LEBANESE AMERICAN UNIVERSITY

The Potential of Technology in Education: A Case in Point of Tablets Use in a School in Lebanon

By

Farah Zain

A thesis
Submitted in partial fulfillment of the requirements
for the degree of Master of Business Administration
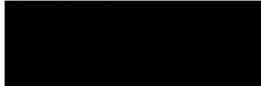
School of Business

May 2016

THESIS COPYRIGHT RELEASE FORM

LEBANESE AMERICAN UNIVERSITY NON-EXCLUSIVE DISTRIBUTION LICENSE

By signing and submitting this license, you (the author(s) or copyright owner) grants to Lebanese American University (LAU) the non-exclusive right to reproduce, translate (as defined below), and/or distribute your submission (including the abstract) worldwide in print and electronic format and in any medium, including but not limited to audio or video. You agree that LAU may, without changing the content, translate the submission to any medium or format for the purpose of preservation. You also agree that LAU may keep more than one copy of this submission for purposes of security, backup and preservation. You represent that the submission is your original work, and that you have the right to grant the rights contained in this license. You also represent that your submission does not, to the best of your knowledge, infringe upon anyone's copyright. If the submission contains material for which you do not hold copyright, you represent that you have obtained the unrestricted permission of the copyright owner to grant LAU the rights required by this license, and that such third-party owned material is clearly identified and acknowledged within the text or content of the submission. IF THE SUBMISSION IS BASED UPON WORK THAT HAS BEEN SPONSORED OR SUPPORTED BY AN AGENCY OR ORGANIZATION OTHER THAN LAU, YOU REPRESENT THAT YOU HAVE FULFILLED ANY RIGHT OF REVIEW OR OTHER OBLIGATIONS REQUIRED BY SUCH CONTRACT OR AGREEMENT. LAU will clearly identify your name(s) as the author(s) or owner(s) of the submission, and will not make any alteration, other than as allowed by this license, to your submission.

Name: Farah Zain

Signature: ███████████

Date: 6/5/2016

PLAGIARISM POLICY COMPLIANCE STATEMENT

I certify that:

- I have read and understood LAU's Plagiarism Policy.
- I understand that failure to comply with this Policy can lead to academic and disciplinary actions against me.
- This work is substantially my own, and to the extent that any part of this work is not my own I have indicated that by acknowledging its sources.

Name: Farah Zain

Signature:

Date: 6/5/2016

I dedicate this paper to my family who always taught me the importance of education, who stood by me all the time and supported me no matter what and most of all, because they believed in me. Thank you for always being there.

I dedicate this paper to my school who raised me up since I was 3 years old, who taught me a lot and finally believed in me and gave me the chance to apply my research within.

Finally, I dedicate this paper to the supporting NGO. Without them, this dream would not have come true.

Acknowledgment

This project would not have been possible without the support of many people.

Many thanks to my advisor, Dr. Manal Yunis, who read my numerous revisions and contributed various improvements to the final draft. Also thanks to my committee members, Dr. Iman Osta, and Dr. Wissam Al-Hussaini, who offered guidance and support.

A special thanks to my close friend Razan Shanouha who endured this long process with me, and always offering support and help.

And finally, I am grateful for the continuous support and love of my parents and numerous friends.

The Potential of Technology in Education: A Case in Point of Tablets Use in a School in Lebanon

Farah Zain

Abstract

Nowadays, considering the great developments of technology in all aspects and its fast widespread among students in Lebanon, we can describe the new generation as smart. The new generation uses the information and communication technology (ICT) to a big extent. As students in Lebanon gain the chance to use the new technology more, especially tablets (including iPads) for education purposes, their passion for attending classes and gaining knowledge might increase. Thus, there is a need to enhance today's teaching styles using new learning technologies. Therefore, integrating this kind of information technology (tablets) into the learning process among school students has become an important area to examine and explore. Nevertheless, the importance of this process is subject to debate amongst educators in the schools operating in Lebanon. While some support the idea of integration, opponents claim that tablets' costs outweigh their benefits. Questions such as: "Are our schools ready for the technology integration in classrooms?" and "will these technologies contribute to better learning performance?" need to be answered. This study aims at examining the integration of tablets in teaching English in a third grade class at a school operating in Lebanon. A quasi-experimental design was deployed to assess the impact of tablet use on the performance of students and to check whether this technology integration in teaching results in significant differences in the students' learning outcomes. A conceptual model was developed based on a theoretical framework combining the Gamification in education Theory (Pelling, 2011) and the Theoretical Extension of the Technology Acceptance Model (Venkatesh & Davis, 2000). Regression analysis was deployed, and results showed that teachers' perceived usefulness of tablets in classrooms is determined by the level of perceived school support and their perceived computer self-efficacy. Results also showed that students' satisfaction is influenced by the device characteristics as well as their perceived fun and engagement. The quasi-experiment revealed in general that the use of tablets may contribute to better performance among students in gaining the English language skills.

Keywords: Tablets, English Learning, Quasi Experiment, Device Usefulness, Fun and Engagement, TAM, Extended TAM, Gamification in Education

Table of Contents

List of Tables

List of Figures

Chapter One

Introduction

Technology brought about successful transformations in industry, science, and business. The role it played manifested itself in reduced errors and hazards, better simulations and experimentations, and high levels of efficiency. The world is witnessing rapid development of information technology in different aspects of life. In a short period of time, things around that were there for a long time changed and were substituted by faster, more compact, and often more accessible ones. Of them we mention some: The mail has developed into an email, the book has turned into an e-book, and the mobile phone has become a multi-purpose smart device. In other words, information technology has created a new world of various technological advancements which became needs rather than wants.

As information technology changed our lifestyles, it has knocked the door of education too. In this area, however, the emphasis should be not only on innovation, in terms of hardware and software, but also on how technology would be integrated into instruction and how it would influence assessment (Sandholtz, Ringstaff, and Dwyer, 1997). Wenglinsky (1998) agrees that the introduction of technology into schools isn't just to equip the school with modern devices; however, it is to improve the student's academic performance and other educational results. Yet, since we are living in the era of technology, and kids are born almost technology-users, the challenge now is how to leverage this opportunity for education purposes.

As in other areas and sectors, the contribution of IT in education is evidently mediated by human, educational, and institutional factors. Based on this, this study emphasizes that in education, for information technology to contribute positively to the

teaching and learning processes, factors like teachers' attitudes, students' attitudes, instruction method, and school policies should be taken into consideration.

But what is educational technology? "Educational technology involves the disciplined application of knowledge for the purpose of improving learning, instruction, and/or performance" (Spector, 2015). It is about using technological tools effectively in education. Nevertheless, studies examining the relationship between IT and education reported mixed results. While many researchers have shown positive correlation between technology and education (Ağır, 2015), others believe that there is no agreement between educators and researchers on whether technology introduction into schools makes any obvious changes (Thiruchelvam, 2014). Still others reported results that both support and question the positive role that educational technology may play in the learning process (Vu, 2013).

Technology's integration into education is a remarkable fact all around the world (Wang & Reeves, 2004). Studying the use of technology in education has increased in importance because it is believed to improve the skills and capabilities of both instructors and students (Saba, 2009). Ismael and Al-Badi (2014) believe that it enhances the instructor's teaching style and improves the student's educational experience.

As we have reached the 21st Century, the definition of a well technologically-equipped classroom has changed and the challenges continue to arise accordingly. Laser-pointers, calculators, overhead projectors, computers, LCD projectors, smart-boards and many other devices were used to enhance the learner's experience. However, ever since the introduction of handheld devices and iPads in 2010, schools started paving their way into integrating such devices into their programs. Each new technology, on its own, will offer the student a different learning experience. It is expected that tablets will not just replace the computers, but also books in classrooms (Vu, 2013). While they just don't replace printed materials (exercise sheets/copybooks), they support communication and increase the availability of teaching resources.

1.1 Statement of Problem

Coughlan (2014) reported the results of a study conducted by Dr. Barbie Clarke of The Family, Kids and Youth research agency mentioning that 70% of the primary and secondary schools at the UK have been using tablet computers. Moreover, it states that 45% of the schools which haven't introduced the new technology to their curriculum are thinking of taking this initiative soon. Yet, the same study clarifies that until now, there is no obvious evidence of the academic improvement at these schools.

The same way, various countries in the Arabian Gulf including United Arab Emirates are switching towards electronic learning and mobile learning as a way to follow the trend of the latest technologies of the developed countries. Major drivers behind following such trend include the change in the learner's demographics, education transfer, and the technology advancements. Some institutions, as UAE University, distributed laptops, PCs, and tablets for students and made it obligatory to use them while they study (Ali, 2012).

Nevertheless, with all these attempts and the growing use of information technology in education, some reports state that unlike the business settings, the communication industry, the accounting industry, and the music industry, schools have failed to experience improvement in student achievement as attributed to technology use (Norris & Soloway, 2012). Many developed countries have set the use of tablets as part their educational curriculum. The same way, some schools of the region started to design their own educational tablet way (Their Edu-Tab Way). Yet, there's a lack of research in this area in Lebanon. Cultures and environments differ, what works in other settings might not work here and vice-versa. With such reports about tablets use in schools, it is important to explore the perceptions of stakeholders about their usage in schools operating in Lebanon.

1.2 Statement of Purpose

This research aims to identify the main drivers and challenges of using the tablets for educational purposes at schools in Lebanon. It studies the potential effects of such devices on teaching and learning at schools in Lebanon. In other words, the study will explore whether such technologies will allow teachers and educators to add value for the learner's experience. It will also develop a model for using such mobile devices in the country.

Based on the above, the main research questions of the study are as follows:
- What impact does tablet use have on students' performance?
- What are the teachers' perceptions of the drivers and challenges expected about the tablet's usage as an educational tool in Lebanon?

The following section will demonstrate an overview of the existing literature related to the research topic at hand. A description of the research methodologies follows to explain how to address the research objectives and answer the research questions.

1.3 Anticipated Contribution

This study will add value to the field of educational technology and related areas of study. First, it will investigate the usage of tablets in a school of Lebanon while recording day to day observations. This will allow us to evaluate the effectiveness of using such devices in a culture like the Lebanese one, especially because it considers three concerned perspectives (student, teacher, parents). Second, the study allows us to generate knowledge of perceived behaviors when introducing a new technology in general and tablets in specific to the field of education. This will facilitate improvement in the process of introducing tablets to school afterwards.

Chapter Two

Literature Review

As educational institutions became more receptive towards involving high technologies into their curriculum, the education and learning market witnessed an extraordinary growth in its market. The markets products include: hardware, software, services and educational content. The technology revolution has transformed when new devices, such as tablets, became new entries to this world. Thus, the increase of the use of mobile devices in education along with the enhanced cooperation between hardware companies and educational content providers have led to the growth of "smart education and learning market". MarketsandMarkets (2015) expect this market to rise from "$105.23 Billion in 2015 to $446.85 Billion by 2020 at a Compound Annual Growth Rate (CAGR) of 24.4% during the forecast period." In addition, Teens' and Tweens Technology Usage (UK) stated in its July 2015 report that three quarters of teens and tweens have their own tablet devices (Mintel, 2015).

This growing market attracted researchers to investigate the technology adoption by schools, the factors influencing its use, and its impact on the learners' performance.

2.1 Overview on Educational Technology

Many have thought of definitions for educational technology. Mohseni (2014) explained that educational technology is the use of several developed technological tools in education, aiming to improve and enhance the process of teaching and learning. Similarly, Laliberte (2010) defined it as: a tool that increases performance levels while allowing the use of innovative approaches with regard to teaching and learning" (p. 53). However, many researchers explained that implementing educational technology doesn't always generate positive results as expected. Cravey (2008) believes that

implementing educational technology shows mixed results. He explains that this could be due to several factors including different ways of integrating technology and the subject and the level of the class.

Mohseni (2014) explained various benefits of educational technology. They include: enhancing student learning, increasing student engagement and participation, making the process of learning more fun and enjoyable, increasing student motivation, making the course and course material more manageable and accessible, providing differentiated instruction, and learning new technologies (Mohseni, 2014).

2.2 Tablets as a new Educational Technology

When tablet devices were first launched, people thought it was a new type of laptops. However, The NMC Horizon Report (Higher Education Edition) considered tablet devices a totally new technology and not just a new type of a light laptop (Johnson, Adams Becker, Cummins, Estrada, Freeman, and Ludgate, 2013). Steve Jobs, the co-founder of Apple, described the iPad during its launch as a "third category device". He clarified that it was created in between the smartphone and the laptop (BBC News, 2010). Henderson and Yeow (2012) agree that the iPad is first of a kind. It is not a netbook, neither a tablet PC nor a smartphone. Yet, it has common features of all of them.

Back when the Apple Company launched the iPad tablet, the education community started raising questions about its application such as "Does it belong in the classroom? Will it change education? Are we ready to use it?" (Frey, Fisher, & Gonzalez, 2013). Manuguerra and Petocz (2011) believed that such new technologies are capable of transforming the way teaching and learning are implemented. This technology can greatly generate "constructivist and collaborative approaches to learning, and flexible and adaptive approaches to teaching".

Murray and Olcese (n.d.) mentioned that iPads could be considered as a technology for learning in K-12 settings if we follow Means' (1994) four educational technology categories: tutor, communicate, explore, and tool. Means (1994) explains that "technology is used as a *tutor* when it does the teaching directly, typically in a lecture-like or workbook-like manner" (p. 9). On the other hand, some technologies are utilized for *communication* purposes as "programs and devices that allow students and teachers to send and receive messages and other information through networks or other technologies" (p. 10). Technology is used to *explore* when learners can formulate decisions from the information they gain and access. Finally, technologies are considered *tools* when they "are not designed explicitly for school use but can be put to educational purposes" (p. 10). In this paper, the tablet will be considered a tool to enhance the four categories mentioned by Means (1994).

2.3 SAMR Model

While Means (1994) discussed four educational technology forms, Puentedura (2009) developed a model called SAMR; substitution, augmentation, modification, and redefinition. This model works on transforming learning with technology. It works on two main levels: a higher one that aims, through modification and redefinition, at transforming the student's learning practices, and a basic one that aims at enhancing the student's learning practices through substitution and augmentation. Figure 1 shows how tablets can be a tool operating using the SAMR model.

Substitution	Augmentation	Modifictaion	Redefinition
Tablet operates as a direct substitute tool with no functional change	Tablet operates as a direct substitute tool with functional change	Tablet operates as a tool to significantly redesign the exercise	Tablets permit the creation of new exercises, previously inconceivable
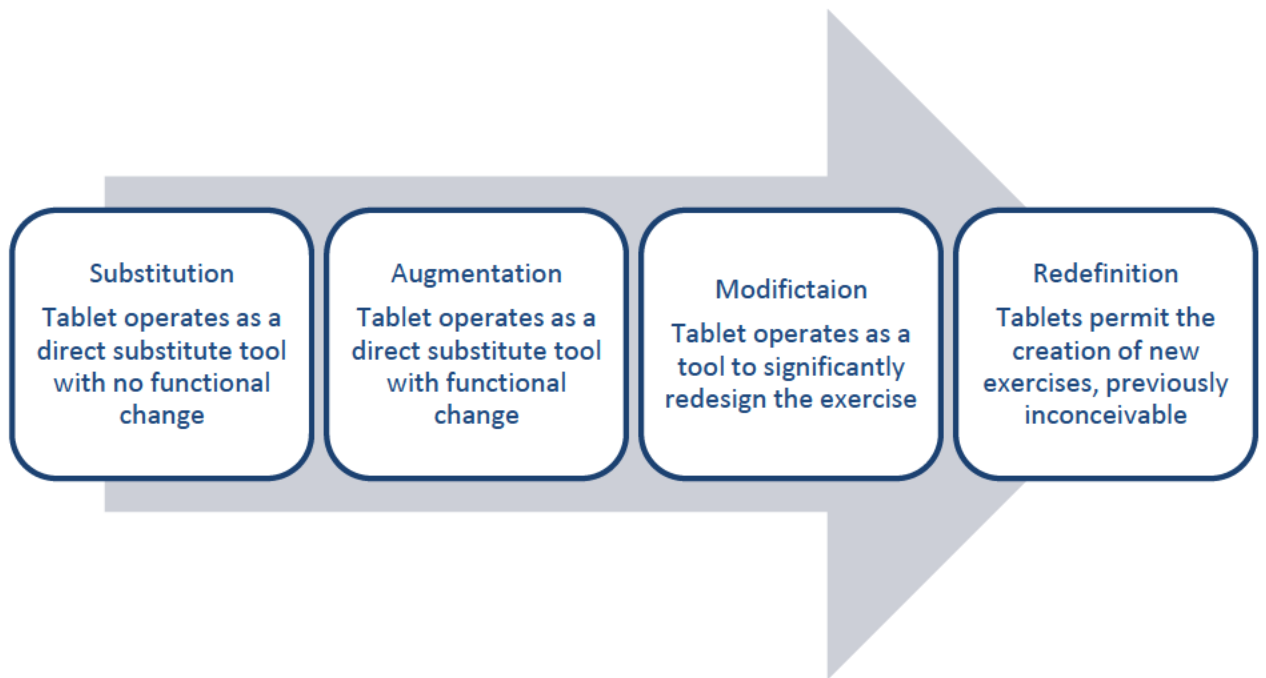
Figure 1 SAMR Model Customized for Tablets

2.4 Factors Influencing Perception about Tablet Use in Education

When tablets were introduced, some thought that they will replace the use of other devices and thus refused this invention. Aiyegbayo (2014), for instance, believes that the tablet was never created to replace other devices. He discusses that some instructors found the use of devices other than tablets better to fulfill certain academic jobs as long typing. However, Frey et al. (2013) agree that without reasonable planning, the tablet innovation is "just another activity", meaning that when using tablets for learning purposes, the students feel engaged, yet, "learning is left to chance".

Churchill, Fox, and King (2012) assure that the degree to which tablets will be part of education is highly influenced by the "teachers' perceptions" of what this technology will provide. They argue that the device characteristics and benefits go along separately from the teachers' models of how such devices can be used in their teaching experience. Even though many researches have proved that students feel more motivated and enthusiastic to learn, Churchill et al. (2012) believe that there is no enough

8

indication that tablets influence the learning experience. They raise the issue that studying and predicting the tablets impacts on learning must be discussed with teachers in the first place. Table 1 summarizes the benefits and challenges mentioned by the literature.

Benefits	Challenges
Improving Engagement and Communication	Social issues
Enhancing Enthusiasm and Excitement	Parents Concerns
Device characteristics	Resistance
Allowing Personalization and Independent learning	School Readiness
Environment Friendly	Lebanese Infrastructure
Easier Assessment	Health Factors
	Class Management
	Digital Nativity
	No Better Grades

Table 1 Benefits and challenges of using tablets in school

2.5 Benefits of using tablets

Literature discussed various benefits of educational technology in general and the use of tablets in education in specific. The benefits of using tablets in schools for educational purposes include:

2.5.1 Improving Engagement and Communication

The tablets technology improved communication in-two ways: parents with the school and teachers with students. With this technology, parents not only check their child's work at school; they are also able to check all resources and e-books provided for lesson explanation. In a research done in Scotland, Burden, Hopkins, Male, Martin, and Trala, et al. (2012) reported that parents felt more engaged with the school when their kid's iPad interchanged between home and school. Also, the parents felt that their kids established more "motivation, interest and engagement with learning" when the

iPads went to school. The school did a pilot study where 80% of the parents agreed that the project was valuable. They clarified that the study "significantly changed their child's enjoyment of and attitude towards school" (p. 10).

Clarke and Svanaes (2012) stated three important roles for parents when initiating the tablets program at a school. These included, engage parents in the establishment phase, arrange training and provide all information related, and decrease parents' concerns around security and safeness. This will help in sustaining the parental engagement and support for the new program. Also, it will increase their satisfaction with the school.

Using the tablets smart applications, emails and direct messaging are sent easily. This helps the teacher receive direct feedback of the students' work and therefore keep the students engaged. In addition, with these devices, students can perform one-to-one interactive activities which can be monitored by the teacher directly using certain applications. In this way, a developed communication is established and an opportunity for continual assessment is granted (Shuler Winters et al. 2013). One-to-one interactive activities include filling "surveys, quizzes or web-based science and mathematical simulations". Gaining knowledge in such a way is believed to be more enjoyable and easier for students to understand (Ali, 2012). In the same way, West (2013) discusses that continuous digital feedback from the teacher grant the students chances to elevate their learning process and hence achieve greater learner's autonomy.

2.5.2 Enhancing Enthusiasm and Excitement

As technology plays a big part of our lives, schools are making an effort to use it in order to deliver a super learning experience for students (Agostini, Di Biase, & M. Loregian, 2010). Morgan (2014) believes that when educators make use of the technological skills the students have and when they direct them to fulfill their work using the latest technologies (ex: tablets), excitement will be sensed often all over the classroom.

Manuguerra & Petocz (2011) believe that the iPad is now a tool used to "engage, inspire and motivate" the educators through its communication means and developed presentation tools. They agree that this device modified the pedagogical approach by simplifying the student's learning experience but making it deeper.

2.5.3 Device characteristics

What features of the tablets invention make them so demanded in the educational field? Other than being practical and light-weighted, Henderson and Yeow (2012) discusses that the "iPad's large multi-touch screen, sleek profile and the ability to easily download and purchase a huge variety of educational applications make it attractive to educators". On the other hand, since fingers are a natural mode of input and are considered the most common way to use the tablets, students are more enthusiastic to learn through them. It has intuitive interactive characteristics and it has made online learning more feasible with its wireless internet connectivity (Frey et al., 2013). Hence, because of these device characteristics, students will eventually stay excited while learning for a longer period of time (Agostini et al., 2010).

Teachers use tablets to collect, bring together and distribute content. They like using tablets for various reasons: the small price in comparison to a laptop, practicality, interactive characteristics, mobility, and the large collection of available applications. They believe that the tablet promises a transformational change as a teaching and a learning tool (Frey et al., 2013). Add to that is the student's ability to access the content and information quickly and easily and to collaborate with each other (Henderson & Yeow, 2012).

The popularity of mobile devices in education is due to its increased functionality and affordability. But, while having a deeper look at the tablets in specific, they have a better performance compared to other mobile devices, smartphones for example. The tablets have larger screens, grander batteries, processing powers, a growing collection of interactive applications, and the ability to record audio and video. At the same time, the tablets prices are decreasing while they are available to schools at lower costs (Clarke & Svanaes, 2014).

Hardware parts are not the only remarkable features of the tablet. The application varieties found in the iTunes store or the Google play store encourages the learner or the teacher to dig in finding the suitable app. There is an app for everything. Khaddage, Lattemann, and Bray (2011) explain that many applications have facilitated the learning process. There are apps used as tools for "Collaboration" helping in sharing files and folders. There are apps for "Coordination" helping in informing students about homework dues, rules and organization. There are apps for "Communication" to aid in discussion, sharing between students, and synchronous and asynchronous communication.

In addition to all the previous benefits, tablets somehow allowed for the replacement of most textbooks especially heavy ones. Ali (2012) states that many students can't afford to buy original textbooks. In addition, regular books are really weighty. A normal student carries 8 to 10 books in addition to copybooks in one bag. In some cases, textbooks can't be reused by others because some students write notes or referencing which cannot be removed or edited. With the use of tablets, e-books could be downloaded easily and used in the classrooms or at home.

Whether it is an iPad by Apple, Galaxy Tab by Samsung, ThinkPad by Lenovo, Chromebook by Google, or an Intel Education Tablet by Intel, large companies have been designing the best suitable device for educational purposes. The market is in tight competition which makes parents and school administrators in concern of what device is best for their students. Graham Long, the Vice President of Business Enterprise Team-Samsung UK and Ireland, says on the release of Galaxy Tab 4 Education: "Samsung has always strived to provide the best technology and solutions that meet the needs of our users. We are really excited to launch the Tab 4 Education, which combines product innovation with our understanding of the education sector's needs" (Allan, 2015).

2.5.4 Allowing Personalization and Independent learning

World Innovation Summit for Education (WISE), an initiative of the Qatar Foundation started a survey in 2014 under the title of "School in 2030". The results reported that 83% of experts surveyed believed that "curricula will become more individualized to suit each student's needs, while learning as a process will become more collaborative". Meanwhile, the new technological environments transformed the traditional learning. They didn't just increase engagement and enthusiasm, however, they also offered individualization, and they increased the chance for "collaboration and peer learning". This computing environment offered learning for all students (van't Hooft, 2008).

Mobile devices provide a chance for individuality, a "unique scaffolding that can be customized to the individual's path of investigation" (Peters, 2009). Shuler et al. (2013), in a research work published by UNESCO, reported that mobile technologies offer personalization characteristics which permit students of different abilities and of various cycles to learn and progress at their own steps. The paper also forecasts that in the next fifteen years, this "authentic and personalized learning" will continue to flourish with the help of the technological trend. In addition, it will also assist in "learning to learn" talents in young students (Sha, Looi, & Chen, & Zhang (2012); Kearney, Schuck, Burden, & Aubusson (2012); Wong (2012)).

The mobile technology can help students, under the direction of skilled teachers, discover the world around them and create personal solutions to their difficult problems while cooperating with their mates (Shuler et al., 2013). Wong (2012) explains that, with the use of mobile technologies, the students are able to customize their own studying means regarding: when, where and how they believe they will learn the best. Hence, education becomes progressively self-directed.

2.5.5 Easier Assessment

One of the most-time consuming tasks for a teacher is correction time. Using tablets, the teacher is able to create offline/online quizzes. For example, Abu Dhabi

International Private School initiated a web-based platform for students and teachers. With it, they can create online quizzes which used to be done in computer labs. This initiative saved a lot of time for the teacher because quizzes are graded automatically, and thus decreased the burden on the computer labs. It also eliminated the time for students to go to computer labs and return (Ali, 2012).

When the school has an online portal with parents, the grades can be sent automatically for them if the teacher permits. Grades' total average can be computed and the parents can view them. Automatic assessment can include multiple choice questions, true/false questions, dictation, drag and drop questions and static values. Some applications on tablets can assist the teacher in showing plagiarism and grammatical and spelling mistakes.

2.5.6 Environment Friendly

The world is currently witnessing a "going green" phenomenon. Lots of paper usage can be reduced when using e-papers. We mentioned earlier that tablets eased the way for e-books trend to flourish. Other than e-books, papers include worksheets, quizzes, emails, and parents' notices. Therefore, implementing such technology reduces the paper usage, and thus maintain a greener environment (Ali, 2012).

2.6 Challenges of Using Tablets

While the benefits are many, adopting and using tablets in classrooms may be faced by many challenges, including social, environmental, and health factors, for example. Following are several challenges discussed in the literature.

2.6.1 Social issues

Thiruchelvam (2014) believes that a major academic challenge is the kid's obvious distraction and the social isolation. 47.3% of parents believed that tablets were social isolating. This led to the rise of a new phenomenon: multitasking. The student will be engaged with his device during class time (Sana, Weston, & Cepeda, 2012).

14

Nowadays, parents admit they use tablets to keep their children silent (Carey, 2015). Parents download games for their kids on their tablets as to engage them with fun games. So, kids perceive this device as their "fun" device. Meanwhile, when introducing this device to schools, teachers will have to spend time teaching kids that this powerful device could be used to fulfil some other beneficial tasks, education in specific. Students must know that this device can help them understand their studies using educational apps or have fun through games or even do both simultaneously using educational interactive games.

2.6.2 Parents' Concerns

Parents' support when starting a new program at a school is a major key for the success of the program. Yet, one of the important challenges which any school should consider when starting the tablets program is answering parents' concerns. Karsenti and Fievez (2013) argues that although the new program's benefits are more than its challenges, however, setting parents straight with it is critical so that they can help solving issues when they arise. The school should raise questions: What's the parent's reaction? Are they convinced that the tablets' program will enhance their kid's learning? And lastly will they be supportive?

Clarke and Svanaes (2012) listed several concerns which include: costs, security, and children "never switching off". Costs included the tablet's price, maintenance, e-books and applications. Schools most probably will develop their own app and include everything related in one directory: e-books, games, files needed, and so on. Developing an app costs a lot and parents will definitely participate.

Nowadays, children are over engaged with the world of digital technology. Thus, parents are worried that after the tablet becomes a part of the kids' education too, they will never switch it off (Clarke & Svanaes, 2012).

In addition, BBC Active (n.d.) reported parents concerned about tablets replacing exercising book thereby kids losing their handwriting skills. Anne Laure says, "The iPad is an extra, it does not replace printed materials. The teachers are not ready to let go of the traditional style of teaching. We have welcomed the iPads in so much as they help communication and widen the resources available but we are not ready to let go of paper yet. The children themselves still value their exercise books and rely on them for revision." On that issue, Karsenti and Fievez (2013) assured that the tablets are not yet a perfect tool to learn how to write. So, different learning activities must be done to backup this issue.

On the other side, although parents seem to be concerned a lot, but in fact, a study was made by Mintel (2013) which reported that 50% of UK households allow their kids to use the tablets with or without supervision. Out of these 50%, 70% assured that the tablet is used for "educational purposes, and not just entertainment". Thus, we can conclude that parents are kind of supportive of using the tablets as an educational tool.

2.6.3 Resistance

The term resistant could describe teachers who don't want to integrate the new technology into their classrooms in general. Recently, many new technologies that serve education better are being available at schools. Yet, some teachers go against integrating technology in their teaching process (Howard, 2013).

2.6.4 School Readiness

A school can't simply initiate a new transitional program as the tablets without introducing the program to the staff, training them and preparing them for the expected outcomes. On the technical level, training the teachers must include answering the following questions: How to use this device? What opportunities does this device offer? What problems might they face when using it?

Training teachers shouldn't be on the technical aspects only; the school must set a pedagogical training for all its academics. Since the two fields of education and technology are wide: Morrison, Leah, Harvey and Masters (2014) argued that everyone at their school, even the experienced IT team, needed a serious "How to implement the iPads program as pedagogical tools" guidance. Pedagogical aspects include: "class management and subject teaching methods". Moreover, resources must be available for teachers prior to starting the project. After training, a specific time must be assigned for teachers to try out the new learning practices. This can be preferably done in teams (Karsenti & Fievez, 2013). We must note that the device's original language is English. Ali (2012) highlights the importance of dedicating more time when training teachers who don't know the English language.

For the tablets project to succeed, the school's hardware and software readiness must be fulfilled. This includes preparing the technological infrastructure by implementing a "reliable, sustainable and expandable wireless network" (Ali, 2012). Adding to that, the school must be supplied with all-time electricity, LCD projectors, and electricity plugs. As for the software readiness, the school must provide reliable application(s) put under several trainings.

No matter what the level of the teachers and students is, as long as they are working with unsuitable hardware and software, one should predict that new technologies will not produce high level of good practices as promised. Teachers will eventually find their way out claiming that it is not worth the effort (Ismael & Al-Badi, 2014).

Another important technical challenge that the school must take into consideration is hiring a dedicated technology team (Ali, 2012). The team must be ready to answer help calls (during class times), provide maintenance for hardware and software issues, and assist teachers in finding adequate and up-to-date resources continuously.

2.6.5 Lebanese Infrastructure

What if major challenges against technological growth in education lay in the Lebanese country itself? All technological advancements require electrical supply all time. Yet, Lebanon has been suffering from electrical shut downs since its civil war (1975-1990). Lebanese people have been suffering for four decades from electrical outages and the problem has not yet been solved due to various obstacles and political situations. The energy minister of Lebanon warned: "No quick fix for Lebanon power cuts" (The Daily Star, August 2015). Westall (October, 2015) argues that due electricity cuts, homes and business rely on more expensive, de-regulated, diesel-run electric generators. She reports that the gross national income of the household is about $9800, out of which $1300 is spent on electricity. The article disappointedly reports that in five or six years, the average of electric supply per day will decrease from 16 or 18 hours a day to 12 hours a day.

On the other hand, MTV (2015) reports during its prime time news that Lebanon suffers from a slow internet, and the solutions are absent. Lebanon's internet service was ranked 175 among 192 countries. The internet is not transmitted yet through fiber optics and the current internet infrastructure (copper lines) is old causing a bad internet transmission to homes and businesses.

These two facts sadly leave us questioning about Lebanon's development in general, and education in particular. In order to solve these issues, a school must prepare electric generators. Moreover, the teacher must not rely on applications that require internet. Also, the technical team must find solutions to create an offline environment for the learning process.

2.6.6 Health Factors

Many researchers and parents agreed that tablets save the back a lot of weight. Yet, they neglected the "iPad shoulder", "tech-neck" and the "itchy eyes". The Chartered

Society of Physiotherapy (Morris, 2012) reports: "when you are using a tablet, your neck is pointing sharply down, so your joints are getting stiff and your nerves are possibly overworking". Repacholi (2001) adds that overusing handheld devices result in headaches, sleep disturbances and nausea. So, the school must manage effectively the time spent on the tablet, not per session but per day in coordination with the parents.

2.6.7 Class Management

When starting the program, there comes a time when the student must learn that the tablet in his/her hand is not used for fun purposes only. With the school instructions and help, the student must start accepting the idea that this device can enhance his/her learning. But, with a device that has an application store, games, a camera and a wireless connection, students may get distracted during the class. Student might misuse the device leading to unsuitable actions. Karsenti and Fievez (2013) argue that there are no "foolproof classroom management strategies" for the use of tablets in the classroom. To avoid this in the UAE, the school offered a classroom management system where ~~by~~ the teacher can take control of the students' tablets. He/she can make sure that everyone is doing what he/she is supposed to do (Ali, 2012). Adding to that, using tablets, the teacher can move around and teach easily. With that, she can monitor the students' work and continuously grab their attention with her movement. And in times where the tablet is not being used, it should be kept aside under the teacher's supervision.

2.6.8 Digital Nativity

"Digital Native" is a term first used by Marc Prensky (2001). Today, it is used to describe the new generation. They live in technology-saturated environment (Morgan, 2014). Thus, they are more technically experienced and skillful of the latest devices than older people, teachers in specific. In this case, the teacher must not feel offended. However, a smart teacher must leverage this opportunity thereby enriching the cooperating quality in the students and learning from them the most.

2.6.9 No Better Grades

Although tablets grab the students' attention, motivates them, encourages them, yet many researches have discussed that the program did not reveal better performance in exams and better grades. Kinash, Brand, Mathew and Kordyban, (2011) highlighted that an Australian investigation reported that students were confident and optimistic, but most of them did witness an improved learning. Jalali Trottier, Tremblay, and Hincke (2011) stated that students at a Canadian University did a multiple choice exam on their iPads. While the student loved the idea and papers were saved, they felt more stressed; they had worries about unreliable internet or incorrectly recording their answers. Moreover, the founder of the Center for Highly Interactive Classrooms, Curricula, & Computing in Education and a professor at the University of Michigan, Elliot Soloway, says: "Technology has benefited retail, entertainment, research, and other industries because those areas redesigned themselves to take advantage of the technology but bolting technology onto an existing curriculum will not lead to increased student achievement" (Tynan-Wood, n.d.).

2.7 Using Tablets in the English Classroom

Considering English as a main subject taught currently as a foreign language in schools of Lebanon, we can mention the basic English skills at which the schools assess students: Reading, Spelling, Grammar, Listening and Speaking. Several researchers have stated using the tablets in the English language sessions. For example, when the tablets were introduced to senior classes, students agreed that their devices were beneficial as e-readers and ad a tool to access the information which the instructor was lecturing about (Geist, 2011). Also, McKenna (2012) mentioned that when grade 1 students used the tablets for about 3 months, their average reading fluency enhanced significantly. She also reports that their improvement rate was normal to that period of time. In addition, Miller (2012) mentioned that a senior lecturer in English courses used the tablets with students to motivate their self-assessment and self-confidence while learning the language.

2.8 Theoretical Framework and Conceptual Model

This paper is based on three main theoretical frameworks: Technology Acceptance Model -TAM (Davis, 1989), the extended TAM (Venkatesh & Davis, 2000) and the Gamification in Education framework (Pelling, 2011).

In studying users' acceptance, adoption, and use of technology, TAM has been cited as a reference model in the literature. According to this model, people will accept and use a new technology if they perceive it "useful" and "easy to use". To start with, perceived usefulness (PU) is the degree to which a person anticipates that the new technology will produce better results (Davis, 1989). According to Davis (1989), 'Useful' refers to "the degree to which a person believes that using a particular system would enhance his or her job performance" (p. 320). As for perceived ease of use (PEoU), it is the perception or "the degree to which a person believes that using a particular system would be free of effort." (Davis, 1989, p. 320).

While TAM is viewed as the most commonly used model in the Information Systems research area (Lee, Kozar, & Larsen, 2003), it was criticized for not including other factors that may influence PU and PEoU (Benbasat & Barki, 2007). Based on this, an extended TAM model was suggested (Venkatesh & Davis, 2008). The extended TAM is based on the original TAM along with factors suggested by other researchers. In fact, many scholars have proposed various extended TAMs with additional factors like performance expectancy, social norms, effort expectancy, voluntariness, and image.

As for gamification in education, the term was first thought up by Pelling in 2002 (Pelling, 2011), and was highly related to educational technology. According to this model, educational technology can enhance students' performance through perceived fun, engagement, immediate feedback, progress indication, and user control. Previous research discussed gamification and showed the impact it has on performance. Table 1 shows a summary of this research.

Table 2 Literature related to gamification

Author & Year	Performance Measure Used	Impact of Gamification on Performance
Sandusky (2015)	Marks	- The learners' intrinsic motivation drove them mostly to participate in gamification - The game mechanics used in the gamification environment lead some learners to changing their intrinsic motivation to extrinsic motivation
Cheong, Cheong, and Filippou (2013)	Questionnaire measuring learning, engagement, student experience, and enjoyment using Likert Scale	- Gamification can have a positive outcome on learning: Most participants believed that the gamified learning environment enhanced their learning. - The activity engaged the participants and enjoyment was somehow sensed. - Engagement and enjoyment effects were not pronounced as the effects of learning. Yet, both are significant.
Denny (2013)	Data was collected from the students' real use of PeerWise tool in a large undergraduate course using a survey encompassing their perceptions of the badge system	- The use of badges resulted in encouraging effects. This lead to increasing both the number of different days where students were active and the number of answers admitted.
Domínguez, Saenz-De-Navarrete, De-Marcos, Fernández-Sanz, Pagés, and Martínez-Herráiz, (2012)	- Gamified educative experience - Academic results	- Gamification in e-learning environments has the ability to enhance student motivation, yet it's not redundant to have this effect. Big efforts are needed to design and implement the experience for it to be fully encouraging. - Emotional and social effects could be resulted from gamification activities such as reward systems and competitive social instruments. - Within an online educative environment, reward systems create an innovative, fun and motivating way to show progress. - Leaderboards also generates motivation since students are able to see their work openly, and because they are able match their progress with other colleagues.

Fitz-Walter, Zachary, Tjondronegoro, Dian W., & Wyeth, Peta (2011)	- Students were asked to fill a questionnaire on the completion of the game. The questionnaire was composed of 5-point Likert scaled questions and various open-ended questions with five components; "Participant Information, Orientation Application Usage and Feedback, Game Aspects and Achievement System Feedback, Improvements and Future Uses and Additional Comments and Notes".	- Using achievements to encourage use: some contestants only used the check-in option because it had game attributes linked to it. - Usability vs. Enjoyment: For achievements depending on numerical input to progress, participants enjoyed less since some simply answered using trial and error and challenge was minimal. - Participants mostly favored game activities that needed some kind of contextual input (location, time, event) to finish more than those requiring answering a question.
Dong, Dontcheva, Joseph, Karahalios, Newman, and Ackerman (2012)	- A discussion about the learning effects, involvement with Jigsaw, and user interface developments.	- Participants found the game to be an effective learning environment that can add to the demonstration-based tutorials - Challenge levels and the implemented hints were both significant and useful in founding a responsive environment for participants to engage in "discovery-based learning".

2.8.1 Perceived Usefulness (PU) and Perceived Ease of Use (PEoU)

According to TAM, if a user perceives a new technology as useful and easy to use, then his/her intention to use the technology would increase. Consequently, educational technology that has high PU and PEoU is more likely to generate positive perceptions and intentions to use it to reach better performance.

In an elementary class educational setting, where the school administration is considering the adoption and use of tablets, we suggest that the perceived ease of use and perceived usefulness may affect the level of support that teachers offer to students while using this technology. We also suggest that PU and PEoU may influence the students' motivation to learn.

In this study, however, emphasis would mainly be on perceived usefulness and the factors that may influence them. Further, only teachers' perceived usefulness of tablets in education will be considered since it may be difficult to assess these perceptions among third graders.

2.8.2 Support

Garakani (2015) found that a success component in blended learning implementation and success is the learning support provided by teachers in the form of feedback given to students and in monitoring their learning processes (Garakani, 2015). To provide this support, teachers need to have ICT literacy as well as pedagogy knowledge (Yadollahi, 2015). Earlier, Amiri (2000) found that language teachers' knowledge of information technology enables them to get involved in the computer-based material design and development. The author recommended that proper ICT training be given to language teachers so that they can better integrate educational technologies in their teaching practices and accordingly provide the support needed by the learners. Based on this, we suggest that the support provided to teachers by their school in the form of training and information technology literacy can allow teachers to better understand and appreciate the value that information technology may add to the

quality of instruction and learning. With this in mind, the following hypothesis could be stated:

H1: School support to teachers is positively related to their perceived usefulness of tablets in the classroom.

2.8.3 Perceived Computer Self-Efficacy

Researchers reported an association between previous encounters with technology and the willingness to use or continue using a certain system (Naarmala, 2009). This is expected to build self-efficacy. Bandura (1982) considered self-efficacy as an intrinsic motivation rather than an extrinsic motivation, where successful behavior is rewarded with valued outcomes. Venkatesh, Brown, Maruping, and Bala (2008) believe that regarding the instructional methods, using educational technologies can provide supportive tools that will familiarize instructors who are not ICT users with ICT, thus enhancing their confidence in integrating technology in the classroom.

At the student level, previous research established a positive relationship between familiarity with technology, self-efficacy, and motivation to learn. In a study examining the impact of technology integration into social studies classes, the author found that students had confidence in their ability to do the task due to their familiarity with the technology (Heafner, 2004). The technology improved the motivation of students to learn the course material through providing them with enjoyment and supporting their creativity. In this study, only the teachers' perceived computer self-efficacy is included. Based on this, the following hypothesis was set:

H2: Teachers' self-efficacy is positively related to their perceived usefulness of tablets in the classroom.

2.8.4 Resistance to Technology Adoption

Almost all employers want their companies to be innovative, embracing the latest efficient technologies. While employees also demand what is best for their work too. Yet, in every organization, when it comes to introducing a new technology, many employees become reluctant into accepting it and at sometimes, refuse to learn how to

use it. Of course, organizations' leaders must face the resistance to technical change, and not just ignore it. To define it, resistance is a behavioral act to demonstrate an opposition to the organization's management (Mumby, 2005) whereby it is considered a major cause to the failure of a scheduled change (Foote, 2001; Kotter & Schlesinger, 1979). Likewise, Zimmerman (2006) mentions that the success of any new initiative in a school is highly dependent on teachers. Thus, the school principals and change managers must expect facing such resistance. Of course not all teachers will show resistance, there are levels of either "technological aversion" or "technological affinity" among them (Kahveci, Sahin, & Genc, 2011). Reasons behind resistance to change vary. Greenberg & Baron (2000) mentioned few, including: (a) the failure to identify the need for change; (b) changing the habit, instead of improving their current skills and strategies and developing new ones, some teachers believe that it is easier to stick to their current successful ones. Mumtaz (2000) describes them as happy with their familiar and established teaching styles. Moreover, Laliberte (2010) states that even if teachers decided to use technology, they will use it "in ways that are consistent with their current teaching practices" (p. 10); (c) the school's previous failure of technology integration efforts has led into generating teachers who are extremely cautious of accepting new attempts; and (d) the fear of the unknown. As most teachers are highly confident of their current teaching styles, many might feel a sense of insecurity when it comes to trying new things (Fullan, 2003). In the situation of technology integration in schools, the advantage is evaluated in accordance to whether students learning has enhanced (Howard, 2013). In addition, as the potential advantages of a new technology integration to the students' learning is still developing and not so clear, this made teachers feel that they might be risking their students' achievement and their teaching time (Zhao & Frank, 2003). Add to that, Goleman, Boyatzis, and McKee (2002) agree that the school's environment plays a major role in encouraging new technological practices. When teachers feel the environment is "unsafe", they might act defensively, stick to their old habits and refuse to accept embracing new technological initiatives. This is a crucial case especially when teachers know that the school will not provide suitable support or sufficient training for them. Based on the above discussion, the following hypothesis could be put:

H3: Teachers' resistance to change is negatively related to their perceived usefulness of tablets in the classroom.

2.8.5 Device Characteristics

The gamification factor in using educational technology in the classroom help students derive a range of benefits, including enjoyment (perceived fun), engagement, immediate feedback, progress indication, and user control (Pelling, 2011) to get the enjoyment they seek in a game and at the same time gain the knowledge and improve their learning process. Going back to TAM, PU is considered extrinsic motivation, while perceived enjoyment and fun are considered intrinsic motivation. Davis, Bagozzi and Warshaw (1992) found that perceived enjoyment was significantly related to PEoU. This makes us think about the characteristics that the tablet device has and that may add to the enjoyment factor perceived by the user. In addition, Moon and Kim (2001) reports perceived playfulness as a factor determining the attitude towards Web surfing. They noted that intrinsic motivation should also be introduced to the TAM research. While extrinsic motivation helps achieve valued outcomes that are different from the task (Lee et al 2003) leading to that outcome, such as recognition, promotion, pay, etc., intrinsic motivation refers to that feeling driving you to perform a certain task just for doing it.

In fact, different and mixed results were reported in the literature regarding the impact of the device characteristics on their perceived fun and their motivation to learn. According to Fu, Su, and Yu (2009), some considered digital learning will change the student from a passive receiver into an active initiator of knowledge and that gamification helps students increase their knowledge through technology to the extent that it becomes part of their learning process. Whereas, others disagree as they believe that the good quality educating games are no more available (Fu et al., 2009). According to Papastergiou (2009), students provided with online gaming educational tools can be more motivated and more effective in gaining and retaining knowledge. (Papastergiou, 2009).

Moreover, the immediate feedback that the student gets will build students' motivation, and at the same time, it will enable teachers to customize the curriculum in a

way so as to aid students' understanding. At the same time, this will help teachers develop a better understanding about the difficulties faced by students during the learning process (Herreid & Schiller, 2013). It is important to mention here that educational technology with a gaming factor should have clear set goals. The goals component is important in any fun activity (Weinberg, 2010). Games without clear goals are less enjoyable than games with goals (Wooley, 2008). Moreover, games with levels can increase the challenge level within the students. These levels indicate progress and can provide students with both motivation and feedback regarding how far they are proceeding with the task. In addition, users should feel empowered and that they are in control of the task they are completing. This enhances their motivation and keeps them engaged (Brandtzaeg, Folstad & Heim, 2004, 63). Finally, John Carroll states, "Things are fun when they attract, capture, and hold our attention by provoking new or unusual perceptions" (Carroll, 2004, 38-40) This provides further understanding as to the importance of active activities that can be fun and that can result in high levels of engagement and interaction space. Based on all what's mentioned above, the following hypotheses could be put:

H4: Tablet use associated with more perceived fun and engagement is positively related to students' satisfaction in class.

H5: The tablet's device characteristics are positively related to students' satisfaction in class.

2.8.6 Student Performance

The literature shows that previous researchers have operationalized student performance in different ways, including grades, satisfaction, and completion of stages (Puzziferro, 2008). The author stated that studying any of the three measures exclusively can give unreliable results. Lee et al (2003) argued that while user satisfaction regarding the use of technology-based systems is an important measure to consider, yet TAM studies confine themselves to technology acceptance and use, neglecting satisfaction as an important success variable. In this research, we argue that students who use tablets in classrooms and get involved in experiencing tablet-related features are most likely to

show high performance levels illustrated in well better scores. Based on this, we hypothesize the following:

H6: Tablet use in classroom is positively related to English skills development.

Based on the above hypotheses and the literature review, hypothesized relationships could be depicted as follows.

Teacher

• Resistance to Change • Self-Efficacy • School Support

→

Perceived Device Usefulness

Student

• Device Characteristics • Fun & Engagement

→

Student Satisfaction

Device

Tablet Use in Class

→

English Skills (Scores)
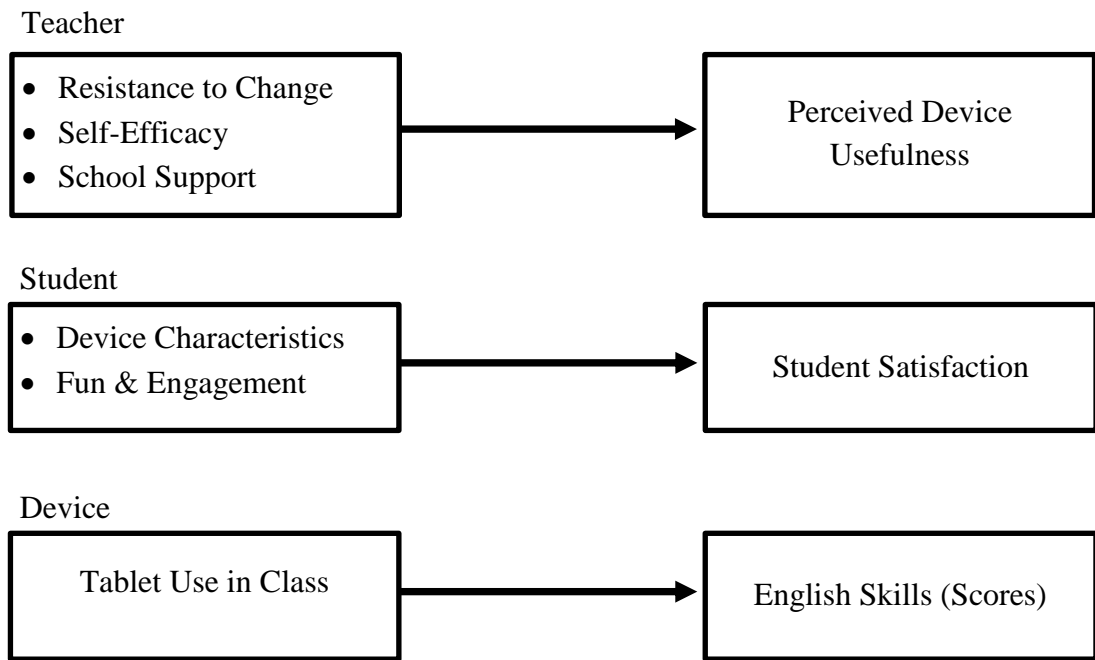
Figure 2 Study Hypothesized Relationships

Chapter Three

Research Methodology

This chapter highlights the methodology that guides this research and frames it. The research method and design, participant selection, research instruments, data collection and data analysis procedures are presented.

It is worth mentioning here that many are the types and kinds of tablets made by different companies. Tablets include iPads, Samsung Tabs, Lenovo Tabs etc. So, as we move on with the research, we will use the term "Tablets" to refer to all types of mobile devices.

As reported in the literature, using the tablets technology at schools had proved its usefulness in various ways. Yet, several challenges have been faced when integrating this technology in the classroom. Few schools of Lebanon have lately considered these devices as part of their curriculum, but no official experimental documentation was shared. Thus, this study aims at developing a model of how a school of Lebanon can initiate this experience based on a quasi-experiment and on a survey distributed to teachers.

3.1 School Background

Al-Bayader School, operating since 1980, is a private and an independent educational institute that serves students from Kindergarten to Grade 12. The school is located in Beirut, Lebanon. Another branch of the school was opened in Mount Lebanon in 2000. Mainly students of Al-Bayader School are from the middle socio-economic status. The school follows the Lebanese curriculum. Moreover, Al-Bayader strives to keep up to date with the latest technologies that will enhance its learning process. That is why, since 2010, most of the classes got equipped with SMART technologies

(computers, LCDs and smart boards). In addition, the school has a dedicated IT staff of three persons. In order to follow the trend with technological developments and to enrich and improve the standard and methodology of teaching, Al-Bayader has decided to be a part of this research.

3.2 The Quasi-Experiment

To discover the influence of using tablets on students, this study adopted the quasi-experimental design (also called the pre-post- intervention design). This type of experiment is usually used to assess the benefits of a specific intervention where the participants chosen for the experiment were not decided randomly (Eliopoulos et al., 2004).

The experiment took place in a school which didn't experience using the tablet device before. It assessed the device's effectiveness and its impact on students' performance in English, using the English skills, namely reading, spelling, grammar, speaking and listening. To achieve this objective, two groups were used: the treatment group, a third grade class, where the tablet was used to teach an English unit in reading, spelling, grammar, speaking and listening, and the control group, which comprised another third grade class, where the same English unit was taught, using the same traditional method of teaching. Care was taken to ensure that the two groups are similar in all aspects, except for the treatment intervention. First, both classes had the same gender and age distribution. Second, the time of both classes was very close. Third, the two classes were taught by the same teacher. Fourth, scores of both classes during the first semester were very close. Table 3 summarizes the main characteristics of both classes and demonstrates their similarity.

Characteristic	Treatment Group	Control Group
Age Average	8	8
Gender Distribution	8 Males 15 Females	7 Males 16 Females
Class Time	5 Morning Sessions 5 Afternoon Sessions	5 Morning Sessions 5 Afternoon Sessions
Class instructor	Miss Razan	Miss Razan
Performance	Equally Distributed	

Table 3 Characteristics of Grade 3 Classes: Treatment & Control Groups

3.3 The Experiment's Participants

23 students of grade 3 (8-9 years old) and 1 English teacher (25 years old) were the major participants of the experiment at Al-Bayader School – Beirut.

3.4 Experiment Phases and Data Collection Methods

The experiment consisted of 7 phases and it used mixed methods. It included quantitative and qualitative techniques as to ensure a maximum insight on how the devices will be integrated. Below are the experiment phases accompanied with the data collection method used:

- In the first phase, a meeting with the school principal took place explaining the drivers behind trying this technology and the challenges expected

- In the second phase, a proposal was submitted to the school. This included the experiment's suggested work plan and timeline, taking into account the needs and considerations of the principal. The final proposal was approved. At the end of this phase, the participants were chosen: Grade 3 section composed of 23 students and their English language teacher.

- In the third phase, a primary questionnaire (found in appendix A) was distributed to the participants' parents announcing the coming project and asking them about their willingness to participate in the experiment. The questionnaire asked them about

their current tablet devices (if they have any), their concerns and comments regarding the issue, and their kids' perceived technological knowledge in using tablets.

During this phase, an interview took place with the participating teacher. The questions raised targeted her age, teaching experience, level of technological confidence, drivers to accept being a part of this experiment and the expected challenges.

- In the fourth phase, the experiment preparation was taking place; technically and educationally. Weekly meetings were scheduled with the English class coordinator to ensure the project material progress. Academic decisions about the tablets' usage in class were finalized. The tablets were scheduled to be used in the following English subjects: Reading, Grammar, Spelling, Listening and Speaking. Appendix B includes the finalized work plan of the experiment done.

At the end of this phase, the twenty-three students' parents were invited to attend a meeting held at the school explaining the experiment in details. Twelve parents attended the meeting, two apologized for not attending due to personal reasons but asked about the experiment on the phone, three parents came to school after the meeting day and asked about the experiment, and six parents didn't reply or come. All parents approved the experiment but one. She didn't like the device and banned her kids from using it at home. But after a discussion took place, she accepted and she decided to buy her kid a tablet. During the meeting, the parents were given a detailed paper showing the applications required for installation and some policies written by the school on the usage of the tablets. The students were given a date to bring the tablets to school in order to check their readiness. Meanwhile, the school prepared a wireless internet network in the class.

- In the fifth phase, the experiment started and lasted for 6 weeks. During the experiment, two non-participant observers were assigned to attend the English classes and remain silent while they record their observations about the students'

behavior in class, the teacher's class management and the technical environment. One observer attended almost all English sessions while the other attended about four times during the six weeks.

- In the sixth phase, data collection of the experiment was finalized. First, students' grades of the tablets' classroom were compared with the students' grades of the non-tablets classroom. Also, students' grades of the tablets' classroom were compared with their previous grades of the pervious semester.

Second, surveys were distributed for students to collect quantitative and qualitative data about their experience. The students' survey first asked about the student's gender and favorite activity on the tablet as a multiple choice question. The remaining questions held different measures including fun and engagement, device and applications usefulness and satisfaction towards using tablets in the classroom presented using a three-point Likert scale measure. Because the survey targeted kids, the three-point Likert scale measure were replaced by emoticon faces (sad face represented the disagree option, a neutral face represented the neutral option, and a smiley face represented the agree option). At the end of the survey, two open ended questions were stated asking the student about what he liked and disliked the most about studying with tablets. In this survey, statements assessing the device usefulness were adapted from a measure developed by Eden, Ganzach, Flumin-Granat, & Zigman (2008). New items were added to incorporate certain aspects related to the school and the class under study. In order to ensure that students really understood the survey, we managed to distribute them into three groups where each group had a facilitator that explained each statement of the survey to the students and answered questions asked by them.

Third, a survey was distributed for parents to collect quantitative and qualitative data about their kid's experience. The survey had two types of questions; a five-point Likert Scale table and two open ended questions that asked about the benefits realized and any points needed to be improved. Questions were adapted from Ağır

34

(2015) and others were added and customized by the researcher to suit the
experiment.

Fourth, a meeting was conducted with the teacher to collect her insights about
the experience in all. The meeting held included several questions: the experiment
initiation, benefits realized including class and academic performance, challenges
faced, and recommendations.

- In the seventh phase, analysis of data collected took place.

Method	When?
Meetings with the school principal	Pre-Experiment
Meeting with the participating teacher	Pre & Post Experiment
Meeting with parents to explain the experiment details	Pre-Experiment
Class Observation	During Experiment
Survey for parents to ask about their kid's experience	Post-Experiment
Survey for students to ask about their experience	Post-Experiment

Table 4 Methods of data collection for the quasi experiment

3.5 Teacher's Survey

In order to understand the perceived thoughts of the teachers about using tablets
in the educational field, a survey was distributed to 140 teachers at Al-Bayader School, a
school which is considering, yet hasn't integrated, the tablets. The survey (found in
Appendix C) comprised of three types of structured questions; first, categorical
questions targeting the teacher's age, classes she teaches, subject she teaches, her
teaching experience (in years), her current usage of technology available in the
classroom, her confidence while using classroom technology, and her opinion of the
level of educational technology in the school. Second, questions using a five - point
Likert Scale were used, where 1 = Strongly Disagree and 5 = Strongly Agree, measuring

the teacher's attitude towards integrating a new technology, perceived benefits for the students when using tablets as a tool in education, perceived benefits for the teacher's job when using tablets as a tool in education, and perceived challenges when using tablets as a tool in education. Third, the survey had an open ended question asking the teacher to mention her opinion of integrating tablets as a tool in education.

The survey was adapted from multiple sources. The statements measuring the teacher's perceived computer-efficacy and perceived school support had questions adapted from Oreg et al. (2008) and others were added by the researcher for further investigation. The statements measuring resistance were only adapted from Oreg et al. (2008). In addition, the statements measuring the perceived usefulness for the teacher's job when using tablets as a tool in education specifically statements had two different sources: Venkatesh & Davis (2000) and Cambridge Research (n.d.). Next, some of the statements measuring the perceived challenges when using tablets as a tool in education were adapted from the Cambridge Research (n.d.) while the rest were added by the author for further exploration. Table 5 shows a brief summary of the items measured in the survey along with example of each.

Topic Measured	Source	Example
Perceived Computer-Efficacy	Oreg et al. (2008)	Since I love technology, I will enjoy working with a new technology as soon as it's available.
Perceived School's Support	Oreg et al. (2008)	Training me is essential to learn and understand how to use a new technology.
	Added by researcher	I like new technology, but more support is needed.
Resistance	Oreg et al. (2008)	I generally consider technological changes in my class as a negative thing
Perceived Usefulness	Venkatesh & Davis (2000)	Improves my job performance
	Cambridge Research (n.d.)	Allows me to create more variety in my lessons.
Perceived Challenges	Cambridge Research (n.d.)	Preventing students accessing irrelevant content
	Added by researcher	Decrease the practice of writing skills

Table 5 Items measured in teachers' survey

Chapter Four

Findings

This section summarizes the results of the various data collection methods included previously of both the quasi-experiment and the teachers' survey.

4.1 The Quasi Experiment

4.1.1 The Principal's Meeting

During the principal's meeting related to phase one, she gave her general comments on the experiment, her needs and considerations. She encouraged initiating such experiment at her school because she believes that tablets' usage helps students develop the skills they need in the real world, allows students to access variety of educational resources, reduces the students' bag weight, facilitates the e-connection between the teacher and the students, motivates the students and allows for parental engagement. However, she raised concerns around the needed continuous monitoring of the tablets usage in the classroom, orienting the teacher and students on how to effectively use the device, providing technical help for the teacher and the students, reducing the handwriting skills practice, and possibility of having students suffering from negative health impacts on the long term. Afterwards, she gave her verbal approval to initiate the experiment at the school.

4.1.2 Parents' Pre Survey

After distribution of the first survey to parents during the third phase, the results collected showed that out of 23, 22 families approved the experiment. The 22 families already had tablets (12 iOS and10 android) and 12 kids had their own tablets. The

results indicated that the 23 students knew how to use the tablet. Concerns mentioned were security, experiment duration, losing handwriting skills, applications used, purchasing applications, kid's distraction, topics covered on the tablet and monitoring kids.

4.1.3 Participant Teacher Pre-meeting

The first meeting with the participant teacher discussed several topics. The teacher was twenty-five years old and had four years of experience. She loves technology because it "simply engages students". That is why she encourages having a new technology in her classroom as long as it is not distracting for her students and she can control it. Moreover, the teacher assured that it is a new experience and definitely an added value to her teaching style. What drives her the most to experiment is her curiosity to explore the effectiveness of using such devices on her students' performance and achievement. This includes her students' engagement, enthusiasm to learn, and getting higher grades. She clearly said: "Any addition to my classroom that would serve those purposes is welcomed". As for the challenges expected, she mentioned wasting time which may lead to delay in the yearly plan. Second, she had concerns regarding the arising technical issues and errors during the learning process in class. Third, she was afraid of losing class management.

4.1.4 Class Observation

The two observers who attended the tablets sessions recorded the tasks prepared by the teacher on the tablet, students' attitude in the class, and problems faced. Out of the tasks done by on the tablets, the observers mentioned reading stories, listening to stories, doing research, playing educational games, and solving exercises. Table 6 links the tasks done in the class to the SAMR model written in the literature. The characteristics column describes how the task was fulfilled using the tablet. Thus, the SAMR level was generated. For example, the tablet allowed for a functional improvement in the reading part since the student was able to listen to the story. Hence, the SAMR level of this task is augmentation. In addition, since the student was able to

do some research on his tablet, a job that wasn't doable in-class before, this task was characterized as redefinition. Using his tablet, the student worked on searching for information to present them in front of his class.

Task	Characteristics	SAMR Level
Reading Stories	E-book	Substitution
Listening to Stories	Listen and read the story	Augmentation
Doing Research	Searching for information to prepare for a presentation	Redefinition
Playing Educational Games	The games were interactive giving immediate results and progress.	Modification
Solving Exercises	The teacher was able to check the students' exercises form her device.	Augmentation

Table 6 In-class tasks done by the student

Figure 3 shows different students' attitudes in class with respect to the six weeks of the experiment. All over the experiment, observers indicated that students were continuously extremely engaged, motivated, and happy. However, at the beginning of the experiment, students were not very confident using the device. Yet, as time passed, students got extremely confident. In addition, observers reported that at some points, the students were somewhat distracted especially when technological problems aroused. Examples of technological issues noticed all over the experiment in the classroom were internet loss, slow internet, tablet running out of battery, and the teacher not oriented regarding how to use the application.
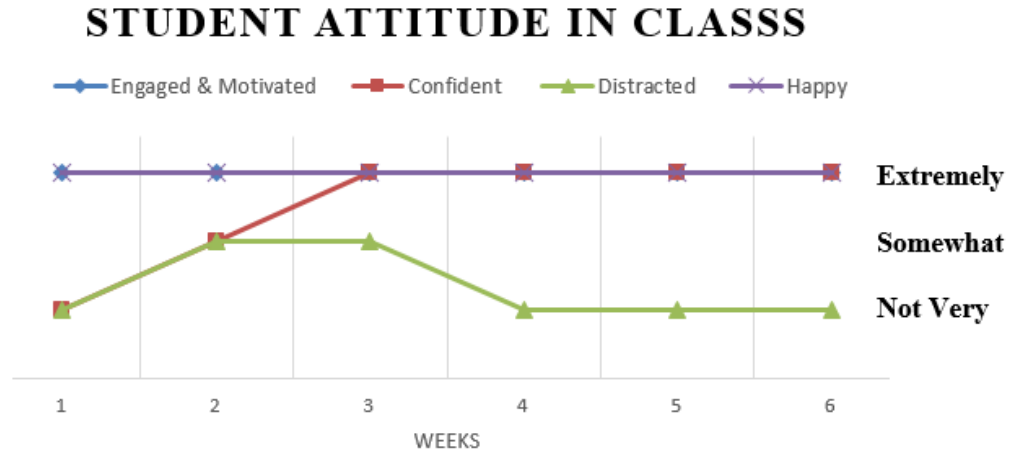
Figure 3 Students' Attitude in Class

4.1.5 Students' Post Survey

Twenty-three kids out of twenty-three filled the survey and returned it. When asked about their favorite task they did on their tablets in the class, 69.6% said playing educational games, 17.4% said solving exercises while13% said reading stories.

In order to eliminate the redundancy from the set of questions in the student's survey and categorize them, we conducted a factorial analysis using SPSS. Three components were derived namely: Device Characteristics, Fun and Engagement, and Satisfaction. The rotated component analysis (Varimax) was used. Table 7 shows the factorial analysis component results.

	Components		
	1	*2*	*3*
Device Characteristics			
Understand the lessons more	0.768		
Finishing work quickly	0.707		
Easy to finish class work on my tablet	0.701		
Work without facing problems	0.706		
Save time when using tablet.	0.841		
Depend on the tablet to help me finish my work	0.807		

Easy to solve exercises using tablets	0.605
Easy to play games on the tablet	0.714
Open the games and files again when home	0.631
Listen to the reading book stories on the tablet	0.692
Fun & Engagement	
Solving exercises using the Xodo app was exciting	0.857
Playing games found in the Dropbox was fun	0.607
Reading from tablet is more fun than from book	0.736
Satisfaction	
Experience in class was better than I used to think	0.746
Prefer playing the game on Dropbox than to solve it on the book	0.912
Loved the class more when we used tablets	0.660
Advise students in other classes to use the tablets	0.943

Table 7 Student Survey Factorial Analysis

In order to assess the impact of perceived device characteristics (representing the students' perceived ease of use and usefulness of the device used) on students' satisfaction with the device, a linear regression analysis was done, taking into consideration satisfaction as the dependent variable and device characteristics and fun and engagement as the independent variables. The linear regression equation demonstrated is:

$$\text{Regression Equation 1:} \quad y= -1.594+3.535x_1 + 1.876\, x_2$$
$$(0.002) \quad\quad (0.077)$$

Where y denotes satisfaction, x_1 denotes device characteristics, and x_2 denotes fun and engagement.

The regression coefficient associated with Device Characteristics is *3.535* suggesting that each one-unit increase in Device Characteristics is associated with *3.535 unit* increase in the student satisfaction. This indicator is significant at the 99%

confidence level (p=0.002<0.01). Likewise, the regression coefficient associated with Fun and Engagement is *1.876* suggesting that each one-unit increase in Fun and Engagement is associated with *1.876 unit* increase in the student satisfaction. This indicator, however, is only significant at the 90% confidence level (p=0.077<0.1). This association between the Device Characteristics, Fun and Engagement and Satisfaction is also statistically significant (p=0.000, R^2=0.613). Thus, we can say that, to students, both Device Characteristics and Fun and Engagement are good predictors of Satisfaction, with 61.3% of the variance in satisfaction being explained by these two factors. In conclusion, hypotheses 4 and 5 are supported.

4.1.6 Students' Scores

One of the ways to compare both classrooms was checking the difference of their scores. Students' scores of the tablets classroom and the non-tablet classroom were collected for the second term (term of the experiment). The independent t-test was performed using SPSS. In addition, in order to check for any improvement of the tablet classroom student, their grades before and after the intervention of the tablets were collected. For this comparison, the paired sample t-test was executed using SPSS.

The scores collected had grades related to the categories for which the tablet intervention was used in the experiment, specifically Reading, Grammar, Listening & Speaking and Spelling. For each, the school usually evaluates according to certain skills related to each category. Evaluation scores for each skill were 1, 2, or 3 where 1 is the "acquired" level, 2 is the "developing level" and 3 is the "not acquired" level. First, culmination of the scores of the skills for each category was calculated. Then, averages of the classes were computed. It is worth mentioning that the lower the score is, the better.

The independent t-test compares the means between two unrelated groups; tablets and non-tablets classes in this case. As shown in table 8, in Reading, Grammar and Spelling, the means for the tablets class was lower than the non-tablets class which

is better. Yet, the significance levels for all categories were insignificant meaning that there is no statistically significant difference between the two classes.

Category	Mean		Significance level (2-tailed)
	Tablet	*Non-tablet*	
Reading	8.91	9.09	0.788
Grammar	5.6087	5.7826	0.608
Listening & Speaking	6.13	5.91	0.641
Spelling	1.22	1.26	0.81

Table 8 Independent T-Test Results

The paired t-test determines whether the difference between the two variables is significantly different from zero or not. In this case, we will use it to compare the means of the same class (tablets class) before the intervention of tablets and after it. Table 10 shows the results.

Category	Mean		Paired Difference:	Significance
	Before	*After*	**Mean**	**(2-tailed)**
Reading	7.7	6.43	-1.261	0.000
Grammar	3.39	3.39	0.000	1
Listening & Speaking	4.78	4.65	-1.3	0.451
Spelling	1.3	1.22	-0.87	0.162

Table 9 Paired T-Test Results

By examining the above table, we notice that the means for the tablets class is less than the non-tablets class for Reading, Listening & Speaking, and Spelling while it is the same for the Grammar. Yet, statistics didn't show a significant difference between the two states except for Reading (p=0.000).

The significance in reading could be attributed to a major functional improvement provided by the tablets, which was listening to the story. In a short period of time (6 weeks), the students showed a high improvement in their reading skills. On the other hand, the lack of significance in the other skills could be due to the short time of the experiment. With such English skills and the intervention of a new information

technology into education, it definitely needs more time to evaluate the device's effectiveness (Kozma, 2003). In conclusion, hypothesis 6 is not fully supported.

4.1.7 Parents' Post Survey

Twenty-two parents out of twenty-three returned the survey filled. By looking at the data submitted by the parents (Table 10) we can realize that, to parents, tablets had positive effects on their kids' education. Out of them, we can mention that tablets increased the motivation to learn (72.7%). Motivation included the kids preferring to read their assignment from the tablets and not from the book, kids loving the English class more, and kids telling their parents about what they did in class enthusiastically, etc. In addition, 59% of the parents perceive the tablet device as useful in the learning process because it has facilitated their education by providing resources, created an e-connection between the teacher and the student, reduced the burden of carrying books, and increased sense of responsibility. 31.8% of the parents reported that the tablet increased the study time of their kids and with it, the students learned how to make more effective use of time. Speaking technologically, 40.9% of the parents agreed that tablets increased the child's interest in technology, reduced their interest in books and increased/created a technology addiction. In conclusion, 77.3% of the parents were happy with their kids experience and recommended using it as a tool for learning next year in more subjects.

In the open ended questions, several parents expressed their happiness with the tablets experience. They were grateful that the school thought of technology emergence in the curriculum but still raised concerns about not fully integrating it in the next experiment. Add to that, parents wanted to feel more involved. Some of them suggested sending a newsletter of what the kids did on the tablet in the class; others demanded assigning homework on the tablets other than reading.

	Frequency (/22)	Percentages
Time related issues	7	31.8%
Technology related issues	9	40.9%
Device usefulness	13	59%
Motivation to learn	16	72.7%
Happy and recommend	17	77.3%

Table 10 Parents views of using tablets in the classroom

4.1.8 Participant Teacher Post-meeting

When interviewing the teacher after the experiment was done, she said that at the beginning of the experiment, she felt anxious and tensed until she found the best module that suits her and the students. However, the students were extremely excited. But as time passed on, things went smoothly and the kids got the hang of it. Their technical questions became less and they started using the tablets independently. As for the benefits realized, she stated that the experiment was a great chance and definitely an added value for her classroom. She agrees that all over the experiment, although there was a minimal difference in grade results among the two classes, her students were academically motivated especially while playing games related to spelling, grammar and vocabulary. In addition, the parents reported to her their kids' excitement for using the tablets to practice reading at home, especially the slow readers.

Along with the benefits realized, the experiment involved some challenging moments. The teacher mentioned internet loss and slow loading of some applications. Furthermore, asking students to get their own devices led students to get low quality devices which raised technical issues in class. She adds that some students forgetting to get their tablets from time to time forced her to rearrange the distribution of tablets in some class activities. At last, she added that a significant challenge was the extra load and extra effort required for preparing tablet resources.

Recommendations mentioned by the teacher were various. This includes intensive technical orientation for the teacher and hiring an assistant whose sole role is to help teachers in finding and creating lesson-related tablet resources adequate for their classrooms.

4.2 Teachers' Survey

Participants included were all female teachers of the same school: 140 surveys were distributed and 119 were returned. Table 11 shows some relevant characteristics of the participant teachers: age, teaching phase, field of teaching, and teaching experience.

Teachers were asked about their perceived level of confidence when using technology in their classroom: 34.5% of the teachers were very confident regarding their use of technology, 52.9% were confident, 10.9% were somehow confident, and 1.7% were not confident. Regardless of the level of confidence, 73.9% of the teachers agreed that more technology is needed, 25.2% reported that the technology being used at school is fine, and 0.8% of the teachers agreed that less technology is needed.

Table 12 shows the teachers' perceived level of confidence when using technology in the classroom versus their opinion of the technology level provided by the school.

Background variable	Groups	Frequency	Percentage
Age	20-30	38	31.9
	31-40	61	51.3
	41-50	18	15.1
	50+	2	1.7

Teaching Cycle	Kgs	30	25.2
	Cycle 1	31	26.1
	Cycle 2	25	21
	Cycle 3	20	16.8
	Secondary	13	10.9
Field of Teaching	Languages	44	37
	Sciences	10	8.4
	Math	8	6.7
	Math & Science	9	7.6
	Social Studies	7	5.9
	Homeroom	32	26.9
	Other	9	7.6
Teaching Experience	Less than 5 years	30	25.2
	5-10 years	39	32.8
	11-15 years	23	19.3
	16-20 years	15	12.6
	20+ years	10	8.4
	Missing	2	1.7
Total		**119**	**100**

Table 11 *Age, teaching phase, field of teaching, and teaching experience of the participants.*

			Level of Confidence				
			Very Confident	Confident	Somehow Confident	Not Confident	Total
Opinion of Technology Level	More technology needed	Count	34	44	8	2	88
		% within Level of Confidence	82.9%	69.8%	61.5%	100.0%	73.9%
	Less Technology Needed	Count	0	0	1	0	1

			.0%	.0%	7.7%	.0%	.8%
		Count	7	19	4	0	30
	Technology level is fine	% within Level of Confidence	17.1%	30.2%	30.8%	.0%	25.2%
	Total	Count	41	63	13	2	119
		% within Level of Confidence	100.0%	100.0%	100.0%	100.0%	100.0%

Table 12 Teachers' level of confidence when using technology versus their opinion of the technology level at the school.

In order to eliminate the redundancy from the set of questions in the teachers' survey and categorize them, we conducted a factorial analysis using SPSS. Four components were derived namely: Perceived Computer Efficacy, Perceived School Support, Perceived Resistance, and Perceived Device Usefulness. The rotated component analysis (Varimax) was used. Table 13 shows the factorial analysis component results.

	Components			
	1	*2*	*3*	*4*
Perceived Computer Efficacy				
Search for ways that will help me integrate the new technology before I use it in my work.	.790			
Previous experience with technology will help me adopt a new one.	.805			
Enjoy working with a new technology since I love technology	.654			
Perceived School's Support				
Training me is essential to learn and understand how to use a new technology.		.813		
The school's support affects my decision in accepting a new technology.		.742		
Incentives will motivate me to integrate a new technology in my classroom		.668		
I like new technology, but more support is needed.		.733		

48

Perceived Resistance	
Consider technological changes in my class as a negative thing	.696
Prefer my current teaching style over experiencing a day with unexpected technological events in my class.	.795
Informing me that there's going to be a significant technological change, I would probably feel stressed.	.691
Feel uncomfortable about technological changes even if I think it will benefit my work.	.782
Avoid changes even if I know it will benefit me.	.657

Perceived Device Usefulness	
Improves my job performance	.858
Improves my productivity	.883
Enhances my effectiveness in my job	.880
Helps me in lesson planning	.567
Saves me time	.569
Encourages me to keep searching for innovative learning solutions	.701
Allows me to create more variety in my lessons	.754

Table 13 Factorial Analysis for Teachers' Survey

The perceived computer efficacy component is based on the teacher's perceived technological ability to make an effective use of the device. For example, if she usually searches for ways that will help her adopt a new technology, if previous experience with technology will help her accept a new one, and if her love for technology will aid in the process of learning and enjoying it. Meanwhile, the perceived school's support encompasses training teachers, motivating them, providing incentives and constant help and guidance. The third component, perceived resistance, covers how comfortable the teacher feels about technological changes. And finally, the last component, perceived device usefulness, includes how the teacher perceives the device helpfulness relative to her job (performance, productivity, variety in lesson planning, saving time etc.)

After determining the major components, we tried to assess the impact of perceived resistance, perceived school support, and perceived computer efficacy on perceived device usefulness. To do this, a regression analysis was conducted. Taking the component perceived device usefulness as the dependent variable and perceived computer efficacy, perceived school's support, and perceived resistance as the

independent variables, linear regression test was run. While the components perceived computer efficacy (p=0.035) and perceived school's support (p=0.003) reported significance at the 95% confidence level and 99% confidence level respectively, perceived resistance (p=0.128) didn't. So, the linear regression equation is:

$$\textit{Regression Equation 2:} \qquad y = 1.03 + 0.226x_1 + 0.282x_2$$
$$(0.035) \qquad (0.003)$$

where y denotes perceived device usefulness, x_1 denotes perceived computer efficacy, and x_2 denotes perceived school's support.

The regression coefficient associated with perceived computer efficacy is 0.226 suggesting that each one-unit increase in perceived computer efficacy is associated with 0.226 unit increase in the perceived device usefulness. Likewise, the regression coefficient associated with perceived school's support is 0.282 suggesting that each one-unit increase in perceived school's support is associated with 0.282 unit increase in the perceived device usefulness. This association between the perceived device usefulness, perceived computer efficacy and perceived school's support is also statistically significant (p=0.000, R^2=0.173). Thus, we can say that, to students, both perceived computer efficacy and perceived school's support are good predictors of perceived device usefulness, with 17.3% of the variance in perceived device usefulness being explained by these two factors. In conclusion, hypotheses 1 and 2 were supported, while hypothesis 3 is rejected.

The perceived resistance component didn't show any significance. This could be attributed to the fact that 73.9% of the teachers agreed that more technology is needed in the classroom. So, as a start, a great percentage of them are with the integration of a new technology in the school. Also, we can assume that teachers believe that no matter how resistant they were, at the end of the day, they have to abide by the school rules when it decides to integrate the tablets in the classroom. They will be left with no other choice but to follow the new system. Yet, factors like the school's support and their computer

efficacy hold a great role in perceiving the tablet device as useful and easy to use in the field of education.

Although two factors of the regression formula showed significance, the r-squared value was relatively low (17.3%). This could be explained by the fact that sometimes humans' attitude towards something is simply harder to predict than physical processes. Also, this could be also attributed to the fact that this equation is only reflecting perceptions, and the responding teachers haven't experienced the tablet use yet. Moreover, other factors, which were not measured in this paper, play a role in the perceived device usefulness such as saved time, student performance, success stories in other schools presented to teachers, etc.

Looking deeper at the perceived challenges results (Table 14), 71 of the teachers (59.66%) consider technical related issues a challenge. This includes the lack of technological support, not knowing how to find adequate resources for the tablets, lack of assistants that will help in lesson preparation on the tablets, and the fear of students becoming too reliant on technology. When teachers were asked about considering supervision related issues as a challenge, 92 of the teachers (77.31%) agreed that preventing students from accessing relevant information and managing their access to inappropriate materials is a challenge. Moreover, 68 of the teachers (57.14%) recorded that lack of time to prepare supervision for the students is a challenge.

Perceived Challenge	Disagree	Neutral	Agree
Technical related issues	8	40	71
Student related issues	19	81	19
Supervision related issues	2	25	92
Time related issues	24	27	68

Table 14 Teachers' Perceived Challenges

The following table summarizes the hypotheses' results:

Hypothesis	Method Addressed	Results
H1	Teacher's Survey	Verified
H2	Teacher's Survey	Verified
H3	Teacher's Survey	Rejected
H4	Quasi Experiment	Verified
H5	Quasi Experiment	Verified
H6	Quasi Experiment	Partially Verified

Table 15 Hypotheses Results Summarized

Chapter Five

Conclusion

This research paper aimed at understanding the benefits and the challenges of using a new technology (tablets) in educational settings. First, a theoretical overview of the literature was demonstrated. Next, this study has provided a quasi-experiment of the use of tablets in school settings, namely grade three students during the English sessions for six weeks. The experiment covered pre and post methods of data collection including the participants' opinions, their teacher's, and their parents'. Also, a survey was distributed to teachers who didn't integrate the tablets as a part of their curriculum measuring factors that could affect their perceived device usefulness.

It has been obvious that integrating a new information technology solution generates benefits and challenges that have to be tackled for it to be successful. Many of the previously stated benefits and challenges are applicable in many countries including Lebanon, yet some challenges are specific to the Lebanese environment only such as the electricity cut-downs and the internet downtimes and slow speed. To test the benefits and the challenges of such devices in the Lebanese environment, a quasi-experiment for grade three students was initiated.

The quasi-experiment compared tablets class to a non-tablet one which held the same educational settings but the intervention of tablets. All over the experiment, the teacher and the observers reported that students of the tablets class were extremely happy and motivated as previous researchers mentioned (Henderson & Yeow, 2012). Students were able to engage in different tasks. Moreover, parents mentioned that their kids were motivated to attend the English class more when it had tablets usage as reported also by Burden et al. (2012). To see whether this motivation had led to an improvement in their English skills grades, we compared their grades before and after

the intervention of tablets. The results showed significance in their Reading skills only. Also, we compared the tablets and the non-tablets classes' English skills scores, the tablets class had better averages than the non-tablets classroom although significance wasn't realized. The insignificance could be attributed to the short time of the experiment. After surveying the students about their experience, it was concluded that both device characteristics (ease of use, interactivity, friendliness etc.) and factors related to fun and engagement (exciting applications, games etc.) are good predictors of their satisfaction.

As new technologies keep knocking the door of education, there is a possibility that schools oblige teachers and students to use tablet devices for educational purposes. Through the survey distributed to teachers, it was concluded that a teacher's perceived device usefulness (relative to her performance, productivity etc.) is highly dependent on her perceived school's support (as reported by Garakani, 2015) and her perceived computer efficacy (as reported by Heafner, 2004). Perceived resistance didn't show any significance which may be attributed to the fact that teachers will be obliged to use the devices no matter what.

In order to realize the wonderful potentials of these devices, the school must develop a good learning environment. First, this includes putting all participants on board (teachers, students and parents) by educating them on the benefits and challenges of using the devices. Second, ensuring school's technical readiness is important to avoid possible problems related to electricity and internet downtime and by hiring a specialist to fix in-class technical problems. Third, training teachers on ways to use the device in educational settings and supporting them are crucial for the project success. Finally, helping teachers find the needed and useful resources for their curriculum will help them integrate the educational technology in the classroom in a smoother way since they can better perceive the contribution of information technology to quality education and how to incorporate it into the curriculum.

To sum it up, tablets are just tools and the new generation is well educated on how to use them. It remains a chance for teachers, schools and parents to make good use of this opportunity. Yet, if not well addressed, this tool will act as a distracting device to students and probably a frustrating one to teachers. The effectiveness of using tablets in the classroom cannot be assessed on a short term. Moreover, one can't simply say the device has more positive effects than negative ones or vice-versa. It is up to the teacher how to integrate it, and it is up to the school how to support using it.

5.1 Limitations

Various limitations were encountered while developing this research which should be considered. It is worth mentioning that the dominant one was time. For the experiment, such research must be based on a longitudinal framework as to assess its effects more precisely. In addition, the research had only one subject evaluated and it incorporated only one section of grade three participating. As for the survey, teachers filling the survey were only females. However, caution is needed as to avoid generalizing the results of the experiment (not to include all school graders and subjects) and the survey (not to include males).

5.2 Future Research

First, research must be done on the usage of tablets using more subjects and not just the English Language. The research can include higher classes, too. In order to clearly understand the effects of using such devices on students' performance, the study must be a longitudinal one. Second, since teachers participating in the survey were only females, research must be done on males too in order to check if the gender factor generates different results. Other factors affecting the perceived device usefulness could also be measured such as resources availability and success stories in other schools presented to teachers etc. Third, it is worth researching about the use of curriculum-based applications developed by schools or publishers. This saves time in researching for tablet-based applications suitable for the curriculum. This way teachers might perceive a higher degree of this device's usefulness.

Finally, the study tested hypothesized relationships, but a comprehensive model linking the teacher-related factors, the student-related factors, and the technology-related factors together is needed. Based on this, future research is recommended to bridge the relationships tested in this study through building the appropriate links between the three constructs.

Educational technology is continuously developing and growing making it inevitable that this development will constantly provide new improvements to the education sector (Nguyen L., Barton, & Nguyen L. T., 2014). With this research findings and results, and the suggested future research work, more exploration is needed in this field. Education is crucial to promote the society's stability and unity. And by improving and enhancing the quality of education provided to the new generation using the latest information technologies, we can build hopefully a well-developed generation able to shape a stronger and a healthier community on the long run.

References

Ağır, A. (2015). iPad at School: A Holistic Evaluation of the Opinions of Students, Teachers and Parents Concerning iPad Usage. *International Journal of Education, 7(3), 175-193.*

Agostini, A., Di Biase, E., & Loregian, M. (2010, March). Stimulating cooperative and participative learning to match digital natives' needs. In*Pervasive Computing and Communications Workshops (PERCOM Workshops), 2010 8th IEEE International Conference on* (pp. 274-279). IEEE.

Aiyegbayo, O. (2015). How and why academics do and do not use iPads for academic teaching?. *British Journal of Educational Technology*, *46*(6), 1324-1332.

Ali, S. (2012). Challenges and Benefits of Implementing Tablets in Classroom for e-Learning in a K-12 Education Environment – Case Study of a School in United Arab Emirates. *International Journal of Engineering and Science*, 3(4), 39-42.

Allan, D. (2015, January 27). Samsung introduces Galaxy Tab 4 Education tablet to UK | ITProPortal.com. Retrieved from http://www.itproportal.com/2015/01/27/samsung-introduces-galaxy-tab-4-education-tablet-uk/ (October 12, 2015)

Amiri, F. (2000). IT-literacy for language teachers: should it include computer programming?. *System, 28(1),* 77-84.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American psychologist*, *37*(2), 122.

BBC Active (n.d.) IPads in the Classroom.Retrieved November 24, 2015, from http://www.bbcactive.com/BBCActiveIdeasandResources/iPadsintheClassroom

BBC News (2010). Apple unveils iPad tablet device [online]. BBC News. Retrieved August 8, 2015, from http://news.bbc.co.uk/1/hi/technology/8483654.stm

Benbasat, I., & Barki, H. (2007). Quo vadis TAM?. *Journal of the association for information systems*, *8*(4), 7.

Brandtzaeg, P., Folstad A. and Heim J. (2004). Enjoyment: Lessons from Karasek. Funology: From Usability to Enjoyment, edited by Mark A. Blythe, Kees Overbeeke, Andrew F. Monk and Peter C. Wright, 55-66. Boston: Kluwer Academic Publishers.

Burden, K., Hopkins, P., Male, T., Martin, S. and Trala, C. (2012). iPad research in schools. Hull: University of Hull.

Cambridge (2013). *Technology in the Classroom survey results* [Brochure]. Author. Retrieved May 11, 2016, from http://www.cie.org.uk/images/149740-technology-in-the-classroom-survey-report.pdf

Carey, T. (2015, January 8). Worrying rise of the iPad childminder: More and more parents admit using tablets to keep their children quiet. Retrieved December 5, 2015 retrieved from http://www.dailymail.co.uk/femail/article-2901261/Worrying-rise-iPad-childminder-parents-admit-using-tablets-children-quiet.html

Carroll, J. M. (2004). Beyond fun. *interactions, 11(5)*, 38-40.

Cheong, C, Cheong, F., & Filippou, J. (2013) Quick Quiz: A Gamified Approach for Enhancing Learning. PACIS Proceedings. Paper 206.

Churchill, D., Fox, B., & King, M. (2012). Study of affordances of iPads and teachers' private theories. *International Journal of Information and Education Technology*, *2*(3), 251.

Clarke, B. & Svanaes, S. (2012). One-to-one Tablets in Secondary Schools: An Evaluation Study - tage 1: 2011- 2012. London: Family Kids and Youth.

Clarke, B., & Svanaes, S. (2014, April 9). An Updated Literature Review on the Use of Tablets in Education. Retrieved November 16, 2015, from http://www.tabletsforschools.org.uk/wp-content/uploads/2014/04/T4S-Literature-Review-9-4-14.pdf

Compeau, D., Higgins, C. A., & Huff, S. (1999). Social cognitive theory and individual reactions to computing technology: A longitudinal study. MIS Quarterly, 23 (2), 145-158.

Coughlan, S. (2014, December 3). Tablet computers in '70% of schools' - BBC News. Retrieved October 30, 2015 from http://www.bbc.co.uk/news/education-30216408

Cravey, R. T. (2008). *An analysis of the relationship of educational technology implementation level and student achievement*. ProQuest

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992).Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, 22, 1111-1132.

Denny, P. (2013, April). The effect of virtual achievements on student engagement. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 763-772). ACM.

Domínguez, A., Saenz-de-Navarrete, J., De-Marcos, L., Fernández-Sanz, L., Pagés, C., & Martínez-Herráiz, J. J. (2013). Gamifying learning experiences: Practical implications and outcomes. *Computers & Education*, *63*, 380-392.

Dong, T., Dontcheva, M., Joseph, D., Karahalios, K., Newman, M., & Ackerman, M. (2012, May). Discovery-based games for learning software. In*Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 2083-2086). ACM.

Eden, D., Ganzach, Y., Flumin-Granat, R., & Zigman, T. (2008). Augmenting means efficacy to boost performance: Two field experiments. *Journal of Management*.

Eliopoulos, G. M., Harris, A. D., Bradham, D. D., Baumgarten, M., Zuckerman, I. H., Fink, J. C., & Perencevich, E. N. (2004). The use and interpretation of quasi-experimental studies in infectious diseases. *Clinical Infectious Diseases*, *38*(11), 1586-1591.

Frey, N., Fisher, D., & Gonzalez, A. (2013). *Teaching with Tablets: How do I integrate tablets with effective instruction?(ASCD Arias)*. ASCD.

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.

Fitz-Walter, Z., Tjondronegoro, D., & Wyeth, P. (2011, November). Orientation passport: using gamification to engage university students. In*Proceedings of the 23rd Australian Computer-Human Interaction Conference*(pp. 122-125). ACM.

Foote, D. (2001). The Futility of Resistance (to Change). *ComputerWorld.* Retrieved May 11, 2016, from http://www.computerworld.com/article/2589854/it-management/the-futility--of-resistance---to-change-.html

Fu, F. L., Su, R. C., & Yu, S. C. (2009). EGameFlow: A scale to measure learners' enjoyment of e-learning games. *Computers & Education*, *52*(1), 101-112.

Fullan, M. (2003). *Education in motion: Leading in a culture of change*. Centre for Professional Excellence.

Garakani, M. G. (2015). EFL Learners' Usability Evaluation of an Educational Website: Does Gender Make. *Handbook of Research on Individual Differences in Computer-Assisted Language Learning*, 299.

Geist, E. (2011). The game changer: Using iPads in college teacher education

classes. *College Student Journal*, *45*(4), 758.

Goleman, D., Boyatzis, R., & McKee, A. (2002). Primal leadership: Realizing the power
of emotional intelligence. Boston: Harvard Business School Publishing

Greenberg, J., & Baron, R. A. (2000). Behavior in organizations (7th ed.). Upper Saddle
River, NJ: Prentice Hall.

Hargis, J., Cavanaugh, C., Kamali, T., & Soto, M. (2014). A federal higher education
iPad mobile learning initiative: Triangulation of data to determine early
effectiveness. *Innovative Higher Education*, *39*(1), 45-57.

Heafner, T. (2004). Using technology to motivate students to learn social
studies. *Contemporary Issues in Technology and Teacher Education*, *4*(1), 42-
53.

Henderson, S., & Yeow, J. (2012, January). iPad in education: A case study of iPad
adoption and use in a primary school. In *System science (hicss), 2012 45th
hawaii international conference on* (pp. 78-87). IEEE.

Herreid, C. F., & Schiller, N. A. (2013). Case studies and the flipped classroom. *Journal
of College Science Teaching*, *42*(5), 62-66.

Howard, S. K. (2013). Risk-aversion: Understanding teachers' resistance to technology
integration. *Technology, Pedagogy and Education*, *22*(3), 357-372.

Ismael, S. M., & Al-Badi, A. H. (2014). Technology for Enhancing the Learning and
Teaching Experience in Higher Education. *World Academy of Science,
Engineering and Technology, International Journal of Social, Behavioral,
Educational, Economic, Business and Industrial Engineering*,*8*(8), 2452-2460.

Jalali, A., Trottier, D., Tremblay, M. & Hincke, M. (2011). Administering a gross
anatomy exam using mobile technology. e-Learn Magazine, 2 (Feb. 1). [Online]
Available: http://elearnmag.acm.org/featured.cfm?aid=1943209 .

Ludgate, H. (2013). NMC Horizon Report: 2013 Higher Education Edition.

Kahveci, A., Sahin, N., & Sebnem, G. E. N. Ç. (2011). Computer perceptions of
secondary school teachers and impacting demographics: A Turkish
perspective. *TOJET: The Turkish Online Journal of Educational
Technology*, *10*(1).

Karsenti, T., & Fievez, A. (2013). The iPad in Education: uses, benefits, and
challenges–A Survey of 6,057 students and 302 teachers in Quebec,
Canada. *Montreal, QC: CRIFPE*. Kearney, M., Schuck, S., Burden, K., &
Aubusson, P. (2012). Viewing mobile learning from a pedagogical
perspective. *Research in learning technology*, *20*.

Khaddage, F., Lattemann, C., & Bray, E. (2011, March). Mobile Apps Integration for Teaching and Learning (Are Teachers Ready to Re-blend?). In*Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 2545-2552).

Kinash, S., Brand, J., Mathew, T., & Kordyban, R. (2011). Uncoupling mobility and learning: When one does not guarantee the other. In *Enhancing Learning Through Technology. Education Unplugged: Mobile Technologies and Web 2.0* (pp. 342-350). Springer Berlin Heidelberg.

Kotter, J. P., & Schlesinger, L. A. (1979). *Choosing strategies for change*(pp. pp-106). Harvard Business Review.

Kozma, R. B. (2003). *Technology, innovation, and educational change: a global perspective: a report of the Second Information Technology in Education Study, Module 2*. ISTE (Interntl Soc Tech Educ.

Laliberte, T. R. (2009). *Mixed Method Study: Exploring the Use of Educational Technology Tools in K-12 Classrooms*. ProQuest LLC. 789 East Eisenhower Parkway, PO Box 1346, Ann Arbor, MI 48106.

Lee, J. S., Cho, H., Gay, G., Davidson, B., & Ingraffea, A. R. (2003). Technology acceptance and social networking in distance learning.*Educational Technology & Society*, *6*(2), 50-61.

Lee, Y., Kozar, K. A., & Larsen, K. R. (2003). The technology acceptance model: Past, present, and future. *Communications of the Association for information systems*, *12*(1), 50.

Manuguerra, M., & Petocz, P. (2011). Promoting student engagement by integrating new technology into tertiary education: The role of the iPad. *Asian Social Science*, *7*(11), 61.

MarketsAndMarkets (2015). Smart Education and Learning Market by Hardware (IWB & SBL), Software (LMS/LCMS, ERP, Test & Assessment, Mobile Education Apps), Educational Content (Audio & Video Courseware, E-Textbooks), Learning Modes, User Type, & Region - Global Forecast to 2020. (2015, June 1). Retrieved December 5, 2015, from http://www.marketsandmarkets.com/Market-Reports/smart-digital-education-market-571.html

McKenna, C. (2012). There's an app for that: How two elementary classrooms used iPads to enhance student learning and achievement.*Education*, *2*(5), 136-142.

Means, B. (Ed.). (1994). *Technology and education reform: The reality behind the promise*. Jossey-Bass.

Hallissy, M., Gallagher, A., Ryan, S., & Hurley, J. (2013). The use of tablet devices in ACCS schools. *Retrieved January*, *13*, 2014.

Miller, W. (2012). iTeaching and learning. *Library Technology Reports*, *48*(8), 54-59.

Mintel (2013). Teens' and Tweens' Technology Usage - UK. [online] retrieved from http://academic.mintel.com/homepages/guest/

Mintel (2015). Teens' and Tweens' Technology Usage - UK. [online] retrieved from http://academic.mintel.com/homepages/guest/

Mohseni, A. (2014). Educational technology: The tablet computer as a promising technology in higher education.

Moon, J. W., & Kim, Y. G. (2001). Extending the TAM for a World-Wide-Web context. *Information & management*, *38*(4), 217-230.

Morgan, H. (2014). Maximizing student success with differentiated learning.*The Clearing House: A Journal of Educational Strategies, Issues and Ideas*,*87*(1), 34-38.

Morris, G. (2012, December 25). IPad And Tablet-Related Injuries On Rise. Retrieved May 11, 2016, from http://news.sky.com/story/1029838/ipad-and-tablet-related-injuries-on-rise

Morrison, M., Leah, J., Harvey, F., & Masters, C. (2014). Embedding the iPad as a learning and teaching tool: A case study of staff and student perspectives in a management school. In *First International Conference on the use of iPads in Higher Education 2014*.

MTV Lebanon News (April 16, 2015). واقع الانترنت في لبنان. MTV. Retreived from http://mtv.com.lb/Programs/Prime_Time_News/2015/Videos/16_Apr_2015/%D9%88%D8%A7%D9%82%D8%B9_%D8%A7%D9%84%D8%A7%D9%86%D8%AA%D8%B1%D9%86%D8%AA_%D9%81%D9%8A_%D9%84%D8%A8%D9%86%D8%A7%D9%86

Mumby, D. K. (2005). Theorizing resistance in organization studies A dialectical approach. *Management communication quarterly*, *19*(1), 19-44.

Mumtaz, S. (2000). Factors affecting teachers' use of information and communications technology: a review of the literature. *Journal of information technology for teacher education*, *9*(3), 319-342.

Murray, O. T., & Olcese, N. R. (2011). Teaching and learning with iPads, ready or

not?. *TechTrends*, *55*(6), 42-48.

Naarmala, J. (2009). ICT and Teachers in Higher Education: A Case Study on Adopting Web Based Training. University of Vaasa.

Nguyen, L., Barton, S. M., & Nguyen, L. T. (2014). IPads in higher education-Hype and hope. *Br J Educ Technol British Journal of Educational Technology, 46*(1), 190-203. doi:10.1111/bjet.12137

Norris, C. & Soloway, E. (2012). Going Mobile: Stop the Technology Bashing! District Administration, retrieved from: http://www.districtadministration.com/article/going-mobile-stop-technology-bashing

Oreg, S., Bayazit, M., Vakola, M., Arciniega, L., Armenakis, A., Barkauskiene, R., ... & Hřebíčková, M. (2008). Dispositional resistance to change: measurement equivalence and the link to personal values across 17 nations. Journal of Applied Psychology, 93(4), 935.

Papastergiou, M. (2009). Digital game-based learning in high school computer science education: Impact on educational effectiveness and student motivation. Computers & Education, 52(1), 1-12.

Pelling, N. (2011). The (short) prehistory of gamification. *Funding Startups (& other impossibilities).* Haettu, 7, 2013.

Peters, K. (2009). M-learning: Positioning educators for a mobile, connected future. In M. Ally (Ed.), Mobile learning: Transforming the delivery of education and training. Vancouver: Marquis Book Printing. Retrieved from http://www.aupress.ca/books/120155/ebook/99Z_Mohamed_Ally_2009-MobileLearning.pdf

Prensky, M. (2001). Digital natives, digital immigrants part 1. *On the horizon*,*9*(5), 1-6.

Puentedura, R. (2009). Transformation, technology, and education. Retrieved November 10, 2013, from http:// hippasus.com/resources/tte/puentedura_tte.pdf

Puzziferro, M. (2008). Online technologies self-efficacy and self-regulated learning as predictors of final grade and satisfaction in college-level online courses. The Amer. Jrnl. of Distance Education, 22(2), 72-89.

Repacholi, M. H. (2001). Health risks from the use of mobile phones. Toxicology Letters, 120(1-3), 323-331.

Saba, A. (2009). Benefits of Technology Integration in Education. EdTech, 501.

Retrieved from
http://edtech2.boisestate.edu/sabaa/502/Saba_Synthesis_Paper.pdf

Sana, F., Weston, T., & Cepeda, N. J. (2013). Laptop multitasking hinders classroom
learning for both users and nearby peers. *Computers & Education*, *62*, 24-31.

Sandholtz, J.H., Ringstaff, C., and Dwyer, D.C. (1997). Teaching with Technology,
N.Y: Teachers College.

Sandusky, S. (2015). Gamification in Education. The University of Arizona. Retrieved
from http://hdl.handle.net/10150/556222

Sha, L., Looi, C. K., Chen, W., & Zhang, B. H. (2012). Understanding mobile learning
from the perspective of self-regulated learning. *Journal of Computer Assisted
Learning*, *28*(4), 366-378.

Shuler, C., Winters N., and West, M. (2013). The Future of Mobile Learning:
Implications for Policy Makers and Planners. Paris, UNESCO.

Spector, J. M. (2015). Foundations of educational technology: Integrative approaches
and interdisciplinary perspectives. Routledge.

The Daily Star (2015, August 5). No quick fix for Lebanon power cuts: energy minister.
The Daily Star (Beirut, Lebanon). Retrieved from
http://www.dailystar.com.lb/News/Lebanon-News/2015/Aug-05/309761-no-
quick-fix-for-lebanons-electricity-problem-nazarian.ashx

Thiruchelvam N. (2014). Attitudes Towards Tablet Devices as an Educational Tool.
Heriot Watt University.

Tynan-Wood, C. (n.d.). IPads in the classroom: The promise and the problems |
GreatKids. Retrieved November 29, 2015, from
http://www.greatschools.org/gk/articles/ipad-technology-in-the-classroom/

van't Hooft, M. (2008). Personal, Mobile, Connected: The Future of Learning.
International Handbook of Information Technology in Primary and Secondary
Education (pp. 873-881). Springer US.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology
acceptance model: Four longitudinal field studies. Management science, 46(2),
186-204.

Venkatesh, V., Brown, S. A., Maruping, L. M., & Bala, H. (2008). Predicting different
conceptualizations of system use: the competing roles of behavioral intention,
facilitating conditions, and behavioral expectation. *MIS quarterly*, 483-502.

Vu, P. H. (2013). An inquiry into how iPads are used in classrooms.

Wang, F. & Reeves, T. C., (2004), Why do teachers need to use technology in their classrooms? Issues, problems, and solutions, Computers in the Schools, vol. 20 (4), pp. 49-65.

Weinberg, A. (2010). Elementary Students' Perceptions of Classroom Technology (Doctoral dissertation, George Mason University).

Wenglinsky, H. (1998). Does it compute? The relationship between educational technology and student achievement in mathematics. Princeton, NJ: Educational Testing Service. (ERIC No. ED 425 191)

West, D. M. (2013). Mobile Learning: Transforming Education, Engaging Students and Improving Outcomes. Washington, Center for Technology Innovation at Brookings.

Westall, S. (2015, October 27). No Light at End of Tunnel for Power Crisis. The Daily Star (Beirut, Lebanon). Retrieved November 26, 2015, from http://www.highbeam.com/doc/1G1-432767461.html?

Wong, L. H. (2012). A learner-centric view of mobile seamless learning. *British Journal of Educational Technology*, *43*(1), E19-E23.

Yadollahi, S. (2015). An Overview of EFL Teachers' Individual Differences in CALL. Handbook of Research on Individual Differences in Computer-Assisted Language Learning, 46.

Zhao, Y., & Frank, K. A. (2003). Factors affecting technology uses in schools: An ecological perspective. *American educational research journal*,*40*(4), 807-840.

Zimmerman, J. (2006). Why Some Teachers Resist Change and What Principals Can Do About It. NASSP Bulletin, 90(3), 238-249.

Appendices

Appendix A First Survey to Parents

Dear Grade 3C students' Parents,

We are excited to announce that we will be using the tablets as a tool to enhance our curriculum and your child's learning. During the next semester, your kid will have the opportunity to experience this technology at school for a month during the English Sessions. As a partner in your child's education and as a preparation for this experience, we need you to fill out this form and submit it as soon as possible for further cooperation.

More information will be coming to you about how the learning process will take place. We will set up a meeting to elaborate the case in details and answer your concerns. Meanwhile, kindly fill out this inquiry:

- Student Name:
- Do you own a tablet?   •Yes   •No
  If yes, specify its kind: •iPad   •Samsung   •Lenovo   •Other:
- Its model (iPad 4/Samsung Tab 4/ iPad mini etc.):
- Does your kid have his own tablet?   •Yes   •No
- Does your kid know how to use tablets? •Yes   •No
- Do you have Internet Wifi connection at home? •Yes   •No
- Do you plan on sending this device to school for educational purposes if the school asked?
  •Yes   •No
- Do you plan on keeping this device to school for educational purposes if the school asked?
  •Yes   •No
  If no, what is the reason?
- Parent's Email
- If you have any comments or concerns to be clarified in the meeting, please list them.

Appendix B Work plan for English Sessions- Redesigning the curriculum to include tablets sessions

- The use of tablets in classroom will be used for lesson application in these English subjects: Reading, Grammar, Spelling, Listening and Speaking.
- The main applications used were Dropbox, Socrative, Xodo and Move&Match.
- The tablets will only replace the reading book completely. Tablets will not eliminate the work done on their practice books and copybooks. However, the practice and the grammar books PDF books will be uploaded on the tablets (DropBox). The folder where the student has his books in will be shared and edited by the teacher.
- No homework will be given to the students using the tablets except for the reading assignment.

Reading:

- The interactive offline reading book will be shared with the students. This will allow the students to listen and read the reading selections.
- Ask students to keep their reading books at home. They will open the reading book from the tablets.
- Learning resources related to the vocabulary taken will be shared with the students.

Listening and Speaking:

- During the building background information session, the students will perform in groups a research (watch videos and read texts) around the topic related to the theme and present it in the classroom.

Grammar and Spelling:
- Learning resources will be shared with the students'.
- Students will play online/offline games individually or in pairs or in groups after explanation takes place. Also, they will be able to solve extra sheets on the tablets using Xodo. Yet, this will not eliminate practice done on their books. The purpose of these games is to help the student practice and understand the skills required.

Lessons Prepared			
Reading	**Listening and Speaking**	**Grammar**	**Spelling**
Two reading selections	Solar System Research	Subject Verb Agreement	Three Letter Blends
Main Idea		Past Tense	Ar-Or Sounds
Two Vocabulary selections			

Appendix C Teacher's Survey

- Age Range
- Teaching Cycle
- Teaching field
- Experience in teaching
- Confidence with technology usage
- Opinion of current level of technology provided in your classroom

- Computer Efficacy:
  - I usually search for ways that will help me integrate the new technology before I use it in my work.
  - My previous experience with technology will help me adopt a new one in my class.
  - Since I love technology, I will enjoy working with a new technology as soon as it's available.

- School Support:
  - Training me is essential to learn and understand how to use a new technology.
  - The school's support (providing resources, training, help…) affects my decision in accepting a new technology.
  - Incentives will motivate me to integrate a new technology in my classroom (granting me more free time, increasing salary, supplying me with benefits…)
  - I like new technology, but more support is needed.

- Resistance:
  - I generally consider technological changes in my class as a negative thing.
  - I prefer my current teaching style over experiencing a day with unexpected technological events in my class.
  - If I were to be informed that there's going to be a significant technological change regarding the way things are done at school, I would probably feel stressed.
  - I feel uncomfortable about technological changes that occur at my classroom even if I think it will benefit my work.
  - I sometimes avoid changes even if I know it will be benefit me.

- Perceived Device Usefulness:

  - I think using tablets in education will improve my job performance.
  - I think using tablets in education will improve my productivity.
  - I think using tablets in education will enhance my effectiveness in my job.
  - I think using tablets in education can help me in lesson planning.
  - I think using tablets in education saves me time.
  - I think using tablets in education encourages me to keep searching for innovative learning solutions.
  - I think using tablets in education allows me to create more variety in my lessons.

- Perceived Challenges:
  - Technical related issues
    - Lack of technological support when a problem occurs in class
    - Students can become too reliant on technology
    - Not finding adequate resources for tablets
    - No staff member is allocated to assist in lesson preparation
    - Parents dislike increased costs

  - Student related issues
    - Students gets easily distracted – especially by social networking
    - Decrease the practice of writing skills
    - Possible negative health impacts.

  - Supervision related issues
    - Preventing students accessing irrelevant content
    - Managing access to inappropriate material

  - Time related issues
    - Students can become too reliant on technology

- Overall opinion of using tablets as a tool used in learning