Hasan Ali Yücel Eğitim Fakültesi Dergisi
Cilt: 11, Sayı 22, 2014-2, s.39-54

THE EFFECTS OF USING AN INTERACTIVE WHITE BOARD IN TEACHING ENGLISH ON THE ACHIEVEMENT OF PRIMARY SCHOOL STUDENTS

Meral ŞEN[*], Ahmet AĞIR[**]

ABSTRACT

In this study the effects of using interactive white board on primary school students' achievement in teaching English were examined. The sample of this study is comprised of 146 students doing 4th grade English classes at Şehit Teğmen Ali Yılmaz Primary School. According to the statistical analysis results, working group was divided into two groups as the experimental group and the control group.

The subject of the research was "Home Sweet Home" Unit 6, with the topics of "House rooms, furniture and prepositions", chosen from 4th grade English student's book were taught by using IWB to experimental group for 75 students and using blackboard to control group for 71 students. The success of experimental and control group students were investigated by English Achievement Test, a multiple choice test, which is divided into pre-tests and pro-tests. The results of the tests were evaluated by using SPSS 16.00 package program.

Findings, resulting in a significant difference, show that the use of IWB increases the students' English academic success when compared to the use of blackboard and using IWB in teaching English affects primary school students' achievement positively. As a result, this study will work useful for teachers and students at every field of education.

Key Words: *Interactive whiteboard, Teaching English, Academic success, Attitude scale*

İNGİLİZCE ÖĞRETİMİNDE AKILLI TAHTA KULLANIMININ İLKOKUL ÖĞRENCİLERİNİN BAŞARISINA ETKİSİ

ÖZ

Bu araştırmada İlköğretim Birinci Kademe İngilizce Öğretiminde Akıllı Tahta Kullanımının Öğrenci Başarısına Etkileri incelenmiştir. Şehit Teğmen Ali Yılmaz İlköğretim Okulu'nda ilköğretim 4. sınıf İngilizce derslerine

[*] Meral ŞEN, Cumhuriyet İlköğretim Okulu, İngilizce Öğretmeni, e-posta: meral_sevcan@hotmail.com

[**] Yrd. Doç. Dr., İstanbul Üniversitesi, Hasan Ali Yücel Eğitim Fakültesi, Bilgisayar ve Öğretim Teknolojileri Bölümü, Bilgisayar ve Öğretim Teknolojileri Eğitimi Anabilim Dalı, e-posta: agir@istanbul.edu.tr

devam eden 146 öğrenci çalışma grubunu oluşturmuştur. İstatistiksel analizler sonucu çalışma grubu deney ve kontrol gruplarına ayrılmıştır.
MEB ilköğretim 4. Sınıf İngilizce ders kitabından seçilen ''Home Sweet Home - Evim Tatlı Evim'' 6. ünitesi konuları olan '' Evin odaları, ev eşyaları ve yer yön zarfları'' Deney grubunda 75 öğrenciye akıllı tahta kullanılarak, Kontrol grubunda 71 öğrenciye kara tahta kullanılarak işlenmiştir. Deney grubu ve Kontrol grubu öğrencilerinin başarıları ön-test ve son-test şeklinde oluşturulan 25 soruluk çoktan seçmeli İngilizce başarı testi aracılığıyla ölçülmüştür. Nicel veriler SPSS 16.00 paket programı kullanılarak değerlendirilmiştir.
Elde edilen verilere göre akıllı tahta kullanımının öğrencilerin İngilizce akademik başarıları üzerinde kara tahtaya göre anlamlı düzeyde bir fark oluşturarak İngilizce öğretiminde akıllı tahta kullanmanın öğrenci başarısını olumlu yönde etkilediği belirlenmiştir. Sonuç olarak araştırmanın, eğitimin her alanında öğretmenler ve öğrenciler için faydalı olacağı söylenilebilir.
Anahtar Kelimeler: *Akıllı tahta, İngilizce Öğretimi, Akademik Başarı, Tutum ölçeği*

INTRODUCTION

There have been some recent innovations in the academic field in the present age of information technology. Many technological devices help academic branches to operate in a more interactive manner and they visually enrich teaching sessions. The beginning of the technological era changed the education system by making the learning process more memorable for students, while allowing teachers to access more resources.

Academic success is directly proportional to the quality of the teaching materials. The use of technological products as teaching aids may increase the quality and success rate of teaching.

It can be seen that production and integration of technological devices are increasing by the day. The effects of these developments can be observed in various ways in Turkey. Alongside these developments, chronologically schools began to use the cyclops, projector and smart boards (Çiftçi, Taşkaya and Alemdar, 2013).

The new tool, the smart board, entered the academic environment in recent years. Known as the smart board in Turkey, it is also known as the interactive white board, or electronic board and is a white board (Shenton and Pagett, 2007).

Seventeen cities and 52 schools started using the smart board and tablet as an experimental application on February 6, 2012. At this moment, beside vocational high schools, all 3,657 high schools have

received 85,000 smart boards and 13,500 tablet pcs which have been distributed to students and teachers (MEB, 2012).
In Turkey's elementary education institutions, foreign languages are compulsory lessons beginning from the 4th grade. (The Ministry of Education, Foreign Language Education and Training Regulations, 2006)Accordingly, in Turkey several training technologies should be supported in teaching English as a foreign language. For the realization of effective foreign language learning in schools, for foreign language classes to start in smaller classes could be evaluated as a positive development (Sağlam, Özüdoğru and Çıray, 2011).
Cravey's (2009) study stated that the usage of smart board by students of the English language English language, was successful and effective in their language acquisition, through the innovative use of smart decks.

Research Aim and Significance
The aim of the present research is to analyze the success of students who are learning English with smart board assistance. The significance of this research is to make the work of elementary students adequate with the help of modern teaching technologies.

Problem Sentence
"Do smart boards have any contribution to student English language learning at the elementary level?" was the core problem sentence, and some hypotheses are determined to measure the effects of smart board usage on the student success.

Hypothesis
- There is no important difference between the experimental group and the test group test scores.
- There is a meaningful grade difference between the pre and the after test scores of the control group.
- There is a significant difference between the experimental and the test group test scores.

Smart Board
In Turkish, and in the world's literature, the smart board has received numerous names like the interactive board, the electronic board, and the interactive whiteboard. When we take a closer look at history of the smart board, we can see that the smart board manufacturer, the Smart Technologies Corporation's name inspired the transformation

of the name “interactive board” to that of “smart board” (Smart Technologies, 2010).

Functions of the Smart Board.

The history and functions of the smart board are explained fully in Taufik’s (2006) article. Smart board research was first conducted by David Martin and Nancy Knowlton in 1987 at the Smart Technologies Corporation.

Smart Technologies introduced the first smart board in 1991.

- Touch Feature: the mouse requires the touch to the surface of smart board or a screen. Apart from using the mouse, users are used to open and close documents with Windows applications, to be clicked web links, and also objects or pictures can be moved by finger swiping on the board.
- Writing and Deletion Feature: Smart board images and text to help existing users to write, draw and delete. Written text and images can be erased with a magnetic erase. It works like a hand eraser. In addition, the intelligent keyboard may be brought up on the board when needed.
- Save, Open and Print Features: Smart board is to save, open, and print the files. After recording on the smart board, writing notes or drawings of the notes, to re-opening, and to get output from the printer.
- Handwriting to Text Conversion Computer Feature: The benefit of smart board is transformed into computer text from text or notes which are written. In other words, handwriting in the format of text or writing in other formats can be converted to a computer text.
- Recording and Playback Feature: Users can record any application seamlessly onto the board. Recorded files can be replayed on any computer with a Windows Media Player. Users are able to save speeches and even their own voices, and are able to listen to them again. In addition, video files, which would play on all types of computers, can be created by users.
- Drag and Download Feature: Suitable for any course that requires drawing, such as mathematics or engineering. These techniques are achieved by moving the stylus.
- Storage and Discovering: Users can store drawings and writing. Drawing and articles can be consulted when it’s necessary. This

feature can be used to store or to re-open any subject, idea or answer the question during this course.

- Usage of the colors, shading and highlighting: The features of color, shading, and highlighting are used for comprehensive, and effective graphics and fractions with this function, similarities and differences between words can be highlighted while learning English.
- Matching Feature Article: In vocabulary teaching, different versions of words, questions and answers can be found and match. It can be provided for matching pictures and spaces and also the answers can be dragged into answers' spaces.
- Motion or Animation Feature Motion and animation techniques provide depictions and illustration. Both techniques appear in the form of short videos. Images can be moved from one side to the other side. Animation features are used to create for more interesting photos which are needed in any particular section.
- The smart board as an important tool can be used to combine all subject areas. Whereas many emerging technological tools are used just specific subject areas, smart boards can be used in all subject areas, and classes (Sessoms, 2009).

Each worksheet can be recorded separately on the board and when it's necessary, moving between worksheets helps the student to recall things and reinforce student achievement. Furthermore, instead of re-drawing on blackboards, images can be instantly brought back from previous week's lessons in a few seconds (Levy, 2002). It gives different opportunities to the tapping on the board involved in various operations (move, delete, add notes, change the shape, etc.) for especially some students who prefer to touch for learning (Bell, 2002). Teachers can ensure that certain points can be more clearly seen and understood by use of the magnifying glass feature (this is especially useful for visually-impaired students), screens can be used to highlight certain areas and engage student attention (Smith, 2008).Smart boards allow users to spot problems, and avoid common conceptual errors during the course, and they offer the opportunity to go back to make corrections. The smart board is a tool that has an important place in education, it allows the rapid transfer of presentations, and it makes for very effective and efficient practice.

Smart Board Related Publications and Research

In an article, "Ways of Getting Attention towards in Education", teachers realized that smart boards had a positive and lasting effect on students. 5th grade teacher in an English class used a smart board to define new words and used images to illustrate them. A different page showed synonyms and antonyms for the words.

Al-Saleem's (2012)'s article published in the European Scientific Magazine "Foreign Language Class", explains how smart boards help class applications through editing the text and pictures, taking notes in a digital media form, web use, printing, or using e-mail to save notes, templates, photos and multimedia tools for later review, and they create lesson activities digitally.

Sessoms's (2009) article, "Smart Board Research" allows readers to comprehend how smart board makes both small and larger groups interact and share experiences. In the article "A Smart Board Survey of Smart Boards" revealed that large and small groups could work together, and that it was possible for ideas and experiences to be shared. All field content can be used in an integrated manner and thus the smart board can be very useful in the classroom.

In the research activity conducted by Hopkins (2007), social studies students used smart boards to create and show time tables. Furthermore, they created mind maps to study animal adaptations in science and technology lessons.

In Beeland's (2002) research, "Student Participation, Visual Learning and Technology", students stated that they mostly liked applications with a touch interface and that smart board helped them to concentrate during class sessions.

In Cravey's (2009) study of smart boards, it was suggested that schools needed them for three reasons in the classroom:

- Smart boards increase student participation.
- They allow the use of multiple and simultaneous presentations.
- They make teachers use different teaching methods.

In the doctoral study by Kaya and Aydın (2011), "Students Opinions Concerning Smart Board Usage to Teach Geography Topics in Social Studies", students stated that the use of the smart board in social studies classes helped them to comprehend better, increased their attention in the lessons and kept them entertained. In "Smart Board and Teaching Applications", by Adıgüzel, Gürbulak and Sarıçayır (2011), it was predicated that smart boards improved the

quality of science, mathematics and language teaching for different age groups, from kindergarten to universities, and they eased the learning process for people who could not enable standard education for various reasons.

In the "Effects on Learning by Using the Smart Board for Equation Solving in Mathematic Course", a process thesis by Tezer and Deniz (2009), the success rate of the smart board usage of the experimental group in mathematics was greater than that of the control group.

According to the thesis by Akdemir (2009), "An Examination of Student Successes in Geography Lessons", the usage of smart board in geography classes increases the success rate of students when compared with blackboard usage.

In the research paper, "Effects of Smart Board Usage on Elementary School Student Success at Mathematics" study conducted by Ekici (2008), it was concluded that smart boards are useful in the teaching of mathematics.

In "Usage Of the Smart Board in Middle Schools Geography Lessons", a study by Ateş (2010) it was observed that smart board usage in geography lessons quickened the pace of lessons and allowed teachers to teach faster and be more efficient.

Foreign Language Teaching

Learning Foreign Language was made compulsory after the 4th grade in primary schools in Turkey. It can be seen that the ages of students affect their language learning processes. If the planning process for academic topics does not take account of the age of the student group, it will not be successful enough.

The reason for using 4th grade related students as examples, is to deduce whether or not that age group is well for language learning.

Usage of the Smart Board in Foreign Language Teaching

According to Al-Saleem (2012), smart board supports the language learning process. There are 3 reasons for that. It:

1. Supports interaction and communication in class.
2. Helps in the presentation of new cultural and linguistic items.
3. Improves speaking abilities.

Due to the English Language Acquisition from Smart Technologies, the smart board helps teachers to eliminate the problems regarding language learning that are present in the students' minds. These interactive products can provide visual learning materials for English

learning students. It motivates students by providing visual, audio and interactive lesson material.

METHOD

Research Model

A half experimental pattern was used in the present research. There are four classes of 4th grade in the school by the researcher as a teacher. There was no mixing of classes to create the control and experimental groups. This research process was conducted between November and December of the first term of the 2011-2012 academic year and lasted 5 weeks.

"Home Sweet Home" was the application topic from the 4th grade English lessons, Unit 6. This unit was chosen as it contains many material usage options such as pictures, illustrations of "Rooms of the house, the common tools in the house and prepositions of places and direction etc." rather than using abstract terms. It has been suggested that smart board can be used to depict basic objects in the house which cannot be brought into class, and thus creates a more permanent teaching base for students. Fourth grade students have 3 hours of English lesson in a week. The research was conducted by the researcher teaching in both test groups for 3 hours in each week. A conventional teaching method was used on the control group, and was based on bringing various object illustrations of the house to the class according to the researcher's lesson program. In the experiment group, smart board (e-Beam technology) was used to provide an audio dictionary. Students drew their rooms and belongings with a smart board pencil. A PowerPoint presentation consisting of different objects in houses was shown to the students, and these teaching objects were presented while showing different animations, applications etc. via the internet.

Choosing Subjects

The English Success Test was used as a pretest for the 4th grade students of Şehit Teğmen Ali Yılmaz Primary School to create experimental and control groups. Classes 4-A and 4-B were chosen for the experimental group, 4-C and 4-D were chosen for the control group due to the similarities between their English Success Test Pre Test. Anova statistical analyzes were used on 4-A, B, C, D for this purpose.

Universe and Sample

Fourth grade students comprised the universe of the research. In the academic year 2011-2012, the control group was comprised of 4-A and 4-B class students, and the experimental group was comprised of 4-C and 4-D class students. The total number of students was 146; the students were from the Şehit Teğmen Ali Yılmaz Primary School of the Zübeyde Hanım neighborhood in the Sultangazi district of Istanbul.

Data Collecting Instruments

Success Test

Success Test of "Home Sweet Home":

The purpose of creating a success test was to investigate the relation between the academic success rates of four 4th grade classes taught by same teacher. To deduce this relationship a test of 25 questions test was prepared by consulting the MEB's 4th Grade English Lesson Book, Unit 6, "Home Sweet Home", to decide how many questions should be asked on which topic. Appropriate regulations were made after consulting expert supervisors.

To measure the reliability of the success test these pilot data were transferred to a computer database and by using the Cronbach α Test on the SPSS statistics program, a trust coefficient of 0.83 was found. The success test was used in accordance with this result. After reviewing the test questions by following qualification parameters such as its hardness and distinctness, it was decided not to remove any of those questions. Each of the 25 questions was worth 4 points, and graded out of 100

FINDINGS

Analyses and Findings According To Hypothesizes

There is no important difference between the experiment and the test group test scores

Table 1: Results of Independent Group T Test to Indicate the Difference of Pre Test Averages between Experiment and Control Group.

Point	Groups	N	X	SS	SH_x	t test		
						T	Sd	P
Pre-test	Experiment	75	28,01	5,610	,648	-1,303	144	,195
	Control	71	29,15	4,930	,585			

It can be seen in Table 1 that there is no important grade difference at success rates between the control and the experiment groups whose Success Test Pre Test is applied to find a significant difference between them (p>.05).
There is a significant difference between experiment groups pre-post test scores

Table 2: Results of Group T Test to observe the difference between pre-post tests score of Experiment Group

Groups	$\overline{X}$	N	SS	SH_x	t test		
					T	Sd	P
Success Test– Pre-test	28,01	75	5,610	,648	-14,972	74	,000
Success Test– Post-test	63,15	75	20,282	2,342			

It can be seen at Table 2 that there is a statistically significant difference between pre-post tests score of Experiment Group (p<.05). The hypothesis counted as valid due to this result.
There is a significant difference between the control group's pre-post test scores

Table 3: Results of Group T Test to observe the difference between pre-post tests score of the control group

Groups	$\overline{X}$	N	SS	SH_x	t test		
					T	Sd	P
Success Test– Pre test	29,15	71	4,930	1,585	-7,717	70	,000
Success Test– Last test	45,41	71	17,252	2,047			

It can be seen at Table 3 that there is a statistically significant difference between pre-post tests score of Control Group at Group T Test to observe the difference between their pre-post tests scores(p<.05). Hypothesis counted as true due to this result.
There is a significant difference between experiment and test groups test scores.

Table 4: Results of Group T Test to observe the difference between post test score averages of Control and Experiment Group

Point	Groups	N	X	SS	SH_x	t test		
						T	Sd	P
Post test	Experiment	75	63,15	20,311	2,345	5,666	144	,000
	Control	71	45,41	17,237	2,046			

As can be seen from Table 4, the result of Group T Test which are used to show statically significant difference between the post test scores of the control and the experiment groups, are found the meaningful difference between their pre-post ($p<.05$).

DISCUSSION

By drawing on the research findings, the following discussion is reached. There was no difference between the groups, this allowed for a comparison of their pre-test and post-test scores. It can be seen that the smart board increased the success rate of students in their English lessons. It can be postulated that this resulted from their interest in technology. It has also been found that use of the blackboard in teaching also increases the success rate in English classes. But it can be seen that smart boards increase the success levels more efficiently than blackboards. By these findings, a result in favor of the proposal in the research topic occurred.

The experiment group's pre-test scores came out lower than those of the control group, see Table 1. By comparing the before and after research results, the aim of the research problem was reached.

This situation shows that students' achievements are increased thanks to the smart boards in the English program.

The control group's success test pre-test came higher than their post test scores. This shows that blackboards can also be used efficiently in English teaching.

CONCLUSION

Smart boards which are used outside of Turkey, in both business and academic areas, have been at the disposal of Turkish schools over the past few years. The pros and cons of smart board usage at schools, its contribution to academic life, began to be investigated.

For the purposes of this project, smart board advantages, disadvantages and functions at the 4th grade English teaching were researched. Hypotheses were created to review the research data. Unit 6 of the 4th grade lesson book was chosen for the course topic in the lesson in which the experiment group used smart boards and the control group used simple blackboards to learn. Over the course of 5 weeks, the experimental group's success test post-test was higher than that of the control group. It can be concluded that the visual, audio and interactive properties of smart board resulted in better teaching in the experimental group than in the control group. By

using these receptors lessons can be operated with more efficiency. It can be seen from the research conducted by Kurt and et al. (2012) that teachers use the smart board frequently during class sessions. Teachers use smart board to share various kinds of lesson materials as well as the ones they made with their students. It can be said that the teaching process using more tools and a greater variety of techniques makes the lesson learning more permanent. Smart boards contribute an efficient way of teaching as visual sense by using different pictures/visual materials, sense of hearing by the use of various sound effects and the conducting group session; and also kinesthetic receptor by using touch (URL 1).

These conclusions have been reached by creating hypothesizes to deduce the effects of the research problem.

According to the research conducted by Taufik (2006), the smart board's colors, shading and highlighting tools can be used effectively in graphic activities and for fraction problems, while for teaching English, these properties can be used for indicating linguistic similarities between Turkish and English. For grammar teaching, smart boards can be used to match different versions of words, questions and answers.

It has been concluded that teachers' favorite tools for teaching are technologies such as the computer and the internet according to Baki and et al. (2009), conducted to find the perspective of teachers on teaching technology.

The research result shows us that the smart board can be used in any sort of academic area without difficulty. In Ayva's (2010)"Student Feedback for the Process of Learning and Teaching in Social Studies" after taking the opinions and criticisms of the students, it could be concluded that the smart board eased their learning process and made their attitude towards lessons more positive. In an experimental study conducted by Weimer (2001), a class's motivation towards a lesson project was measured and it was observed that their motivation rose after using the smart board.

It has also been observed that the smart board increases student attention when used in scientific lessons such as teaching technologies, science and technology, as well as in social studies (Pektaş, Çelik and Katrancı, 2009: 652).

Taking a closer look at smart board functions, it becomes evident that these boards play a massive part in improving both teaching and

learning experience across the academic range, from 1st level teaching to read, to higher level foreign language lessons. In this way, the quality of academic studies may be improved as well. To succeed in the use of smart boards in academia, the academic plan, the personal development of both the students and the academics should be viewed as a complete structure and harmony (Miller & Glover, 2006).

As Sessoms (2010) stated, the smart board can provide new experiences for students in different learning experiences that it take a place for chalk.

There are not enough studies of smart board usage in Turkey. Regularizations about smart board usage in different lessons will give different opinions to teachers about new educational technology. It has been suggested that the subject demographic should be increased to make healthier analyzes in research. In the training processes of teachers, the importance and contribution of the smart board, or any sorts of technological devices, should be made clear. To make sure teachers get the proper abilities and knowledge concerning teaching technologies, education faculties should nurture teacher candidates in the usage and integration of technology.

REFERENCES

Adıgüzel, T., Gürbulak, N. & Sarıçayır, H. (2011). "Akıllı Tahtalar ve Öğretim Uygulamaları", Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, vol. 8, no. 15, pp. 457-471

Akdemir, E. (2009). "Akıllı Tahta Uygulamalarının Öğrencilerin Coğrafya Başarıları Üzerine Etkisinin İncelenmesi", Master's thesis, Zonguldak Karaelmas Üniversitesi Sosyal Bilimler Enstitüsü

Al-Saleem, A. (2012). "Yabancı Dil Sınıfı", Avrupa Bilimsel Dergisi, vol. 3, no. 8, pp. 129-132

Ateş, M. (2010). "Ortaöğretim Coğrafya Derslerinde Akıllı Tahta Kullanımı", Marmara Coğrafya Dergisi, vol. 22, pp. 409 – 427

Ayva, Ö.(2010). "Sosyal Bilgiler Dersi Öğrenme Öğretme Süreci İle İlgili Öğrenci Görüşleri", International Conference on New Trends in Education and Their Implications, Antalya, Turkey.

Baki, A., Yalçınkaya A., Özpınar H., & Uzun, S. (2009). "İlköğretim Matematik Öğretmenleri ve Öğretmen Adaylarının Öğretim

Teknolojilerine Bakışlarının Karşılaştırılması", Turkish Journal of

Beeland, W. (2002). "Student Engagement, Visual Learning and Technology: Can Interactive Whiteboards Help?", retrieved from http://chiron.valdosta.edu/are/Artmanscrpt/vol1no1/beeland_am.pdf, on 23.09.2011

Bell, M. (2002). "Teacher feature: Why use an interactive whiteboard? A baker's dozen reasons!" Teachers.net Gazette, vol. 3, no. 1, retrieved from http://teachers.net/gazette/JAN02/mabell.html on 22.11.2011

Cogill, J. (2002). "How is the interactive whiteboard being used in the primary school and how does this affect teachers and teaching", retrieved from http://virtuallearning.org.uk/whiteboards/IFS_Interactive_whiteboards_in the_primary_school.pdf on 16.02.2012, pp. 31-42

Computer and Mathematics Education, vol. 1, no. 1, pp. 67-85

Cravey, A. (2009). "Smartboard Narration", EDUC 7101:Diffusion and m Integration of Technology in Education, retrieved from http://technologyspecialist.wikispaces.com *on 12.09.2011*

Çiftçi S., Taşkaya S. & Alemdar M. (2013). "Sınıf Öğretmenlerinin Fatih Projesi İlişkin Görüşleri", Elementary Education Online, vol. 12, no. 1, pp. 227-240

Ekici, F. (2008). "Akıllı Tahta Kullanımının İlköğretim Öğrencilerinin Matematik Başarılarına Etkisi", Master's thesis, Marmara Üniversitesi Eğitim Bilimleri Enstitüsü

Hopkins, A. (2007). Journal of the Research Center for Educational Technology (RCET), Vol. 3, no.2

Kaya, H. & Aydın, F. (2011). "Sosyal Bilgiler Dersindeki Coğrafya Konularının Öğretiminde Akıllı Tahta Uygulamalarına İlişkin Öğrenci Görüşleri", Journal of Turks, vol.3, no. 1

Kurt A., Kuzu A., Dursun Ö., Güllüpınar F. & Gültekin M.(2013). "FATİH Projesinin Pilot Uygulama Sürecinin Değerlendirilmesi: Öğretmen Görüşleri", Journal of Instructional Technologies & Teacher Education, vol. 1, no.2, pp. 1-23

Levy P. (2002). "Interactive whiteboards in learning and teaching in two Sheffield schools: A developmental study", retrieved

from http://www.shef.ac.uk/eirg/projects/wboards.htm on 06.12.2012

Milli Eğitim Bakanlığı. (2006). Yabancı Dil Eğitimi ve Öğretimi Yönetmeliği Resmi Gazete (31.05.2006/26184), Tebliğler Dergisi (Haziran 2006/2585Ek) retrieved from http://mevzuat.meb.gov.tr/html/26184_1.html on 15.08.2011

Miller, D. & Glover, D. (2006). "Enhanced secondary mathematics teaching: gesture and the interactive whiteboard", BERA: Warwick , pp. 2-3

Morgan, H. (2010). "Teaching With the Interactive Whiteboard: An Engaging Way To Provide Instruction", Focus on Elementary, pp. 2-3

Pektaş, H. & Katrancı, M. (2009). "5. sınıflarda ses ve ışık ünitesinin öğretiminde bilgisayar destekli öğretimin öğrenci başarısına etkisi", Kastamonu Eğitim Dergisi, vol. 17, no. 2, pp. 649-658

Sağlam, M., Özüdoğru, F. & Çıray, F. (2011). "Avrupa Birliği Eğitim Politikaları ve Türk Eğitim Sistemi'ne Etkileri'',Yüzüncü Yıl Üniversitesi, Eğitim Fakültesi Dergisi, pp. 87-109

Sessoms, D.(2009). "Interactive Teaching and Learning", retrieved from http://www.edtech568.com//.htm on 17.03.2011

Shenton, A. & Pagett, L. (2007). "From 'bored' to screen: the use of the interactive whiteboard for literacy in six primary classrooms in England", Literacy, vol. 41, no.3

Smart[SmartBoards] (2010). Smart Teknolojileri, retrieved from http://www.smarttech.com on 17.03.2011

Smith, H. J. (2008) "Interactive whiteboards: boon or bandwagon?", A critical review of the literature, Journal of Computer Assisted Learning, vol.21, pp 91-101.

Taufik, A. (2010). ''The Use of Smartboard Technology as An Instructional Tool", Al-Bayan, vol. 22, pp. 77-68

Tekelioğlu, S., Sürücü, M., Uğur, B., Sönmez, A., Ok, M. & Eren, F. (2009). "Smart Board (Akıllı Tahta)'un Eğitime Entegrasyonu Sunum Raporu", 9th International Educational Technology Conference

Tezer, M. & Deniz, K. A. (2009). "Matematik Dersinde İnteraktif Tahta Kullanarak Yapılan Denklem Çözümünün Öğrenme Üzerindeki Etkisi", Master's thesis, Yakın Doğu Üniversitesi

URL 1. Akıllı Tahta Nedir?. Retrieved September 09, 2013 from http://iys.inonuedu.tr/webpanel/dosyalar/445/file/akillitahta.pdf.

Weimer, M. J. (2001). "The Influence of Technology Such As a SMART Board Interactive Whiteboard on Student Motivationin the Classroom" retrieved from http://www.smarterkids.org/research/paper7.asp on 21.08.2013