ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 11, Issue, 11, pp.8210-8214, November, 2019

DOI: https://doi.org/10.24941/ijcr.36616.11.2019

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

TEACHER PERCEPTIONS ON THE USE OF TABLETS IN MAINSTREAM K12 CLASSROOMS IN THE UNITED ARAB EMIRATES

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ARTICLE INFO

Article History:
Received 04th August, 2019
Received in revised form
28th September, 2019
Accepted 15th October, 2019
Published online 26th November, 2019

Key Words:
Smart Learning, Tablets, K12, Teacher Perceptions, United Arab Emirates, Mainstream Classrooms.

ABSTRACT

This study focuses on teacher perceptions of the use of tablets in mainstream classroom in a K12 school in Dubai to enhance teaching and learning. It also explores the development of mobile devices and their usage, and how smart learning has evolved from just handling small devices with limited features, to tablets with endless features and endless learning opportunities. The participants in the study are teachers at a private K12 school in Dubai in the United Arab Emirates. The study employs a quantitative approach to data collection. The results of this study indicate that teachers in Dubai require more understanding of how to implement technology in general, and more specifically tablets. The most important point concluded from this study is that the school leadership should strive to keep teachers up-to-date with technological development and continuous training in order to ensure effective implementation of tablets in mainstream classrooms.

Citation: Sary El Shaar and Khadeegha Alzouebi. **2019.** "Teacher Perceptions on the use of Tablets in mainstream K12 Classrooms in the United Arab Emirates", *International Journal of Current Research*, 11, (11), 8210-8214.

INTRODUCTION

The study explores teacher perceptions of the use of tablets prior to the implementation of such devices in mainstream classrooms in a K-12 private school. This study will help build a base for future studies, especially now the education sector is moving towards digital and online education. The study uses an exploratory quantitative design that surveys participants from different countries, including Lebanon, Syria, Jordan, Palestine, Egypt, Canada, the United States and South Africa. Participants' experience varies from one to fifteen years and more, teaching Math, English, Business, Arabic, Physics, Chemistry, Music and Information and Communication Technology. Investing in teaching staff is one of the important priorities for nations according to His Highness Sheikh Zayed bin Sultan Al Nahyan (*Gulf News,* 2005): "No matter how many buildings, foundations, schools and hospitals we build, or how many bridges we raise, all these are material entities. The real spirit behind progress is the human spirit, the able man with his intellect and capabilities." Consistent with this aim to best prepare youngsters for the future, Abu Dhabi Educational Council (ADEC) is an education authority established by the Abu Dhabi government, and Dubai's counterpart is known as the Knowledge and Human Development Authority (KHDA).

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They both carry out school inspections and give ratings to improve the standard of education. In 2012, 11 private schools in Dubai were rated as outstanding for their overall performance, while 66 private schools were given acceptable ratings. One of the key recommendations in all school inspection reports was related to technology: "acquiring suitable technological equipment, attainment in the basic skills of literacy, numeracy and the use of ICT, and a quality of IT facilities and resources" (ADEC, 2012) (KHDA, 2012). Today, children easily master the use of communication devices, media software and hardware, and digital technologies, which affect their attitudes and views (Dunn, 2011). Children benefit from digital technology that exposes them to large amounts of educational content using PowerPoint slides, video, or/and audio to enhance the level of teaching and learning. Discussion and analysis can be moved online by using email, blogs, wikis, and social networking sites for learning. From our experience as educators, learners have more opportunities to express their thoughts while using and enjoying technology. Such access can build learning communities outside the time and space restrictions of the classroom. The learning process now matches learners' lifestyles. Evaluating and grading can be moved online as well, for instance, the teacher might post grades on a social networking site like Facebook or Twitter so students can compare grades. This may enhance the level of motivation in some children, but consent, confidentiality, security issues and accessibility should be considered. Use of tablets is growing exponentially and has encouraged visionary educational leaders and decision-makers to implement their

use in public schools. H.H. Sheikh Mohammed bin Rashid Al Maktoum, the Ruler of Dubai and UAE Prime Minister and Vice President; Recep Tayyip Erdoğan, Prime Minister of Turkey; and Yingluck Shinawatra, Prime Minister of Thailand, are championing this trend. Almost all the major companies have launched their own tablet (Samsung, Blackberry, Sony, Amazon, and Apple). The integration of tablets into primary schools will create a positive learning environment (Major, Hassler and Hennessy, 2017) Eady and Lockyer (2013) depend on minimum infrastructure supported by the internet and a good network connection. In addition, systematic practical training designed for teachers would also play an important role in the success of such integration. In order to ensure the success of such an initiative, a pilot project before full integration would provide an excellent opportunity to monitor the advantages and disadvantages to decide what to enhance and modify.

Over the past ten years, mobile learning has grown from a minor research interest to a set of significant projects in schools, workplaces, and all areas around the world. The 21st century is now the mobile age, where phones are carried everywhere, banks are accessed from anywhere in the world through internet or mobiles, and computer games are handheld. "We now have the opportunity to design learning differently: to create extended learning communities, to link people in real and virtual worlds, to provide expertise on demand, and to support a lifetime of learning," according to Mike Sharpels, Professor of Learning Sciences and Director of the Learning Sciences Research Institute at the University of Nottingham, UK. Mobile learning projects are thriving all over the world, more people have mobile phones than personal computers, 6 billion is the number of mobile devices sold to end users in 2010, an increase of almost 32% compared to the year before; 10.3 million is the number of tablets users in 2010, and 82.1 million is the number of tablet users expected in 2015 (Pingdom, 2011). The statistic depicts the number of tablet users worldwide from 2013 to 2021. For 2017, the worldwide number of tablet users is projected to rise to around 1.2 billion. In 2014, around 840 million people across the globe used a tablet at least once per month, equivalent to over 20 percent of the world's total population. This figure is forecast to rise to over 1.28 billion by 2018 and an estimated 152 million unit shipments of tablets will be distributed worldwide. The Asia Pacific region is predicted to overtake North America and Europe as the largest market for tablets, as an estimated 58 million units will be shipped in the region in 2018. In comparison, 48 million units are projected to be shipped in Western and Eastern Europe and 48 million units in North America.

While according to a report by Forrester Research, there were over one billion PCs in use worldwide by the end of 2008 and this report predicts PC adoption in emerging markets is growing fast, it is estimated that there will be more than two billion PCs in use by 2015. In Japan, over 75% of internet users already use a mobile as their first choice for access. This shift in the means of connecting to the internet is being enabled by combining three facts: the growing number of smart mobile devices, flexible web content, and continued development of the networks that support connectivity. Mobile learning, or 'M-learning,' combines mobile computer and e-learning. Smart phones and tablets are dominating the market. Mobile learning is not just learning using portable devices, but learning across contexts. Devices are becoming smaller, portable, multimedia, and universally accessible through the internet. As mobile technology has become more sophisticated, with larger, clearer screens and touch-controlled keyboards, the potential for educational applications has also increased. E-book readers, such as Kindle, Nook and others that allow for the downloading and reading of large numbers of books, and the iPad, which also provides access to multimedia content such as books, music, movies, and videos, offer another form of mobile learning, and will help to cut the cost of textbooks for children.

Theoretical Framework: In February 2012, the "FATiH project" was launched in Turkey. "Movement of Enhancing Opportunities and Improving Technology," abbreviated as FATiH, is among the most significant educational investments in Turkey, proposing that "Smart Class" be put into practice in all schools around Turkey. With this project, 42,000 schools and 620,000 classes will be equipped with the latest information technologies and turned into computerized education classes (Smart Class), (FATiH project, 2012). In April 2012, UAE Vice President, Prime Minister and Ruler of Dubai His Highness Sheikh Mohammed bin Rashid Al Maktoum launched the Mohammed bin Rashid Initiative for Smart Learning. This project, costing 1 billion AED, will be implemented within 5 years in public schools. The outcome is to establish a unique learning environment in schools through the introduction of 'Smart Classes, with students using tablet PC and high-speed 4G networks (Sheikh Mohammed news, 2012).

Mohammed Bin Rashid Smart Learning Program was established by Dubai Government in 2012 with a renewed emphasis on technology. The aim of the programme is to provide grade 6 to 12 students with tablets, teachers with laptops by 2019. The United Arab Emirates aims to be a front-runner in the smart education and to achieve this it implemented a three-stage strategy, which began with introducing the tools in the first stage, training the teachers and students on how to use these tools in the second and ensuring continuity in the final stage. In 2014 a total of 283 schools were transformed to smart schools, which included 1,760 classes, 6,349 teachers and 34,513 students. By the year 2018 all 423 schools will be transformed, this includes 7,606 classes, 12,320 teachers and 121,205 students. Similarly, in 2011, a new tablet initiative was lunched, to be implemented in nineteen primary schools in Western Australia. These nineteen schools showed massive improvement between 2009 and 2011 in the National Assessment Program – Literacy and Numeracy (NAPLAN) in Australian schools (Government of Western Australia, Department of Education, 2012). The initiative aims to integrate Information Communication Technology (ICT) effectively into teaching and learning, according to three areas: (1) innovation in using technology for educational purposes, (2) teaching literacy and numeracy with the integration of tablets, (3) strong school leadership and staff member engagement. Based on this initiative, a new professional learning community will be formatted, sharing how tablet implementation can transform learning. By May 2012, Thailand had bought about a million tablets from a Chinese company, to be used by elementary school students, as a fulfilment of a government election promises. The deal was signed, at a cost of 82 million US dollars, between the Thai Ministry of Information and Communications Technology and the Chinese company Shenzhen Scope Scientific development. The government initially pledged to provide tablets for primary

school students throughout the country at the start of the school year. However, the sale was delayed several months because of disagreement over the terms of the contract with the Chinese company, and criticism over the level of quality, with a price of $82 per device. More importantly, students could not use these tablets for purposes of education (*Emaratalyoum*, 2012).

In July 2012, Joel Klein, the former chancellor of New York city public schools, announced that he would be the head of Amplify, a new K-12 education division, to provide tablets for educational purposes.(Amplify is a partnership between News Corporation, the world's second largest media group (Newscorp, 2012) and AT&T, the largest communication holding company in the world by revenue (ATT, 2012). They launched a pilot program in the first semester of 2012-2013 which offered 4G tablets, Wi-Fi and 4G connectivity, device management and technical services for selected schools across the United States (*US News*, 2012). During the press conference announcing this project, Klein stated: "It is our aim to amplify the power of digital innovation to transform teaching and learning, and to help schools deliver fundamentally better experiences and results." According to Michael Singleton, social studies department head at Florida's Orlando Science Schools, the growth of tablets has motivated many schools to find ways to integrate the devices inside the classroom. He added: "I would say an iPad will one day be the same as a book bag or a ruler or a pencil. I think that the iPad will be an essential component to schools, and it's certainly something we can't ignore as a school, we need to embrace it." This project was different from the others because the leaders announced that students must maintain their Grade Point Average (GPA) at a specific level in order to continue with the program. Students who fell below the target GPA would be deprived of using the tablet (*US news*, 2012).

During the world first summit for education advancement, held in May 2012 in Abu Dhabi, the capital of the United Arab Emirates, Dr. Abdullatif Al Shamsi, the Director General of the Institute of Applied Technology (IAT), announced that the high schools of the Institute would no longer use books. They were to be replaced by tablets (iPads) containing all required textbooks and resources in addition to a multilingual dictionary. Demonstration videos would allow the students to fully interact to aid understanding and submit responses. On the second day of the summit Dr. Abdulla if stated: "The new tablets are going to be distributed to all students and teachers at the beginning of the new academic year 2012-2013 instead of their laptops, to permanently get rid of the school bag and its unhealthy impact on the students." According to him, scientific studies stressed the "iPad" is the ideal alternative to textbooks, which are usually exposed to damage or loss. On the other hand, e-books are easy accessible with one touch of the device, and through such tablets internet access can easily increase the amount of resources and materials that serve the educational process and the evolution of its content. He added: "Technology is not being used in an integrated manner to develop the learning environment in the country, preventing the achievement of a high-tech education level." Thus he managed to focus on the large gap between the generation of internet and technology and the forerunners of education, which constitute the most important obstacle in the development of education. He then added that the qualifications the educators hold, the experience, the capabilities and competencies should be enhanced, particularly regarding their technological interest.

The use of modern methods should be expanded to facilitate the learning process, and make it more exciting and interactive for the students of the future generation, to give them the opportunity to perform many tasks at a time while following technological trends. In conclusion, Dr. Abdullatif clarified that replacing textbooks by tablets had been part of an advanced plan carried out by the Institute in high schools of applied technology for years, during which technology programs were used, such as 'one to one' and the 'electronic gate.' These pilot programs prepared students for transition from the stage of textbooks to the stage of technology in education, making electronic devices and materials available in a manner that is fully compatible with the preferences and concerns of students (*Al Ittihad*, 2012). Another study on the use of tablets in elementary school classroom was done by Margie Dunn from Rutgers University in 2005. This introductory study looked at two small K-8 charter schools using tablets with a wireless connection. Her research question was: To what extent are tablets being used in elementary classrooms to enrich the mathematical experience? This study explored ways in which the technology was used effectively and outlined ways it could be improved. Informal discussions with teachers and administrators at the schools indicated more initial success at the younger grade levels. Thus, as a starting point, the study focused on tablet-based Math lessons through 3rd grade classes. Observations were conducted once a week for several weeks and the tasks of the lessons varied.

METHODOLOGY

This study explores the reflections of mainstream classroom teachers. The outcome of the quantitative data collection in this study will lead to a The reflections and thoughts of teachers should be explored before the implementation of tablets in mainstream classroom in order to assess the readiness of teachers, the level of training needed, and the acceptance of the use of tablets by the parents. Hence, this study does exactly this. Descriptive analysis.

The research questions:

- What are the benefits of the implementation of tablets in mainstream classrooms in Dubai?
- What are the key challenges faced by classroom practitioners in the implementation of tablets in schools?
- What are the existing attitudes towards the use of tablets in schools, and particularly in replacing the use of books?

The objectives and aims of the study are:

- To describe tablet use and its impact on the teaching and learning environment.
- To identify factors that affect implementation at classroom level.
- To raise awareness of the use of cross-curricular teaching through the use of tablets.
- The significance of the study research is that it has come at a time where H.H. Sheikh Mohammed Bin Rashid Al Maktoum has launched a very important initiative, driving the Smart Learning process forward in the emirate of Dubai.

RESULTS

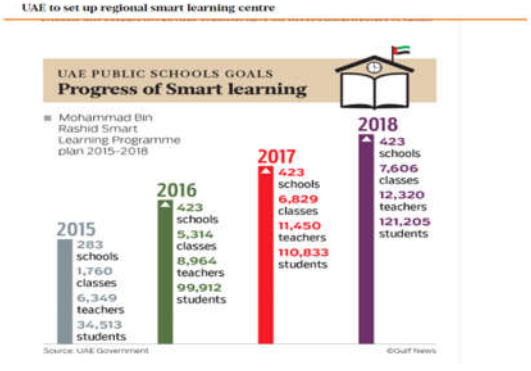
The survey included 31 questions in English, each numbered in columns, and participants were assigned a number in rows. After inserting all data into an excel worksheet, the findings were divided into two parts: the first part dealt with numbers, while the second part dealt with statistics. Thus an analysis of the data using descriptive statistics could be performed. The importance of applying descriptive statistics was to obtain the frequency and percentage of participants choosing each question. The purpose of such a survey is to identify the quantity of the concept in numerical form. A quantitative study is a research methodology using statistical models to measure the actual observed outcomes from respondent-completed questionnaires, surveys, or clinical tests (Richards, 2010). This method used here provides useful results to explore teacher perceptions about best practices of tablet usage. According, an effective strategy may then be developed that will help in tablet implementation.

Descriptive statistics: Descriptive statistics in this study will help describe and understand the features of the specific data set by giving short summaries about the sample and measures of the data.

***Tablet usability*:** As there are five different answers presented in the survey, more than 75% of the teachers demonstrated either agreement or strong agreement that tablets and laptops have huge differences: 50% agreed that they still need a laptop even if they have a tablet. In addition, 38% of the participants had no idea about tablet compatibility with projectors and interactive boards. More than 60% of the respondents either agree or strongly agree that tablets will replace books. In addition, over 38 % disagreed that using tablets is more complicated than using a laptop.

***Tablet Integration*:** Most respondents either agreed or strongly agreed that they were happy with their technological skills: 58% of the participants disagreed that they face challenges integrating technology in classrooms, while 28% agreed; and 35% disagreed that parents resist technological integration. Moreover, 35% agreed that use of tablets may add further pressure on the teacher, however, 25% disagreed, and 15% strongly disagreed. In addition, more than 75% of the participants either agreed or strongly agreed that use of tablets enhanced teaching and learning skills, while none of the participants strongly disagreed, which indicated that teachers are very aware of the advantages of tablets, especially regarding their effect on the teaching and learning process.

***Tablet Effectiveness*:** Almost all participants agreed or strongly agreed that tablets increase positive classroom practices, while none disagreed nor strongly disagreed.



Moreover, 38% strongly agreed and 53% agreed that use of tablets encourages extra-curricular activities. Furthermore, 43% strongly agreed and 50% agreed that tablets extend learning outside the classroom, while only 5% disagreed, and none strongly disagreed. Additionally, 38% agreed and 38% strongly agreed that tablets enhance the level of child participation, while none strongly disagreed. Most participants either agreed or strongly agreed that use of tablets helps teachers give direct feedback, but 5% disagreed and 3% only strongly disagreed. In addition, 28% strongly agreed and 33% agreed that use of tablets helps to raise child performance, while 10% disagreed and 30% were neutral. Moreover, 38% strongly agreed and 45% agreed that children demonstrate technological skills while using tablets. In addition, 48% strongly agreed and 43% agreed that use of tablets enhances student online research experience. In addition, 20% strongly agreed and 33% agreed that use of tablets helped increase child attendance. Additionally, 38% strongly agreed and 45% agreed that use of tablets motivated the children, while 13% gave neutral feedback and 5% disagreed, while none strongly disagreed.

***Tablet Challenges*:** 19 of the participants agreed and 10 strongly agreed that financial challenges might interfere with implementation of tablets. Additionally, 20% agreed while 30% disagreed that tablets affect child health. Moreover, 35% strongly agreed and 20% agreed that use of tablets limits social skills in children. Furthermore, 28% agreed and 25% disagreed that use of tablets negatively affects motor skills, and 45% agreed and 10% strongly agreed that use of tablets creates challenges in terms of classroom management.

Tablet support: 50% of the participants strongly agreed and 43% agreed that technical support should always be available for assistance, while none neither disagreed nor strongly disagreed with this statement. In addition, 60% strongly agreed and 35% agreed that teachers should be exposed to training on the effective use of tablets, while none disagreed nor strongly disagreed. In addition, 50% either disagreed or strongly disagreed that their school curriculum met technological requirements. Furthermore, 28% disagreed and 23 %strongly disagreed that teachers have enough time to prepare for and implement tablets. Finally, 40% strongly agreed and 20% agreed that there is not enough support and guidance from the school regarding the implementation of tablets, but 13% disagreed and 8% strongly disagreed with this statement.

DISCUSSION

Tablet usability: 48% of the teachers agreed that there are huge differences between laptops and tablets, which supports the findings of a comparative study between tablets and laptops (Benson et al., 2008). According to a study done by the Faculty of Engineering and Surveying at the University of Southern Queensland, Australia, in 2011, tablets are compatible with projectors that have wireless connection ability. In our study, 38% of the participants gave neutral feedback since it is more of a technical question.

Tablet Integration: 38% of the participants agreed and 33% strongly agreed that the use of tablets enhances teaching-learning skills, which goes along with the findings of an article first published online in 2003 by T.C. Liu, H.Y. Wang, J.K. Liang, T.W. Chan, H.W. Ko, and J.C. Yang, entitled:

"Wireless and mobile technologies to enhance teaching and learning" (Chan et al., 2003). This report found that wireless and mobile technologies can help both teachers and children concentrate on teaching and learning. The use of such devices supports teachers to monitor child learning, it helps children to engage themselves effectively in the learning process, and it enhances group work activities. This applied in grade six classes at Nan-Hu Elementary School in Taipei.

Tablet Effectiveness: 55% of the participants agreed tablets increase positive classroom practices. This result is similar to what Anne Davis, the principal of Longfield Academy in the United Kingdom) found in her 2012 case study. She concluded that use of technology increases positive classroom practices, which will lead to high-level teaching-learning processes only if the practices are good and shared with others. According to Bouvin et al. (2005), tablets extend learning outside class borders. Most participants in our study either agreed or strongly agreed on the latter. As indicated by the Empirical Education report in 2012, children who used the tablet version of the Math Algebra 1 textbook by Houghton Mifflin Harcourt, which is a digital and interactive version, scored 20 percent higher on tests than children who used traditional textbooks. Empirical Education is a research firm that helps K-12 school systems make evidence-based decisions about the effectiveness of their programs, policies, and personnel (Empirical Education, 2012). Children commented on the digital version that it is more motivating, attentive, and engaging. Thus, 28% of the participants who strongly agreed and 33% who agreed that the use of tablets helps to raise child performance, were in line with the findings of the Empirical Education report.

Conclusion

The results of this study indicate that teachers in Dubai require more understanding of how to implement technology in general, and more specifically tablets. The most important point concluded from this study is that the administration should strive to keep teachers up-to-date with technological development and continuous training. The use of technology is not about the technology itself, but about helping children to use technology in order to reach an outstanding learning level. Without the proper instruction and useful guidance, any technological implementation will face failure. School administration needs to change the curriculum to remain compatible with technological change; it needs to provide training sessions staff members, and to offer support and guidance. Moreover, the recruitment policy should target professional employees with technological proficiency.

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