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RESEARCH ARTICLE

HOW TECHNOLOGY CAN BE INTEGRATED INTO THE EDUCATION SYSTEM OF SAUDI ARABIA

*Qhaliah Altherwe

University of North Florida

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ABSTRACT

Integrating technology in teaching students is an effective tool to enhance students' performance in the learning process. Most of the researchers and experiments prove that teachers who rely on technology devices on their teaching methods have positive attitudes towards students. Also, it effects on the students' outcomes to be more interactive and engagement in the classroom. However, some teachers face a lot of barriers that prevent them to rely on technology tools. In this research, the researcher will focus on how teachers in Saudi Arabia can integrate technology as effective tools to teach youngest students different subjects, and how to overcome the common obstacles that face them while using this technology.

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INTRODUCTION

In this paper I aim to understand experiences of teacher about using technology as essential part of education. Using technology in classrooms is becoming important in the modern world as it is more efficient, help instructors to deliver their ideas in an effective way and is also time saving. Therefore, it is need of time to study its characteristics and pros and cons. This research important to me because there's an assumption that using technology as medium of transferring information will be suited to these students, especially in facilitating classes, particular evidences in Math, Chemistry and Physics. Student in this field shows a complete understanding of these areas of knowledge and become more eager to find solutions for their questions via keeping pace with the world's technological advancement and development.

Research question

Particularly, I intend how teachers can be encouraged to use technology in class, which barriers usually prevent teachers from using technology in class and how the ministry of education can help teachers using technology as an essential part of education. Thus, I question that how technology can be integrated into the education system of Saudi Arabia and how barriers can be eliminated that teachers can face in the future?

Literature review: This part of the study discusses the review of related literature on the application of technology in education. Where the research manifest that teachers developed certain attitude towards technology in class that can be considered as both positive and negative receptions depending on the culture. It also shows the benefits technology in the educating the younger generation, as they are more expose and subjected to technological innovations than the traditional blackboard or whiteboard approach. This chapter will be divided in sections that will thoroughly discuss the application of technology in education. The sections are (A) Effectiveness of technology in Teaching over Interactive whiteboard. (B) Teacher Attitudes towards Technology. (C) Barriers that Hinder Technology Implementation amongst Teachers. The literatures from this section have the end goal to analyze the integration of technology as medium to transfer knowledge that will benefit both teachers and students.

Effectiveness of technology in Teaching over Interactive whiteboard: Usage of computer and interactive whiteboard can be considered as a battle of innovation versus traditional mediums for transfer of knowledge or educating the younger generation. Technology was identified as a vital in education by many researchers. The recent events that showcases the innovative prowess of technology as a powerful tool to change the culture and society, that will result that people (in this context, teachers) should be equip with technological advancement and knowledge to cope and integrate with the students. It has been manifested that such innovations in

*Corresponding author: Qhaliah Altherwe,
University of North Florida.

teaching education as audio-visual devices and movies will enhance the ability of the students, and instructions will be better understood in subjects such as Mathematics, Statistics, Science, and geography. (Muhammad Tanveer, Azeem, Maqbool, & Tahirkheli). It is also manifested with the "Widespread and effective use of it is evident from the availability of various types of software for different grade levels in the market. A large number of research studies have been conducted to ensure the effectiveness of computer technology in the subject of mathematics" (Muhammad Tanveer, Azeem, Maqbool, & Tahirkheli). It also manifested that technology has played a vital part as it brought positive attitudes among elementary students and their teachers. The teachers who are positive with use of technology tend to foster positive attitudes to their students. (Christensen, 2002).

Meanwhile, another effective teaching medium called Interactive Whiteboard in Teaching is also foster positive response with transfer of education to the students. In a published journal article of Int'l J of Instructional Media, Teacher's Attitudes Toward Using Interactive White Boards in the Teaching and Learning Process in Jordan, it emphasizes that: "The interactive whiteboard seems to have been very effective in supporting the teaching and learning process. It helps teachers to motivate and encourage students to engage with ICT to improve their level of understanding, obtain the required skills, and improve their performance. Interactive IWBs make it also easier for groups of students to work collaboratively on projects taking into consideration that the right training is provided to teachers to obtain the skills and the confidence to make use of this exciting new technology (Alshawareb & Jaber, 2012). In it also indicates that teachers have positive response on the medium that will integrate and entails more knowledge to the student. It allows the students to participate more in class and as in connotes in the title to be interactive, it was noticed that relationship teachers and students as tighter than usage of technology.

The same with Alshawareb and Jaber's research conclusion, Isman, Abanmy, Hussein, and Al Saadany shows a positive response with the Interactive Whiteboard technique it manifested:

"The Technology integration using Interactive Whiteboard can potentially increase interactivity between teachers and students, enhance student engagement, support motivation and enjoyment, and ultimately increase student achievement, and the most important factor in enhancing learning experience is the perception of the teacher on their instructional methodology. If the teacher perceives that Interactive Whiteboard could enhance instruction and interaction, then the result could be a positive influence on students" (Isman, Abanmy, Hussein, & Al Saadany, 2012). The study is also an indication that the traditional in a way can be more interactive and engaging to students than the using the technology. It gives teaching a heart and more emotional connection to the students. But in some way has shown inefficiency on jiving to the thoughts and way life of the younger generation. This entails that technology incorporation with education, student's feelings towards computers increased, the more intensively and their beliefs about the usefulness of computers in their job decreased. There is a significant factor in age on attitude towards computers in the classroom.

Teacher Attitudes towards Technology: It is pointed the effectively and efficiency of computer or technological innovation/machines in education. Also, many researches have proven its validity to the improvement of students based from surveys from teachers. The study can assume that teachers attitude towards this medium is positive. In Muhammad Tanveer, Azeem, Maqbool, & Tahirkheli article, it indicated a positive attitude on the potential usage of computer in the classroom and there's an assumption of self confidence development for both teachers and students. But it emphasis on the effectivity of this programs depends on the teachers attitude. Though, Alshawareb & Jaber discussed that teacher may see the use computer useful but it is crucial to note that they need to incorporate themselves to the knowledge of computer technology. It is vital in teaching to know the medium and understand to innate the specific subject matter to the students. It is integral to teaching the familiarity of the teacher to technologies and understand it fully. (Alshawareb & Jaber, 2012). It was seconded by Isman, Abanmy, Hussein, and Al Saadany in their journal article. "' The instructor who has learned to integrate technology into existing curricula may teach differently than the instructor who has received no such training. The difference in classroom technique and the greater extent of technology use should have a positive effect on teacher and student attitudes toward information technology. (Isman, Abanmy, Hussein, & Al Saadany, 2012). Concretely drawing a picture that program may be seen by Teachers as positive, but there is a posing question if the teachers are able and willing to have a course on computer or integrate themselves on computer crash to better understand the essence and perspective of the program on students' education. There is a need that teachers engagement on computer integration as much as they have to join the flow of youth ability on technology. Generally, this sections literature founds that teachers have positive response on the program. These responses do effectively indicate the teachers' ability to adapt programs and confidently succeed to such program.

Barriers that Hinder Technology Implementation Amongst Teachers: We have seen the efficiency of the technology in teaching and teachers responded positively on the program. With this review, there are barriers that may hinder the implementation of program. In journal article Technology Integration Barriers: Urban School Mathematics Teachers Perspectives, it discusses teachers mindset to teach what they were taught. This will be a challenge to teachers who lack of this knowledge and don't have the idea of technology or not skillful to teach by using technology. Supports from intuitions are vital to provide the school the computer and machines for this program (Wachira & Keengwe, 2011). "These teachers cited lack of technology, unreliability of existing technology, poor administrative and technical support and a lack of Technology and pedagogical knowledge in using technology as major barriers to technology implementation in their classrooms." (Wachira & Keengwe, 2011). Teaching with technology requires a teacher's attitude to truly transform. Another barrier discussed is a transformation within the teacher. They should change themselves into more in-depth teachers with full knowledge or grasp of the computers, programs, and machines. They should be driven with gadgets usages and internet as a searching tool and effective communication tool. (Yu) In a separate article called barriers to Teachers' Use of Technology, the author identified six (6) major barriers that affect the use of technology of teachers based from responses the researchers got on the study.

The six barriers are (a) limitations of physical settings (b) availability of materials, (c) condition of equipment and maintenance, (d) lack of training and interest, (e) low socioeconomic status and (f) crowded classrooms. (Kurt & Ciftci, 2012)The teacher has the responsibility suit her teaching techniques to the needs of the students. Also, have to decide to use technology in teaching and make an effort to acquire this technology. Though, there are cases where "...teachers reported that teaching technology with a hands-on interactive approach was not possible with technology, while others reported that they use technology to provide a hands-on approach to science with their students. Even though some teachers reported that technology was not used in their classroom because it did not interest them personally, it is the feelings of these researchers that this may only be part of the story (Hechter & Vermette, 2013). The acceptance of technology of teachers via training system, with this teacher can adapt to technology and teach it to student confidently. There are options to choose "several measurement tools developed to predict the variables that influence technology acceptance"(Kabakçi yurdakul, ursavaş, & becit işçitürk, 2014).

Overall, the teachers developed certain attitude towards technology in class that can be considered as both positive and negative receptions depending on the culture. It also shows the benefits technology in the educating the younger generation, as they are more expose and subjected to technological innovations than the traditional blackboard or whiteboard approach. There's an assumption that using technology as medium of transferring information will be suited to these students, especially in facilitating classes, particular evidences are found in using technology in teaching Math, Chemistry and Physics student in this field shows a complete understanding of these area of knowledge and become more eager to find solutions for their questions via keeping pace with the world's technological advancement and development. Although, there are fields that should be address as how to improve the facilities of the school? How to attain technology needed for this program? And, how will the teachers adapt this knowledge to the teachers.

MATERIALS AND METHODS

Since this research aims to understand the essence of the respondents' educational experiences toward the integration of technology in teaching, I use interview as methodology in gathering data.

Methods

This research intends to understand the respondents' educational experiences in terms of using technology as a medium for teaching. Thus, it is important to get as nearer as possible to these experiences. As a result, in this study the researcher conduct a detail interviews. The sample of this research contains 15 Saudi teachers. The respondents are mixture of both genders. The respondents have at least one-year practice of their teaching profession. The data gathered through interviews. I met some respondent and I sent an email to ask each respondent ten questions related to the research as a data. The use of the interviews intends to show how the respondents see technology as a medium in a class. Even though, an interview procedure was aimed for this purpose, the interviews conducted in an informal mood.

The questions were used to initiate the conversation and then the respondent will answer without being interrupted most the times. So that, the interviews were meant to be experiences of conversation that intends to aid the respondents reproduce on their experiences. Furthermore, because of the small size of the sample, I was able to talk to the respondents outside of the formal interview setting. The interviews then transcribed so I could use the transcripts as a data for my research.

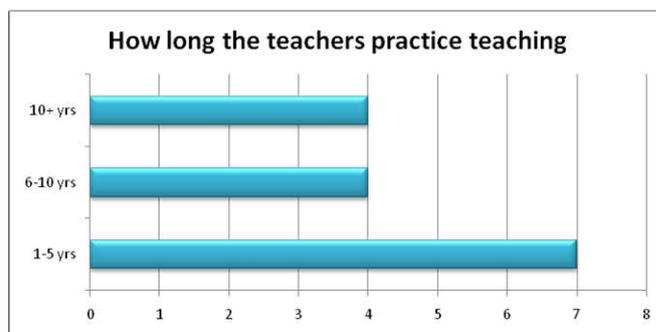
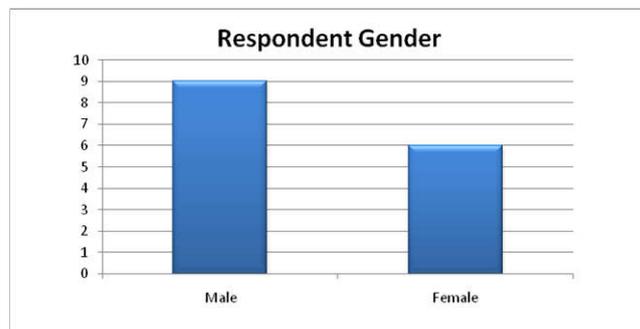
The interviews were coded in two steps: open coding and focused coding. In open coding I "read line-by-line to identify and formulate any and all ideas, themes, or issues they suggest, no matter how varied and disparate" (Emerson, Fretz and Shaw, 2011, p. 172).In contrast, while using focused coding I "uses a smaller set of promising ideas and categories to provide the major topic and themes for the final ethnography" ((Emerson, Fretz and Shaw, 2011, p. 172). The coding process led to the following codes:

Not at all: (To describe that the respondent has no experiences by the use of the technology in a class).

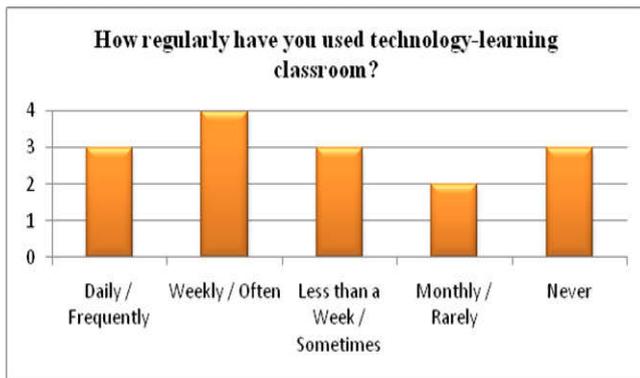
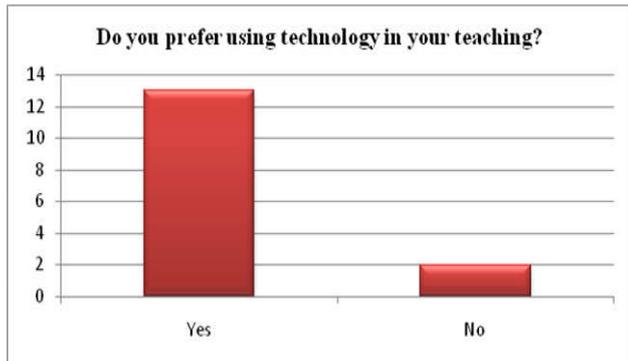
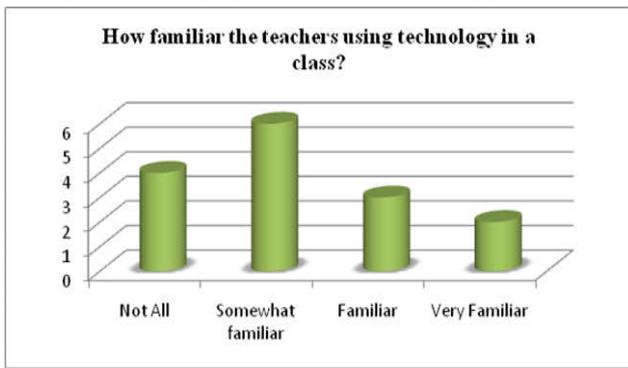
- Somewhat familiar: (To describe that the respondent has tried the use of the technology in a class).
- Familiar: (To describe that the respondent use of technology in a class is common).
- Very Familiar: (To describe that the respondent uses the technology if respondent use it more often or always uses it in a class).

Data analysis and interpretation

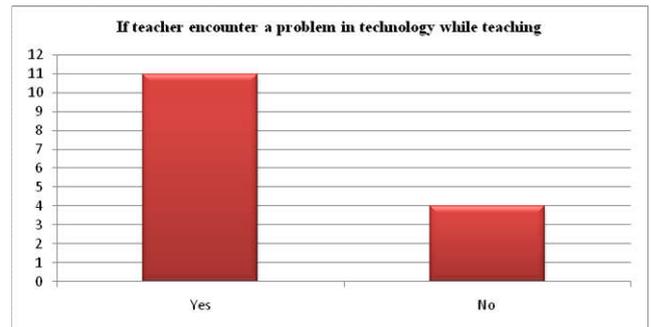
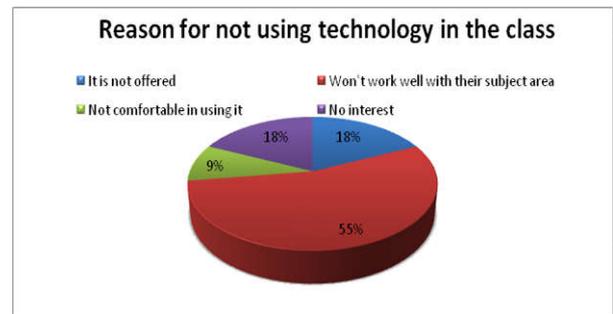
- Number of respondents or the teachers interviewed their gender and the years of practice in their profession in teaching.



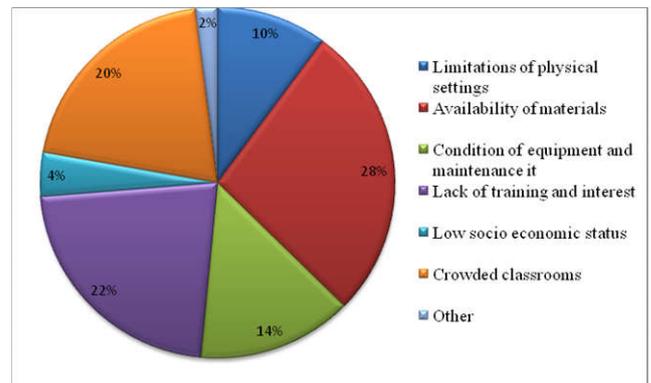
- The information below illustrates how familiar the respondents using technology in class as a teaching method if the respondents prefer technology as a teaching medium or not and how frequent the respondent use technology in the class.



- Moreover, the barriers that affect teacher not to use technology as teaching method or material.



Below are common problem encounter of the respondents who said "yes," while using technology in the class.



- Respondents common thought toward the advantage and disadvantage of technology in line with teaching student.

Benefits	Disadvantage
New way of teaching at make subject easy to understand.	Sometimes a student loses focus toward the subject matter
Make students excited, and interested.	Expensive and lack of resource
Lessen paper and teaching materials to carry.	Technology change every time
Save time to both teacher and students.	Lack of training and time in training
Both teacher and student develop skill toward technology	Sometimes power outage, network/software/hardware failure, and virus or malware interrupt the presentation
Use of videos and images in applying the subject theory for easy understanding	Some of the teachers and students prefer the traditional way of teaching
	Decreases social development of the student
	No change at all

- Interrupted by the technical problem such as the power outage, network/software/hardware failure, and virus or malware/virus interrupts the presentation.
- Sometimes consume more time in using it, and it takes time to prepare the devices.
- School does not maintain or update the device cause malfunction.
- No or not enough skills and knowledge to use the device which gives a hard time to use it
- School has a limited device to offer and has a slow internet connection subscription which causes delay using software that requires internet connection.

Barriers that prevent teachers from using technology as a medium for teaching in a class

Inferential statistics: In this segment talk about the inferences concerning the population based on the data gathered from the sample. The data organized into four parts each of the parts has two or more questions that fairly related to each other. First, the respondents were divided into gender 60% are male while 40% are female if gender has a relationship that indicates in the respond on the medium.

- Respondents reason they don't use or don't plan to use technology as a medium for teaching. Respondents were asking if they encountered a problem with the use of the technology while teaching. If answered "yes," the respondent's problem encountered.

Then the next question, if the years of practice of the profession affect the respond of the teacher in the use of technology. 46% of the respondents are teaching for 1 year to 5 years then 54% are teaching more than five years. The second set of questions focuses on teachers if they would like to use technology as a medium in a class. According to the data gathered, most of the respondents have already experienced using technology in a class. However, most of them answered less familiar and the other teachers who answered not at all. In addition, the 33% of respondents use technology less than a week or month and 20% of the respondent never use technology in learning classroom. However, when all respondent asked, if they would prefer using the technology majority of the respondents answered yes (86%). The third set of question focus on the advantage and the disadvantage of the technology as a medium. Please refer to the table provided above. Fourth and the last set of question focus on the reason the respondents would not like to use technology as a medium. According to the data gather, 55% of the respondent who answered "Reason for not using technology in the class" chooses technology won't work well in their subject area. Still, 73% of the respondents answered that they encountered problems in using the technology. In addition, respondents were given choices to pick barriers that prevent them in using technology. The result, 28% of the respondent, answered lack of availability of the technology. While 22% said that the lack of training and interest and 20% said that the class is too crowded to satisfy the needs of the student.

Data Analysis: In this area focused on presenting the underline themes and structures that exist in the respondents toward technology as a medium for teaching. After analyzation the data, gender has no relationship toward the respond in technology. Moreover, the years of practice of the respondents have no relationship, or common answers found. Therefore, gender and years of practice has no connection toward the use of technology as a medium for teaching. The second set of questions focuses on teachers if they would like to use technology as a medium in a class.

Even though that the majority of the respondents are not or not well familiar and often use technology in a class, still majority of them prefer the use of technology in a class. In the section of literature, Alshawareb & Jaber discussed that teacher may see the used computer useful but it is crucial to note that they need to incorporate themselves to the knowledge of computer technology. The data gather resulted to be true. In the advantage and the disadvantage of the technology as a medium for teaching, most of the respondents answered that technology is a new method of teaching, which make student interested and excited as an advantage. Next common answered by the respondents as an advantage is save time of both teachers and students in learning a subject. This also proven by Muhammad Tanveer, Azeem, Maqbool, & Tahirkeli in their article. While, according to most of the respondents the disadvantage of it if the device has a technical problem such as networks problem and the preparation of the device. Technical problem encounters upon teaching disturb the class and eats time to fix. In addition, respondent has lack of training and skills to use the technology in the class also affect how the respondents deal with the technical problem. Lastly, for the fourth set of question, the "reason for not using technology in the class" has a problem. There are a lot of respondents did not respond to this question which make it less valid. Therefore, this data will be disregarded.

However, the 73% that answered "yes" to the question if they encountered problem regarding technology while in the class most commented problems are still technical problem and lack of knowledge and skill in the use of technology. Then were back up by the poll in the barrier of using technology as a medium ranking 2nd as a barrier. On the other hand, lack of availability of the technology was the leading pick barrier of the technology which was also stated in the disadvantage of technology and in the related literature "Barriers that Hinder Technology Implementation amongst Teachers." These teachers cited lack of technology, unreliability of existing technology, poor administrative and technical support and a lack of Technology and pedagogical knowledge in using technology as major barriers to technology implementation in their classrooms." (Wachira & Keengwe, 2011) For that reason, respondent would like to use technology as a medium, however; they are lack of skills, training, equipment and funds to use its advantages. Still, 20% of the respondents answered that technology is not applicable to a crowded class composing 40 or more students.

Conclusion, reflection, and action plan: In this research, I aimed to answer the following question. How technology can be integrated into the education system of Saudi Arabia and how barriers can be eliminated that teachers can face in the future? In order to answer these questions, and interviewed 15 Saudi teachers with different gender and experience conducted. For the question, the researcher concluded that schools and Universities should provide equipments and material such as Information Communication Technology devices in the premise that would support and assist teachers and students exposure and develop in their lack of interest and skill in the benefits of technology in the field of education. Next, a school or university must conduct free but well-informed training for the teachers on how to use the technology. If school or university has an ICT staff, it is enough to conduct a well-informed training or demonstration. This ICT staff should also do maintenance to ensure 100% functionality of the devices to avoid technical problem that may encounter by the users which should be a must because it their responsibility. Moreover, schools or universities should avoid overcrowded student within a subject or class. Thus, application and integration of technology can be offer to the students. After the analyzing of data gathered, the researchers believed in the teachers that they can integrate technology into their teaching if they could only provide a well informed training and proper equipment. Since, most of them are willing to do so. The researcher also would like to commend the teacher for using traditional way of teaching, even though, there is an easier way of teaching by the use of technology.

Following the research the researcher would like to suggest and create an action plan for the researcher and the reader. As a profession of the researcher, the researcher plans to;

Plan to learn, expose and study technology application to avoid lack of skill problems.

- Use more often technology in the class as a supporting material for additional information on the subject presented.
- Plan to expose the student in the use of current and latest technology that can afford and given by the schools and universities.
- Plan to encourage co-teacher to use the technology.

- If the skills improved in the use of technology, the researcher would like to do training and seminars for co-worker and to students.

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