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Teachers' attitudes towards liquid crystal display (LCD) panel interactive board applications

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This study determined the viewpoints of teachers from different branches on using the interactive boards placed in classrooms in high schools, which are expected to replace the classical boards in the context of FATIH Project by the Ministry of National Education. Single Review Model was used in the present study where 21 teachers participated from different branches of high schools and the installation of interactive boards was completed in Fall Season of 2013 to 2014 Academic Year. The data of the study were collected by using the Liquid Crystal Display (LCD) panel interactive board attitude scale consisting of 10 questions. The data were examined by using descriptive and content analysis methods and the findings were listed and tabulated according to the questions of the scale. When the results were analyzed, it was observed that the teachers who participated in the study made use of the LCD panel interactive boards technologies frequently in their classes for educational activities such as presentation of slides and digital books or showing of films, videos, pictures, etc. Despite some infrastructural problems and lack of software, they stated that the advantages brought by the use of interactive boards in education were more than the drawbacks, and it was adopted by almost all teachers. However, in order to place the use of interactive boards in the desired level for all teachers, more than one in-service training are needed to cover the needs that are determined in the present study.

Key words: FATIH project, interactive board, teacher's attitudes.

INTRODUCTION

The overwhelming developments and innovations in technology, especially in computer and communication technology, have brought noticeable changes in many social lives. One of the areas affected by these innovations and developments is education. This process naturally affects the educational approaches and increases the importance of learning with technology (Demirli, 2002: 4). Besides that, with increase in the desire for education, increase in the number of students and amount of information, the complicated content of information to be taught, and the growing importance of individual education and similar reasons, the use of computers in education and also Computer Assisted Education (CAE) applications (Odabaşı, 1998: 135) have been initiated.

When the background of technology-supported

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education is considered, it is seen that it has a long history. Innovative educational regulations were designed in the 1960s after being inspired by new technological developments and by using them. Technological developments were used in many fields from computer-assisted teaching to individual educational systems and to open education medium for the purpose of reducing the limitations of classrooms in educational processes and to adopt the educational materials for individual learning level (Sandberg et al., 2011: 1334).

In the late 1950s, computers were used for management purposes in developed universities like Stanford and Illinois in the United States of America. With the production of computers that have low costs in 1960s and 1970s, projects were developed on educational applications (Odabaşı, 1998: 136). The examples of these projects may are as follows: Apple's Classrooms of Tomorrow (ACOT) in 1980s, Preparing Tomorrow's Teachers to Use Technology (PT3) in the USA in 2000s, the Magellan Project, with aimed that a laptop computer is given to each student in Portugal in 2008, the project in South Korea aiming that school books are loaded into electronic medium (Pamuk et al., 2013: 1800). In Turkey, the application of computer assisted education in educational institutions was brought to the agenda in 1984 for the first time (Odabaşı, 1998).

Using modern technologies in education is suggested as a solution to the known limitations and problems of traditional education (Demirli, 2002: 1), because traditional educational materials like course books guide students in learning the topics that are listed according a certain order that consist of interrelated chapters during the educational process (Chen and Hsu, 2008: 153). In this respect, to cope with the difficulties faced in educational field, the traditional approaches are inadequate, and when this situation is considered, it becomes clear that the best approach in the present day is to make use of the opportunities brought by information technologies (Kamacı and Durukan, 2012: 204).

In today's world, it is aimed that an individual is trained in such a way that will enable him/her to reach, collect, present, interpret and produce information. When the first applications in which computers were used for educational purposes and the ones used today are compared, it is clear that there are major differences both in terms of the cost of purchasing computers and the skills to use them (Saran and Seferoğlu, 2010: 252).

As a result of these developments, the FATIH (increasing opportunities and improving technology movement) project was brought to the agenda in 2010 for the first time as the most up-to-date and most developed version of CAE. In this project, computers have been replaced with interactive boards. Al-Faki and Khamis (2014) defined interactive boards as big touchscreens that have the duty of being a computer and projector. Muhanna and Nejem (2013) defined interactive boards as being more beneficial than computers because unlike computers designed for individual use, interactive boards are suitable for use in crowded classrooms and support active participation. The basic aim of the FATIH Project that was planned to be completed within 5 years after it was initiated, was to ensure equality without considering geographical differences, developing and improving the technology used in schools, and support the learning of students by placing the tools of information technology in the center of learning medium. The project was started by Ministry of National Education (MoNE) and supported by TÜBİTAK, Ministry of Science, Industry and Technology, and Ministry of Transportation, Maritime Affairs and Communication. The project consisted of 5 basic components (MoNE, 2013):

1. Providing the hardware and software infrastructure,
2. Providing and managing the educational e-content,
3. Active ICT use in educational programs,
4. In-service training for teachers and
5. Conscious, reliable, manageable and measurable ICT use.

To understand better why having interactive boards in classrooms is so important, the advantages and disadvantages of this technology should be considered. These advantages and disadvantages can be listed as follows (Brown, 2003; Glover et al., 2007; Karsenti, 2016; Smith et al., 2005):

Advantages

1. The system has a user-friendly interface; it facilitates the spread of information-communication technologies (ICT).
2. Teachers may bring existing ready materials together and prepare presentations because the system is suitable for multiple purpose use.
3. The system facilitates the learning of students, and increases motivation and participation in lesson.
4. Saves students from taking notes and has the flexibility that facilitates the sharing of documents via internet access.
5. The system helps education by considering individual differences.

Disadvantages

1. The system is more expensive than a computer of a usual board.
2. When the surface of the interactive board is damaged, it may be expensive to renew it.
3. It may be difficult to place it to make everybody benefit from it in a comfortable way in classrooms.

4. If remote access is allowed to the interactive board, foreign users may invade the system in an unwanted way.

Nowadays, students are not limited with learning in a fixed place (Sandberget al., 2011: 1334) and the duty of reducing the disadvantages mentioned above and protecting the advantages belongs to teachers who are informed and trained on the use of these technologies. But unfortunately, despite this massive rapid shift from the black/white boards to the IWBs, teachers have been faced with adapting to the use of the highly technological tool in their classes (Alparslan and Içbay, 2017: 1779). For this reason, it is extremely important to provide the technical education and support needed by teachers to use interactive boards (BECTA, 2011; Tatli and Kiliç, 2016; Teck, 2013). It is because although there are many claimed benefits for IWB technology, it is the duty of the teachers to exploit the positive features of IWBs and integrate them into their current teaching methodologies (Gashan and Alshumaimeri, 2015: 176).

In consequence, today, the technology is the reinforcer of education of students with its advantages and disadvantages. With transition to student-centered education from teacher-centered education, the role, activity, attitudes and behaviors of students, and technology has become the focal point of interest to study the effects on education (İşman et al., 2004: 11).

The purpose and importance of the study

The purpose of the present study was to gather the viewpoints of teachers who use interactive smart boards in their classrooms on the technology of the interactive boards; and determine their opinions on the innovations bought by FATIH Project, to see how often and how frequently they use the innovations, and to observe the positive or negative opinions on the use of interactive boards in education/classrooms, and to determine their problems in using interactive boards. Therefore, the present study focused on the attitudes and practices of teachers towards the use of interactive boards. To help the teachers and other stakeholders of FATIH Project advance their uses of the interactive boards, and to make contributions in order to improve/develop the existing technology, interviewees were asked eleven questions which are shown one by one in the findings.

METHODS

Design

The present study was conducted by using the Single Review Model, which is one of the general review models. Review design generally means to define the existing situation about the topic of a study by taking its photo (Büyüköztürk et al., 2012: 177). In this study, the use of interactive boards, which are provided to schools in the context of FATIH Project, by teachers, and the viewpoints of teachers working in schools of MoNE were investigated in terms of their opinions about this technology.

The population and sampling of the study

The study was conducted in 2014 in Malatya City, Turkey. The study was conducted as interviews that included 21 teachers working at high schools in 7 different colleges where interactive boards were installed completely and the teachers were trained on the use of interactive boards. When defining the study group, the convenient sampling method, which is one of the purposeful sampling method was preferred. According to Yıldırım and Şimşek (2011), this method leads to speed and practicableness in a study, and has relatively lower costs when compared with other methods. The teachers had received training on using interactive boards, and were on active duty in schools where the FATIH project was applied, which were accepted as the basic criteria in selecting the teachers for the study group in the present study. The demographical data of the teachers who were included in the study are given in Table 1.

Data collection tool

The “LCD Panel Interactive Board Attitude scale” (Koçak and Gülcü; 2013), which was found in the literature review was used as the data collection tool in the present study. The reliability and validity studies of the scale were evaluated by three academicians who are specialized in assessment and evaluation, curriculum development and computer. The scale consists of 2 sections, the first one including demographical data of the participants, and the second one including the open-ended questions were prepared to determine the viewpoints of the participants on using interactive boards. The semi-structured interview form is a data collection tool that enables the researcher to find the differences and similarities in the answers of the participants given to the study questions, and make comparisons in the light of the data. Unlike quantitative studies, in quantitative studies, some alternative concepts such as credibility, transferability or conformability are used for validity and reliability (Yıldırım and Şimşek, 2011).

Analysis of the data

The qualitative data that were obtained with the interview form were analyzed by the author of the study by using the content analysis technique, and were used in the study after the qualitative data were digitalized. In the content analysis, similar data were grouped and encoded under certain concepts and themes, and the categories (themes) were found, and the findings defined and interpreted by organizing the codes and themes (Balcı, 2011; Büyüköztürk et al., 2012; Yıldırım and Şimşek, 2011). In interpreting the data obtained with the content analysis, generally, frequency and percentage are used (Büyüköztürk et al., 2012: 243). The basic aim in digitalizing the qualitative data such as frequency, percentage etc. is to increase the reliability of these data, to reduce their biasness, and make the data to become suitable to make comparisons between categories (Yıldırım and Şimşek, 2011). In this respect, the findings of the study are shown in numbers and tables.

In addition, specialist viewpoints were received for the categories in the reliability study.

Table 1. Demographical data of the teachers.

Variables		No.	%
Branch	Information Technologies	7	33.33
	English	4	19.04
	Geography	2	9.52
	Turkish Language and Literature	2	9.52
	Other (Philosophy, Mathematics, History, etc.)	6	28.56
Gender	Male	16	76.19
	Female	5	23.81
Educational experience	6-10 years	9	42.85
	11-15 years	4	19.04
	16-20 years	4	19.04
	21 years and above	4	19.04
Age range	26-30 years old	3	14.28
	31-35 years old	7	33.33
	36-40 years old	5	23.80
	41-45 years old	2	9.52
	46 years old and above	4	19.04
Duration of using Interactive Board	I do not use at all	1	4.76
	1-2 hours	6	28.57
	3-5 hours	4	19.04
	6-10 hours	5	23.80
	11 hours and above	5	23.80
Institution	High school	21	100
Total		21	100

FINDINGS

Technological devices used by teachers in their daily lives

The question “What are the technological devices you use in your daily life?” was asked the teachers who participated in the study to learn which technological devices they used in their daily lives. The data on the technological devices used by teachers in their daily lives are given in Table 2.

According to the data obtained, the teachers stated that all of them used computers with or without any other technological device(s) by it in their daily lives. The use of interactive phones, table PCs, and mobile phones follow computers. Two teachers stated that they usedcomputers in their daily lives. Some viewpoints of the teachers on this topic are as follows:

Teacher 16: “I generally use computer and smartphone”.

Teacher 7: “Mobile phone and desktop computer have become inevitable for me”.

Technological materials used by teachers in their classes

The frequency and percentage values of the answers given by the teachers to the question “What are the technological materials you use in your classes?” are given in Table 3.

It was observed that the teachers used the four elements of “Flash – PDF – Picture - Video” (28.57%); and the third elements of “PDF – Picture - Video” (23.80%0. It is also observed that the other participants preferred different combinations of the “Flash – PDF – Picture – Video – Office programs” materials in their classes. Another finding shown in Table 1 is the fact that all participants but 1 teacher use at least two different materials in their classes. It attracts attention that at least

Table 2. The technological devices used by teachers in their daily lives and their distributions.

Variables	No.	%
Computer - Smart Phone	8	23.80
Computer - Smart Phone - Tablet Computer	4	19.04
Computer - Mobile phone	3	14.28
Computer alone	2	9.52
Computer - Mobile phone - Tablet Computer – Media player – Smart TV – Home cinema system	1	4.76
Computer – Smart Phone - Tablet Computer - Media player – Smart TV – Home cinema system	1	4.76
Computer – Smart Phone - Tablet Computer - Smart TV	1	4.76
Computer - Smart Phone - Tablet Computer - USB Memory	1	4.76
Total	21	100

Table 3. The technological materials used by the teachers in their classes and their distribution.

Variables	f	%
Flash – PDF – Picture - Video	6	28.57
PDF – Picture– Video	5	23.80
Flash – Office programs – Picture - Video	2	9.52
Flash - PDF – Picture	2	9.52
Flash – PDF - Video	2	9.52
Office programs – PDF - Video	1	4.76
PDF –Video	1	4.76
Flash – PDF	1	4.76
Office programs (word, excel, powerpoint)	1	4.76

2 of the "Flash – PDF – Picture - Video", which had a rate of 28.57%, were used in 95.24% of all the combinations. Some of the viewpoints of the teachers on technological materials they use in their classes are as follows:

Teacher 20: "First of all, I use PDF and Paint. Of course, flash is also indispensable".
Teacher 9: "I use PDF and class teaching videos".
Teacher 21: "Video, PDF and paint are the most frequently used tool by me".

Viewpoints of the teachers on LCD panel interactive board technology

The viewpoints of the teachers on the hardware infrastructure of LCD panel interactive board technology were examined with the question "What are your viewpoints on LCD panel Interactive Board technology (architecture)? In Table 4, the frequency and percentage values on this field are given. 11 of the teachers stated completely positive viewpoints on Interactive Smart Board Technology with a rate of 52.38%, 6 of them stated that although they had positive viewpoints, there were also some missing points with a rate of 28.56%. 4 teachers (19.04%) stated negative viewpoints of this technology.

It was observed that when asked about the hardware infrastructure of the Interactive Board, that is, the FATIH Project, teachers considered this technology as a positive development; however, it was also observed that they had several hesitations about the hardware that constituted the system. Because the screen of the interactive board may be small in crowded classes, and in some well-lit areas, the LCD panel has high brightness, which makes it difficult for students to see it; the weariness in the eyes when used constantly, and similar negative points constitute the bases of these hesitations. Some other negative points are, the breakdown of the operation system, inconsistent software, virus infection and reduction of in-class interaction. Some of the viewpoints of the teachers on the infrastructure of the LCD Panel Interactive Smart Board technology are as follows:

Teacher 10: "It has been included in indispensable elements for a quality education".
Teacher 17: "New-generation interactive boards are

Table 4. The viewpoints of the teachers on LCD panel interactive board technology.

Variables	f	%
Positive	11	52.38
Negative	4	19.04
Positive but infrastructure missing/inadequate	3	14.28
Positive but technology must be developed	2	9.52
Positive but expensive technology	1	4.76

Table 5. Viewpoints on using LCD panel interactive board in education

Variables	f	%
Visual-Audio enhancement	6	22.22
Saving time	5	18.51
Motivating-Permanent education	4	14.81
Education inadequate	3	11.11
Unnecessary investment	2	7.40
Infrastructure missing	2	7.40
Using it must be compulsory	2	7.40
Other (unhealthy, internet connection, misuse)	3	11.11

perfect in many ways, because the projection devices made the previous technologies dysfunctional."
Teacher 5: "Touchscreen is very good. I think this is a perfect technology."
Teacher 2: "I do not find it as a positive development to apply it without forming an infrastructure system. Aside from this, it facilitates the teaching of the classes..."

The viewpoints of teachers on using LCD panel interactive board in education

The teachers mostly gave positive answers to the question "What are your opinions about using LCD Panel Interactive Board in education?" They stated positive viewpoints especially because interactive boards were visual-audio and ensured saving of time. The frequency and percentage values of the teachers on using LCD Panel Interactive Board in education are given in Table 5.

In light of the data given above, it is possible to claim that the majority of the teachers have positive approaches on the use of LCD Panel Interactive Board in educational field. The positive viewpoints have a total of the visual-audio enhancement, ensuring motivation and permanent education, saving time with continuous internet connection. The negative viewpoints of the teachers are as follows: training on the use of interactive boards is inadequate, there are several missing points in the infrastructure, there are potential health problems, and the interactive boards may be misused. Some viewpoints of the teachers on the use of Interactive Board in Education:

Teacher 11: "The system is a late but positive Educational tool."
Teacher 1: "I find the system beneficial because it is versatile, the data can be visualized, and it increases the interests of students in classes, and makes it possible to reach information."
Teacher 12: "... The system is a revolution for education; however, the user must have adequate training."

Requirement of LCD panel interactive board

Answers to the question "Would you like to have LCD Panel Interactive Board in your classes for the topics you teach? Why?" are given in Table 6.

90.47% of the teachers replied "Yes" to the question and stated that Interactive Board was necessary. They stated that the reason for this was the fact that the system made them save time and energy. One of the teachers was indecisive, and 1 teacher said "No" (4.76%) because the teachers were inadequate, adequate productivity could not be received from the Interactive Board. Interactive Smart Board had multimedia, that is, it may provide the benefits that might be brought by many different tools alone, provide unlimited material in terms of e-content with internet connection, saves time and energy from the self-energy of the teacher, which makes

Table 6. Viewpoints on the necessity of LCD panel interactive board.

Variables	n	%
Yes	19	90.47
Sometimes	1	4.76
No	1	4.76
Total	21	100

Table 7. Viewpoints on the requirement of traditional board.

Variables	No.	%
Yes	14	66.66
Sometimes	5	23.80
No	2	9.52
TOTAL	21	100

this technology attractive for education. Some viewpoints are as follows:

Teacher 7: "Of course, I want. The more these address as many sensory organs as possible, the better the topic is learnt by the student".
Teacher 6: "Of course, I want. Because I am a person who loves videos, presentations and paint".
Teacher 2: "I do not want. Because the teacher does not know how to use it, the desired productivity cannot be achieved".

The necessity for using traditional board

"Would you like to have a traditional board accompanied by an LCD Panel Interactive Board in your classes? Why?" the sixth question and the viewpoints of the participants on having traditional boards as well as LCD Panel Interactive Board in their classrooms are given in Table 7.

14 of the teachers (66.66%) stated that they needed traditional board, 5 of them (23.80%) stated that they sometimes need it, the remaining 2 (9.52%) stated that they do not need traditional boards any more. Majority of the teachers who replied "Yes" said that they preferred traditional boards because they could write without any trouble and could do many things on the traditional board they otherwise could not perform on interactive board. Although, the teachers who replied "sometimes" shared the same justifications with those who replied "Yes", they stated that they did not consider classical writing board as a requirement. Some of the viewpoints of the teachers are as follows:

Teacher 17: "I think that traditional boards should also exist, because interactive boards and their erasers are not adequate for some processes."

Table 8. Intensity of using LCD panel interactive board during classes.

Variables	Frequency	%
Every stage of the class	16	57.14
At the end of the class	5	17.85
In the beginning of the class	4	14.28
In the middle of the class	3	10.71

LCD panel interactive board use intensity during classes

The answers given by the participants to the question "At which stage do you use LCD Panel Interactive Board during teaching in your classes (in the beginning, in the middle, at the end, continuously, etc.) and why?" are given in Table 8.

It was determined that majority of the teachers (57.14%) used Interactive Boards at every stage from the beginning of the classes until the end. 17.85% of the teachers stated that they used Interactive Boards at the end of their classes for the purpose of solving question related to the topic or to summarize the topic of their classes. A very slight difference was detected between the teachers who stated that they used the Interactive Boards at the beginning of the classes (14.28%) or in the middle (10.71%). The teachers gave their viewpoints on this topic as follows:

Teacher 14: "I always use the Interactive Boards because I need to zoom or shrink the images during classes, or underline important concepts and use maps sometimes."
Teacher 21: "The Interactive Boards is always on and I use it when I need it to show the pictures and shapes in the topic of the class".
Teacher 18: "I generally use it in the middle of the class. Nothing can replace interactive communication".

The purpose of using LCD panel interactive board

The distribution of the data given to the question "For what purposes do you use the LCD Panel Interactive Board in your classes?" are given in Table 9.

Teachers were asked a question on part of the teaching content they preferred using the Interactive Boards, and the rate of the teachers who stated that they used the Interactive Boards when "they were teaching" is 35.29%. Moreover, 33.33% of the teachers stated that they used the Interactive Boards when they were solving

Table 9. The purpose of using LCD panel interactive board

Variables	f	%
Teaching the topic	18	35.29
Solving questions	17	33.33
During Activities	10	19.60
Assigning homework/solving	4	7.84
During Applications	2	3.92

Table 10. Positive viewpoints on LCD panel interactive board

Variables	f	%
Using time efficiently	13	26
Visual-audio	13	26
Attention-motivation-interest	7	14
Technological properties	5	10
All-in-one property	4	8
Permanency in education	4	8
Energy saving	4	8

problems. Ready-made documents which enable teachers save time in which they write the questions were the main preference for teacher to use the Interactive Boards. 19.60 of the participants stated that the reason for their preference was conducting activities. 7.84% of the teachers stated that they preferred the Interactive Boards when they assigning homework or receiving feedbacks about homework. The percentage of teachers who stated that they used the Interactive Boards for activities as the last item was 3.92%. Some of the viewpoints of the teachers on this topic are as follows:

Teacher 8: "I mostly use the system in activity part of the class because I think nothing can replace the teaching of a teacher".
Teacher 19: "I use the system in teaching the topic and solving problems".

Positive and negative sides of interactive boards in the viewpoints of the teachers

The answers given by the teachers to the questions 9 and 10 which are "What are the positive/negative sides of the Interactive Boards they experienced during their classes?" are given in Tables 10 and 11.

The properties (positive attributes) of the LCD Panel Interactive Board were mentioned in the first rank with 26% by stating "using them with more efficiency" and "visual-audio". The viewpoints of teachers that the Interactive Boards increase the motivation, interest and attention in classes for the students were determined as 14% in the second row. The viewpoints of the teachers who considered the Technological properties of Interactive Boards as a positive side were in the third row with 10%. In addition, characteristics of many devices being collected in one single device, the increase in permanency of learning, and saving energy for teachers are among other positive viewpoints of the teachers on Interactive Board. The most positive side of Interactive Boards is that it contributes to the productive use of their times for teachers and include visual-audio enhancement in their classes. Some of the viewpoints of the teachers are as follows:

Teacher 20: "Saving time, I do not expend my energy, ... The system does the job of more than one devices alone."
Teacher 13: "The visuality increases, it saves time."
Teacher 10: "Touch-able technology, fast access to information with internet, flash memory disk may be used simultaneously with USB connection".

The teachers stated that the most important negation about the system was virus infection with a rate of 25.71%, disconnected internet, requiring format, etc. technological problems. Following these problems, the teachers stated that the system reduced the in-class interaction between the teacher-student and student-student, and the new technology makes the eye become weary and has radiation problems with a 14.28%, which is shared by the two teachers who shared these viewpoints. Some teachers stated that this technology was expensive for our country, it was difficult to find materials on their branches, students misused the interactive board and played games and listened to music with a rate of 8.57%. Another viewpoint with 8.57% is the one claiming that the Interactive Board does not have any negative side. The screen is small in some classrooms and cannot be seen by students and writing on touchscreen is not so easy and functional with other negative sides of the new technology stated by the teachers. Some teachers also considered the LCD panels as a threat to health. Some viewpoints of the teachers on the negative sides of Interactive Boards are as follows:

Teacher 8: "Misuse, students watch only movies… In addition, it has many missing points as touch-able screen, I mean the sensitivity is inadequate".
Teacher 9: "The dominance on the classroom reduces when dealing with the board. Viruses are infected and the process of the classes is disrupted".

The properties of LCD panel interactive boards that are used more frequently

The list of the properties preferred with the highest

Table 11. Negative viewpoints on LCD panel interactive board.

Variables	f	%
Technological problems (virus, disconnection etc.)	9	25.71
Reducing in-class interaction	5	14.28
Unhealthy	5	14.28
Expensive	3	8.57
Lacking of course material	3	8.57
Misuse	3	8.57
No negative sides	3	8.57
Screen size	2	5.71
Not suitable for writing	2	5.71

Table 12. The most frequently used interactive board properties.

Variables	No.	$\overline{X}$
Presentation	1	7.29
Film-video show	2	6.38
Picture show	3	6.14
Course book	4	5.95
Student's book	5	4.95
Writing	6	4.52
Internet connection	7	3.76
Drawing	8	3.62
Saving the notes on the board	9	2.38

frequency by the teachers when using LCD panel Interactive Board is given in Table 12. As shown in Table 12, 7.29% of the teachers stated that they used primarily, the "Presentation" property. Among the most frequently used properties, "film-video show" (6.38%) is the second and "picture show" (6.14%) is the third. Course book (5.95%), student's book (4.95%) and writing (4.52%) are the other most used properties of the interactive boards. Internet connection (3.76%) and drawing (3.62%) are the least ones used for educational purposes by teachers in their classes.

RESULTS AND DISCUSSION

The percentage of use of computer technology (100%) and interactive phone technology (85.72%) was close to each other. This finding shows parallelism with the results reported by Koçak and Gülcü (2013) and is important because teachers who have adopted computer and touchscreen technologies in their daily lives are ready to use this technology both in mental and in physical terms. Tatli and Kiliç (2016) also reported that more computer use increases the use of interactive boards more effectively. This is also supported (question 4) by the teachers' positive attitudes towards using interactive boards in educational settings (80.96%) over negative attitudes (19.04%). Again, these findings show that the more the teachers interact with the ICT devices, the more positive their overall satisfaction on interactive boards.

On the other hand, with regards to the negative effect of interactive boards, technical problems (25.71%) are a big challenge to teachers as stated in the studies of Koçak and Gülcü (2013), Kurt et al. (2013), Pamuk et al. (2013) and Karsenti (2016) which are important in that they show the seriousness of the situation. The problems that arise due to lack of infrastructural services and technical ones are revealed as the other negative sides of the Interactive Boards and the FATIH Project. These findings show similarities with the study conducted by Erduran and Tataroğluin (2009). In addition, software problems and missing documents were also given as negative effect of the interactive Board in education by Gürsül and Tozmaz (2010), Koçak and Gülcü (2013), Kurt et al. (2013) and Türel (2012). In order to solve these negative points, the teachers recommended that more in-service trainings should be provided for teachers, and it might be compulsory to use interactive boards in classes for a period of time. Teachers who claim interactive boards are unhealthy (14.28%) and reduce in-class interaction (14.28%) should be informed by the

experts of that domain. Otherwise, negative opinions and drawbacks may affect the positive interaction of people with this technology.

Although, some negative opinions are shown for the interactive boards when the stage and purpose of using the interactive boards by teachers were analyzed, it was observed that majority of the participants used the Interactive Boards at every stage from the beginning to the end of their classes; however, it was also observed that this continuous use was not at the same intensity during classes, and increased when the topic is being taught (35.29%) and problems are solved (33.33%). This situation may be explained with the excessive presence of e-content like class teaching videos and ready-to-use question pools on the internet. Videos are more enhanced in terms of audio-visual when compared with plain teaching, and the time spent in writing the questions on the boards is saved because ready-to-use documents reflected on the screen are among the reasons the Interactive Boards are preferred; and also, it must not be ignored that teachers are in constant struggle to solve more questions with students who are studying for national exams, which makes Interactive Boards to be used with such an intensity. The reason why the Interactive Boards are preferred less in homework and practice part is that these processes are performed with oral communication rather than written. In studies by Erduran and Tataroğlu (2009), Gürsül and Tozmaz (2010) and Kurt et al. (2013), it was also reported that the Interactive Boards were preferred more in teaching class topics and in solving questions. Thus, the basic reason for using the Interactive Boards especially towards the end of classes (17.85%), which are in fact used at every stage (57.14%), may be that the teachers' use the Interactive Boards for solving questions as mentioned earlier.

Independently of class stages, the findings also show that Interactive Board "makes classes to be visualized" and "enhance the use of multimedia contents and tools" which supports the findings of Slay et al, (2008). Using time efficiently, increasing student motivation, making classes become more attractive, and providing rich content for the topics of classes are other positive sides of Interactive Board (Altınçelik, 2009; Çoklar and Tercan, 2014; Erduran and Tataroğlu, 2009; Gürsül and Tozmaz, 2010; İşman et al., 2012; Koçak and Gülcü, 2013, Kurt et al., 2013; Sadi et al., 2008).

Besides the advantages above, what make interactive boards more comfortable for teachers are, of course, e-materials such as slides, videos, animations, books, etc. The analysis of the findings indicated that doing slideshow (7.29%), film-video (6.38%) and pictures (6.14%) are the most frequently preferred properties of interactive boards. The basic reason for this situation is that the materials exist for almost all branches. In addition, the teachers who stated that they used the Interactive Boards for teaching their classes to prioritize these materials confirmed this already expected situation. Similarly, internet connection, drawing, and saving the notes on the board at the last row may be explained with the incomplete infrastructural services. The findings of the study are parallel to the findings of Erduran and Tataroğlu (2009), Koçak and Gülcü (2013) and Kurt et al. (2013), but contrary to the findings of Altınçelik (2009) claiming that "the most frequently used property is writing", and the finding of Koçak and Gülcü (2013) claiming that "the least 3 used properties are showing pictures, internet connection and writing".

Overall, the findings of this study show that teachers think Interactive Boards are very useful and necessary; however, traditional boards should also be included in classes. The basic need for the traditional writing board is the fact that unlike the touchscreen that does not have adequate sensitivity, it is easier to write on traditional green or white boards. Some technological and infrastructural problems may also be considered as other factors that drive teachers to the traditional board.

After all, it is clear that, although teachers have some anxieties and problems, majority of the teachers consider the use of touchable Interactive Boards in a positive way, and use them frequently in their classes. Hence, they need technological support to take advantages of this utmost technology in educational setting.

RECOMMENDATIONS

Based on the findings of this study, to make use of Interactive Board in Educational settings in a more efficient and productive way, the followings are recommended:

1. In order to take the Interactive Boards to the desired level for all teachers, more than one in-service trainings must be organized in the light of the needs determined in the study.
2. It is necessary that a computer teacher is assigned to help the teachers in order to solve the technical or technological problems in every school.
3. The contents of the EBA website (Educational Information Network) which provides materials for teachers who are in need must be increased in a fast manner, and a user-friendly interface must be provided.
4. The results obtained in the present study may be supported with future studies.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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