected to develop during their education, very few students are capable of collaborating with others online [7]. Another research stated that although educators are worried about losing their jobs as technology replaces traditional methods, they find this experience better than their experience on campus in terms of both course organization and student interaction [4], [3]. On the other hand, some researchers have pointed out that online studio courses should develop more interactive areas, are not customizable, do not include facial and body language responses [5], and have disadvantages such as network connection problems, data transfer speed and communication problems [24], [25]. An argument about the need to create different discipline-specific approaches to investigate individual attitudes towards e-learning adaptation and suggested that the social and technical requirements of each discipline may be different [18]. The barriers to compliance with online design education were discussed, and it was concluded that if a social environment is provided, face-to-face and online education can be equivalent [28]. Examining the students' views on virtual classrooms for the lighting design course given in the Interior Design Department via Blackboard, it was emphasized that the majority of the students supported the idea of virtual classrooms for the theoretical part of the course, and student grades did not change in face-to-face or online courses [2],[1]. Factors were questioned such as gender, age, and study content and education level affect the efficiency of online learning [16]. The student's adaptation is suggested to be dependent on their level of awareness, familiarity with information technologies, and willingness to participate and adapt to the e-learning approach [29], whereas another study suggested that e-learning satisfaction is affected by the quality of the e-learning system [17]. Student satisfaction with Blackboard was investigated and inferences were made for a distance education course, that students were more committed to the improvement in their grades and delivery times. It was also investigated what factors influence students' satisfaction with The Blackboard Learning System and the factors influencing their satisfaction levels were investigated, and it was discovered that content quality, teacher, technical issues, and system-related factors all influence students' satisfaction. In studies on the development of e-learning, it has been pointed out that various factors can be used to predict or

explain what users avoid, adopt or are dissatisfied with [27].

According to the literature review, some studies show that students have a positive attitude toward Blackboard, while others show a negative attitude. The use of Blackboard and the transition to blended learning are defined as a situation surrounded by difficulties in all of the studies conducted. However, although there have been studies on e-learning in many disciplines in general, there has not been much work in the field of interior architecture on the platform they connect to and the approaches of people in the teaching environment. In this context, the evaluation of the transition process from face-to-face method to online learning with Blackboard in interior architecture studio courses and understanding their perceptions of e-learning during the COVID-19 epidemic of the students who experienced the courses will provide feedback to the course developers on teaching and learning [12]. The purpose of this study is to better understand students' perceptions of how to improve their satisfaction with Blackboard, which has been used as an e learning system to improve learning effectiveness. It is believed that the research on the expectations or satisfaction of the students about the system they use while taking online courses in interior design education, which aims to teach the components of the space, will contribute to the literature.

2. Hypotheses of the Study

This study was conducted to discover the expectations or satisfaction of students receiving interior architecture education regarding the platform through which they connect to the online course. It is based on data obtained from students who took their project courses online from the Blackboard application during the Pandemic process. In the questionnaire created in this context, the relationship between the technological experience of interior architecture students in lower and upper classes and their comfort in using blackboard was questioned. Based on these data, the relationships between students' satisfaction levels and perceptions towards the Blackboard application and their success in the project courses taken with the blackboard application were investigated at the level of classes. It is aimed to define the requirements of the distance education method to improve interior architecture project courses and to increase the level of spatial knowledge obtained from virtual environments. As a result, the primary hypothesis is that there is a link between interior architecture students' level of satisfaction with the project courses they take via the Blackboard application and their course success; Internet connection, technical infrastructure, trainer, making

sketches, conveying ideas, sharing clear images, being critical in this environment, etc. affects students' satisfaction levels. It is expected that students who have less technical problems in using the Internet will have a high level of satisfaction and success with Blackboard.

3. Method

In this research, an experimental study was carried out using Blackboard, an e-learning system. In order to test the above-mentioned hypotheses, a questionnaire-based method of evaluating students' experiences was used. The data obtained as a result of the survey were converted into a table in Office Excel program, and possible correlations were evaluated using SPSS 20.0 a statistical analysis software program. Statistical data that is descriptive such as frequency distributions for categorical variables, mean and standard deviation for numerical variables are given. Whether the factors affecting satisfaction, perception and success regarding the Blackboard application differed statistically or not was measured with t-test for numerical variables and ANOVA for categorical variables. To compare the correlations between the two variables, Pearson correlation analysis was used, and $P < 0.005$ was considered statistically significant. When more than one group needs to be analyzed together, the correlation is shown in the crosstabs. In addition, for numerical variables (for example, technological factors affecting blackboard satisfaction), whether the means differed statistically in the two areas was measured with the t-test.

The questionnaire was distributed to 153 interior architecture students selected randomly. These students participated in online studio project courses that continued for 11 weeks. Blackboard learning management system, a distance education software, was used in this 11-week period. Participants answered the questionnaire containing a preliminary information letter online via Google Forms. The survey was conducted during the quarantine period of 2019-2020. It was stated that there were no right or wrong answers in the applied questionnaires; therefore, users are asked to be sincere when answering questions. The survey tool has automatically implemented that all questions must be filled in completely before being sent and cannot be submitted twice. Cronbach's alpha was used to assess the internal consistency of the questionnaire's reliability, and the reliability coefficient of the questionnaire was found to be high. ($\alpha = 0.912$). In the survey: Four types of data were collected, namely the "user characteristics" (age, gender, education level, internet use, blackboard experience, etc.), "factors affecting satisfaction in online project course taken with Blackboard", "evaluation of the satisfaction in the project course taken with Blackboard and the success of the studio according to

different classes", "evaluation of the Blackboard system in the context of adjectives". The following questions were attempted to be answered using data: What are the Blackboard perception levels of interior design students? This question in the questionnaire includes the following sub questions directed at the students:

- a. Tell me about your prior experience with the Blackboard LMS: Have you ever used Blackboard before coming to university?
- b. How do you rate Blackboard in terms of various features?
- c. How does Blackboard affect learning?

4. Findings

In this part of the study, the results of the examination carried out with the appropriate test and analysis methods of the hypotheses formed in line with the research purposes are included. Table 1 below presents the sample's gender and class distribution. In addition, average age of participants is 21.

Table 1. Gender and Class Distribution of Research Participants

		N	%
Gender	Female	104	68
	Male	49	32
Class	1	55	36
	2	41	27
	3	25	16
	4	32	21
Total		153	100

Table 2 presented below shows the results of One Way ANOVA that conducted for the exploring the statistically significant mean differences between the Class and Blackboard Satisfaction variables. According to results there is a statistically significant mean differences between the class [$F(3, 148) = 5,194, p < 0.05$] and blackboard satisfaction of the participants. When these significant mean difference were investigated it could be stated that while the first classes have the highest blackboard satisfaction level ($3,67 \pm 1,12$) the fourth classes have the lowest blackboard satisfaction level ($2,47 \pm 1,42$).

Table 2. Mean Differences between the Participants' Class and Blackboard Satisfaction Levels

	Class	M	Std	F	p
Blackboard Satisfaction	1	3,67	1,12	5,194	0,002
	2	3,32	1,17		
	3	3,36	1,57		
	4	2,47	1,42		

Table 3 presented below shows the results of One Way ANOVA that conducted for the exploring the statistically significant mean differences between the

Class and Grade variables. According to results there is a statistically significant mean differences between the class [$F(3, 148) = 11,972, p < 0.05$] and grades of the participants. When these significant mean difference were investigated it could be stated that while the first class have the highest grades, the fourth class have the lowest grades.

Table 3. Mean Differences between the Participants' Class and Grades

	Class	M	Std	F	P
Grade	1	3,89	1,11	11,972	0,003
	2	3,63	1,22		
	3	3,28	1,51		
	4	2,23	1,43		

A chi-square test was used to investigate the relationship between class and online connectivity in Table 4. According to the results the relation between these variables was significant $\chi^2(6, N = 170) = 29,95, p < 0.01$

Table 4. Class Distribution by Online Connectivity

Group	Online Connectivity		
	No Technical Issue	Technical Issue No Negative Impact	Technical Issue Negative Impact
1	32	16	7
2	16	12	13
3	4	13	8
4	6	8	18

$$\chi^2(6) = 29,95, p = .000$$

In the Table 5 below a One Way ANOVA was performed to examine the statistically significant mean differences between the internet usage and blackboard satisfaction. There is no statistically significant mean difference between internet usage and blackboard satisfaction, according to the findings. [$F(4, 147) = 0,321, p > 0.05$].

Table 5. Mean Differences between the Participants' Internet Usage and Blackboard Satisfaction

	Internet usage	M	Std	F	P
Blackboard satisfaction	1 hour and below	3,00	1,73	0,321	0,864
	2-3 hours	3,13	1,53		
	4-5 hours	3,28	1,50		
	6-7 hours	3,25	1,36		
	8 hours and above	3,50	1,28		

In the Table 6 below a One Way ANOVA was performed to examine the statistically significant mean differences between the internet usage and grades of the participants. According to the results there is no statistically significant mean difference between the internet usage and grades of the participants [$F(4, 147) = 0,468, p > 0.05$].

Table 6. Mean Differences between the Participants' Internet Usage and Grades

	Internet usage	M	Std	F	p
Grades	1 hour and below	3,33	2,08	0,468	0,763
	2-3 hours	3,31	1,46		
	4-5 hours	3,24	1,44		
	6-7 hours	3,34	1,43		
	8 hours and above	3,68	1,28		

In the Table 7 below, the results of the Pearson correlation test that performed to explore the correlation analysis between the grades and blackboard satisfaction of the participants. According to the results grades of the participants and blackboard satisfaction were strongly, positively correlated $r(148) = .839, p = 0,000$.

Table 7. Correlations for the Grades and Blackboard Satisfaction

	N	M	SD	1
Grades	152	3,37	1,41	-
Blackboard Satisfaction	152	3,27	1,42	.0,839**

* = $p < 0,01$

In the table 8 below results of the multiple linear regression analysis that conducted for the exploring the technical predictors of the blackboard satisfaction dependent variable were presented. According to the results Technical Issues ($\beta = -.19, t(3, 147) = -2,328, p < .05$), Image Clarity ($\beta = .18, t(3, 147) = 2,230, p < .05$) and Microphone Clarity ($\beta = .16, t(3, 147) = 1,704, p < .05$) are statistically significant technical predictor of the blackboard satisfaction. When this results were investigated it could be stated that; a one-unit increase in the Technical Issues variable decreases the blackboard satisfaction by %19, a one-unit increase in the Image Clarity variable increases the blackboard satisfaction by %18 and a one-unit increase in the Microphone Clarity variable increases the blackboard satisfaction by %16.

Table 8. Multiple Linear Regression Analysis for the Technical Predictors of Satisfaction Level

	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	
	B	Std. Error Beta			
Technical Issues	-0,291	0,125	-0,190	-2,328	0,021
Image Clarity	0,229	0,126	0,180	2,230	0,018
Microphone Clarity	0,153	0,146	0,162	1,704	0,043
Internet Connection daily	-0,055	0,144	-0,032	-0,38	0,705

Dependent Variable: Blackboard Satisfaction; $R^2 = \%43$

In the table 9 below results of the multiple linear regression analysis that conducted for the exploring the educational predictors of the blackboard satisfaction dependent variable were presented. According to the results Easy Feedback ($\beta = .22$, $t(3, 146) = 2,322$, $p < .05$), Instructor ($\beta = .32$, $t(3, 146) = 5,264$, $p < .05$) and Active Participation ($\beta = .19$, $t(3, 146) = 3,943$, $p < .05$) are statistically significant technical predictor of the blackboard satisfaction.

Table 9. Multiple Linear Regression Analysis for the Educational Predictors of Satisfaction Level

	Unstandardized	Standardized		t	Sig.
	Coefficients	Coefficients	Beta		
	B	Std. Error	Beta		
Instructor	0,321	0,079	0,302	5,264	0,002
Active Participation	0,198	0,104	0,187	3,943	0,037
Ability to Sketch	-0,011	0,119	-0,007	-0,090	0,929
Conveying Opinion	0,117	0,13	0,074	0,899	0,370

Dependent Variable: Blackboard Satisfaction; $R^2 = \%55$

Table 10 presents the Average scores of the blackboard evaluation phrases. According to the results environment friendly phrase has the highest score ($M = 3,6$) and distracting has the lowest score ($M = 2,1$).

Table 10. Average Scores of Blackboard Evaluation Phrases

	M±Sd	Min-Max
Exhausting	2,4±0,9	1-5
Distracting	2,1±0,8	1-5
Suitable for Group Work	2,4±0,9	1-5
Environment Friendly	3,6±0,9	1-5
Comfortable	3,4±0,9	1-5
Social	2,4±0,9	1-5
Creative	3,1±1,2	1-5

The analysis in this study show causal relationships between identified factors and users' satisfaction with the Blackboard learning system. The findings also confirm the results of many previous studies.

5. Results

As assumed in the hypothesis of the research, in the project courses taken with the Blackboard application, features such as internet connection, technical infrastructure, trainer, making sketches, conveying ideas, sharing clear images, being critical of this environment, and Blackboard satisfaction levels of different classes of interior architecture students who take online design studio. And it has

been observed that it has a significant effect on course achievement. It was determined that 68% of the survey participants were female and 32% were male, with an average age of 21, belonging to the Z generation (Table 1). Generation Z is considered to be the closest group to the use of digital technology. As can be seen in Table 2, the overall satisfaction level from the online interior design studio training with Blackboard was above the average, and it was determined that the factors related to satisfaction level, studio success, and internet connection differ according to the classes. According to this, when the general satisfaction level of the project course taken with Blackboard is examined in terms of classes, it is concluded that the first graders have higher satisfaction than the senior grades. While the first graders were the most satisfied with the Blackboard education, it was followed by the 3rd, 2nd and 4th grades. The satisfaction levels of the second and third graders are very close to each other. It has been determined that the satisfaction level of 4th graders who have been educated with the traditional method for a longer period of time is low (Table 2). The results obtained from the findings related to satisfaction and indicating that the lower classes are at a higher level of satisfaction from the blackboard application according to the internet connection data also confirm the studies (Table 2, Table 4) [14], [29]. As seen in Table 3, it is concluded that the achievements and grade levels of interior architecture students who take project courses through the blackboard application are related. In general, the average success rate in project courses is over fifty percent. Considering the course achievements on the basis of classes, it was determined that the project grades of the first year students with high blackboard satisfaction were also higher than the upper classes. It is seen that the satisfaction level and course grades of the first and second year students from the blackboard application in interior architecture studios are higher than those of the third and fourth grades. As can be seen in Table 4, there is a significant relationship between the students' grades and the quality of their online connection to the project course they took via the blackboard. According to this, 1st and 2nd graders had less technical problems in internet connection, whereas 3rd and 4th graders faced more technical problems in internet connection. On the other hand, as seen in Table 5 and Table 6, there was no statistically significant relationship between students' internet usage time in a day and their satisfaction with the use of the Blackboard teaching system in project courses and their course success. As a result of the strong and positive relationship between students' grades and Blackboard satisfaction in Table 7, as their satisfaction with the Blackboard system increases,

their success in project courses also increases. When the results of the multiple linear regression analysis in Table 8, which includes the analysis of the factors affecting satisfaction, are examined; In the project courses taken with the Blackboard application, Technical Problems, Image Clarity, Microphone Clarity are statistically important technical determinants of satisfaction with the Blackboard application. When these results are examined; it is resulted that a one-unit increase in the Technical Issues variable increases Blackboard satisfaction by 19%, a one-unit increase in the Image Sharpness variable increases Blackboard satisfaction by 18%, and a one-unit increase in the Microphone Clarity variable increases Blackboard satisfaction by 16%, a one-unit increase in the Easy Feedback variable increases the blackboard satisfaction by %22, and lastly one-unit increase in the Active Participation variable increases the blackboard satisfaction by %19. The daily internet connection time has no significant relationship with the level of satisfaction. According to the results of Multiple Linear Regression Analysis for Educational Predictors of Satisfaction Level in Table 9, Easy Feedback, Trainer and Active Participation affect Blackboard satisfaction. The results are consistent with previous research indicating that teachers' effectiveness in online courses is high [9]. When the evaluation results of the Blackboard application by interior architecture students in the context of adjectives in Table 10 are examined, the feature of being environmentally friendly stands out the most. Later, it was expressed as comfortable and creative. In terms of being tiring, suitable for group work and being social, the results were in the middle ($M = 2.4$). On the other hand, the results of distraction are low (Average = 2.1)

6. Discussions

Based on the results obtained, it has been seen that Blackboard offers students the opportunity to use the internet's familiar environment for educational purposes, and the use of Blackboard and the integrated Pusula course management pedagogically is beneficial for student learning. It has been determined that it enables students to present course materials in a manner that promotes the development of organizational, communication, and time management skills. When it comes to student satisfaction with the Blackboard Learning System; the reported interrelationships between system-related factors and user satisfaction overlap with previous studies described in the literature. As main functions, the system includes a home page, teaching/learning materials, a discussion board, a quiz, homework, and a link. The curriculum, course information, assessments, and a course overview are

all available on the homepage. Blackboard can display teaching/learning materials in the form of PowerPoint slides, MS Word documents, Acrobat PDF documents, and video files. Instructors can post instructions on how to prepare for an upcoming lesson, while students can post any questions they have about assignments or technical issues with the website on the discussion board. While students can work off campus, the blackboard system provides an ideal opportunity for discussion board, chat room, regular communication with instructors and peers at remote sites. Students who want to test their knowledge or learn on their own can take online quizzes in the form of multiple choice questions. Instructors can also assign homework online, allowing students to upload assignment files before the deadline. The system enables the instructors and students to meet their needs easily. Lecture notes, audio recordings, animations, learning activities, case studies, and videos are all easily added to the system. The fact that people who provide fast and high quality connections without having technical problems in internet access are more successful and have a higher level of satisfaction also coincide with the study which argues that e-learning satisfaction will be affected by the quality of the e-learning system [17]. The fact that the satisfaction levels and studio achievements of the first and second grades are higher than the third and fourth grades are interpreted as the new generation is more sensitive to the quality of internet connection. It has been found that the time spent online in a day is not associated with success and satisfaction. Therefore, it cannot be said that spending a lot of time on the Internet brings success in e-learning.

7. Conclusion

LMSs are becoming an increasingly common e-learning system in higher education and they are increasingly being adopted in many universities around the world. Due to the fact that there has not been a complete return to the face-to-face education process in the post-pandemic period, the need for online education and the management systems used in this education to be examined in terms of improving education is increasing. It is important to evaluate the developing technologies on the basis of disciplines and even courses, as well as their place in education. Each distance education technology has its own positive and negative aspects. It is suggested to focus on the differences in perception regarding the application systems presented as a training tool in different courses. Findings in this study on interior architecture students' perceptions and experiences of Blackboard, including their satisfaction levels and course achievement, and their assessment of certain features of the system, revealed many advantages of using the distance learning approach for other courses

and highlighted some difficulties. It is thought that the results will contribute to the improvement of course quality, student performance and results. In general, students believe that the Blackboard application contributes as a complement to their learning of the project lessons. However, it is foreseen to increase the benefits of communication and collaboration tools to support group work where students have difficulties. As seen from this case study, it is a two-sided system where teaching and learning complement each other. It arises that the parties should enrich their experience of using the Blackboard Learning System to improve communication and learning actions. It is believed that expanding features that encourage interaction in the teaching process, such as the discussion board in the forum menu, will increase student satisfaction with the Blackboard Learning System and trigger factors related to the level of efficient learning [19]. Increasing the level of expertise and experience related to digital technologies and the internet is one of the factors that increase students' satisfaction with learning management systems [11]. In our example, almost all students declared that they were comfortable using the internet, but they expressed an opinion in the direction of increasing their experience with Blackboard. This situation, as it is highly related to the satisfaction of the students with the online courses, makes it important for the trainers to support the activities in the courses in a way that encourages them. Finally, in order to improve overall user satisfaction, it is recommended that the system be updated regularly at certain times and handled in different courses so that the system can keep up with the new developments in e-learning pedagogical methods and tools.

8. Limitations

It is concluded that a qualitative online connection or being able to connect without any technical problems is more effective in the satisfaction and success of the course application tool than the time spent on the internet in general in a day. Interactions with internet usage tools and distance education have been limited.

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