High School Teacher's Opinions and Problems Faced about Using Smart Board in Classroom: Famagusta District Sample

Yaprak Batu

Submitted to the
Institute of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of

Master of Science
in
Information Communication Technologies in Education

Eastern Mediterranean University
September 2016
Gazimağusa, North Cyprus

Approval of the Institute of Graduate Studies and Research

Prof. Dr. Mustafa Tümer
Acting Director

I certify that this thesis satisfies the requirements as a thesis for the degree of Master of Science in Information and Communication Technologies in Education.

Assoc. Prof. Dr. Ersun İşçioğlu
Chair, Department of Computer and Instructional Technologies Education

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Master of Science in Information and Communication Technologies in Education.

Assoc. Prof. Dr. Ersun İşçioğlu
Supervisor

Examining Committee

1. Assoc. Prof. Dr. Mustafa İlkan

2. Assoc. Prof. Dr. Ersun İşçioğlu

3. Asst. Prof. Dr. Fahme Dabaj

ABSTRACT

The development of technology has gained meaningful impact and has influenced the educational standard in this era of globalization. This dissertation aims at reviewing the perception of high school teachers, on the use of smart board in schools located in Famagusta (TRNC). A detailed investigation was done on why smart boards are being used as well as major problems faced in the period of usage. Also, the study aims at using the developed research questions to find answers of the problems related to the usage of smart board in the classroom by teachers.

As a quantitative research work, one hundred and twenty eight (128) teachers from four selected secondary schools in Famagusta District in TRNC took part in the research. They include both male and female with different educational qualifications. Also variables such as age, profession, experience, weekly usage time of smart board, material design, coursetaken and certificate are major variables employed in the study. Descriptive technique was used in analyzing the general opinions of the teachers while Analysis of Variance (ANOVA) employed in calculating whether opinions deferred due to gender, age, experience or profession. Also, T-test is used in considering the significance between variables.

Hence, the result found that age and profession didn't affect their opinions but the level of experience influenced teacher's perceptions. Furthermore, the result shows that teachers opinion towards smart-boards differ but not due to their age or profession.

Keywords: Smart boards, Interactive Learning, Active learning.

ÖZ

Teknolojinin gelişmesi küreselleşme çağında eğitim standardını anlamlı olarak etkilemiştir. Akıllı tahtaların öğrencilerin kalıcı ve pratik öğrenmesindeki etkisini kanıtlayan birçok araştırma vardır. Bu çalışmanın amacı Kuzey Kıbrıs Türk Cumhuriyetinde bulunan Gazimağusa bölgesindeki lise öğretmenlerinin sınıf içerisinde akıllı tahta kullanımı konusundaki algı ve görüşlerini gözlemlemektir. Akıllı tahtanın kullanılma sebepleri ve kullanımı sırasında yaşanan başlıca problemler detaylı araştırmayla elde edilmiştir. Ayrıca, bu çalışmada öğretmenler tarafından sınıfta akıllı tahta kullanımı kullanımı ile ilgili sorunların cevabını bulmak ve derinlemesine incelemek için araştırma soruları kullanılmıştır.

Yapılan nicel çalışmada, Gazimağusa bölgesinden kadın, erkek ve farklı eğitim alanlarından olmak üzere 128 (yüzyirmisekiz) lise öğretmeni yer almıştır. Ayrıca yaş, meslek, deneyim, sertifika, kullanım süresi, materyal tasarım gibi değişkenler de araştırmada ölçek olarak kullanılmıştır. Öğretmenlerin genel düşüncelerini analiz etmek için tanımlayıcı (ANOVA) varyans tekniği kullanılmıştır.Değişkenler arasındaki anlamlı farklılıkları bulmak için ise T-test kullanılmıştır. Bunun sonucunda yaş ve eğitim alanının genel düşünceler üzerinde fazla etkisi olmadığı fakat deneyimin öğretmen düşünceleri üzerinde anlamlı etkisi olduğu saptanmıştır.

Anahtar Kelimeler: Akıllı Tahta, İnteraktif Öğrenme, Aktif Öğrenme.

DEDICATION

Thanks to my Advisor, my coach Assoc. Prof. Dr. Ersun İşçioğlu for your support during the conduct of this study, thanks to my beloved husband for your support and patience in me because of my busy work life, special thanks to my dear mother for giving me the courage to study my master degree and the inspiring words from thousands of miles away. Lastly, I want to thank my father for having the confidence in me and supporting me financially and morally. I am extremely grateful.

TABLE OF CONTENTS

LIST OF TABLES

Chapter 1

INTRODUCTION

In recent times, there has been a significant growth in the use of technology in our educational system. The electronic whiteboards also called smart boards has been adopted virtually in all countries of the globe. Interactive whiteboards (IWB) have modified teaching and learning in a lot of productive and innovative methods. According to Scott, Mortimer & Aguiar, (2006), they studied the different perspectives in the connection between technology and pedagogy, for instance, interaction or dialogical processes. Technology today is trending in a way that teachers uses the device in transmogrifying the ways they manage their classrooms, illustrate and elaborate information, acquire learning and train students for a developing digital world. In line with the integration process of Information Communication Technology (ICT), the smart board has been one technology that has received major funding specifically in countries such as England, Spain, EU Counties and Turkey (Holmes, 2009; Turel, 2010). As of 2010, England recorded the highest IWB penetration ranking with a (73%) in the world and several other countries such as Denmark (50%) and the United State (35%) have significantly increased the proportion in the usage of Interactive White Boards' in classrooms. Nevertheless, Moorhouse, (2007), found that over "75% of classrooms in the UK have embraced the use of this multimedia technology".

1.1 Introduction

The smart boards have been a facility used in classes for lessons during teaching for several years until now. In 1991, they were initially introduced and ever since then they have been used in classes as virtually. Despite most teachers are faced with various difficulties, the challenges differ from those at a high school category from the elementary school level, as this study is a concern.

Presently, smart boards/IWB supplies various study halls with interactive techniques of making students participates fully in the course of their lessons. Employing the usage of smart board, teachers in high school, can simply make their student get engaged in the lessons and further promote a sense of excitement while the class is going on.

The smart board is a kind of technology that enhances students' acquisition of knowledge and further equips them with the necessary ability to adapt to the increasing use of technology in our society today. The majority of students can find this facility within the study halls, conference room and laboratories. This particular technology can be employed as a gateway to new technologies in the classrooms and it's improvement in quality learning. According to Giles& Shaw, (2011), they found that smart board integrates the function of a computer, projector, and whiteboard within a particular structure. Furthermore, their interactive make-up gives the opportunity so that students can be engaged in the pedagogical process. Smart boards enhance students' participation in the learning exercise and have been illustrated as substantial revolutionary and influential teaching approach in using technology (Hawkins, 2001). According to Fernandez & Luftglass (2003) viewed smart boards as a "powerful learning" device

which enhances teachers to teach with the connection to the internet, educational software as well as videos.

1.2 Aim of the Study

There have been various researches indicating the effectiveness of smart boards on a perpetual and practical learning. Nevertheless, this dissertation aims at finding out perception of high school teachers in the targeted region on how they use smart boards in classroom. Major challenges encountered during the usage are analyzed. This research further purposed to carry out a systematic enquiry on how and for what reason the smart boards are used.

1.3 Research Questions

A research question is the fundamental basis of a research project, study, or review of literature. It centers on the study conceptualization, determines the methodology, and guides all the stages of inquiry, analysis, and reporting. Hence, this research are asking some set of questions in other to get in-depth root of the problems that are faced by teachers and the usage of smart board in the classroom.

This study aims to achieve the above purpose through the following research questions:

1. What are the general opinions of teachers about using smart board in the classroom?
2. Are there any differences between general opinions according to demographic information?

   2.1. What are the teacher's perceptions about using smart board in classroom with regard to gender?

2.2. What are the teacher's perceptions about using smart board in classroom with regard to age?

2.3. What are the teacher's perceptions about using smart board in classroom with regard to the profession?

2.4. What are the teacher's perceptions about using smart board in classroom with regard to experience?

1.4 Limitation

It was agreed on by researchers and as well as writers, including Asika (1991:101) that justification of a research work is to look into its problems i.e. (Limitation of the project, as well as contribute to the knowledge already at hand).

This research is limited in term of time of getting data's from teachers in the Famagusta district, as researcher needed to combine coursework with thesis work. The research made use of result gotten from questionnaires administered in four (4) selected high school. The result was used to summarize all the view of teachers, thus the research is limited to some selected schools in the Famagusta District, there by neglecting the other district in the Turkish Republic of Northern Cyprus (TRNC). Subsequent researcher can carry out a wide investigation that will capture at least more districts in TRNC, on the perceptions of teachers about the use of smart boards in classroom. The researcher was also limited in the area of financing the study too, as transportation within the selected schools posemajor problem.

1.5 Significance of the Study

In this research, teachers view and the problems they encounter for the use of the boards on high school in Famagusta district of TRNC were investigated. According to the findings of the research, the benefits and importance of the use of smart boards in the classroom is emphasized. The thesis employed a descriptive survey method in analyzing the questionnaire. Questionnaire was used to collect data from the teachers. A total of 128 questionnaires were administered in four (4) selected high school for the survey.

As ‘‘essential’’ smart boards are in classroom, also are some problems faced. Despite smart boards been denoted as “essential”, it is not free from not having any problem in usage and application. This thesis found out problems related to the usage of smart boards in the classroom settings. Teachers’ opinions are also considered on what they think about the use of smart boards in class and what are the major problems encountered when they are using smart boards in classroom.

This thesis focuses significantly on “high school teacher’s thoughts and problems faced about smart board usage in the classroom” at Famagusta High schools. Results from the administered questionnaire might shed a light to the type of solutions that is propounded by the researcher to school administrators and state government for better educational growth in a standardize nation.

1.6 Definitions of Key Terms

1. Smart Board: "Smart board is a device invented by SMART Technologies and incorporation. It is also known as the interactive whiteboard. The board has a large

dashboard that is sensitive to touch which detects input through its sensor." –User Guide, *Smart board software.*

2. IWB: acronym means Interactive whiteboard and it means a generic term for hardware that's connected to the computer and displays on computer's desktop, allowing individual to interact with the information at the interactive whiteboard instead of on one's computer – Smart Technology Inc

3. Electronic Whiteboard: is also a generic term for hardware that's connected to the individual computer, what one can do with an electronic whiteboard is to use dry-erase markers on the board and then save the notes to your computer. –Manny-Ikan, E. & Dagan, O. (2007).

4. Interactive Learning: is a pedagogical approach that incorporates social networking and urban computing into course design and delivery. Interactive Learning has evolved out of the hyper-growth in the use of digital technology and virtual communication, particularly by students. – Manny-Ikan, Dagan, Berger-Tikochinski, & Zorman (2007).

5. Technology: Technology can be the knowledge of techniques, processes, etc. or it can be embedded in machines, computers, devices and factories, which involves a know-how technical application which can be operated by individuals. -Sazali, W., Raduan., R. & Suzana, O. (2012).

6. High school: A high school (also secondary school, senior school, secondary college) is a school that provides adolescents with part or all of their secondary education. – Secondary Education, Rand cooperation.

7. Famagusta District: is one of the five districts in Turkish Republic of Northern Cyprus. The city has been the site of an important commercial harbor since the medieval period. – *Prio Cyprus Centre (2011)*

Chapter 2

LITERATURE REVIEW

2.1 Usage Levels of Smart Board

There has been an overwhelming level of research trying to determine how smart boards are used. The research on the use of smart boards has been on the increase and has had a lot of influence on pedagogy. This section provides a building block by reviewing existing literature and looking at methodologies employed by other researchers.

In their studies, Preston and Mowbray (2008) on using a hands on and interactive approach focusing on kindergarten students in Australia' they found that smart boards creates a more interesting learning environment as well as introduce students to technology at an early age.

According to Goodison, Levy and South Texas Community College (2002), they examined students' view of using smart boards while learning science. Meanwhile, Levy (2002) in an empirical study, examined the issues in the implementation of the smart board. The researcher further examined the methods in which the use of smart board had modified the process of teaching and learning and also the method in which students learn. They also looked at the problems faced by both teachers and students during the usage of the device.

Singh and Mohammed (2012) conducted interviews in selected classroom across Malaysia and found out that students interact more in classrooms where IWBs are frequently used.

Gursul, & Tozmaz, (2010) employed the findings from a questionnaire shared among teachers in Turkey as well as face to face interviews with 15 teachers; they used content analysis and qualitative research analysis. They observed that there are various advantages of using smart boards, such as an increase in attention and improvement of student participation. On the other hand, it is observed that there are also various disadvantages such as its time consuming nature and technical difficulties.

2.2 Efficiency of Smart Boards

Research in the efficiency of smart-boards usage is broad hence major studies have been outlined.

Troff and Tirotta (2009) studied the impact of smart-boards on students' motivation for math and academic performances. According to their studies, out of 773 upper elementary students who partook, the result showed the effect of smart boards on students is not significant. Also, Winzenried & Lee (2013) chose several schools from different countries and emphasized that smart boards has been included in the syllabus and a specific course was presented through the usage influenced learning through its special pen; it make sure the same utility as in the conventional black boards; and it can also find it sources from the Internet, DVD/CD, video....etc.

Turel and Johnson (2012) using a sample size of 174 teachers selected from various educational levels (grades 6-12) and using a descriptive methodology found out that teachers believe that IWBs can facilitate learning when appropriate conditions are met.

Martin, Shaw and Daughenbau (2014) conducted a survey which was administered between 48 primary schools in one of the largest school in the district of south eastern United States and found that improvements were needed among a selected group of teachers on the use of smart boards.

2.3 Benefits of Smart Boards

Kennewell and Morgan's study (2003) shows that; Attitudes are largely corresponding to the two groups. Several student teachers have the ideation that a smart board is either useful to have essentials for some certain topics or fundamentals for teaching. The student teachers were obviously positive in regard to the smart board, with 97% responding yes when the question was administered to them. 'Would you choose to have a smart board in your classroom? Even though76% of student teachers assumed that it would develop their planning schedule either a lot or little. This can only be demonstrated in the context of their opinion whether the smart board exhibit standards in the class halls thereby increasing motivation to learn. 90% of both groups who participated in the study and had observed lessons perceived that the smart board had added impact to those lessons. 95% of student teachers who had instructed with this device perceived that the smart board had added a great value to those subjects (Kennewell & Morgan 2003).

Chapter 3

METHODOLOGY

This chapter presents the study research methods, the demographical distribution of the participants, data collection tools, and research validity and reliability.

3.1 Research Method

The research technique applied in this current study deals with the specification of procedures and means through which data information is collected and collated. It further envisages the methods and techniques through which the gathered data is analyzed. "Research methods are the particular strategies researchers use to collect the evidence necessary for building and testing theories" (Frey, Botan, Friedman, & Kreps 1991).

This current research follows quantitative approach. It entails prediction, generalizing a sample to a larger group of subjects, and the use of figures to analyze a hypothesis. For a standard research, employing quantitative technique researchers tend to use a cross section of participants randomly from a general populace, (York, 1998).

This process makes sure there is strict control of variables and the focus is on static reality. Furthermore, the researchers focused on generating data from a large sample of study areas so they could generalize the conclusion to others (York, 1998). According to

Ross, (1999) Quantitative research uses data that are structured in the form of numbers. or that can be instantly changed into digits. It is a controlled, exact approach to research.

Quantitative research methods were originally developed in the natural sciences to study natural phenomena. This type of research is used in diverse fields, for example in medicine, education, government, insurance, law, and psychology (Myers, 1997). The social work profession was introduced on the basis of other disciplines, so it has historically used the quantitative analysis to conduct their research. Examples of quantitative methods include survey methods, formal methods, laboratory experiments, and numerical methods. These methods are now currently used in virtually all social science disciplines (Myers, 1997).

Generally speaking, there are three basic types of quantitative research designs; they include experimental / quasi-experimental, descriptive, and correlational designs. Experimental and quasi-experimental studies are designed to examine cause and effect analysis. They study the effects of treatments by using tests or scales. Descriptive statistic is used to describe the concepts of the data in this research. Descriptive and correlational studies investigate variables in their natural environments and do not include researcher-imposed treatments such as a placebo effect (Ross, 1999).

3.2 Participants

Four selected schools attended in the survey. 36 teachers teaching different courses were picked randomly from Namık Kemal High School (State). Furthermore, 33 teachers tutoring several subjects were as well picked randomly in Gazimagusa Türk Marif College (State). Other high schoolteachers that took part in the survey are Akdoğan

Polatpaşa High school (State) 30 and Doğa College (Private) 29, making the figure 128 teachers from Famagusta, TRNC.

The research population consists of teachers who had several years of experience in the teaching service as well as various educational qualifications. Thus a total of 4 schools with a population 128 participants are used as a measure to determine the result of our analysis.

Table 1. Teachers Demographic Information Frequencies

		N	**%**
GENDER	Female	85	66.4
	Male	43	33.6
AGE	20-24	4	3.1
	25-29	26	20.3
	30-34	49	38.3
	35+	49	38.3
PROFESSION	Computer Teaching	11	8.6
	Mathematics Teaching	15	11.7
	English Teaching	15	11.7
	Music Teaching	6	4.7
	Physics Teaching	10	7.8
	Chemics Teaching	11	8.6
	Turkish Teaching	15	11.7
	Guidance and psychological counseling	6	4.7
	Geography Teaching	7	5.5
	Art Teaching	3	2.3
	History Teaching	10	7.8
	Biology Teaching	8	6.3
	Philosophy Teaching	5	3.9
	German Teaching	3	2.3
	French Teaching	3	2.3
EXPERIENCE	-5 years	29	22.7
	5-15 years	70	54.7
	15+ years	29	22.7
USAGE TIME (WEEKLY)	-1 hour	89	69.5
	1-2hours	17	13.3

Table 1. *(Continued)*

MATERIAL_DESIGN (SOFTWARE,APPLICATION)	Yes	73	57
	No	55	43
COURSE_TAKEN (IWB TRAINING)	Yes	84	65.6
	No	44	34.4
CERTIFICATE (QUALIFICATION OF IWB)	Yes	64	50
	No	64	50

The above data contains the demographic chart and measures of the cases used in this research.

According to Table 1, gender which signifies the sex parameters of the respondents, a total of 85 Female and 43 Males representing 66.4 % and 33.6% respectively participated in the research. While the age category was grouped into various set of 5 margins and they include 20-24 with four participants, 25-29 represent 26 participants, 30-34 representing 49 participants while between 35 and above represented 49 participants as well. The percentage of the age classification amounted to 3.1%, 20.3%, 38.3% and 38.3% respectively.

Furthermore, experts from various fields were used during the process of the research such as Computer, 11 (8.6%), Mathematics, 15 (11.7%), English, 15 (11.7%), Music, 6 (4.7%), Physics, 10 (7.8%), Chemistry,11 (8.6%), Turkish,15 (11.7%), Guidance and psychological counseling, 6 (4.7%), Geography, 7 (5.5%), 3 (2.3%), History, 10 (7.8%), Biology, 8 (6.3%), Philosophy, 5 (3.9%), German, 3 (2.3%) and French, 3 (2.3%) accordingly.

Moreover, from Table 1, the experience of the teachers was also put into consideration due to the fact that they have practical contact with their interactors on a daily basis thereby perceiving the way things should be placed. In addition, the 'usage time' which signifies the amount of periods spent on this facility daily was also used in the analysis. The range was between less than an hour to over two hours daily. Furthermore, a closed question was used for Material Design with a 73 'yes' and 55 'no' representing 57% and 43%, respectively. While a total 84 yes and 44 no representing 65.6% and 34.4% attested to either they have taken the course or not while for the certificates there was no difference as 64 'yes' and 64 'no' indicating a 50 - 50.

3.3 Data Collection Tools

This research (Using Smart Boards in Classroom) survey questionnaire was used by Devecioğlu, and Kaymakcı (2014), (see Appendix A).

The questionnaire is separated into two major categories, the first part covers the demographic questions that are the respondents involved in the survey and the second part contains the survey questions covering the findings in the paperwork.

Likert scale was used as the scaling technique for the questionnaire. A Likert item is usually a report that the participant is been asked to access by administering it as a quantitative significance on any sort of subjective or objective feature, with the level of agreement/disagreement being the dimension most commonly used for the analysis.

This study tends to analyze the cumulated data using descriptive analyses, frequency table, amongst other statistical techniques.

Descriptive statistics are categorized from inferential statistics, which aims to summarize a particular sample instead of using data to know more about the represented sample population. Some measures which are widely used to analyze this model of data include measures of central tendency such as mean, mode, and median.

3.4 Validity and Reliability

The concept of "validity" can be said to refer to the degree of consistency from methodological error in assessment. In order to determine a good test, it is generally said that it have to be reliable that is having a credible and precise measurement of the components which is been studied. In his work, Growdlund (1999) concluded that the concept of validity entails "the greater consistency test results are from one measure to another, the lower the chances of producing an error- the higher the level of reliability".

In line with this study, the research scale that was used is a questionnaire. It was carefully validated through a face-to-face association with the respondent in the survey in order to ascertain its reliability.

Table 2. Reliability Statistics of the Survey

Reliability Statistics

Cronbach's Alpha	N of Items
,751	30

The Table 2 shows the Cronbach's Alpha coefficient for the 30 items as 0.751 indicating that the item has a relatively high internal consistency since it is above the 0.70 acceptability level. The Cronbach's Alpha is a major concept used in measuring the internal consistency on how reliable a scale is. It is expressed as a number between 0 and 1. The coefficient is equivalent to the average of all possible split-half reliabilities.

Chapter 4

FINDINGS

In this chapter, the result of the current study is addressed in line with the research questions. This gives a guide to all the stages of inquiry, analysis, and reporting of the collected data.

4.1 General Opinions of Teachers about Using Smart Board in the Classroom

In regards to the first research question, Table 3 below shows the mean and frequencies on the teachers' perceptions about using smart board in the classroom.

Table 3. General Opinions of Teachers on Smart Board Usage

	Totally Agree		**Agree**		**Neutral**		**Disagree**		**Totally Disagree**		**Mean**
	N	%	N	%	N	%	N	%	N	%	
1. The same way I can work for my classes without the Smart board.	29	**22.7**	45	**35.2**	14	10.9	33	25.8	7	5.5	2.5625
2. My concern is for the use of information and communication technologies in the classroom.	8	6.3	7	5.5	18	14.1	63	**49.2**	32	**25.0**	3.8125
3. Smart boards are time-consuming to use.	21	16.4	27	21.1	16	12.5	44	34.4	20	15.6	3.1172
4. I have been making use of the smart board to my students during lessons.	7	5.5	51	39.8	14	10.9	39	30.5	17	13.3	3.0625

Table 3. *(Continued)*

5. I think it would not be appropriate to use smart boards in each class.	28	21.9	36	28.1	32	25.0	23	18.0	9	7.0	2.6016
6. I don't have the same excitement when i use smart board at the first time.	15	11.7	40	31.3	28	21.9	31	24.2	14	10.9	2.9141
7. I think the interest of student will diminish over time on smart boards.	15	11.7	26	20.3	30	23.4	38	29.7	19	14.8	3.1563
8. Students can disrupt the smart boards if it is used frequently.	24	18.8	32	25.0	30.0	23.4	32	25.0	9	7.0	3.9063
9. I'm afraid of the disruption when using smart boards.	18	14.1	32	25.0	14	10.9	52	40.6	12	9.4	3.0625
10. The teachers were not given adequate training about smart boards.	38	**29.7**	35	**27.3**	24	18.8	27	21.1	4	3.1	2.4063
11. I need different softwares in the smart board in addition to their software.	26	20.3	34	26.6	29	22.7	30	23.4	9	7.0	2.7031
12. I'm having technical difficulties when using a smart board.	23	**18.0**	54	**42.2**	27	21.1	20	15.6	4	3.1	2.4375
13.I do not know how to integrate interactive whiteboard to lesson activity.	9	7.0	18	14.1	25	19.5	62	48.4	14	10.9	3.4219
14. I'm struggling to find material that I can use the smart board.	23	18.0	37	28.9	22	17.2	37	28.9	9	7.0	2.7813
15. When using the SMART Board, I'm having problems with the calibration setting.	12	9.4	37	28.9	25	19.5	42	32.8	12	9.4	3.0391
16. There's noise when using the SMART Board in the classroom.	17	13.3	30	23.4	22	17.2	47	36.7	12	9.4	3.0547

Table 3. *(Continued)*

17. Students with health problems related to eye are experiencing difficulties when using a smart board.	14	10.9	36	28.1	46	35.9	28	21.9	4	3.1	2.7813
18. I can't catch up the topics when I use the SMART Board.	11	8.6	28	21.9	23	18.0	47	36.7	19	14.8	3.2734
19. Smart board prevents to make eye contact with my students.	16	12.5	27	21.1	36	28.1	37	28.9	12	9.4	3.0156
20. I'm losing a lot of time in the course when getting started the installation.	27	21.1	30	23.4	26	20.3	38	29.7	7	5.5	2.7500
21. Smart boards are appropriate in economic terms.	18	14.1	25	19.5	42	32.8	36	28.1	7	5.5	2.9141
22. Smart boards have provided great convenience to teachers	28	**21.9**	57	**44.5**	28	21.9	12	10.2	2	1.6	2.2500
23. Smart boards also provide great convenience to students.	28	21.9	57	44.5	32	25.0	10	7.8	1	0.8	2.2109
24. Thanks to the smart boards, access to information has become easier.	33	**25.8**	56	**43.8**	24	18.8	14	10.9	1	0.8	2.1719
25. Smart boards are healthier than black boards.	54	**42.2**	48	**37.5**	19	14.8	5	3.9	2	1.6	1.8516
26. Smart board is very practical.	27	**21.1**	36	**28.1**	36	28.1	26	20.3	3	2.3	2.5469
27. Smart board enables students can easily draw various geometric shape.	21	16.4	38	29.7	51	39.8	16	12.5	2	1.6	2.5313
28. Functions owned by the Smart board is sufficient.	14	10.9	39	30.5	50	39.1	18	14.1	7	5.5	2.7266
29. I think smart boards have great benefit to education.	38	29.7	58	45.3	23	18.0	7	5.5	2	1.6	2.0391

Table 3. *(Continued)*

30. The use of smart board has become more enjoyable since it began to use in lessons.	27	21.1	50	39.1	29	22.7	17	13.3	5	3.9	2.3984

The general opinion of the teachers is summarized in Table 3. The results generally give different perceptions in the use of smart board in classrooms. One aspect is clear despite there is a little bias towards the use of smart board because of it being an ICT tool which was confirmed by 74.2% of the teachers. There is still a huge uncertainty about the level of necessity as 57.9% of the teachers say they can do without the smart boards. This might be due to unfamiliarity with the technology as 41.4% of the respondents mentioned that they don't use smart board during lessons. While 43% of the teachers claim they are not excited when they use the boards for the first time and only 32% of teachers believe that students are also not enthusiastic about smart boards. The perception that smart boards are time consuming is shared among 37.5% of teachers which doesn't seem to be a problem as 50% of the teachers believe it should be used in every class.

Some might argue that this mixed reception might be due to the technicality of using smart boards. This could be an adequate concern as 57% of teachers claim they were not given adequate training on how to use the smart boards. Technical difficulties may be due to inadequate training or technological deficiencies but the certain aspect is that 60.2% of teachers face technical difficulties when using smart boards, 46.9% of teachers also need to go through the burdensome task of acquiring additional software to be able

to use smart boards effectively. Some of the technical difficulties teachers face when using smart boards are calibration difficulties, noise, and installation with 38.3%, 36.7% and 44.5% of teachers claiming they face these problems respectively.

Integrating existing pedagogy with the white boards does not seem to be much of a problem. But it cannot still be overlooked as 21.1% of teachers claim they have difficulty integrating lesson activities with smart boards and 41.1% have difficulties finding materials to use on the smart board. 30.5% of teachers claim they have setbacks catching up with the topics while 33.6%agree they have difficulty maintaining eye contact with students and 39% of teachers are even concerned that student's optical health may be a concern due to staring too long at smart boards.

The teachers also weighed the economic and overall convenience of the smart board with 32% not being sure of the economic viability. However, overall convenience had clearer perceptions as 66.4% of teachers believed that smart boards are convenient for teachers and students. 69.6%, 79.7% and 49.2% of teachers agree that information accessibility, health conditions and practicality where improved respectively by the use of smart boards. Other factors of convenience were suggested by the teachers. 49.2% believed that students don't find it difficult to draw geometric shapes on smart boards and 41.4% believed that functions are easily accessible on smart boards. The perception towards overall benefits was positive as 75% of teachers believe smart boards have great benefits to education. 60.2% had their opinion that teaching has become more enjoyable with the use of smart boards.

Though the opinions were mixed in general, so many factors may be affected by these opinions hence the reason for differentiation weighing factors such as gender, age, profession, and experience are thoroughly considered. According to Amet, Halit & Ufuk (2015), they found that male teachers have more positive attitudes toward using smart board than female teachers.

4.2 Differences Between Opinions According to Demographic Information

The research conducted has its finding based on the perceptions of teachers. Its variables consist of gender, experience, time of usage qualification and other few factors. For the purpose of this analysis the 3 most important questions selected includes which are:

I. Highlighting the use of smart boards

II. Highlighting perceived technical difficulties in using smart boards

III. Highlighting the overall perception of the benefit of smart boards

Table 4. Differences between male and female teachers in their perception of using smart board in classroom

Variables	**Variable classification**	**N**	**Mean**	**Std. Deviation**	**Std. Error**
Usage	Female	85	3.0235	1.15446	1.12522
	Male	43	3.1395	1.31984	1.20127
Technical Difficulties	Female	85	2.3647	1.01003	0.10955
	Male	43	2.5814	1.13877	0.17366
Overall Benefit	Female	85	2.0706	0.82791	0.8980
	Male	43	1.9767	1.07987	0.16468

From table 4 above, the group statistics indicates the difference between several variables according to gender classification. Hence, measuring the statistical accuracy of the estimate, the standard error shows the distribution of the population mean indicating the effect size of sampled mean.

Table 5. Comparing the Mean of Independent Groups Associated with the Significant Differences

Variables		**Levene's test for equality of variances**		**T-test for equality of means**				
		F	**Sig.**	**T**	**Df**	**Sig (2tailed)**	**Mean difference**	**Std. Error**
Usage	Equal variances assumed	3.394	0.068	-0.511	0.126	0.610	-0.11601	0.2268
	Equal variances not assumed			-0.0489	75.173	0.626	-0.11601	0.2370
Technical Difficulties	Equal variances assumed	1.821	0.810	-1.098	0.126	0.274	-0.21669	0.1973
	Equal variances not assumed			-1.055	76.059	0.295	-0.21669	0.2053
Overall Benefit	Equal variances assumed	4.215	0.042	0.545	0.126	0.587	0.09384	0.1720
	Equal variances not assumed			0.500	67.698	0.618	0.09384	0.1875

From table 5, the significance value for usage 0.065 is greater than 0.05 hence there can be an equal variance that is the variability in the four factors are not significantly different. The significance (2 tailed) value is 0.61 which is greater than 0.05. This implies there is no statistically significant difference between the four factors' means when it comes to their effects on usage perceptions of smart boards.

The significant value for technical difficulties is 0.810 which is greater than 0.05, therefore, there is an equal variance within the four factors. Hence the significance (2

tailed) value, therefore, is 0.274 which is greater than 0.05 which implies no statistically significant difference among the factors' means when it comes to their effects on technical difficulties in the use of smart boards.

For the overall benefit, the significant value shows a 0.042 which is less than 0.05, therefore, the result indicates unequal variances within the factors. The significance (2 tailed) value, therefore, is 0.618 which is greater than 0.05 which indicates that there is no statistically significant difference among the factors' means when it comes to their effect on overall benefits of the use of smart boards.

Table 6. Gender perceptions about making eye contact

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	85	3.17	1.14	126	2.77	0.029
Male	43	2.69	1.18			

From Table 6 above, the significance difference shows that (t (128) 2.77 and $p<0.05$) therefore gender is a significant factor affecting how smart boards affect eye contact between teacher and student. It also shows that the average number of male ($\bar{x}$=2.8) and female ($\bar{x}$=3.17), teachers had no similar perception to this effect. This result corresponds to a study conducted by Kulms, Krämer, Gratch and Kang (2011), they found that female participants recorded a high degree in maintaining eye gazing than their male counterpart.

Table 7. Material design factor in explaining whether teachers have a concern for the use of ICT materials in classrooms

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	85	2.95	1.25	126	2.32	0.022
Male	43	2.44	1.20			

From the Table 7 above, the significance difference in material design for male and female is (t (128) = 2.32 and $p<0.05$) therefore material design is a significant factor in explaining whether teachers have a concern for the use of ICT materials in classrooms. It showed that female had a mean average of ($\bar{x}$=2.95) and male ($\bar{x}$=2.44) accordingly. Therefore in other for students to learn effectively, both male and female teachers assume the material design as a tool in enriching learning through smarts boards.

Table 8. Material design factor in determining whether teachers are making use of the smart boards to students

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	73	2.64	1.05	126	4.90	0.000
Male	55	3.61	1.17			

The Table 8 above, shows a significance difference of (t (128) = 4.90 and $p<0.05$) hence, material design is a significant factor in determining whether teachers are making use the smartboards to students. It further gives a mean average of male ($\bar{x}$ = 2.64) and female ($\bar{x}$ 3.61) respectively.

Table 9. Material design factor in explaining whether students' interest decline while using smart boards

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	73	3.35	1.20	126	2.12	0.036
Male	55	2.89	1.25			

From the Table 9 above, the significant difference showed a (t (128) = 2.12 and $p<0.05$) hence, the material design is a significant factor in explaining whether students' interest diminish overtime. The mean average showed a proportion of male $\bar{x}$= 3.35 and female 2.89 with a p value of 0.036 respectively. This further shows that from the perspective of both male and female teachers, they've understood the relationship between material design and the personal interest of the students in learning.

Table 10. Material design factor that affects fear of disruption when using smart board

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	73	3.30	1.22	126	2.51	0.013
Male	55	2.74	1.26			

From the Table 10 above, the significant difference indicate that (t(128) = 2.51 and $p<0.05$) therefore material design is a significant factor that affects fear of disruption when using smart boards. This can tactically be in the sense that there can be a cause of distraction, damage, or manipulation during the period of usage thereby instilling fear in the mind of the user. The mean average thus shows male $\bar{x}$ = 2.74 and female $\bar{x}$ = 3.30 accordingly.

Table 11. Material design factor affecting teachers perception of training provided

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	73	2.60	1.17	126	2.15	0.033
Male	55	2.14	1.20			

The Table 11 above, the significant differences shows that (t (128) and $p<0.05$),therefore material design is a significant factor affecting teachers perception of training provided. For this reason, more training can be organized for effective learning for both male and

female teachers. For the mean average, male ($\bar{x}$ = 2.14) and female ($\bar{x}$ = 2.60) accordingly.

Table 12. Material design factor affecting teachers knowledge of smart board integration to lesson activity

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	73	3.87	0.83	126	6.23	0.000
Male	55	2.81	1.09			

From the Table 12 above, the significance difference shows that (t (128) = 6.23 and $p<0.05$) therefore material design is a factor affecting teachers knowledge of smart board integration to lesson activity. It further illustrate the mean average of male ($\bar{x}$ = 2.81) and female ($\bar{x}$ = 3.87). Integrating white board technology can enhance teachers in advancing their own classrooms and further stimulate pedagogical modifications in schools (Smart-Board Technology: Integration in Teaching" 2011).

Table 13. Material design factor among teachers perceptions on ease of finding materials

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	73	3.08	1.24	126	3.27	0.001
Male	55	2.38	1.13			

From the Table 13 above, the significant difference shows that (t(128)and $p<0.05$), therefore material design is a significant factor among teachers perceptions on ease of finding materials. This also extends to the installation process, technical issues as well as maintenance. Hence the effect size between the two samples means (Male & female), are given as $\bar{x}$=2.38 and $\bar{x}$3.08 respectively.

Table 14. Material design factor explaining teachers on calibration setting problems

Gender	**N**	$\bar{x}$	**S**	**Df**	**t**	**P**
Female	73	3.39	1.11	126	4.23	0.000
Male	55	2.56	1.08			

From the Table 14 above, (*t* (128) and $p<0.05$) this shows the significant difference of material design as a factor explaining teachers on calibration setting problems. It involves the approach whereby teacher uses it as a designing in checking the accuracy of the facility and its standard and the difficulties encountered. The mean significance between male and female corresponds to $\bar{x}$ = 3.39 and 2.56 with a t value of 4.23.

Table 15. Material design factor explaining teachers perception of noise when using smart boards

Gender	**N**	$\bar{x}$	**S**	**Df**	**t**	**P**
Female	73	3.26	1.25	126	2.20	0.029
Male	55	2.78	1.14			

From the Table above, the significant difference shows that (*t* (128) and $p<0.05$) as such, material design is a factor in explaining teachers perception of noise when using smart-boards. As noise can be a factor of disturbance in a natural setting, teachers also admitted that noise can also polarize the environment when this facility is been used. The mean average for male perception was $\bar{x}$= 2.78 while female perceived higher with a mean average of $\bar{x}$= 3.26.

Table 16. Material design factor explaining whether teachers can catch up on topics when using smart-boards

Gender	**N**	$\bar{x}$	**S**	**Df**	**t**	**p**
Female	73	3.64	1.18	126	4.25	0.000
Male	55	2.78	1.06			

From the Table 16 above, the significance difference shows (*t* (128) and p<0.05), therefore material design is a significant factor in explaining whether teachers can catch up on topics when using smart-boards. This help to reduce the time they use for the preparation of lesson notes and make the learning a personalized one. The mean average for male sample teachers was $\bar{x}$=2.78 and female $\bar{x}$3.64 only.

Table 17. Material design factor explaining perceptions of teachers eye contact with student

Gender	**N**	$\bar{x}$	**S**	**Df**	**T**	**p**
Female	73	3.23	1.20	126	2.45	0.016
Male	55	2.72	1.07			

According to Table 17 above, the significant difference shows that (*t* (128) and p<0.05), therefore material design is a significant factor in explaining perceptions of teachers eye contact with student. Whereas the mean average of both male and female was $\bar{x}$=3.23 and $\bar{x}$=2.72 respectively.

Table 18. Course taken factor in explaining whether teachers are making use of the smart boards to students during lessons

Gender	**N**	$\bar{x}$	**S**	**Df**	**T**	**P**
Female	84	2.72	1.10	126	4.69	0.000
Male	44	3.70	1.15			

Table 18 above, demonstrates that (*t* (128) and p<0.05) therefore course taken is a significant factor in explaining whether teachers making use the smart boards to students during lessons since it's lesser than 0.05 significant value. Also the mean average for male was $\bar{x}$=3.70 and female $\bar{x}$=2.72 only.

Table 19. Course taken factor in explaining whether teachers are excited when they use smart boards the first time

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	84	2.63	1.16	126	3.85	0.000
Male	44	3.45	1.10			

From the Table 19, the significant difference illustrates (t (128) and $p<0.05$) hence, course taken is a significant factor in explaining whether teachers are excited when they use smart boards the first time. The average mean recorded was given as male $\bar{x}=3.45$ while female 2.63 only.

Table 20. Course taken factor in explaining perceptions on adequacy of training

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**p**
Female	84	2.57	1.23	126	2.17	0.032
Male	44	2.09	1.09			

From the Table 20 above, the significant difference shows that (t(128)and $p<0.05$) therefore course taken is a significant factor in explaining perceptions on adequacy of training. The sample teachers in the research had a proper and sufficient training in the use of this facility with the mean average of male $\bar{x}=2.09$ and female $\bar{x}=2.57$.

Table 21. Course taken factor in explaining perceptions on the need for additional software in smart board use

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	84	2.50	1.18	126	2.63	0.009
Male	44	3.09	1.23			

The Table 21 above, the significant difference illustrates that (t (128) and $p<0.05$) apparently, course taken is a significant factor in explaining perceptions on the need for

additional software in smart board use. The mean average in the result show that male $\bar{x}$=3.09 while female $\bar{x}$=2.50 only.

Table 22. Course taken factor affecting economic perceptions of the use of smart boards among teachers

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**p**
Female	84	2.73	1.14	126	2.50	0.014
Male	44	3.25	1.01			

From the Table 22 above, the significant difference shows that (t (128) and $p<0.05$) therefore course taken affect economic perceptions of the use of smart boards among teachers. The mean average for male is given as $\bar{x}$=3.25 high and female $\bar{x}$=2.73 low.

Table 23. Course taken factor in explaining perception of student convenience in the use of smart-boards

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	84	2.11	0.84	126	1.60	0.011
Male	44	2.38	0.99			

From the Table 23 above, the significant difference indicates that (t (128) and $p<0.05$) therefore course taken is a significant factor in explaining perception of student convenience in the use of smart-boards. According to some teachers who made extra note they admitted that the facility is usually positioned in a conducive and strategic area for the comfort and convenience of every student. Thus the mean average for male is $\bar{x}$=0.99 and total female had a mean average of 0.84 accordingly.

Table 24. Course taken factor in explaining perceptions of smart-boards in making access to information easier

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	84	1.96	0.82	126	3.51	0.001
Male	44	2.56	1.08			

From the Table 24 above, the significant difference shows that (t (128) and $p<0.05$) therefore course taken is a significant factor in explaining perceptions of smart-boards in making access to information easier. When connected to the internet, student can access the World Wide Web for further illustration in the process of teaching according to the report. The mean average for both gender given male as $\bar{x}=2.56$ and female $\bar{x}=1.96$ only.

Table 25. Course taken factor in explaining perception of smart board practicality

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	84	2.40	1.10	126	2.03	0.044
Male	44	2.81	1.06			

From the Table 25 above, the significant difference shows that (t (128) and $p<0.05$) hence course taken is a significant factor in explaining perception of smart-board practicality. The mean average for male $\bar{x}=2.81$ and female $\bar{x}=2.40$ respectively.

Table 26. Course taken factor in explaining perceptions on smart board use to draw geometric shape

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	84	2.38	0.95	126	2.48	0.014
Male	44	2.81	0.92			

From the Table 26 above, the significant difference illustrate that (t (128) and $p<0.05$) therefore course taken is a significant factor in explaining perceptions on smart-board use to draw geometric shape. The facility has been designed with some external features

such as the smart board pens and smart board eraser. With this tool, teachers can use it for even more complex task during teaching in class (SMART Inc.). The mean average for male respondents $\bar{x}$=2.81 and female $\bar{x}$=2.38 respectively.

Table 27. Course taken is a significant factor in explaining perceptions on smart board overall benefit to education

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	84	1.91	1.18	126	2.11	0.036
Male	44	2.27	1.23			

From the Table 27 above, the significant difference shows that (*t* (128) and $p<0.05$) therefore course taken is a significant factor in explaining perceptions on smart-board overall benefit to education. According to a journal published by AMCIS (2011) Proceedings, they found that Smart boards are interactive and such attributes help teachers to integrate, advance and provide content as well as safe resources and time for instance paper work. As such the mean average for male respondents $\bar{x}$=2.27 and female $\bar{x}$=1.91 respectively.

Table 28. Course taken factor in explaining how enjoyable it is when using smart boards

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	84	2.17	1.08	126	3.29	0.001
Male	44	2.81	0.94			

According to Table 28 above, the significant difference indicates that (*t* (128) and $p<0.05$) therefore course taken is a significant factor in explaining how enjoyable it is when using smart boards. The mean average for both genders who participated in this current study is given as male $\bar{x}$=2.81 and female $\bar{x}$=2.17 only.

Table 29. Certificate factor in explaining whether teachers use smart board in lessons

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	64	2.70	1.09	126	3.51	0.001
Male	64	3.42	1.21			

From Table 29 above, the significant difference illustrate (*t* (128) and $p<0.05$) therefore certificate is a significant factor in explaining whether teachers use smart board in lessons. Hence the average mean of both genders who attested to using the interactive whiteboard during classes for male is $\bar{x}$ =3.42 while female had a lesser mean value of $\bar{x}$=2.70 respectively.

Table 30. Certificate factor in explaining whether there is excitement when using smart boards for the first time

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	64	2.51	1.09	126	3.93	0.000
Male	64	3.31	1.19			

From the Table 30 above, the significant difference indicates that (*t* (128) and $p<0.05$) therefore certificate is a major factor in explaining whether there is excitement when using smart boards for the first time. The mean average for male is $\bar{x}$=3.31 while female $\bar{x}$=2.51.

Table 31. Certificate factor in explaining teachers perception on student interest in the use of smart boards

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	64	3.37	1.10	126	2.01	0.046
Male	64	2.93	1.34			

According to the Table 31 above, the significant difference shows (t (128) and $p<0.05$) thus certificate is a factor in explaining teachers perception on student interest in the use of smart boards. The average mean for both genders had a close view of Male $\bar{x}=2.93$ while female had $\bar{x}=3.37$ accordingly.

Table 32. Certificate factor in explaining the need for different software in smart-board use

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	64	2.34	1.11	126	3.43	0.001
Male	64	3.06	1.24			

From the Table 32 above, the significant difference shows that (t (128) and $p<0.05$) therefore certificate is a significant factor in explaining the need for different software in smart board use. According to SMART Inc. the interactive whiteboard needs some software component to work efficiently and durably, this range from SMART Notebook Software, SMART AirLiner wireless slate amongst others. For the mean average, male had $\bar{x}=3.06$ while female $\bar{x}=2.34$.

Table 33. Certificate factor in explaining whether teachers struggle to find materials to use on the smart boards

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	64	2.51	1.23	126	2.46	0.015
Male	64	3.04	1.20			

From Table 33 above, the significant difference shows that (t (128) and $p<0.05$) therefore certificate is a significant factor in explaining whether teachers struggle to find materials to use on the smart-boards. This includes the features the facility comprises of

such as the smart board pen tray, the smart board pens and smart board eraser, and smart response interactive response system amongst others. The result further illustrate the mean average of both male and female respondent as $\bar{x}$=3.04 and $\bar{x}$=2.51 respectively.

Table 34. Certificate factor in explaining the perception of noise during the use of smart boards

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	64	2.81	1.25	126	2.26	0.025
Male	64	3.29	1.16			

From the Table 34 above, the significant difference shows that (*t* (128) and $p<0.05$) therefore certificate is a significant factor in explaining the perception of noise during the use of smart boards. As further illustrated in the result above, the mean average for male is $\bar{x}$= 3.29 while female $\bar{x}$=2.81 only.

Table 35. Certificate factor in explaining teachers that catch up to the topics when using smart boards

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	64	3.09	1.29	126	1.69	0.093
Male	64	3.45	1.09			

From Table 35 above, the significant difference demonstrate that (*t* (128) and $p<0.05$) therefore certificate is not a significant factor in explaining teachers that catch up to the topics when using smart boards. This factor can be due to some teachers finding it too technical and in the process but with constant day-to-day practice they can get used to this facility. The result further provide the mean average for both gender as male having $\bar{x}$=3.45 and female $\bar{x}$=3.09 accordingly.

Table 36. Certificate factor in determining teachers that lose time during installation of smart board software

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	64	2.39	1.24	126	3.40	0.001
Male	64	3.10	1.10			

From the Table 36 above, the significant difference shows that (t (128) and $p<0.05$) thus, certificate is a significant factor in determining teachers that lose time during installation of smart board software. The given mean for male is $\bar{x}$ =3.10 and female $\bar{x}$ =2.39 only.

Table 37. Certificate factor in explaining economic viability of smart boards

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	64	2.56	1.09	126	3.71	0.000
Male	64	3.26	1.04			

From the Table 37 above, the significant difference shows that (t (128) and $p<0.05$) therefore, certificate is a significant factor in explaining economic viability of smart boards. Hence with this facility there is a high chance of making the quality of education expand through the components of qualified expert using the technology. The average mean show that male had $\bar{x}$=3.26 and female had $\bar{x}$=2.56 only.

Table 38. Certificate factor in explaining teachers access to information

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	64	1.96	0.75	126	2.42	0.017
Male	64	2.37	1.10			

From the Table 38 above, the significant difference shows a (t (128) and $p<0.05$) therefore certificate is a significant factor in explaining teachers access to information.

As indicated further in the table, the given mean average for male was $\bar{x}$=2.37 while female had a mean average of $\bar{x}$=1.96.

Table 39. Certificate factor in explaining perception of health effect of smart boards

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	64	1.67	0.73	126	2.23	0.027
Male	64	2.03	1.05			

According to Table 39 above, the significant difference illustrating the perception of Health is given as (t (128) and $p<0.05$) therefore certificate is a significant factor in explaining the perception of health effect of smart boards. The total mean average of male respondents is $\bar{x}$=1.67 and female had a higher mean of $\bar{x}$=2.03 only.

Table 40. Certificate factor in explaining teachers perceptions on drawing of geometric shapes

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	64	2.32	0.92	126	2.43	0.016
Male	64	2.73	0.96			

Table 40 above, illustrate the significant difference attributed to the perception of teachers (t (128) and $p<0.05$) therefore certificate is a significant factor in explaining teachers perceptions on drawing of geometric shapes. The result further shows the mean average of $\bar{x}$=2.73 for male and $\bar{x}$=2.32 for females only.

Table 41. Certificate factor in explaining perception on how enjoyable the use of smart board is

Gender	**N**	**$\bar{x}$**	**S**	**Df**	**T**	**P**
Female	64	2.07	1.01	126	3.49	0.001
Male	64	2.71	1.06			

From the Table 41 above, (t (128) and $p<0.05$) therefore certificate is a significant factor in explaining perception on how enjoyable the use of smart boards are. This can be deduced from the end of term evaluation of students' grade in the light of using this facility for learning. As the table further indicate, the result of the mean average of both male and female are $\bar{x}$ =2.71 and 2.07 respectively.

4.3 Analyzing Individual Factor Effects

This current study further analyzes individual factor effects on the differences in opinions. For the purpose of this analysis only question 29 where teachers gave their overall view on- the benefits of smart boards were used.

Table 42. Descriptive for age classification

Overall Benefits		N	Mean	Std. Deviation	Std. Error
	20-24	4	2.2500	0.95743	0.47871
	25-29	26	2.1538	1.00766	0.19762
	30-34	49	1.8571	0.86603	0.12372
	35+	49	2.1429	0.91287	0.13041
	Total	128	2.0391	0.91705	0.08106

The significance value is 0.490 which is greater than 0.05 and it implies that there is little evidence the variances are not equal. The analysis of variance is used to determine if different age groups had differing opinions on the overall benefits of smart boards.

Table 43. Opinions of teachers with different age groups

		Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
	Between Groups	2670	3	0.890	1.060	0.369
	Within Groups	104.135	124	0.840		
	Total	106.805	127			

The significance value is 0.369 which is greater than 0.05 which indicates that there is no significant difference between the opinions of the different age groups.

Table 44. Descriptive for classification according to years of experience

		N	**Mean**	**Std. Deviation**	**Std. Error**
	5-	29	2,2414	1,15434	,21436
	5-15	70	1,9286	,87346	,10440
	15+	29	2,1034	,72431	,13450
	Total	128	2,0391	,91705	,08106

The significant value is 0.08which is greater than 0.05 which implies that there is little evidence the variances are not equal. The analysis of variance is used to determine if different years of experience had differing opinions on the overall benefits of smart boards.

Table 45. Opinions of teachers with differing years of experience

		Sum of Squares	Df	Mean Square	F	Significance
	Between Groups	2.162	2	1.081	1.291	0.020
	Within Groups	104.643	125	0.837		
	Total	106.805	127			

The significant value is 0.020 which is less than 0.05 which implies that there is a significant difference between the opinions of teachers with differing years of experience. What particular set of experience levels are responsible for this differences? The answer to this question can be done by conducting the Tukey post hoc test which will enable proper multiple comparisons.

Table 46. Multiple comparisons of years of experience

Dependent Variables	(I) Experience	(J) Experience	(I-J) Mean Difference	Std. Error	Sig.
Q29	5-	5-15	0.31281	0.20205	0.124
		15+	0.13793	0.24028	0.567
	5-15	5-	-0.31281	0.20205	0.124
		15+	-0.17488	0.20205	0.388
	15+	5-	-0.13793	0.24028	0.567
		5-15	0.17488	0.20205	0.388

From table 46, it shows that all the significant values are greater than 0.05 which indicates that there is no statistically significant difference in each pairing of the years of experience.

Table 47. Descriptive for profession classification

		N	Mean	Std. Deviation	Std. Error
	Total	128	2,7813	1,24190	,10977
	Computer Teacher	11	1,8182	,60302	,18182
	Mathematics Teacher	15	2,0000	,65465	,16903
	English Teacher	15	2,0667	,70373	,18170
	Music teacher	6	2,5000	,83666	,34157
	Physics teacher	10	2,4000	1,17379	,37118
	Chemistry Teacher	11	2,0909	1,22103	,36815
	Turkish Teacher	15	1,8667	,83381	,21529
	Guidance and Psychological Counseling	6	1,5000	,54772	,22361
	Geography Teacher	7	1,5714	1,13389	,42857
	Art Teacher	3	2,0000	1,00000	,57735
	History Teacher	10	2,2000	1,03280	,32660
	Biology Teacher	8	2,7500	1,28174	,45316
	Philosophy Teacher	5	1,2000	,44721	,20000
	German Teacher	3	2,6667	,57735	,33333
	French Teacher	3	2,0000	,00000	,00000
	Total	128	2,0391	,91705	,08106

The significant value is 0.076 which is greater than 0.05 and thus implies that there is little evidence the variances are not equal. Therefore, the analysis of variances is employed to determine if different professions had differing opinions on the overall benefits of smart boards.

Table 48. Opinions of teachers with differing professions

		Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
	Between Groups	15.129	14	1.137	1.143	0.158
	Within Groups	90.813	113	0.804		
	Total	106.805	127			

The significant value is 0.158 which is greater than 0.05 implying that there is no significant difference between the opinions of teachers with differing professions.

Chapter 5

CONCLUSION

5.1 Conclusion

The use of smart boards has been on the rise in recent times. Many people have had different perceptions of smart boards. The Turkish Republic of Northern Cyprus has seen this technology enter its secondary school classrooms therefore making it necessary for research into teacher's perception on the use of smart boards. This thesis aimed to weigh these perceptions and hence used a 30 question questionnaire to ask teachers of the areas important regarding the smart boards. It also aimed at determining if different factors such as Gender, Age, Experience and profession caused some biases towards opinions.

The thesis focused on four major schools in the region which amounted to a total sample size of 128 teachers. Descriptive techniques were used to analyze the general opinions of the teachers while the Analysis of Variances (ANOVA) technique was employed to determine if opinions deferred due to Gender, Age, Experience or profession. The results from the questionnaire showed mixed perceptions towards the use of the smart boards although a majority of the teachers agreed they were beneficial. This current study shows that age and profession didn't affect their opinions but the level of experience affected teacher's perceptions.

Furthermore, teachers opinion towards smart boards differ but not due to their age or profession. These findings were due to the use of generally accepted techniques of statistical analysis.

Although the thesis tried to involve a broad range, there is still a lot of gap in literature, and further researchers should consider issues such as smart boards use in tertiary institutions as well as analyzing other possible factors that could cause biases in teacher's opinions.

REFERENCES

Amet, A., Halit, A., & Ufuk, G. (2015). Teachers attitudes toward using interactive whiteboards. *Middle Eastern & African Journal of Educational Research, 17* (22). Retrieved on from http://www.majersite.org/issue17/17_2.pDf

Asika, N. (2005). Research Methodology in Behavioral Sciences: Lagos *Longman Publishing Limited Banks and Other Financial Institutions Act 1991*. Retrieved on July 21, 2016 from http://www.sciepub.com/reference/60932

Fernandez, J. &Luftglass, M. (2003). *Interactive whiteboards: A powerful learning tool. Principal*, The Embattled Principal, tech Support, 83, 63.

Cogil, J (2002). How is the interactive whiteboard being used in primary schools and how does it affect teaching? *Kings college London*, pp 1-48. Retrieved on July 21st 2016 from http://mypad.northampton.ac.uk/13416667lc/files/2013/10/iwb-26igy0w.pDf.

Coyle, Y., Yañez, L., &Verdú, M. (2010). The impact of the interactive whiteboard on the teacher and children's language use in an ESL immersion classroom. *DOI system pp 614-625*. Retrieved on July 21st 2016 from http://doi.org/10.1016/j.system.2010.10.002.

Famagusta / ammochostosinternal displacement in Cyprus (2011). *Prio Cyprus Centre*. Retrieved on July 21, 2016from http://www.prio-cyprus-displacement.net/default.asp?id=568

Giles, R.M., & Shaw, E. L. (2011). Smart boards rule. *Science and Children, 49*(4), 36-37. Retrieved from http://eric.ed.gov/?id=EJ964069

Gursul,F&Tozmaz, G.B (2010). Which one is smarter? Teacher or Board. *Science Direct*. Pp5731-5737. Retrieved on 21st July 2016from

Hassan, A &Kamis, A (2014). Difficulties facing teachers using interactive smart boards in their classes. *American International Journal of Social Sciences. Pp 136-158*. Retrieved on July 21st 2016 from http://www.aijssnet.com/journals/Vol_3_No_2_March_2014/16.pDf.

Holmes, K. (2009). Planning to teach with digital tools*: Introducing the interactive Whiteboard to pre-service secondary mathematics teachers*. Australasian Journal of Educational Technology, 25 (3), 351-365. Retrieved on 21st July, 2016 from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.363.7836&rep=rep1&type=pDf

Kocak, O &Gulcu, A (2013). Teachers remark on interactive smart board with LCD technology. *International Journal of Education in Mathematics, Science and Technology.* pp 294-300. Retrieved from on 21st July 2016 http://ijemst.com/issues/1_4_6_Kocak_Gulcu.pDf.

Kulms, P.,Krämer, N.,Gratch,J., and Kang,S. (2011),It's in Their Eyes: A Study on Female and Male Virtual Humans' Gaze. *Springer-Verlag Berlin Heidelberg6895*, pp. 80–92. Retrieved on August 17, 2016 from http://ict.usc.edu/pubs/It's%20in%20their%20eyes-%20A%20study%20on%20female%20and%20male%20virtual%20humans'%20gaze.pDf

Manny-Ikan, E. & Dagan, O. (2007). Using the interactive white board in teaching and learning – an evaluation of the smart classroom pilot project. *Interdisciplinary Journal of E-Learning and Learning Objects 7*. Retrieved on July 21, 2016 from http://www.ijello.org/Volume7/IJELLOv7p249-273Manny-Ikan763.pDf

Moorhouse, E. (2007, March 30) Mt. Laurel district shows off digital classroom. *Burlington County Times,* section B, p. 1-2. Retrieved on 21 July, 2016 from http://eduaction.pages.tcnj.edu/files/2013/05/U-Smart-Boards-Special-Needs-Inclusion.pDf

Myers (1997), in Cynthia, H. Qualitative and Quantitative Concepts: Similarities, Differences, and Controversy. Concepts in Proposal Writing. Retrieved on July 21, 2016 from http://www.und.nodak.edu/instruct/wstevens/PROPOSALCLASS/Huntpaper.htm

Pourciau, N. (2014). Teaching&Learning with smart board technology in middle school classrooms. *Walden University November*. MN, United States. Retrieved on July 21, 2016 from http://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=1044&context=dissertations

Saltan, F &Arslan, K (2009). Teachers perceptions on interactive whiteboards. *Mersin University*. Pp 353-365. Retrieved on 21st July 2016.from https://www.google.com.tr/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&cad=rja&uact=8&ved=0ahUKEwjP08DjiZPOAhVCPxoKHUhCAhEQFghaMAU&url=http%3A%2F%2Fdergipark.ulakbim.gov.tr%2Fmersinefd%2Farticle%2Fdownload%2F1002000254%2F1002000328&usg=AFQjCNGahOGlsagB-i_PuRaNCk5ZZeUTgA&sig2=fK99y_OdA6HiDtXbxiGmKw&bvm=bv.128153897,d.bGs

Savery, J (2002). Faculty and student perception of Technology integration in teaching. *The Journal of Interactive Learning*. pp 1-12, retrieved on 21st July 2016 from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.472.4532&rep=rep1&type=pDf

Sazali, W., Raduan., R. & Suzana, O. (2012). Defining the concepts of technology and technology transfer: a literature analysis. *International Business Research (5)* 1. Retrieved on July 21, 2016 from http://www.ccsenet.org/journal/index.php/ibr/article/viewFile/13847/9501

Secondary Education. Rand Cooperation. Retrieved on July 21, 2016 from http://www.rand.org/topics/secondary-education.html

Scott, P. H., Mortimer, E. F. & Aguiar, O. G. (2006), The tension between authoritative and dialogic discourse: A fundamental characteristic of meaning making interactions in high school science lessons. *Sci. Ed.*, 90: 605–631. doi:10.1002/sce.20131. Retrieved from 21 July, 2016 from http://onlinelibrary.wiley.com/doi/10.1002/sce.20131/abstract

Smart-Board Technology Integration in Teaching. (2011). Association for Information Systems: *AIS Electronic Library (AISeL).* Retrieved on August 19, 2016 from http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1017&context=amcis2011_submissions

Geronazzo, M. (2013). Stanford University Study Finds Strong Economic Advantages in Using SMART Collaboration Solutions. *Smart Collaborate Naturally: SMART Technologies Inc.US.* Retrieved on August 19, 2016 from https://smarttech.com/en/about+smart/about+smart/newsroom/media+releases/english+us/releases+by+year/2013+media+releases/2013/stanford+university+study+finds+strong+economic+advantages+in+using+smart+collaboration+solutions

Resources. *Smart board components.*Retrieved on August 19, 2016 from https://www.blossomlearning.com/ShowResource.aspx?rid=50

Smart technology Inc. (2006) Interactive whiteboards and learning-improving student learning outcomes and streamlining lesson planning. *White Paper*. Retrieved on July 21, 2016 from http://www.sharpsav.com/wpcontent/uploads/2013/08/Int_Whiteboard_Research_Whitepaper.pDf

Turel, Y & Johnson, T (2012). Teachers Belief and Use of Interactive. Whiteboards for Teaching and Learning. *Educational Technology & Society*. pp 381–394. Retrieved on July 21st 2016 from http://www.ifets.info/journals/15_1/32.pDf.

Turel, Y.K. (2010). Developing teachers utilization of interactive whiteboards. I D. Gibson & B. Dodge (Eds.), *Proceedings of Society for Information technology & Teacher Education International Conference 2010,* Chesapeake, VA: AACE.(pp.3049-3054).

User Guide-Smart Board software. *Smart Technologies*. Retrieved on July 21, 2016 from https://www.nyu.edu/campusmedia/data/pDfs/Genomics%20-%20SMART%20Board%20Users%20Guide.pDf

Zirkle, M. L. (2003). The effects of smart board: interactive whiteboard on high school students with special needs in a functional mathematics class. Eastern Mennonite University VA 22802 US. Retrieved on July 21, 2016 from https://www.scribd.com/document/14332849/The-effects-of-SMART-Board-Interactive-Whiteboard-on-High-School-Students-with-Special-Needs-in-a-Functional-Mathematics-Class

APPENDICES

Appendix A: Questionnaire

Sınıf içinde Akıllı Tahta Kullanımı Anketi

Sayın Öğretmenimiz,

Bu çalışmadaki amacımız Mağusa bölgesindeki Lise öğretmenlerinin Akıllı tahta kullanımı konusundaki düşünceleri ve yaşadıkları problemleri belirlemektir.Bu kapsamda arkadaki sayfada yer alan yanıtlara ihtiyacımız bulunmaktadır.

Anket iki bölümden oluşmaktadır.Birinci bölümde sizlerle ilgili demografik özellikleri belirlemeye yönelik 8 adet soru yer almaktadır.Her bir soru için tek bir seçeneği işaretlemeniz gerekmektedir. İkinci bölüm Akıllı Tahta kullanımı konusunda yaşadığınız problemleri saptamak,kullanım esnasında yeterliliklerinizin ne düzeyde olduğunu

ölçmek ve kişisel düşüncelerinizi belirlemek içindir.Anketin ikinci bölümü 30 maddelik likert tipi derecelendirme örneği şeklindedir.Bu bölümde maddeler 1=Tamamen Katılıyorum, 2= Katılıyorum, 3= Kararsızım, 4= Katılmıyorum, 5= Tamamen Katılmıyorum olarak ifade edilmiştir.Ankette seçtiğiniz maddeyle ilgili yere (x) işareti koyarak belirtmenizdir.

Tüm soruları eksiksiz ve samimiyetle doldurmanızı rica eder, katkılarınız için teşekkür ederiz.

A-Demographic Information

1.What is your gender?

- Female
- Male

2.How old are you?

- 20-24
- 25-29
- 30-34
- 35 and more

3.What is your profession?

- Computer Teaching
- Mathematic Teaching
- English Teaching
- Music Teaching
- Physics Teaching
- Chemistry Teaching
- Turkish Teaching
- Guidance and psychological counseling
- Other(Please specify)_ _

4. How long you are working as teacher?

- Below 5 years
- 5-15 years
- 15 and more

5What is the duration of electronic whiteboard usage in classroom in weekly?

- Below 1 hour
- 1-2 hours
- 2 and more

6.Are you designing the materials to be used on the Smart board?

- Yes
- No

7. Did you receive training regarding to use of smart board?

- Yes
- No

8. Do you have certificate regarding to smart board?

- Yes
- No

Scale Items

Items	Totally agrree	Agree	Neutral	Disagree	Totally disagree
1.The same way I can work my classes without the Smart board.					
2.My concern is for the use of information and communication technologies in the classroom.					
3.Smart boards are time-consuming to use.					
4.I have been making use the smart board to my students during lessons.					
5.I think it would not be appropriate to use smart boards in each class.					
6.I don't have the same excitement when i use smart board at the first time.					
7. I think the interest of student will diminish over time on smart boards.					
8.Students can disrupt the smart boards if it is used frequently.					
9.I'm afraid of the disruption when using smart boards.					
10.The teachers were not given adequate training about smart boards.					
11.I need different softwares in the smart board in addition to their software.					
12.I'm having technical difficulties when using a smart board.					
13I do not know how to integrate interactive whiteboard to lesson activity.					
14.I'm struggling to find material that I can use the smart board.					
15.When using the Smart board, I'm having problems with the calibration setting.					
16.There's noise when using the Smart board in the classroom.					
17.Students with health problems related to eye are experiencing difficulties when using a smart board.					
18. I can't catch up the topics when I use the Smart board.					
19.Smart board prevents to make eye contact with my students.					
20.I'm losing a lot of time in the course when getting started the installation.					
21.Smart boards are appropriate in economic terms.					
22.Smart boards have provided great convenience to teachers					
23. Smart boards also provide great convenience to students.					
24.Thanks to the smart boards, access to information has become easier.					
25.Smart boards are healthier than black boards.					
26.Smart board is very practical.					
27.Smart board enables students can easily draw various geometric shape.					
28.Functions owned by the Smart board is sufficient.					
29.I think smart boards have great benefit to education.					
30.The use of smart board has become more enjoyable since it began to use in lessons.					

Appendix B: Turnitin Originality Report

Turnitin Originality Report

Thesis_7 by Yaprak Batu
From Yaprak_Batu (SCHOOL OF COMPUTING AND TECHNOLOGY)

- Processed on 01-Sep-2016 10:34 EEST
- ID: 700113186
- Word Count: 11988

Similarity Index

14%

Similarity by Source

Internet Sources:

12%

Publications:

5%

Student Papers:

9%

Sources:

1

2% match (Internet from 25-May-2016)
http://acikerisim.deu.edu.tr/xmlui/bitstream/handle/12345/5170/189-196.pDf?isAllowed=y&sequence=1

2

1% match ()
http://www.und.edu/instruct/wstevens/PROPOSALCLASS/Huntpaper.htm

3

1% match (student papers from 06-Jan-2016)
Submitted to Eastern Mediterranean University on 2016-01-06

4

1% match (Internet from 09-Dec-2012)
http://xa.yimg.com/kq/groups/23643198/744171855/name/FINAL+THESIS+081909.doc

5

< 1% match (publications)
Gursul, Fatih, and Gulsah Bilgic Tozmaz. "Which one is smarter? Teacher or Board", Procedia - Social and Behavioral Sciences, 2010.

6

< 1% match (Internet from 30-Apr-2009)
http://www.uky.edu/~drlane/capstone/trmdef.htm

7

< 1% match (Internet from 22-Dec-2014)
http://onlinelibrary.wiley.com/doi/10.1002/sce.20131/abstract;jsessionid=CBBAB53F24A831FBDFC0204916F56426.f02t01

8

< 1% match (student papers from 19-Apr-2013)
Submitted to American University of Beirut on 2013-04-19

9

< 1% match (Internet from 25-Mar-2014)
http://eduaction.pages.tcnj.edu/files/2012/11/Use-of-Smart-Boards.pDf

10

< 1% match (Internet from 15-Feb-2015)
http://www.studymode.com/essays/The-Review-Of-Related-Literature-And-54993702.html

11

< 1% match (student papers from 13-Jul-2016)

Class: SCHOOL OF COMPUTING AND TECHNOLOGY
Assignment:
Paper ID: 689374495

12

< 1% match (Internet from 07-Jan-2016)
http://wikilink.biz/

13

< 1% match (Internet from 10-Jun-2014)
http://www.ifets.info/journals/15_1/ets_15_1.pDf

14

< 1% match (student papers from 10-Jul-2016)
Submitted to Kaplan International Colleges on 2016-07-10

15

< 1% match (student papers from 24-Jul-2011)
Submitted to Southern Cross University on 2011-07-24

16

< 1% match (student papers from 30-Oct-2015)
Submitted to London School of Business and Finance on 2015-10-30

17

< 1% match (Internet from 23-May-2016)
http://www.temelaksoy.com/etiket/marka-2/page/3/

18

< 1% match (student papers from 02-May-2016)
Submitted to University of Wollongong on 2016-05-02

19

< 1% match (Internet from 03-Aug-2014)
http://www.absoluteastronomy.com/topics/Lefkoniko

20

< 1% match (Internet from 07-Jan-2014)

http://epubl.ltu.se/1653-0187/2010/006/LTU-PB-EX-10006-SE.pDf

21

< 1% match (Internet from 16-Dec-2015)
http://en.unionpedia.org/i/Field_hockey

22

< 1% match (Internet from 13-Jan-2016)
http://i-rep.emu.edu.tr:8080/jspui/bitstream/11129/1842/1/KayaOmer.pDf

23

< 1% match (Internet from 19-Dec-2013)
http://smarttech.com/ca/About+SMART/About+SMART/Newsroom/Media+releases/English+US/Releases+by+year/2013+media+releases

24

< 1% match (Internet from 08-Mar-2016)
http://digital.lib.usf.edu/SFS0026846/00001

25

< 1% match (Internet from 21-Aug-2008)
http://www2.smarttech.com/NR/rdonlyres/2C729F6E-0A8D-42B8-9B32-F90BE0A746D8/0/Int_Whiteboard_Research_Whitepaper_Update.pDf

26

< 1% match (student papers from 27-Nov-2010)
Submitted to University of Central Florida on 2010-11-27

27

< 1% match (student papers from 06-Aug-2015)
Submitted to University of Sunderland on 2015-08-06

28

< 1% match (Internet from 28-Jan-2012)
http://sinhwakang.net/Publications.html

29

< 1% match (student papers from 01-Feb-2016)

Submitted to Eastern Mediterranean University on 2016-02-01

30

< 1% match (student papers from 14-Apr-2010)
Submitted to Nottingham Trent University on 2010-04-14

31

< 1% match (student papers from 07-Jul-2015)
Submitted to Western Governors University on 2015-07-07

32

< 1% match (Internet from 05-Jan-2015)
http://pubs.sciepub.com/jfa/2/3/3/

33

< 1% match (Internet from 23-Sep-2015)
http://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=1112&context=dissertations

34

< 1% match (Internet from 30-Nov-2015)
http://clok.uclan.ac.uk/10563/2/Ogunbiyi%20Oyedolapo%20Final%20e-Thesis%20%28Master%20Copy%29.pDf

35

< 1% match (Internet from 03-Nov-2009)
http://survey.uark.edu/Water_Quality_Survey_Report_with_Appendices.pDf

36

< 1% match (Internet from 22-Apr-2016)
http://elearningindustry.com/why-you-should-adopt-social-learning

37

< 1% match (student papers from 07-Apr-2016)
Submitted to University of Derby on 2016-04-07

38

< 1% match (student papers from 01-Jun-2015)

Submitted to TechKnowledge Turkey on 2015-06-01

39

< 1% match (Internet from 20-Mar-2012)
http://en.wikipedia.org/wiki/Smartboard

40

< 1% match (student papers from 06-Jun-2016)
Submitted to Swinburne University of Technology on 2016-06-06

41

< 1% match (student papers from 12-Apr-2015)
Submitted to University of Wales, Bangor on 2015-04-12

42

< 1% match (Internet from 29-May-2016)
http://tesisenxarxa.net/bitstream/handle/10803/348556/Tesi%20Abir.pDf?sequence=1

43

< 1% match (student papers from 26-Jan-2016)
Class: SCHOOL OF COMPUTING AND TECHNOLOGY
Assignment:
Paper ID: 624242860

44

< 1% match (student papers from 21-Feb-2016)
Submitted to Kolej Mara Banting on 2016-02-21

45

< 1% match (Internet from 10-Jan-2013)
http://accountability.leeschools.net/research_projects/pDf/Winkler.DissertationR.pDf

46

< 1% match (Internet from 19-May-2014)
http://dergipark.ulakbim.gov.tr/atauniiibd/article/download/1025006571/1025006143

47

< 1% match (Internet from 21-Feb-2014)

http://discovery.ucl.ac.uk/19217/1/19217.pDf

48

< 1% match (student papers from 30-Aug-2015)
Class: SCHOOL OF COMPUTING AND TECHNOLOGY
Assignment:
Paper ID: 564772539

49

< 1% match (student papers from 05-Apr-2016)
Submitted to University of Mauritius on 2016-04-05

50

< 1% match (Internet from 16-Dec-2015)
http://scholarscompass.vcu.edu/cgi/viewcontent.cgi?article=5065&context=etd

51

< 1% match (Internet from 15-May-2016)
http://vpod.ch/site/assets/files/0/03/899/2016_april_196.pDf

52

< 1% match (Internet from 19-May-2015)
http://www.tojet.net/volumes/v13i3.pDf

53

< 1% match (Internet from 11-Mar-2015)
http://www.africanafrican.com/folder13/african%20and%20african%20american%20history/ancient%20egypt%20and%20more/Thesis__-_TNA_in_Iraq_construction_industry.docx

54

< 1% match (Internet from 29-Nov-2012)
http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1028&context=techmasters

55

< 1% match (Internet from 21-Mar-2010)
http://www.uwstout.edu/lib/thesis/2003/2003shanklind.pDf

56

< 1% match (Internet from 06-Jul-2016)
http://crires.ulaval.ca/en/publications/filter?f%5Btg%5D=S&o=asc&s=title

57

< 1% match (publications)
Yükselir, Ceyhun and Harputlu, Leyla. "An investigation into EFL prep-class students' academic emotions", Journal of Language & Linguistics Studies, 2014.

58

< 1% match (Internet from 29-Jun-2010)
http://www.ncscatfordham.org/binarydata/files/BalmerImpactSchoolsPaperDraft7.pDf

59

< 1% match (Internet from 26-Oct-2015)
http://reading-sage.blogspot.com/

60

< 1% match (Internet from 13-Mar-2016)
http://ccsenet.org/journal/index.php/mas/article/download/52269/29710

61

< 1% match (publications)
Nejem, Khamis Mousa, and Wafa Muhanna. "The Effect of Using Smart Board on Mathematics Achievement and Retention of Seventh Grade Students", International Journal of Education, 2014.

62

< 1% match (student papers from 02-Oct-2013)
Submitted to University of Bristol on 2013-10-02

63

< 1% match (Internet from 22-Feb-2016)
http://www.tojet.net/volumes/v12i4.pDf

64

< 1% match (Internet from 09-Oct-2015)

http://nhts.ornl.gov/2009/pub/Compendium_2015.pDf

65

< 1% match (Internet from 18-Apr-2014)
http://www.earli2011.org/media/Documents_EARLI2011/BookofAbstractsandSummaries.pDf

66

< 1% match (Internet from 02-Dec-2015)
http://www.researchgate.net/publication/267203009_Teachers%27_Negative_Attitudes_towards_Interactive_Whiteboard_Use_Needs_and_Problems

67

< 1% match (Internet from 30-Dec-2015)
http://www.majersite.org/issue17/17_2.pDf

68

< 1% match (Internet from 03-Mar-2016)
http://ccsenet.org/journal/index.php/ass/article/download/37490/21027

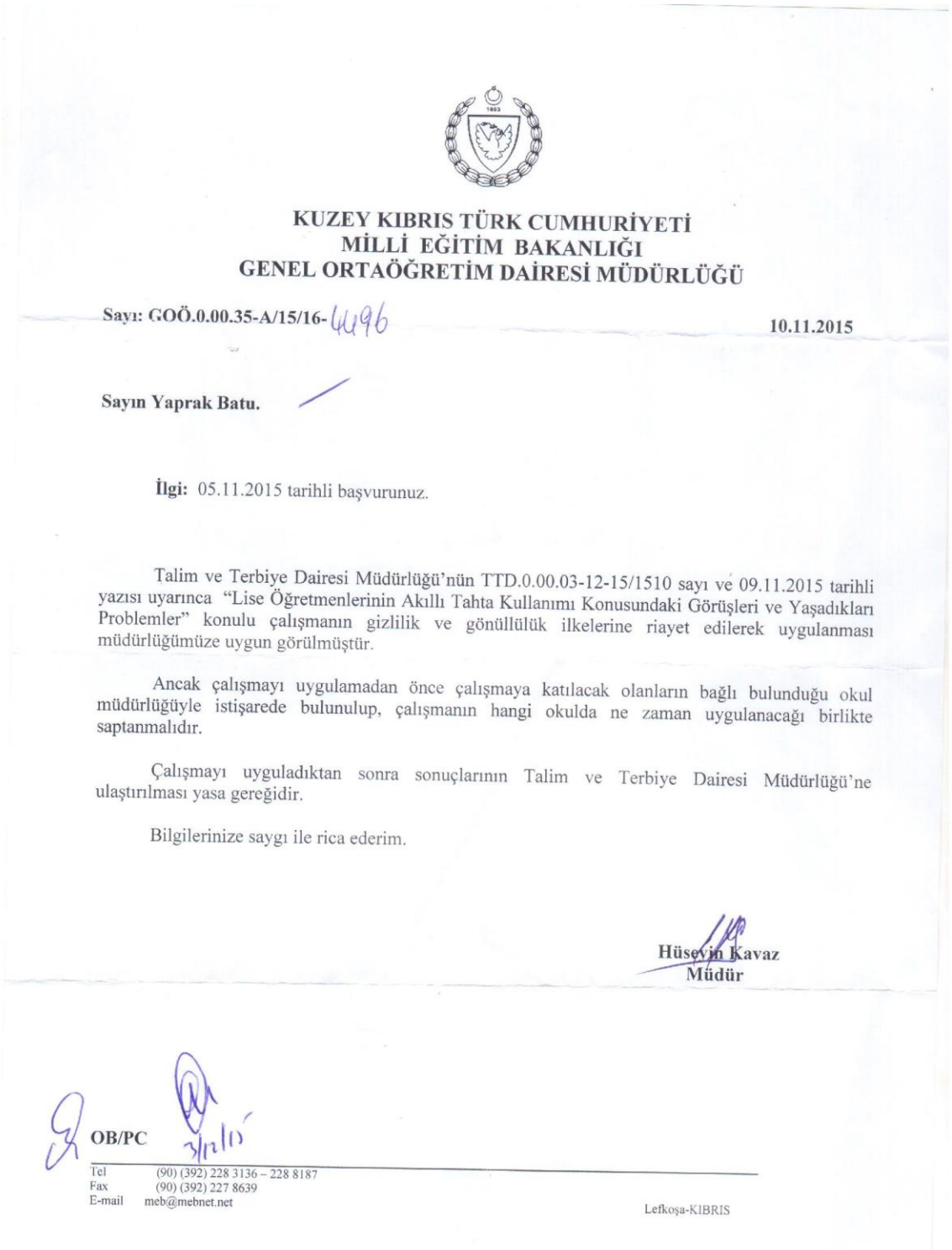
69

< 1% match (Internet from 12-Dec-2009)
http://www.slideshare.net/oshadeesiyaguna/propose-improvements-on-micro-finance-institutional-reach-to-alleviate-poverty-and-conserve-biodiversity-in-sri-lanka

70

< 1% match (publications)
Kahveci, Hayriye. "The 2008 Presidential Election in Cyprus", West European Politics, 2008.

Appendix C: Survey Permission



KUZEY KIBRIS TÜRK CUMHURİYETİ
MİLLİ EĞİTİM BAKANLIĞI
GENEL ORTAÖĞRETİM DAİRESİ MÜDÜRLÜĞÜ

Sayı: GOÖ.0.00.35-A/15/16-4496 10.11.2015

Sayın Yaprak Batu.

İlgi: 05.11.2015 tarihli başvurunuz.

Talim ve Terbiye Dairesi Müdürlüğü'nün TTD.0.00.03-12-15/1510 sayı ve 09.11.2015 tarihli yazısı uyarınca "Lise Öğretmenlerinin Akıllı Tahta Kullanımı Konusundaki Görüşleri ve Yaşadıkları Problemler" konulu çalışmanın gizlilik ve gönüllülük ilkelerine riayet edilerek uygulanması müdürlüğümüze uygun görülmüştür.

Ancak çalışmayı uygulamadan önce çalışmaya katılacak olanların bağlı bulunduğu okul müdürlüğüyle istişarede bulunulup, çalışmanın hangi okulda ne zaman uygulanacağı birlikte saptanmalıdır.

Çalışmayı uyguladıktan sonra sonuçlarının Talim ve Terbiye Dairesi Müdürlüğü'ne ulaştırılması yasa gereğidir.

Bilgilerinize saygı ile rica ederim.

Hüseyin Kavaz
Müdür

OB/PC 3/12/15

Tel (90) (392) 228 3136 – 228 8187
Fax (90) (392) 227 8639
E-mail meb@mebnet.net

Lefkoşa-KIBRIS