A STUDY OF TEACHER UTILIZATION OF SMARTBOARD AT PAN-ASIA INTERNATIONAL SCHOOL BANGKOK

Qun Chen

A Thesis Submitted in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF EDUCATION
in Curriculum and Instruction
Graduate School of Education
ASSUMPTION UNIVERSITY OF THAILAND
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Thesis Title: A STUDY OF TEACHER UTILIZATION OF SMARTBOARD AT PAN-ASIA INTERNATIONAL SCHOOL BANGKOK

By: QUN CHEN

Field of Study: CURRICULUM AND INSTRUCTION

Thesis Advisor: ASSOC.PROF. DR SUPIT KARNJANAPUN

Accepted by the Graduate School of Education, Assumption University in Partial Fulfillment of the Requirements for the Master Degree in Education

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ABSTRACT

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Key Words: TEACHER UNTILIZATION, SMARTBOARD, PAN-ASIA INTERNATIONAL SCHOOL

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The current study was carried out how smartboard can motivate the students to learn more effectively and how smartboard has been used in each subject. Smartboard is an expensive teaching facility. To have it in the school, the teachers should have enough ability to use it and use it properly. Smartboard is a new technology especially in education, not only the teachers are facing to the new technical problems, the students also face to the challenge of new technology. The quantitative research approach was employed by means of a survey questionnaire. Data obtained from 67 teachers were statistically analyzed in order to identify the frequency of smartboard used at Pan-Asia International School and at the same time, to examine gender and grade levels differences in teachers' utilization to use smartboard. The result of data analysis revealed the following: (a) every subject teacher use smartboard to teach at Pan-Asia International School, almost 4 to 10 hours per week; (b) there is no difference in teachers' ability to use smartboard regarding teachers' gender at Pan-Asia International School Bangkok; (c) there is no significant difference in teachers'

ability to use smartboard regarding the grade levels of teaching at Pan-Asia International School Bangkok.

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CHAPTER I

INTRODUCTION

This chapter presents, initially, the background of study relative to the use of smartboard, in general, as smartboard is one of the modern teaching technology, so it should be used in modern education area and the teaching process is affected by teaching technology. The statement of the problem along with the research objectives are outlined to serve as a guide for the research. The chapter, likewise, presents the research questions and hypothesis. Theoretical framework as the foundation for the thesis is also expounded, followed by the conceptual framework that demonstrates the direction of the study. The scope of the study is clarified and the significant of the study is justified also. This chapter concludes with a section on the definition of key constructs of the study and the context in which they are used.

Background of the Study

Along with the development of information technology, people's thinking and learning style has changed and the major progress of information technology was born out of the multimedia technology education mode. It also made a profound influence for the modern education and makes course of content more on multi-media. Information technology makes the teaching work break through the original old patterns, and it can transcend time and space limit. Through the network teaching, the interactivity between teachers and students or students and students was achieved. Modern education teaching depends on teaching courseware. The courseware which developed under multimedia technology environment which achieved the combination of the sound and color, excellent pictures and texts, so that teachers can

fully mobilize students' various senses, and greatly stimulate the student's study interest. As to improve the teaching efficiency, Knezek (the CEO of the International Society for Technology in Education) said "If in 1970 you had knee surgery, you got a huge scar. Now, if you have knee surgery you have two little dots." He compares education without technology to the medical profession without technology. It means that the technology have an important position in the society and from the time pass by, the technology step forward so fast. The development of society needs the best technology.

According to Shenton and Pagett (2007), smartboard can enable classroom teachers to meet the needs of the students with all different kind of leaning styles. The influence of the teaching process by modern education technology, the research objective to education is the learning process and learning resources, emphasize the point of view of the learners, utilize the method of system to organize the teaching process, optimize the teaching resources of the institution. Modern education technology can be divided into education media technology and education design technology, the former is tangible materialized state of technology, mainly involves the hardware and software in the education technologies, including the communication and transmission technology of education, the technology in storage and retrieval of education information, the technology in processing and processing, display and copy techniques of education information. The latter is invisible intelligent technology, mainly involves how to select materials and equipment, arrangement of teaching activities planning, group, teaching process control, evaluation, management and strategy, including education system technology, education psychology technology and education planning technique.

The modern teaching process are made by teachers, students, teaching content, teaching media those four basic elements, teachers through the teaching media transmission information (teaching content), students through teaching media accept information (learning content), four elements have a mutual influence and mutual restriction relationship. The utilization of modern education technology in the education has a profound influence in the process of teaching, teacher, student, and teaching content. Teaching media have four elements.

First, change the teacher's role, make teachers to become students' learning guidance in traditional teaching, emphasizing the teacher's "leading role", the student is the owner of relative knowledge and the preacher was a symbol of authority, with teachers-centered education mode, it has neglected the student-centered as an important role in the study, and make students become negatively passive when they accept the knowledge. When modern education technology into the classroom teaching, teacher's role has changed from its characteristics, function and so on, the teacher is no longer the only way students can obtain knowledge source. Teacher's role has changed from the pure teach knowledge transformation to teaching designers, student activities director, guide in acquiring knowledge. Students stay in the background of certain social and cultural, the certain scene, and under the guidance of teachers, using the necessary learning resources, through the construction of meaning way to acquire knowledge, learn how to learn and actively explore the knowledge. At the same time, the teachers as to be the guidance of students should strengthen the students' learning methods, so that the students changed from negative knowledge receiver gradually to active knowledge explorer and motivator. Teachers should design the teaching software/courseware according to a curriculum and the students' needs.

Second, change the students' status, students' learning are depend on teachers organization, arrangement and requirement, students were negative passively listen to teachers' knowledge and always in a passive position to accept implants. Students only can master the knowledge by teacher's explanation; rely on the teachers' evaluation to know their own progress. Modern education technology get into the classroom, it change the situation like student is attached by the teachers. Audio, video, computer software, CD, multimedia technology (such as virtual reality, hypermedia technology), network and other modern teaching media which has their own unique advantages to provide a variety of external stimulation and abundant learning resources for the students, and to provide for students a variety of participation opportunity and make students have the opportunity to participate actively, to discover, to explore knowledge.

Third, transforming the teaching media effect, make the teaching media become students' cognitive tool in traditional teaching. Teaching media is a tool which teacher use to complete the teaching mission and impart knowledge. When modern education technology get into the classroom, it provide the new teaching means based on the computer as the core of the information technology, communication technology, network technology and has injected the new vitality, it also change the traditional media and teaching mode.

Modern technology such as smart board helps the students learn more effectively (Bell, 2002). It was achieved the new concept of modern technology that creates an interactive environment between the teachers and the students. (SMART Technologies Inc, 2004) describes how a smart board can be used in a learning environment. Learning activities with a smart board may include taking note in digital

ink, creating the digital lesson, using presentation tools built into the smart board software to enhance learning materials.

Statement of the Problem

The smartboard is a new information and communication technology at teachers and students. It provides lots of advantages at students and school level. The smartboard is the media that combines computing power with a white-board and projector. Teachers can use smartboard to show PowerPoint, the teacher can edit or make notes on the smartboard directly in a real time environment, as the smartboard offers touch screen technology in a white-board, thus enabling the students to do the teacher's assessment on the smartboard directly. Unfortunately smartboard technology is expensive and not all schools can afford one, let alone one for each and every single classroom, so this is not a frequently used medium by teachers. And whether or not teachers have enough ability to use smartboard or teachers still need more training about how to use smartboard.

Research Questions

Based on the statement of the problem of the study, the following questions were formulated to help guide the research:

1. How many hours do Pan-Asia International School Bangkok teachers use smartboard to teach in each subject per week?

2. Is there any difference regarding the teachers' ability to use smartboard between teachers' gender at Pan-Asia International School Bangkok?

3. Is there any difference regarding the teachers' ability to use smartboard among the grade levels of teaching at Pan-Asia International School Bangkok?

Research Objectives

The general purpose of this research is to examine the utilization of smartboard in Pan-Asia International School Bangkok. Furthermore, this study aims to meet the following specific objectives:

1. To identify the frequency of smartboard using for each subject per week at Pan-Asia International School Bangkok.
2. To identify the teachers' ability to use smartboard regarding the teachers' gender at Pan-Asia International School Bangkok.
3. To identify the teachers' ability to use smartboard regarding the grade levels of teaching at Pan-Asia International School Bangkok.

Research Hypothesis

Based on the research questions and objectives, the following hypothesis is generated for testing:

H1: There is a significant difference in teachers' ability to use smartboard regarding the teachers' gender at Pan-Asia International School Bangkok.

H2: There is no significant difference in teachers' ability to use smartboard regarding the grade levels of teaching at Pan-Asia International School Bangkok.

Theoretical Framework

Smartboard is one kind of multimedia, so a cognitive theory of multimedia learning is one of the theories that support this study. Multimedia is the "use of multiple forms of media to make a presentation" (Schwartz & Beichner, 1999, p. 8). This is the function that smartboard has and the students were used this function to make the presentation. Multimedia is the "combination of use several media, such as movies, slides, music, and lighting, especially for purpose of education or entertainment" (Brooks, 1997, p. 17). And multimedia is information in the form of graphics, audio, video, or movies. A multimedia document includes a media element other than plain text (Greenlaw & Hepp, 1999, p. 44). Multimedia includes a computer program that have "text along with at least one of them: audio or sophisticated sound, music, video, photographs, 3-D graphics, animation, or high-resolution graphics" (Maddux, Johnson & Willis, 2001, p. 253). In multimedia learning, the students engaged three important cognitive processes. The first process, selecting, is applied to incoming verbal information to yield a text base and is applied to incoming visual information to yield an image base. The second process is applied to the word base to create a verbally-based model of the to-be-explained system and is to applied to the image base to create a visually-based model of the to-be-explained system. Third process, integrating, it happens when learner builds connections between corresponding evens in the verbally-based model and the visually-based model (Mayer, & Moreno, 2001) Smartboard is the media that can achieve this effect.

Social constructivism consider that the individual acquire knowledge is not only in a process of personal construction, but also the inner socialization process, cultural activities and language activities and other social factors influence the individual learning. Social constructivism to have two kinds of representative views:

Piaget's social cognitive theory and Vygotsky's social development theory. Social constructivism analysis the process of knowledge construction through the classroom teaching, peer interaction and speech Angle. In the practical application of contemporary curriculum reform, including cooperative learning and interactive teaching, situational teaching, interdisciplinary study, the education evaluation and education reform. This kind of teaching affect the future development direction of education through theory, practice and methodology. According to Vygotsky, there are two levels of children's psychological development: firstly, the existing development level: firstly, a fundamental role in the development of cognition, on the individual level. Children can achieve the level of problem solving by the help of adult. Secondly, Zone of proximal development: a level of development attained when children engage in social behavior. The range of skills that can be developed with adult guidance or peer collaboration exceeds what can be attained alone (Kearsley, 2004). Smartboard teaching is the student-centered teaching media, so this theory also support in this study. Teaching is the human developments, teaching leads development, create the zone of proximal development.

Conceptual Framework

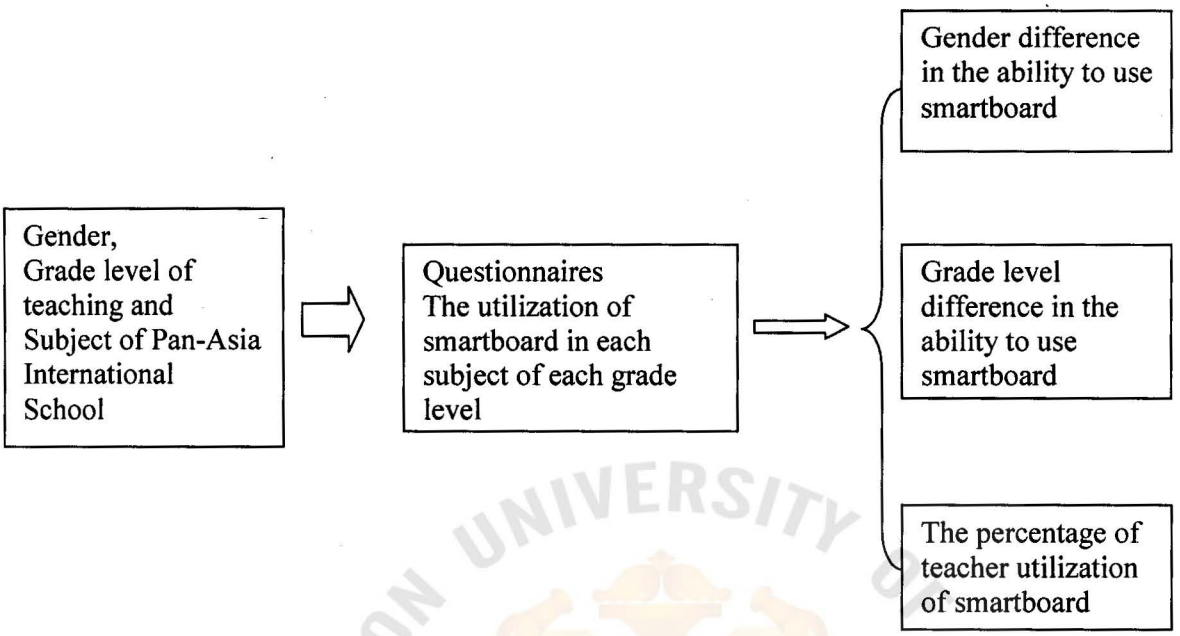

Figure 1: Conceptual Framework

Scope of the Study

This study was focus on the utilization of smartboard at Pan-Asia International School Bangkok. The number of the participants is all the teachers who teach from kindergarten to Grade 12 at this academic year of Pan-Asia International School Bangkok. They are totally 67 teachers.

Definitions of Terms

Ability to use smartboard for teaching:

Smartboard is an effective way to interact with digital content and multimedia in a multi-person learning environment. The ability to use smartboard for teaching is means can use smartboard to create the learning activities with an interactive whiteboard may include the following: (SMART Technologies Inc., 2004)

- Take note with digital ink
- Save notes for review via e-mail or the web
- Demonstrating or using software in front of the room without being locked behind a computer
- Using presentation tools built into the interactive whiteboard software to enhance the learning materials
- Showcasing the students' presentations

Grade levels of teaching:

There are three levels in this research: the first level is elementary school which include from kindergarten to Grade 5; the second level is middle school which include from Grade 6 to Grade 8; the third level is high school which include Grade 9 to Grade 12.

Pan-Asia International School Bangkok:

Pan-Asia International School Bangkok is located at Charaemprakiat Road in southeastern Bangkok's Pravet district. The school's location is at the heart of a rapidly growing and developing area about 10 kilometers from Bangkok's Suvarnabhumi Airport. This is a focal point for the surrounding neighborhoods; it was

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offering a place for community social events and learning opportunities. The school has grown rapidly from a single building in year 2004 to its current structure, which includes two buildings, two football pitches, two covered gymnasium courts, and two covered swimming pools which a big swimming pools for primary and middle school and a small one for kindergarten students . It's currently offers classes from kindergarten to grade 12. Pan-Asia International School Bangkok draws students from across Bangkok. The student population reflects Bangkok's multi-ethnic, multi-cultural diversity. The students of Pan-Asia International School are come from more than 41 different nations of origin. (PAIS, 2012)

Smartboard:

The smartboard also named "interactive whiteboard". It's a touch screen which operates as part of a system that includes the interactive whiteboard, a computer, a projector and white-boarding software, either Smart Notebook collaborative learning software for education. This is a computerized whiteboard through which new ideas can be recorded, saved, recalled and integrated with other information. Because of those features, the smartboard would facilitate interactive and collaborative learning and these effects would be evident in improved test score, generation of ideas, and satisfaction with group learning processes (Howse, Hamilton & Symons, 2000).

Subjects:

There are 13 subjects at Pan-Asia International School from Kindergarten to Grade 12. They are English, Second language, Values, Islamic values, Art, Music, Science, Mathematics, Business, Thai culture, Social study, Biology, Computer.

Zone of Proximal Development (ZPD):

Right now there are two levels for the development of students: one is the existing level of students, and the other is a student possible development level. The gap between these two levels is called "the zone of proximal development".

Significance of the Study

The significance of the current study was be the guideline for the school admin to plan for makes decision on smartboard using and also the school was know what the facility needed in order to motivate the students to learn. The future researcher in other schools will know whether they need to invest smartboard as their teaching facility and whether smartboard can achieve the interactive classroom performance.

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CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter comprises supporting theoretical perspectives and related studies pertaining to the main variables of study. The review of literature commences with a discussion of main principles and salient features of Mayer's cognitive theory of multimedia learning and Vygotsky's social development theory and how the theories can be linked to the teachers' utilization of Smartboard. This is the followed by perspectives and results of studies pertinent to the smartboard using in each subject. In addition, the practical application of Smartboard is discussed. The chapter also explains the interactive classroom performance, followed by the traditional media and smartboard media discussed.

Cognitive theory of multimedia learning

Smartboard as a modern teaching media, it offering lots of ways of learning and increasing the quality of gaining outcomes (BECTA, 2009a). Mayer (2003) was mention in his paper multimedia and its usefulness as a learning tool was explored in a Santa Barbara. Test conditions were set up for book and computer environments and a series of four tests were undertaken to see if students learn more from multimedia than just writing alone, develop a deeper understanding due to multimedia, learn more when words are presented in a certain style, and if students learn more because of the positioning of text and images. The results appear to be positive in the favour of multimedia but no data is provided.

Mayer bases his cognitive theory of multimedia learning on the following model:

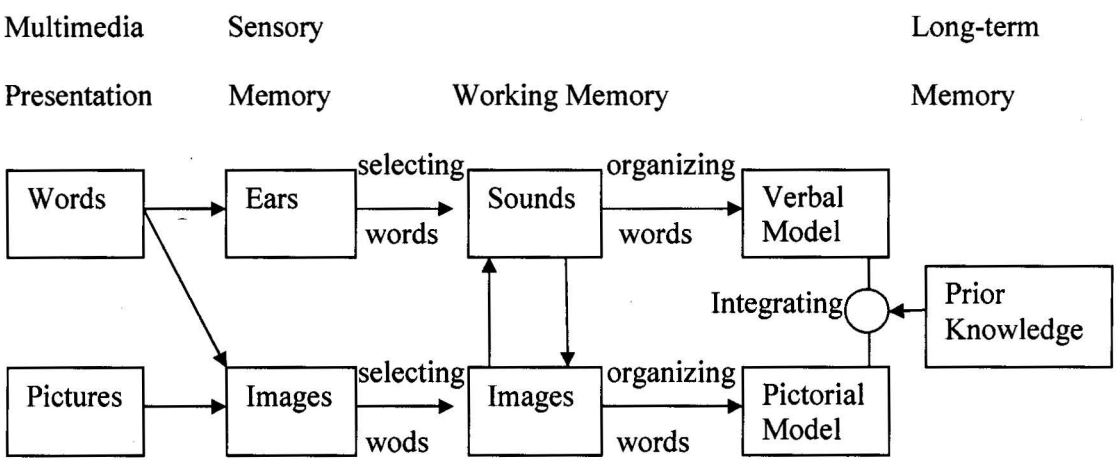

Figure 2: cognitive theory of multimedia learning (Doolittle, 2009)

This model is activated through five steps (Mayer, 2001):

(a). select related words for processing in verbal working memory

(b). select related images for processing in visual working memory

(c). organize the selected words into a verbal mental model

(d). organize the selected images into visual mental model

(e). integrate verbal and visual as well as prior knowledge

Smartboard teaching media is following this model also. Teacher creates the courseware through smartboard. It can emerged in front of the students by PowerPoint, so words and images can emerged to the students, the students use ear to listen teachers' explanation and use the eyes to see both of the words and images that on the PowerPoint. The students can organize the knowledge by both sounds and images then the students can have better understanding about the new knowledge. The multimedia technology brings people to enhance their interaction with others whilst living, working and learning. Opportunities for collaborative learning between

teachers and students or students and other kind of learners are good for both teachers and students because they can exchange and share their ideas, knowledge and also improve their communication skills. (Bonk & Cunningham, 1998).

Vygotsky's social development theory

Lev Vygotsky's social development theory valued the important factor of social interactions in cultural environments. Vygotsky "zone of proximal development theory", think that the development of students have two levels: one is the existing level of students, and the other is a student possible development level. The gap between the two is the zone of proximal development. The theory emphasizes the importance of the zone of proximal development (ZPD) as the factor to help the students gain more knowledge and achieve the students' potentials. Teaching should focus on students' zone of proximal development, to provide students with the difficult content, arouses student's enthusiasm, exert their potential, beyond the zone of proximal development and then based on develop the next development. Smartboard is the media that can motivate and increase the students' interesting. In the process of get interaction with people in the society, language, signs and symbols are most frequency tools that people could utilize to convey their cultural knowledge from generation after generation (Winsler, 2003; Mcleod, 2007).

Smartboard is kind of modern technology; it's new for both teachers and students. It can capture the students' attention and create the student-centered learning environment (Holmes, 2009).

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The smartboard using in each subject

The technology has become an important integrated component in every area in people's life (Andoh, 2012). Smartboard is one of the modern teaching media. There are lots of subjects use smartboard to teach in the classroom. Adopting the new technology in teaching radically changes the traditional media of teaching; teachers are better able to assist their students in meeting learning goal now (Hennessy et al., 2010). Springer (2011) was made the research about the importance of using smartboard in the classroom. In this research, let people know using smartboard in the classroom is one of the most important technology tools that people can use. Using smartboard in the classroom both benefit to the students and teachers and the smartboard also was benefit the special education teachers because the smartboard can allows the students to show what they instead of speak out or write, which is something they might not be able to or feel comfortable doing.

Baker (2007) was shared her experience using a smartboard in a music classroom. The teachers can be able to incorporate all kinds of music media into her lessons while at the same time including every single last student.

There is a finding from classroom based research into the use of smartboard with kindergarten children. Smartboard have been used successfully over the past 8 years at Abbostsleigh Junior School innovative ways to enhance teaching and learning along with some practical example (including photographs) of ways the smartboard has been used in science (Preston & Mowbray, 2008). The children who are 5 to 6 years old, they come to the school with well-developed ideas about science concepts. Using smartboard to teach can increase their enjoyment by being physically

involved touching and moving objects. Smartboard are not typically found in early Childhood settings-the youngest classes are often the last groups to get the resources and there is an historical reluctance amongst early childhood educators to use technology (Goodwin, 2007).

There is a case study that Mr. Tony Trongone joined New Jersey's Gloucester City Public Schools as the district math facilitator. This district was considered "low performing" under the adequate yearly progress standard. Then he proposed adding smartboard and notebook software to Gloucester City's classroom and explains that this product can add the essential visual learning element that was missing in the current lessons. He said he wants to increase the understanding of mathematical concepts and skills by adding another dimension of learning modality and most of the lessons weren't a lot of visual learning going on. The smartboard will add this visual element. Then he is the person who creates math lessons in notebook software and posts the lessons to the district's server, ensuring that all teachers could access the files from their computer and deliver them to their students using smartboard. Then the result is their math scores in the district's middle school have improved by 16 percentage points. After that, along with improving test scores, they start to use the smartboard every lesson and every single day (SMART Technologies Inc., 2005). In each subject, all the teachers have enough ability to use the smartboard, in some schools; female teachers might have less ability than male teachers to use the smartboard. In addition, a case study in United States illustrated that there was no difference in the information and communication technology using skills between female and female teachers (Cushing, Lindenfeld, Morete, Kelly, & Rudiger, 2012).

The practical application of Smartboard

In a research study conducted by Bennett and Lockyer (2008), it says that professional development training is the key element that makes teachers can use smartboard effectively. Smartboard have many unique features that can make any subject get interactive between teachers and students. Smartboard is an interactive electronic whiteboard, it is different from other multimedia devices, and teaching is the main reason. Using smartboard in the classroom makes teaching more convenient and more interaction between teacher and student.

A smartboard is a presentation device that connects to a computer and projector. Unlike a projection screen, the interactive whiteboard is 'active'. As teachers and students interact with the board using a pen, finger or other device, the action is transmitted to the computer and displayed on the board by a projector. Additional user-controlled devices that communicate with the board can be added, such as voting or wireless slates that enable every learner to actively participate.

Online Smartboard enriches the traditional computer multimedia tools function and improve the visual effect. For example: smartboard operation tool has a unique drag and drag function, photographic function, hidden function, video function, draw curtain function, painted function, match function, immediate feedback, real-time print function and so on. Those functions improve the visual effect, more conductive to simulate students' interest, arouse the students' multi-dimensional intelligence and the students can participate well in the learning process.

Not only in teaching language we can use smartboard, for other subjects like mathematics, its huge help for learning with smartboard, it can draw shapes on the smart-board and make a movement on the smart-board. It gives good explanation about the problem. It improves student's problem solving skills.

For the students who like to take notes rather than listing to the teachers' explanation in the class, the smartboard can record the teachers' note, so the students can focus on listening to the teachers' explanation and later view the note recorded from the smart-boards memory.

Phillips (2007) was mention that "this board is your board, not such my board". It means that the students also can use smart-board to make their presentation. So it can help the students to develop their technical skills, in the future they will know more on information technology. Smartboard learning technologies have been developed specifically and exclusively for educational use. The smartboard Learner Response Systems, teaching software and interactive tools are shaped by the input of teachers and learners and are fully interoperable to give schools the choice and flexibility to build a solution that fully meets their needs.

The interactive classroom performance

Interactive teaching goal is to create communication and development; this is a flexible, open goal. Communication is the basis of the interactive teaching target, and development is the general target. The basis and general goals are intermeshed, on the one hand, for the activities of the teachers and students point out the direction, but on the other hand also guarantee the goals of freedom and openness. Preventing

the virtually bound and controlling the teachers and students which lead to mechanical and the rigid.

The conditions of processing interactive teaching: From the teaching practice we can see that compared with traditional teaching, interactive teaching mainly has the following advantages:

Firstly: interactive teaching mobilizes the enthusiasm of the students and the student can participate more during the lecture. The traditional teaching method only pays attention to teachers "teaching", and pays less attention to the students "learning". But interactive teaching pays attention to student-centered status, by letting students participate in the teaching, and by arousing students' interest in learning and also trying to arouse students' enthusiasm and initiative.

Secondly: interactive teaching pays attention to reality, because it can prompt the students and give guidance, as well as improve their ability to distinguish between right or wrong. Also, it can improve their observation, the ability to analyze and the ability of problem solving. The traditional teaching breaks away from the reality and the student's real life. It makes the students feel these things too far from reality, so it's useless for learning and it lead to the interesting of the students declining.

Thirdly: interactive teaching pays attention to the students' individual development, by forming a good communication atmosphere, and by optimizing the classroom teaching effect. The interactive teaching also pays attention to classroom visual and vivid teaching and creates an interactive space (Pierce, 2012).

Finally: interactive teaching attaches great importance to a harmonious educational environment. The traditional teaching only speaks through teachers'

precept to influence student, because it ignores the influence of the students on each other. Interactive teaching pursues participation and thinking, mutual cooperation and solving the problem together. This is the new classroom orientation and it making a seamless fit (Greer, 2012).

The implementation of interactive teaching should be supported by both subjective and objective factors, as it broke through the "classroom teaching centered, textbook centered, teachers centered". The development of interactive teaching is not just the communication between teachers and students. If we want to achieve the expected effect we still need the necessary teaching method like smart-board teaching method.

Traditional Media and Smartboard Media

There is a research here participants were senior nursing students enrolled in a 12-week, applied management course, who used to management interventions concepts during clinical practice. An intervention group of 15 students was used smartboard invention; another group of 15 students was used a conventional method of oral presentation. To diminish intervention effects between those two groups. The result of this research is it appeared that the smartboard stimulated learning and user satisfaction in a seminar group. The results suggest that use of the smartboard in group discussions resulted in greater generation of ideas and a moderately high level of satisfaction with the technology (Howse, Hamilton, & Symons, 2000).

At present, along with the examination-oriented education towards quality education and the transition and the coming of the information era, comes the current situation of teaching mode research, trend diversification, and cooperative and elicited, fineness and modernization. In the classroom, simply use the advanced educational/technical methods, such as multimedia courseware, because this lively courseware increased the class teaching capacity and improved the students' interest in studying, but did not fundamentally change the teaching mode of teaching and learning. It showed no real meaning to cultivate students' innovational consciousness, and students were still very passive when it didn't jump out of the teacher-centered teaching mode.

Joyce, Well & Calhoun (2009) mentions the characteristics of the traditional teaching mode: the teaching method is transfer-accept teaching mode. It comes from Herbart, Ziller & Rein (2012) put forward "five section teaching". The basic of this mode is: learning motivation, reviewing old lessons, teaching new knowledge, consolidating use, check and evaluation. In essence this still belongs to the teacher-centered teaching mode. This kind of mode is good for the teacher who wants to be the leader, as it has the advantage of a focus on classroom teaching organization, management and control. But, a big defect is that it overlooks the students' initiative and creativity, because it cannot see the students' cognitive roles presented. Many schools now just emphasize students' need to digest and understand the content of the teachers' teaching. They treat the students as a receiver of external stimulation or the keeper of memory of the previous knowledge and experience. They forget that students are subjectively initiative and creative thinking people. Most students do not want to ask "why", and also do not know why they even need to ask "why". This forms a blind worship of books and leads to teachers' reverence (where

the books and the teachers cannot be doubted). In the class, only the teachers ask the questions, otherwise the students should interrupt the teachers' lesson plan (which students are not daring to do). This kind of thinking from generation to generation already be bounded and imprisoned in divergent thinking, and it should not dare to break through to traditional new thoughts. Then new ideas are stifled, as a cognitive subject student does not show initiative. This means creative talents became difficult to achieve (castles in the air). It is not difficult to imagine how a cognitive subjected student who is trapped in the teaching process was always staying in passive position. It is difficult to achieve ideal teaching effects or train creative talented person in this way. These are the biggest drawbacks of the traditional teaching model.

Teaching with using Smartboard media is one kind of modern media. The characteristics of the teaching mode of information: it is based on modern teaching environment information transfer mode where the student takes part in the knowledge information processing psychological process, and makes full use of the support of modern education technology to mobilize many teaching media and information resources. To construct a good learning environment in the teachers' organization and guidance, teachers should give full play to students' initiative, enthusiasm and creativity so that the students can become real knowledge information active builders, and so achieve good teaching effects. The key of the information teaching mode is basing it on modern teaching media to constitute an ideal teaching environment, discusses how to give full play to students' initiative, enthusiasm and creativity.

As people know, computers are given priority in modern teaching media. It mainly refers to the multimedia computer, teaching network, campus network and the advent of the Internet. All of these have brought elements that the traditional teaching media is unable to have: computer interactivity, multimedia characteristics, hypertext

characteristic, and networking characteristics. These characteristics can make all students in a class change their learning state, so that the students can really start actively searching for knowledge and is no longer a passive receiver of knowledge and information. In this mode, the teacher becomes the class organizer, and director of classroom teaching. The students become the helper or promoter in constructing meaning.

Conclusion

The smartboard media were motive the students to learn and build up the students' own technical skills such as the students were use smartboard to make the presentation. The smartboard can create the interactive classroom performance. The students and the teachers can get active together and the students were not feeling boring if just listen to the teachers' speaking. But also the success interactive classroom performance is depends on how the teachers make the digital plan and what activities the teachers give to the students and make the students want to participate by themselves. Because long times ago, when people still not have the high technology to support the students' learning, the students still can study, so the most important is how the teacher can get interactive in the class with the students.

CHAPTER III

RESEARCH METHODOLOGY

The chapter presents the research methodology that was use throughout the study. It consists of process of guidelines development including research design, population, sample, research instrument, data collection, data analysis and summary of the research process.

Research Design

The researcher was utilized descriptive survey and quantitative----- comparative methodology to illustrate the findings of the study. A total of 67 teachers were participated in this study which was conduct by the researcher herself at Pan-Asia International School, Bangkok. Independent sample t-test (two tailed) and one way analysis of variance (ANOVA) was apply to determine to analysis

Population

The population is all the teachers who use Smartboard to create the learning activity in any international schools at Bangkok.

Sample

The sample is the academic year 2012 Pan-Asia International School Bangkok teachers from Kindergarten to Grade 12. The total number of the teachers

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from Kindergarten to Grade 12 is 67. So the study was involved a target sample of Elementary level 32 teachers, middle level 19 teachers and high level 16 teachers at Pan-Asia International School Bangkok.

Research Instrument

Development of the research instrument

A modified survey questionnaire was developed for use in this study. The researcher was applied a questionnaire which is adapted and modified from Elding (2006) who is the general advisor for Information Communication and technology of Cambridgeshire government council. This is essentially an audit they created there in Cambridge and they use this prior to local training in schools in order to gauge a starting point for subsequent training. Then once training has started they return to audit and ask trainees to reflect on how much progress they have made. Trainees also have some evidence that they have audited their needs, undertaken training and then reviewed their process. They focus training at three levels and award certificates base on a set of competences at each level. It has three levels: interactive level 1, interactive level 2 and interactive level 3. The researcher was combined those three levels as one level. The researcher also based the question items and rating system on literature review and related studies in association with the research objectives.

Structure of the research instrument

A survey questionnaire was used as primary instrument in the current study explore the use of the smartboard at Pan-Asia International School Bangkok. The questionnaire is presented in Appendix A. It consists of two parts, as explained below:

Part 1: Personal Information: This part comprises the personal demographic profile of the participants. Each respondent was be asked closed-ended questions about his/her gender, the grade level of the participants teach and the frequency of the participants' use smartboard to teach per week. Regarding gender, the researcher was asked their gender as being male or female. For the level of the participants teach, the researcher focus on three level groups. The first group refers elementary school range of Kindergarten to Grade 5, the second group refers Middle school range of Grade 6 to Grade 8, and the third group refers High school range of Grade 9 to Grade 12. For subject of the participant teach, the researcher provided all the subjects that Pan-Asia International School had in its curriculum. There are English, Second Language, Value, Art, Music, Science, Mathematics, Business, Thai culture, Social study and Biology. The participant was written the frequency numbers of beside the subject that he/she teach.

Part 2: Ability to use the smartboard at Pan-Asia International School Bangkok. This part consisted 39 items. All the items ask about the participant's ability to use the smartboard from Very poor (1) to Excellent (5). Each has the following numerical value:

- 1 Very poor
- 2 Poor
- 3 Good
- 4 Very good
- 5 Excellent

Validity and Reliability of the research instrument

Content Validity. In order to identify the quality of instrument in this study, the researcher asked three experts to check the questionnaire items for content validity. They gave their own comments and suggestions and base on these, the questionnaire items were revised accordingly. The three experts were (Appendix C): (1). An expert on Information and Communication Technology; (2) An expert on Educational Technology; (3) An expert on Educational measurement and Evaluation.

Reliability of the research instrument

Table 1

Summary of the reliability of Variables Measured in Alpha

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.969	.968	39

According to Gliem and Gliem (2003), a Cronbach's alpha reliability coefficient that is >.7 is acceptable and >.8 suggests good reliability. In this study, table 1 was found to be reliable for the current research, with Cronbach's alpha coefficients at .969.

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Collection of Data

Data collection consisted of the following steps:

1. Initially, a letter was sent to the school director of Pan-Asia International School Bangkok to get the permission to make the research in the school.

2. A letter was obtained from the school director of Pan-Asia International School Bangkok confirming the research requirement as well as to request and cooperation of those who were in charge of.

3. After obtaining permission from the identified parties, the researcher was delivered the questionnaire to the teachers who teacher from Kindergarten to Grade 12.

4. The researcher was delivered 67 questionnaires during 8th-12th November, 2012. Upon the completion of the survey, the researcher proceeded to collect the questionnaire by herself.

5. It was confirmed that 67 or 100% questionnaire released and 100% were returned all useable. All were deemed valid and would undergo statistic analysis.

Data Analysis

In order to analysis the data, a statistical software program was used. A number of statistics applications were used in the research: descriptive statistics, independent sample T-test and one way analysis of variance (ANOVA). Descriptive statistics in the form of frequency and percentage distributions were utilized to analyze the participants' demographic characteristics of gender, grade level of teaching and smartboard usage per week.

To meet the objective 1 (To identify the frequency of smartboard using for each subject per week at Pan-Asia International School Bangkok), data analysis was

accomplished by means of descriptive statistics in the form of frequency and percentage distributions.

To meet objective 2 (To identify the teachers' ability to use smartboard regarding the teachers' gender at Pan-Asia International School Bangkok), the statistical means and standard deviations was computed as part of descriptive statics. In order to test the related Hypothesis 1(There is a significant difference in teachers' ability to use smartboard regarding the teachers' gender at Pan-Asia International School Bangkok), the independent sample t-test was used.

To meet the objective 3 (To identify the teachers' ability to use smartboard regarding the grade level of teaching at Pan-Asia International School Bangkok) as well as to test Hypothesis 2 (There is a significant difference in teachers' ability to use smartboard regarding the grade level of teaching at Pan-Asia International School Bangkok), data analysis was accomplished by means of one way ANOVA test with post hoc multiple comparisons Scheffe'. The summary of the research process is presented in Table 2.

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Summary of the Research Process

Research Objective	Source of Data or Sample	Data Collection Method or Research Instrument	Data Analysis
1.To identify the frequency of smartboard using for each subject per week at Pan-Asia International School Bangkok	All the teachers from Kindergarten to Grade 12	Questionnaire	Means Standard Deviations
2. To identify the teachers' ability to use smartboard regarding the gender at Pan-Asia International School Bangkok	All the teachers from Kindergarten to Grade 12	Questionnaire	Independent t-test(two tailed)
3. To identify the teachers' ability to use smartboard regarding the grade level of teaching at Pan-Asia International School Bangkok	All the teachers from Kindergarten to Grade 12	Questionnaire	One-way ANOVA

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CHAPTER IV

RESEARCH FINDINGS

This chapter presents the results of statistical analysis of data obtained from 67 respondents. The results of the study are presented in two sections: (a) descriptive statistics; and (b) inferential statistics. The first section focuses on the means, standard deviations, frequency and percentage distributions of selected demographic characteristics under study. The second section presents the result of hypothesis testing.

Descriptive Analysis of Personal Characteristics

Table 3 and table 4 present the results of descriptive statistics conducted to examine the selected demographic characteristics of teachers (N=67) in terms of gender and grade levels of teaching.

Table 3

Frequency and Percentage Distribution of Teachers According to Gender

Gender	Frequency	Percent
Male	34	50.7
Female	33	49.3
Total	67	100.0

Teachers' Gender

Table 3 shows the frequency and percentage distribution of teachers according to gender. It can be seen that out of a total of 67 teachers, 34 (50.7%) were

male and 33 (49.3%) were female. Thus, there were more male teachers than female teachers in this study.

Table 4

Frequency and Percentage Distribution of Teachers According to Grade Levels of Teaching

Grade	Frequency	Percent
Elementary Level	32	47.8
Middle Level	19	28.4
High Level	16	23.9
Total	67	100.0

Teachers' Grade Level of Teaching

Table 4 shows the frequency and percentage distribution of teachers' according to grade level of teaching. It can be seen that out of a total 67 teachers, 32 (47.8%) teachers were teaching elementary school; 19 (28.4%) teachers were teaching middle school; 16 (23.9%) teachers were teaching high school.

Descriptive analysis of the utilization of Smartboard

Table 5 presents the result of descriptive statistics conducted to examine the use of smartboard in Pan-Asia International School Bangkok.

Objective 1: To identify the frequency of smartboard using for each subject at Pan-Asia International School Bangkok

Table 5

Mean (M) of Smartboard usage hour per week in each subject at Pan-Asia International School Bangkok

Subject	Hours/Week (*M*)
English	5.7778
Second Language	7.1000
Values	4.0000
Islamic Values	6.0000
Art	7.8000
Music	7.0000
Science	7.4444
Mathematics	7.2500
Business	10.0000
Thai Culture	4.0000
Social Study	6.3333
Biology	9.0000
Computer	6.6667

Table 5 presents the mean of smartboard usage hour per week in each subject at Pan-Asia International School Bangkok. The average standard for each teacher was having 16 hours per week. Business was the subject that use smartboard the most often-10 hours per week, then following is Biology subject was used 9 hours per week, Art subject was used 7.8 hours per week, Science subject was used 7.5 hours per week, Mathematics subject was used 7.3 hours per week, Second language subject was used 7.1 hours per week, Music subject was used 7 hours per week, Computer subject was used 6.7 hours per week, Social study subject was used 6.4 hours per week, Values subject was used 6 hours per week, English subject was used 5.8 hours per week, Values and Thai culture use the least hours-Values was used 4 hours per week, Thai culture subject was used 4 hours per week.

Inferential Statistics

Independent sample t-test

Objective 2: To identify the teachers' ability to use smartboard regarding the grade level of teaching at Pan-Asia International School Bangkok.

Hypothesis testing

Hypothesis 1: There is a significant difference in teachers' ability to use smartboard regarding the teachers' gender at Pan-Asia International School Bangkok.

Table 6

t-test of Teachers' Ability to utilize Smartboard According to Gender

Variable	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Smartboard using ability			-1.137	65	.260
Male	3.0090	.67607			
Female	3.1950	.66268			

Table 6 presents the result of independent sample t-test conducted to calculate the score for all items (1-39) regarding the teachers' ability to use Smartboard based on 5 Likert-types ratings consisting of Very poor, Poor, Good, Very good, Excellent. Table 6 illustrates that male respondents has a mean score of 3.0090 and standard deviation of .67607. Female respondents had a mean score of 3.1950 and standard deviation of .66268. These findings indicate that while female teachers had a slightly higher ability than male teachers, the difference is not significant. The result of independent sample t-Test shows that sig=.260 > .05, hence, the alternative hypothesis is rejected. In response to the statistical hypothesis, the null hupothesis is accepted-----there is no significant difference in teachers' ability to use smartboard regarding the teachers' gender at Pan-Asia International School Bangkok.

Analysis of Variance (ANOVA)

Objective 3: To identify the teachers' ability to use of smartboard regarding the grade levels of teaching at Pan-Asia International School Bangkok.

Hypothesis testing

Hypothesis 2: There is no significant difference in teachers' ability to use smartboard regarding the grade levels of teaching at Pan-Asia International School Bangkok.

Table 7

Mean and Standard Deviation of Teachers' Ability to Utilize Smartboard regarding the Grade Levels of Teaching

Ability		
Grade	Mean	Std. Deviation
Elementary level	3.1554	.65963
Middle level	3.1134	.65736
High level	2.9760	.73487

Table 7 presents the result of Mean and Standard Deviation of teachers' ability to use smartboard as a function of teachers' grade levels of teaching. It was found that respondents of elementary school teachers obtained M = 3.1554 and SD = .65963. Respondents of middle school teachers had M = 3.1134 and SD = .65736. The rest of respondents of high school teachers has M = 2.9760 and SD = .73487. It can be seen that those teachers who teaching elementary school had the best ability to use smartboard in the class, followed closed by those teachers who teach middle school is position middle. In contrast, the teachers who teach high school had the good ability to use the smartboard.

Table 8

One-way ANOVA Summary table comparing the Elementary, Middle, High Schools

Source	SS	df	MS	F	Sig.
Between Groups	.348	2	.174	.379	.686
Within Groups	29.367	64	.459		
Total	29.715	66			

The Mean between teachers' ability to use smartboard and participants' grade level of teaching was analyzed in table 8. The different variables (items 1-39) were measured by ANOVA to test the hypothesis which states that there is significant difference in the teachers' ability to use smartboard for different grade level of teaching. It was found that sig=.686, which is more than .05 (.686>.05). Therefore, the alternative hypothesis is rejected. In response to the null hypothesis is accepted----there is no significant difference in teachers' ability to use Smartboard regarding the grade levels of teaching at Pan-Asia International School Bangkok.

Additional Findings

This is the comparative about the male and female teachers' smartboard usage peer week.

Table 9:

Analysis of Teachers' Usage per Week According to Teachers' Gender

Mean	
Gender	Usage
Male	6.4412
Female	7.3333

Table 9 presents the male teachers had used the smartboard 6.5 hours per week. The female teachers had used the smartboard 7.4 hours per week. Thus, female teachers use the smartboard more often than male teachers.

Summary

Personal information:

The result of descriptive statistics revealed that, with regard to gender, the majority of respondents were female teacher (n=34 or 50.7%). The remainder consisted of 33 male teachers (n=33 or 49.3%). With regard to grade levels of teaching, the majority of respondents were elementary school teachers (n=32 or 47.8%), followed by middle position, the respondents were middle school teachers (n=19 or 28.4%). The smallest group respondents were high school teachers (n=19 or 23.9%).

Smartboard usage per week:

It was found that the different subjects, teachers' usage per week also different. Business subject was used the most often subject (10 hours per week), followed is biology subject (9 hours per week). The subject that use least often is Values and Thai Culture subject (4 hours per week), followed by English subject (5.7778 hours per week).

Teachers' Ability to use smartboard between to teachers' Gender:

Independent Sample t-Test was applied to test the teachers' ability to use smartboard according to teachers' gender, there being two variables involved-male and female. The result of data analysis revealed that males and females do not differ significantly in teachers' ability to use the smartboard (sig=.260 > .05). In response to the first hypothesis, there is no significant difference in teachers' ability to use the smartboard between teachers' gender.

Teachers' ability to use smartboard among grade levels of teaching:

One-way ANOVA was applied to test teachers' ability to use smartboard among teacher's grade levels of teaching. There being three variables involved: elementary school, middle school, high school. The result of data analysis revealed sig = .686 > .05. In response to the second hypothesis, there is no significant difference in teachers' ability to use smartboard regarding the grade levels of teaching at Pan-Asia International School Bangkok.

CHAPTER V

CONCLUSION, DISCUSSION, AND RECOMMENDATIONS

This final chapter includes the current research titled, teachers' utilization of smartboard at Pan-Asia International School Bangkok. This chapter consists of three sections: (a) conclusions of the findings of the study; (b) discussion based on the results of the study; and (c) recommendations generated as a result of the conclusions and implications of the study, including suggestion for future research.

Conclusions

The result of the current investigation generated three conclusions with teachers' ability to use smartboard at Pan-Asia International School Bangkok. Firstly, in each subject of Pan-Asia International School Bangkok, every subject teacher use smartboard ranging from 4-10 hours per week, it means that smartboard has been widely used in each subject, every subject teacher was agreed with the smartboard can brings better learning environment and can get interactive with the students.

Secondly, male teachers and female teachers have the same ability to use smartboard to teach. Pan-Asia International School Bangkok always provides the smartboard training for the teachers, so the male teachers and female teachers both well trained for smartboard skills.

Thirdly, there is a difference in teacher's ability to use smartboard among grade levels of teaching at Pan-Asia International School Bangkok. It's hard to catch

elementary school students' attention than middle school or high school, so the elementary school teachers should use more multimedia software or animation to catch the students' attention in order to deliver the knowledge. For this special needed, the elementary school teacher used the smartboard more often and they found more software to use in the classroom through smartboard media.

Discussion

This research could not express detailed explanations about the influence of smartboard teaching media and motivational strategies aimed at improving the students' learning. The intention of this study was simply to explore teachers' utilization of smartboard at Pan-Asia International School.

Smartboard utilization

Smartboard has been widely promoted by interactive teaching; in Pan-Asia International School Bangkok almost every single room has the smartboard. Although people already had the smartboard this hardware but the interactive materials and teaching methods is not synchronous planning. At present time, the teachers should create and develop the teaching materials by themselves, because of the difficulty is not low, so some places the smartboard still stay like a decoration product or attract other person' vision, they don't really use it properly.

Smartboard is a good teaching tool which can make up the shortage of the textbook content, but for can play every function of it; the teachers must readjust state of mind. The teachers need to understand the course objective and design the courseware at first. Some of the schools were good at using smartboard, the teachers

can make connections between smartboard and Wii video remote control function, and it is more convenient to teaching. Smartboard can virtual course content and get interactive with the students, improve the teaching effect. However, smartboard is expensive; it was about 1500 dollars per unit and there will be additional cost depending on the type of accessories that the user wants. It's a big investment for the schools. There are various advantages to use smartboard to teach in the class, but if the students cannot use it properly, it just waste the money to invest it as teaching facility in the school.

Utilization of smartboard according to the gender

The result of data analysis through inferential statistics reveled that there is no gender difference in teachers' ability to use the smartboard. This result was consistent with the finding of Cushing et al. (2010) that there also was no correlation between the role of gender and use of technologies for instruction and assessment. In the 21 century, male and female's ability and states are equal, both male and female are full educated person, and also Pan-Asia International School teachers were having smartboard training for every new semester, so it's normal for don't have the gender difference on teachers' utilization of smartboard.

Utilization of smartboard according to different grade levels of teaching

The result of data analysis through inferential statistics revealed that there is no difference among teachers' ability to use the smartboard. Elementary school teachers were using smartboard often than middle and high level teachers. And also is to achieve the needs of elementary school. The students from elementary school can

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gain the knowledge through more multimedia way. One more important reason is smartboard this media can capture the students attention. Elementary school students cannot concentrate on learning for a long time. Because of this needs, the elementary school teachers need more practice and self-study about smartboard function use.

Challenges in smartboard utilization

Smartboard is not the media that only teachers used with the students. While teachers use smartboard to teach, the students also learnt how to use it. Especially middle school and high school students use this function. During teachers' lecture, the students can construct the learning resources with the teachers. Smartboard not only a media that can use in the teaching domain, when the students walk into the society and start to have their own job, they might can use smartboard to make the presentation and do others don't know how to do. Refer the theories of literature review, the 21th century talents need flexible ability and skills especially technology skills. So smartboard utilization is also a skill to help the students in another way.

Recommendations

In the findings of this investigation, the following recommendations are offered for certain individual and groups who may interested or affected by outcomes of this study:

(a). for Pan-Asia International School Bangkok, the school may arrange more development training about how to use smartboard;

(b). for middle school and high school teachers who use smartboard, try to create the useful courseware through smartboard, while the teacher is teaching by smartboard, the students also leaning beside how to use it;

(c). for students, smartboard is a good application to learn how to use it and it will be helped in the future, the world is getting in progress now, so human also need to move forward to gain and learn new technologies all the time;

(d). for the schools or any institute places, if people want to make the investment about smartboard, be make sure people know people have enough ability to use it;

(e). for teaching different grade levels of students, the teachers can share with each other their own courseware.

Recommendation for future research

This research was conducted primarily to examine the teachers' utilization of smartboard at Pan-Asia international School. Future researcher can look further about impact of smartboard using in the International School. This study used all level of grades from elementary school, middle school and high school together to find out the teachers' abilities on smartboard using; other researcher can do a research about a particular grade's smartboard using ability. The research results of the sampling school found that almost every subject use smartboard to teach, so the research can move forward to investigate a particular subject teaching between smartboard media and any other modern media. All of these can be the meaningful studies.

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APPENDICES

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APPENDIX A

Survey Questionnaire

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Questionnaire for smartboard Skills

PURPOSE

This questionnaire is to identify the use of smartboard at Pan-Asia International School Bangkok.

INSTRUCTIONS

Please read the questions carefully and then tick the statement that best describes your ability to use the smartboard.

Thank you very much for your participation.

Part 1: Personal Information

1. Gender:

   Male_____ Female_____

2. What Grade do you teach?

   Kindergarten to Grade 5(Elementary School)_____
   Grade 6 to Grade 8(Middle School)_____
   Grade 9 to Grade 12(High School)_____

3. How many hour(s) do you use smartboard to teach per week in the following subject (please put the number in each subject you teach)
   English_____
   Second language_____
   Values_____
   Islamic values_____
   Art_____
   Music_____
   Science_____
   Mathematics_____
   Business_____
   Thai culture_____
   Social study_____
   Biology_____
   Computer_____

Part 2: Please tick on the number represents your ability to use the smartboard start from Very poor (1), Poor (2), Good (3), Very Good (4) to Excellent (5).

No	What specific ability to use smartboard?	1	2	3	4	5
1.	Connect and switch on the equipment					
2.	Identify smartboard desktop icons					
3.	Orient the smartboard					
4.	Adjust board orientation-to make precision more accurate					
5.	Load the smart notebook					
6.	Add pages to the notebook					
7.	Add a coloured background to a page					
8.	Use the pens to write on the board					
9.	Convert handwriting to front					
10.	Use on screen keyboard					
11.	Use text created elsewhere in SMART notebook					
12.	Format text					
13.	Draw/colour/manipulate shapes, clone shapes					
14.	Move objects and text around screen					
15.	Use the gallery					
16.	Use screen shade					
17.	Use screen capture					
18.	Insert images eg from digital camera					
19.	Use floating tools					
20.	Move objects between pages					
21.	Customize the floating tools					
22.	Use SMART tools…spotlight, magnifier etc with other applications					
23.	Alter size/colour of pens in pen tray					
24.	Clone, manipulate& rename pages					
25.	Use spotlight and magnifier					

26.	Use capture tool efficiently and effectively to capture and create different views of the screen					
27.	Attach a file you want to use to a Smart notebook					
28.	Attach a shortcut to a file you have already created					
29.	Attach a web link to an internet site- this will make for quick access to web resources					
30.	Use the 'My content' area of the gallery- using your image collections					
31.	Adjust picture transparency of images-so that a white background is removed for example					
32.	Access and save SMART resources from the WWW					
33.	Print your SMART notebook					
34.	Use SMART recorder-this will let you record actions on the smatboard live					
35.	Use SMART video player-to play and annotate video clips and save your notes to refers to later					
36.	Make your own page templates					
37.	Insert and use Flash Files, eg: Numeracy ITP's and other animated files					
38.	Use Ink aware- so that whatever you write or draw automatically becomes an actual component of the file, rather than an external note created over the file					
39.	Convert other files to SMART files, eg: PowerPoint or Adobe files into Smart Notebooks					

APPENDIX B

The Permission to Use the Questionnaire

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From: chenjoyce [mailto:chenqun317@hotmail.com]

To: Elding Sally

Subject: Regarding the questionnaire "SMART BOARD Skills AUDIT"

Dear Sally:

I'm the graduate student of Assumption University of Thailand, currently, I'm working on my master thesis about "the utilization of smartboard", and then on searching from internet, i found this questionnaire under your copyright. So I would like to ask your permission to use this questionnaire only for study purpose and also i kindly request you to provide me the validity and reliability of the questionnaire. Your support will help me a lot if you kindly permit me.

Thanks in advance for your kind support.

--

Best regards

Ms.Qun Chen (Joyce)

Phone : +66-832506555

E-Mail: chenqun317@hotmail.com

From: Elding Sally [mailto:Sally.Elding@cambridgeshire.gov.uk]

To: Sally Elding

Subject: Fw: Regarding the questionnaire "SMART BOARD Skills AUDIT"

Dear Joyce,

Sorry I've taken a while to reply – hope it isn't too late to be of use to you. Thanks you for asking and I would be happy for you to use the SMART Audit in your research- please just quote The ICT Service, Cambridgeshire www.theictservice.gov.uk as the source.

It is essentially an audit we created here in Cambridgeshire and we use this prior to local training in schools in order to gauge a starting point for subsequent training. Then once training has started we return to the audit and ask trainees to reflect on how much progress they have made. Trainees also have some evidence that they have audited their needs, undertaken training and then reviewed their progress. We focus training at three levels and award certificates based on a set of competences at each level.

It works for us – have probably updated the audit though as the software for the SMARTboards is now on version 11.

Hope that helps

Regards,

Sally Elding

Senior Adviser (Primary)

The ICT Service

42 West Street, Godmanchester PE29 2HJ

Phone: 01480 376655

Email:sally.elding@theictservice.org.uk

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Appendix C:

Experts

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The Experts

The four experts assured content validity and the quality of the instrument in this study.

1. Dr. Supit Karnjanapun is Associate Professor of Graduate School of Education at Assumption University, as the expert on Information and Communication Technology.
2. Dr.Suthin Rojanaprasert is Associate Dean of College of Communication Arts at Dhurakitbhundit University, as the expert on Educational Technology.
3. Dr.Ruji Pusara is a retired professor of Ramkhahaeng University, as the expert on Educational measurement and Evaluation.

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