QATAR UNIVERSITY

COLLEGE OF EDUCATION

TEACHERS' PERCEPTIONS OF ONE-TO-ONE COMPUTING EFFECT ON LEARNING ENVIRONMENT IN QATARI SECONDARY SCHOOLS

BY

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ABSTRACT

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Title: Teachers' Perceptions of One-to-One Computing Effect on Learning Environment in Qatari Secondary Schools

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The purpose of this study is to examine the effect of one-to-one computing on the learning environment based upon teachers' perceptions in Qatari secondary schools implementing the E-Schoolbag project (phase one and phase two). A questionnaire was employed to collect all teachers' responses from ten secondary schools utilizing Tablet PC in the one-to-one computing initiative. The questionnaire assessed teachers' perceptions about one-to-one computing in terms of: (a) student use, (b) perception of impact, (c) advantages of one-to-one computing, (d) support, (e) and classroom management issues. Teachers were found relatively positive toward the one-to-one computing initiative. Inferential analysis found no statistically significant difference for gender and years of experience in terms of perceived advantages and impact of one-to-one computing.

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Chapter 1: Introduction

Building a connected information society using technology for inspiration and innovation is a key goal of the 2030 Qatar National Vision (Supreme Council of Information & Communication Technology, 2013). All government's sectors are involved in achieving the 2030 vision and turning this vision into reality. Specifically, in order to achieve this key goal, the Ministry of Education and Higher Education (MOEHE) (formerly known as Supreme Education Council), collaborated with the Ministry of Transport and Communication (MOTC) (formerly known as Supreme Council of Information & Communication Technology) to form a partnership to implement technological initiatives in the schools. This joint effort developed and shaped the main initiative E-Education. The purpose of E-Education is to create and foster learning environments that support individual learners by utilizing technology in an effort to build a technology embedded community of students, teachers and parent, and transform classrooms into the forefront of the global learning community (Aljaber, & Dutta, 2008). The E-education initiative is the main framework and the project E-Schoolbag represents a pillar in the initiative (Aljaber, & Dutta, 2008). Furthermore, the E-Schoolbag project is considered an expansion of the overall E-learning project that includes a Learning Management System (LMS) and E-library and E-content (Ministry of Education and Higher Education [MOEHE], 2013).

The E-Schoolbag project was first implemented in the academic year 2011-2012. The project provides a Tablet PC for each student and teacher in order to create a one-to-one computing environment supported with wireless Internet access for the students and the school's staff in the school building. The E-Schoolbag project is designed to provide the student with access to resources and communication with his/her teacher. In addition, Tablet PCs are supplemented with electronic aids and software aligned with the Qatar national curriculum standards (MOEHE, 2013).

To support stakeholders (teachers, students, administration and parents) for effective implementation of the E-Schoolbag project, the MOEHE assigns an electronics project coordinator and an information and communication technician to each school. This supports the project with human resources as a crucial foundation to foster stakeholders' appreciation of utilizing Tablets PC in teaching and learning (Montrieux, Vanderlinde, Courtois, Schellens & De Marez, 2014). In addition, the MOEHE offers professional training in the use of Tablet PCs in the form of workshops to support project implementation.

In the academic year 2011-2012, the first phase of the E-Schoolbag project was launched in ten independent schools where a one-to-one computing environment in learning and teaching was constructed, (MOEHE, 2013). Every student was provided with a Tablet PC, across the three educational stages: (a) primary; (b) preparatory; and (c) secondary. The second phase was initiated in the academic year 2013-2014, where thirty schools implemented one-to-one computing across the three stages. An expansion of the E-Schoolbag to 120 schools as expected the upcoming years (MOEHE, 2013).

Organization of the Thesis

The thesis is organized in five chapters. The first chapter introduced the background and the problem formulation, significance of this study, limitation of the study and the guiding questions. It also included the definitions of the operational term used in the research, as well a brief description of the organization of the thesis. The second chapter reviewed the literature relevant to one-to-one computing and factors influence integrating technology in teaching and learning. Chapter three described the methodology design that guided research and included the setting and the context of the study, a profile of the participants and the sampling method selected. The reliability and the validity of the instrument are also discussed in this chapter and a description of statistical and inferential analysis employed in the research is presented. The fourth chapter

focused on the results and findings of the study presented by the individual research question. Finally, chapter five provided discussion of the findings in regards of the reviewed literature and offers recommendations.

Statement of the Problem

Qatar continues to heavily invest in various forms of education in order to support human development and foster the youth to the highest international standards to enable them to realize their maximum potential (Ministry of Development Planning and Statistics [MODPS], 2011). Qatar has invested significant funds in the implementation of the E-Schoolbag project in forty schools and the projected inclusion of an additional 120 schools as the project expands (MOEHE, 2013).

Teachers are the agents who are responsible for implementing technology integration (Knight, 2012). In addition, teachers form their perceptions based on their experiences in their school environment and these perceptions maybe unique and different from those of policymakers. Regarding what occurs in schools, teachers' perceptions are valuable in providing guidance on what would be beneficial or not (Romanowski, Cherif, AlAmmari, & AlAttiyah, 2013). Given this crucial role, teachers are the targeted population of the current study that examines their perceptions pertinent to the E-Schoolbag project and its impact on learning environment.

Purpose of the Study

The purpose of this study was to examine the effect of one-to-one computing on the learning environment based upon teachers' perceptions in secondary schools implementing the E-Schoolbag project (phase one and phase two). The study examined any differences between male and female teachers' perception in regards of the impact and the advantages of one-to-one computing initiative. Furthermore, the research examined the differences among teachers with various years of teaching experience in terms of their perceived impact and the advantages of the

one-to-one computing initiative on learning. Ten secondary schools adopted one-to-one computing environment in the State of Qatar for five or more years. Schools, administrators, policy makers and stakeholders are considering expanding the establishment of one-to-one computing environments and therefore there is a need for evaluative information to assist in the decision-making process.

Research Questions

The research questions for this study are as follows:

1. What perceptions do secondary school teachers hold about one-to-one computing in terms of: (a) student use, (b) perception of impact, (c) advantages of one-to-one computing, (d) support, (e) and classroom management issues.
2. Are there any statistically significant differences (alpha=.05) in teachers' perceptions of (a) the advantages and (b) the impact of one-to-one computing according to the teacher's gender?
3. Are there any statistically significant differences (alpha=.05) in teachers' perceptions of (a) the advantages and (b) the impact of one-to-one computing according to the teacher's years of experience?

Variables of the Study

The dependent variable of the study is the perceptions of teachers in terms of: (a) student use, (b) classroom tasks, (c) perception of impact, (d) advantages of one-to-one, (e) support, and (f) classroom management issues. Independent variables include: teachers' years of teaching experience and gender.

Significance of the Study

The significance of this study lies with the limited research that examines one-to-one computing in GCC region, specifically in Qatar. The study provides insights into how teachers perceive the effects of a one-to-one computing on the learning environment. Furthermore, this study provides stakeholders with insight into the advantages and disadvantages, areas of strength and areas that need improvement. This is particularly important since the one-to-one computing (E-Schoolbag) project is to be implemented in 120 additional schools. The results will provide

policymakers with research-based information that can aid in the decision-making process, whether the allocation of funds to support one-to-one computing in classrooms is valuable and whether the expansion or continuance of a one-to-one Tablet PC environment is worthwhile. Nevertheless, the findings of the study will be shared with the leadership of schools participating in the E-Schoolbag and will provide valuable insights to guide any future professional development and training programs designed to support teachers who utilize Tablet PCs in their teaching practices and to ensure the success of the E-Schoolbag project. Finally, school leadership should be aware of any issues that hinder the implementation of the initiative, hence, altering and supporting the success of the initiative.

Operational Definition

One-to-One Computing: Assigning every student and teacher with one computing device to be utilized in the classroom or at home (Elwood, 2006). Tablets are supported with educational aids and applications that reinforce the national curriculum standards (MOEHE, 2013).

Chapter 2: Literature Review

Introduction

This chapter reviews the literature to understand one-to-one computing programs. The chapter begins by presenting technology integration linking to the constructivism learning theory. Next, the effect of teachers' perceptions on integration technology in teaching and learning is examined. It includes the application of one-to-one programs, the impact on learning and students' roles in the one-to-one computing programs. Finally, the literature review explores the barriers hindering the application of one-to-one computing initiatives.

Constructivism and Technology Integration

During the process, students should be doing what they know best, teachers as well, should be doing what they know best (Prensky, 2010). Currently, students are the "experts" in using technology and have a high interest and knowledge in its usage. Thus, teachers should integrate technology devices into learning to meet students' interests and support students in communicating and collaborating with peers (Prensky, 2010). These learning opportunities are related to social cognitive theory, where learning and technology integration meet the needs of the students, and learning is tailored to those needs (Roblyer, & Doering, 2014). Technology aims to enhance students' ability to take charge of their own learning and to provide opportunities of individualizing learning.

Moreover, this will allow teachers to follow what they do best by guiding students, asking the right questions, facilitating and providing the needed materials and finally monitoring the quality (Prensky, 2010). Social activism demand technology integration that fosters environments that initiate hands-on activities and meaningful learning experiences for students that are, embedded in real world problems and the familiar contexts, which falls under the social activism

(Roblyer, & Doering, 2014). However, teachers in classrooms do not have to use the technology themselves, instead they will benefit from the students' experiences in utilizing technology tools and integrated in teaching and learning (Prensky, 2010). This eliminates any intimidation teacher may feel based on student' advanced knowledge and skills using technology. The teacher's role should be far from lecturing or explaining the content instead, students are researchers who formulate hypothesizes, investigate and present the findings and communicate with their peers (Prensky, 2010). This type of technology integration is based on the constructivism learning theory and pedagogical approaches (Prensky, 2010).

Possible Factors Influencing Technology Integrating:

The literature reviewed regarding the factors affecting technology integration indicates teachers' beliefs and perceptions about the use of technology is one of the key factors affecting technology integration in teaching and learning (Aldosari, 2007; Inan & Lowther, 2010; Tay, Lim, & Lim, 2013). Furthermore, researchers show great interests in examining teachers' perceptions and attitudes, in order to grasp a deeper understanding of the rationales behind teachers utilizing technology in their classrooms (Al dosari, 2007; Shameem, 2016). For example, constructivist teachers place a positive value on integrating technology (Hsu, 2016), however, a negative belief about technology may lead to low integration of technology in one-to-one computing initiatives (Zuber & Anderson, 2012). Especially, when the teacher perceives technology as a forced and required tool to be utilized in the classroom, rather than a device that could enhance teaching and learning opportunities for the students (Minshew & Anderson, 2015). Based on mixed-method study that investigated math teachers' beliefs in one-to-one computing environment, findings demonstrated that almost all teachers believed that learning mathematics should utilizing traditional tools such as pens and papers. Furthermore, teachers reported that they stopped

integrating one-to-one computing devices in their classrooms when they noticed that student's enthusiasm towards using the devices made them less attentive toward learning the content (Zuber & Anderson, 2012).

As discussed above, the role of teachers' perceptions and factors influencing the implementation of one-to-one computing initiatives are important to understand regarding teachers' technology integration in teaching and learning. Teachers' demographics such as gender and years of teaching experience were also established as factors affecting integrating technology in teaching and learning (Aldosari, 2007; Inan & Lowther, 2010; Tay et al., 2013).

In a study was conducted to examine the effect of several factors in teachers' implementation of computers in the classroom, factors such as gender and years of experience. The study reported that male teachers tended to implement more frequent than female teachers. Another key finding, teachers with more years of experience had lower computer's competencies, yet they were reported significantly with greater levels of computer's usage (Mathews, & Guarino, 2000).

In terms of years of experience and the influence on integrating technology, research indicated it had a significant impact on technology integration and teacher's comfort level (liu, et al., 2016). However, Inan & Lowther's (2010), found that teachers with more years of experience had lower perceptions of readiness to use technology. Prasertsilp, (2015) supported this finding as well, adding that experienced teachers are more resistant to integrate technology in their teaching activities (Prasertsilp, 2015). In context of the current study, it was reported that elderly Qatari citizens lacked ICT skills (Ministry of Information and Communications Technology, 2013).

Gender is also a factor that may or may not influence integrating technology in classrooms. There are various studies that demonstrated no significance differences across gender concerning

the integration of technology. (Dündar, & Akçayır, 2014; Liu, et al., 2016). Garthwait & Weller, (2005) recommended examining gender differences in one-to-one computing implementation as a potential factor.

Teachers' preparation and computer proficiency is another crucial factor influencing technology integration in teaching and learning (Aldosari, 2007; Inan & Lowther, 2010; Tay et al., 2013). Montrieux et al., (2014) emphasized the necessity of well-trained teachers in integrating this innovative technology in teaching practices. Hsu (2016) noted that constructivist teachers have higher self-efficacy beliefs about integrating technology in their classroom.

Although teachers consider themselves as technology savvy, capable of using productivity tools such as word processor, educational software, they admit they are in constant need to learn technology integration strategies that will enhance learning (Wang et al., 2014). A qualitative study noted that most teachers do not know how to integrate innovative tools such as Tablet PCs in teaching and learning although possess positive assumptions of the impact on learning. This assumption was based on opinions rather than practical experience (Ifenthaler & Schweinbenz, 2013).

One-to-One Computing

Successful one-to-one computing initiatives require commitment by teachers to integrating PC devices in their classrooms and to guarantee students' engagement in meaningful learning experiences (Maschmann, 2015). Teachers perceive Tablets PC as a tool that influence can students' motivation in classrooms (Dündar, & Akçayır, 2014; Li, Pow, Wong, & Fung, 2010). Also, Johnson, (2013) reported the majority of teachers (84.2%) perceived that the students are more involved and engaged in learning because of the one-to-one computing initiative. It was also claimed that one-to-one initiatives support the process of teaching and learning as perceived by

teachers, through offering opportunities and resources for teaching and learning practices (Lei & Zhao, 2008).

The literature consistently reported the positive influence of one-to-one initiatives has on learning (Johnson, 2013; Maschmann, 2015). The change in learning and teaching was influenced in a positive manner in the schools that adopted one-to-one computing (Meyer, 2007).

Lowther, Inan, Ross & Strahl, (2012) studied teachers' perceptions and findings indicated that laptop use in one-to-one computing classrooms had a positive impact on student learning and achievement as perceived by the participants. Ferrer, Belvís and Pàmies, (2011) used a mix approach and examined the influence of one-to-one computing on students finding students who are challenged academically improves more in comparison to the rest peers as a result of utilizing Tablet PC.

Lowther, et al., (2012), investigated the implementation of a one-to-one project and measured teachers' perceptions regarding five categories: impact on classroom instruction, impact on students, teacher readiness to integrate technology and technical Support. teacher responses were significantly positive on four of the five categories except for overall technology and technical support (Lowther et al., 2012).

However, other studies contradict the previous studies demonstrating implementing one-to-one computing in schools was found to be significant to the overall students' achievement (Maschmann, 2015; Williams & Larwin, 2016). In addition, teachers perceive the initiative had little or no actual effect on the students' subject grades (Constant, 2011). A study conducted on a pilot Tablet PC initiative found that the majority of teachers do not believe that Tablet PCs can contribute in improving learning and instruction (Ifenthaler & Schweinbenz, 2013).

More importantly, students viewed one-to-one computing initiative as an essential element

to enrich their learning, through offering wide learning resources and opportunities (Lei & Zhao, 2008). The relative impact of one-to-one computing on students' social skills, specifically students' level of collaboration reported to have a positive influence (Li et al., 2010; Lowther et al., 2012).

It was also established by various studies that innovated initiatives and utilizing technology in projects such as one-to-one computing, offers students opportunities that can support student's technological competency and using technology affect this aspect significantly (Lei & Zhao, 2008; Li et al., 2010; Oliver & Corn, 2008). Also, technology will improve students' efficacy in solving learning tasks and building their communication skills (Lei & Zhao, 2008; Li et al., 2010).

Students' Role in One-to-One Computing

Students are carrying and using technology devices and yet teachers seem to be uncertain of the best way to engage students using technology tools in their instructional lessons (Hammonds, Matherson, Wilson & Wright, 2013). Tablet PC as a technology device was found as an instructional tool that has the ability to enhance students' level of motivation and efficacy towards learning (Li et al., 2010). In comparison to regular computers or laptops and keyboards, students generally agreed that Tablet PCs should be used particularly the digital ink feature (Alvarez, Brown & Nussbaum, 2011). Researchers reported that students were generally positive towards Tablet PC in classrooms reporting they are pleased to be using such innovative tools in the lessons (Dündar & Akçayır, 2014; Montrieux, et al., 2013). This was attributed to the fact that the students' view of the Tablet PC as a beneficial and meaningful tool for them and encourage all the schools to adopt such innovated initiatives (Dündar & Akçayır, 2014).

Today's students are challenging educators to integrate modernized, relevant tools into the curriculum such as Tablet PCs (Dickerson, Williams & Browning, 2009). Investigating student uses of digital tools in one-to-one computing, it was noted students are creative and vary their

usage both in-classrooms and outside classrooms. In one-to-one computing classrooms students are tackling different tasks that add value to teaching and learning. For instance, taking notes, solving problems, using the search engines for need information, communicating with peers through online discussions or social platforms such as Facebook and using specific subject software (Bergström & Årebrand, 2013; Lei, & Zhao, 2008).

Research results on students' tasks using one-to-one in computing classrooms highlighted that the Internet was the most commonly used (Dündar & Akçayır, 2014; Lowther et al., 2012), followed by word processing, other research tools and presentation software (Lowther et al., 2012). Using spreadsheet software is one of most frequent tasks in math classes (Zuber & Anderson, 2012)

Drill and practice exercises are frequent tasks being completed in one-to-one computing classrooms as is scaffolding student's learning with self-pace and individualized tasks (Dunleavy et al., 2007; Zuber & Anderson, 2012).

Students in one-to-one computing classrooms view their devices as their main writing tool and the collected data provided evidence that the students spend more time writing on their devices and more frequent since the implementation of use of this technology (Russell, Bebell & Higgins, 2004). Noteworthy, it was found that students while using their devices in writing, they produced a higher quality text compared to when they were using traditional tools such as pencil and paper (Russell, et al., 2004).

Additionally, teachers and students reported the ease of revising texts on their devices with the one-to-one implementation and this supported teachers in improving students' writing skills. This may have attributed to the issue students showed more willingness to revise their own writings. Students reported using the Tablet PCs was enjoyable in writing and rewriting because

of ease revising and editing mistakes creating improved products (Keppler, 2012). Furthermore, one-to-one computing provided an access to a platform for publishing their written work and receiving feedback from teachers or peers (Keppler, 2012).

Beyond the classroom there is another major use reported in one-to-one computing, that is homework as extensions of classwork learning (Lei & Zhao, 2008; Zuber & Anderson, 2012). Tablet PCs were perceived as an easy and enjoyable tool to be utilized in homework (Dündar & Akçayır, 2014). Tablet PCs have great possibilities to be utilized in and out of the classroom (Montrieux et al., 2013). In fact, Zuber & Anderson (2012) reported that approximately half of the students are using devices in one-to-one computing for this purpose at least once per week.

One-to-one computing environment offers teachers the ease of tracking assignment submissions. Teachers can send assignments electronically to the students. When it is completed, the students can submit it online to be graded and the results can be published electronically with the students (Kocak, 2015).

According to Meyer (2007) one-to-one computing initiatives influence teachers to use more project-based instruction and offer students options to demonstrate their learning. Students in one-to-one computing classes were found to be more involved in working on projects, searching for information, long term projects and assignments (Meyer 2007).

Fiorillo (2015) examined how teachers view the one-to-one computing initiatives. As part of the survey, teachers were asked to rate the frequency they used the devices in completing the following activities: produce homework, assess students, communicate with students and communicate with colleagues. It was reported the majority of teachers are doing these tasks on a daily basis demonstrating that teachers were integrating these devices in their daily classroom routine (Fiorillo, 2015).

Barriers in One-to-One Computing

Initiating one-to-one computing projects demands teachers to employ this new digital tool within instruction. The research literature refers to teachers' lack of technological competency as one of the main obstacles that hinder the successful of implementation. Teachers who are not familiar with computers could take hours in preparing for their lessons (Dündar & Akçayır, 2014). According to teachers, there is a concern for digital literacy because, students are over-relying on information technology (Lei & Zhao 2008).

Studies suggested that students' off-task behavior is a negative aspect of one-to-one computing initiatives. Because of the off-task behavior, some teachers were discouraged in integrating Tablet PCs in their classrooms (Dündar & Akçayır, 2014; Zuber & Anderson, 2012). Although teachers reported that integrating Tablet PCs has several benefits for their teaching, students' attention seems to drift to irrelevant tasks such as, messaging others and playing online games instead of searching for information on the Internet as requested (Dündar & Akçayır, 2014).

Other teachers noted their concerns of students misusing the Internet in the classroom and accessing inappropriate material (Dunleavy et al., 2007). Compared to traditional resources like textbooks, teachers became frustrated because they had to monitor students' behavior dealing with classroom management issues, rather than being involved in learning (Zuber & Anderson, 2012). As previous studies indicated, classroom management in one-to-one computing initiatives is a major challenge faced by teachers because devices are complicating rather than facilitating teaching and learning and teachers are overwhelmed and have less control of the teaching and learning process (Dunleavy et al., 2007).

With regards to classroom management issues, technical issues are another main concern teachers and students face with one-to-one computing. Teachers are challenged to find appropriate

software to substitute the role of the textbook (Zuber & Anderson, 2012). Another frequent technical concern is students forget to charge their devices and eventually this occurrence disturbs lessons and learning activities (Dunleavy et al., 2007).

Furthermore, technical issues such as unreliable Internet access could interfere with overall initiative implementation (Garthwait & Weller, 2005; Kocak, 2015). Minshew and Anderson, (2015) indicate teachers may tend to be discouraged to integrate one-to-one computing due to Internet inaccessibility that frustrates teachers and students limiting the usage of these devices (Minshew & Anderson, 2015). According to Johnson, (2013) the lack of reliable technological support and low accessibility of technical equipment are two concerns that frustrate teachers and could influence implementation. In addition, Garthwait & Weller, (2005), reported teachers spend hours and days teaching and training the students on the technical tasks and still students were inefficient in using devices.

An important issue mentioned is that one-to-one computing initiatives are causing changes in the students' social behavior and teachers noted that during the break students are using their tablets instead of interacting with their peers and communicating with their friends (Dündar & Akçayır, 2014). The issue is that students tend to communicate more often electronically rather than in person (Hatakka, Andersson & Grönlund, 2013).

Finally, the literature consistently suggested one-to-one computing initiatives need to empower and prepare teachers with appropriate professional development to ensure effective integration and support teachers in classroom management skills in order to create effective learning environments (Dunleavy et al., 2007).

Chapter Summary

This chapter began by elaborating briefly on the theoretical background of integrating

technology in teaching and learning. The literature review revealed the possible factors that can influence the integration of technology in the classrooms, teachers' perceptions and dispositions were revealed as a key factor that can influence technology integration including teachers' demographics characteristics and teachers' technological competency. Finding from previous studies conducted on one-to-one computing initiatives were presented. Several studies supported the assumption that implementing an innovated initiative such as one-to-one computing can positively influence the quality of teaching and learning. Student's attitudes toward one-to-one computing and the role of the student in one-to-one computing were briefly presented in this chapter. Finally, this chapter elaborated the main barriers in one-to-one computing that might hinder teachers and students. The next chapter will discuss the methodology utilized for collecting the perceptions of teachers in Qatari secondary school implementing one-to-one initiative.

Chapter 3: Research Methodology

Research Context

This study was conducted in ten government funded Qatari secondary schools that are implementing the E-Schoolbag project. In the 2011-2012 academic year, the first phase of the E-Schoolbag project was launched in two secondary schools. Two years after the implementation of the first phase of E-Schoolbag project, the second phase was launched in the 2013-2014 academic year. This phase included eight additional secondary schools with the intention to extend this initiative to 120 different schools in the upcoming years (MOEHE, 2013). Table 1 illustrates the E-schoolbag secondary schools by phase and gender. In order to establish one-to-one computing environments, the E-Schoolbag project provides all students and teachers in the participating schools with a Tablet PC (MOEHE, 2013). The current study was conducted at the start of the second term of the 2016-2017 academic year. All ten schools selected for this study are currently implementing a one-to-one Tablet PC initiative.

Table 1

E-Schoolbag Secondary Schools by Phase and Gender

Phase	Male	Female
One	Tariq Ibn Ziyad School	Al Risala School
Two	Doha School	Qatar School
	Al-Wakra School	Al-Shahaniya School
	Ahmad Bin Hanbal School	Umm Ayman School
	Omar Bin Al-Khattab School	Amna Bint Wahb School

Participants

The targeted population in this study was all male and female teachers in grades ten through twelve in the ten E-Schoolbag secondary schools implementing the one-to-one computing initiative in Qatar.

Approximately 750 teachers are working in the ten schools. In this study, all teachers were invited to participate. As requested, the Educational Supervision Office (ESO) in the MOEHE emailed a link to an electronic questionnaire to the ten schools' administrations. School administrations were requested to forward the email to all teachers in their schools inviting them to participate in the study. A total of 365 completed questionnaires were collected from random participants. The participants (N=365) consisted of 55% males, 45% females. The majority of participants have 11-20 years of teaching experience (n= 135, 37%*)* and roughly 50 percent of the participating teachers are teaching more than one grade level (n= 172, 47.1%*)*. The participants taught different subject areas and math teachers represented the highest participation percentage among other subjects (n =62, 17%). Demographic frequencies and percentages of the characteristics of the sample are illustrated in Table 2.

Table 2

Descriptive Statistics for Demographics Characteristics

Demographic	*n*	%
Gender		
Male	201	55.1
Female	164	44.9
Years of Experience		
0-5	31	8.5
6-10	88	24.1
11-20	135	37.0
More than 20	111	30.4
Grade Taught		
10	51	14.0
11	59	16.2
12	83	22.7
More than Grade Level	172	47.1
Subject Area		
Math	62	17.0
Arabic language	48	13.2
Islamic Studies	47	12.9
English Language	46	12.6
Social Studies	34	9.3
Chemistry	32	8.8
Physics	32	8.8
Biology	31	8.5
Technology	14	3.8
Physical Education	7	1.9
Other	12	3.3

Data Collection

This study examined teachers' perceptions towards the E-Schoolbag project and the effect on the learning environment in Qatari secondary schools. This study utilized questionnaires since these are more reliable because the participants are anonymous and they tend to be more honest and not bias about their responses in the questionnaire (Cohen, Manion & Morrison, 2013). In particular, this study utilized a Web-based questionnaire as the instrument to collect data. A Web-based questionnaire is a form of survey instrument used for data gathering that uses a website such as survey monkey as an online survey platform for participants (Creswell, 2013). Currently, Web-based surveys are more prevalent. According to Creswell 2013, this can be attributed to the popularity of websites and the ubiquitous of the Internet. Also, the use of Web-based questionnaires is cost-efficient compared to paper-based questionnaire (Lavrakas, 2008).

As previously mentioned, the questionnaire was administered by sending an electronic link form the Educational Supervision Office (ESO) in the MOEHE via email to schools' administrations to teachers in the beginning of the second semester of 2016/2017 academic year. The questionnaire link was open for seven days. In the third day, the ESO sent an email reminder to the schools' administrations to encourage all teachers to participate in the study. All questionnaires responses were compiled anonymously from teachers in grades ten through twelve.

Instrumentation

The purpose of this study was to examine secondary teachers' perceptions toward the one-to-one computing initiative in Qatari secondary schools. In addition, this study analyzed any statistically significance differences in the perceived impact and the advantages of one-to-one computing initiative regarding teachers' gender and years of teaching experience. The questionnaire used was a modified version of the "Teacher Survey: One-to-One Computing in

Educational Research" used in several studies (Dunleavy et al., 2007; Maninger & Holden, 2009; Prososki, 2015). Prososki (2015) validated the survey instrument using a panel of specialists in technology integration. The content validity was measured for the questionnaire's items (Prososki, 2015). Permission was granted from Dr. Prososki to use the questionnaire in the current study.

The questionnaire was employed to examine the responses from the participants in various questions related to a one-to-one computing initiative and consisted of five dimensions: (a) student use, (b) perception of impact, (c) advantages of one-to-one, (d) support, (e) classroom management issues (Prososki, 2015). Demographic information collected included teachers subject taught, grade level, years of experience, gender. The questionnaire was posted on the private website Survey Monkey.

In consideration of the different context this study was conducted, the researcher adapted the survey to address the research questions and the targeted participants. The participants of the current study are Arabic speakers. This instrument was translated from English to Arabic to ensure the participants understood each item. The Arabic version was then back translated to English by an expert and then compared with the original questionnaire by two bilingual educational experts to determine the equivalence between the two versions. These procedures are part of the widely used back-translation method to determine the relationship of source and target language versions of an instrument are equivalence and identify discrepancies (Behling & Law, 2000; Creswell, 2013).

Following this procedure, three educational experts examined the Arabic version of the questionnaire and were asked to review the instrument's words' clarity and the relativity of the items to the context of the study and the participants. Each expert was provided with a copy of the Arabic questionnaire and asked to determine if each item was clearly stated and relevant to each

dimension. They were encouraged to provide any recommendations or suggestions that would improve the items. The comments of each expert were combined and examined by the researcher to determine the suitable changes that addresses these comments. The experts were selected based on their expertise in the field of technology and education. The experts were two university professors in the field of educational technology at Qatar University, and one expert who is working as a coordinator of technological project in one of the secondary schools involved in the one-to-one computing initiative. The experts suggested few changes to be made, in order to address clarity of the items or to address the context of the initiative in Qatar. The experts also recommended the removal of few items and two dimensions teachers' work environment and teachers' uses, as they noted they were irrelevant to the current research questions. Furthermore, the experts noted the length of the questionnaire as potential issue since it could lead participants to withdraw and not complete all questions.

After several changes on the instrument, it was piloted in electronic version on 17 teachers. A comment bar was added to every dimension, and participants were provided the opportunity to leave a comment or a suggestion, especially in regard the clarity of the items, the electronic layout of the questionnaire and the administration of the questionnaire. The pilot study included secondary teachers from both genders and currently working in the secondary schools implementing the E-Schoolbag project. Cronbach's Alpha was used to measure the internal consistency of the instrument's dimensions (Cohen et al., 2013; Creswell, 2013).

The results of the pilot study revealed that the dimensions were reliable. There were three dimensions with reasonably strong α coefficient, such as student use (α= .95), perception of impact (α= .90) and support (α= .90). The other two dimensions (advantages and classroom management issues) were found with lower reliability. Moreover, the participants of the pilot study commented

on the electronic layout of the questionnaire, recommended to change the drop-list to make the survey user-friendly.

The original questionnaire the "Teacher Survey: One-to-One Computing in Educational Research" consisted of 83 items. Both participants in the pilot study as well as the experts expressed concerns regarding the length of the questionnaire. Based on the feedback from experts and the pilot study, the following changes were made on the items of the questionnaire, irrelevant and the two dimensions (teachers' work environment and teachers uses) were removed and a few questionnaire items were reworded. The reliability of the five dimensions' items was reanalyzed using the total sample was (N=365). Table 3 illustrates Cronbach's Alpha reliability of the questionnaire's dimensions. The five dimensions were found with highly reliability as Cronbach's Alphas ranged from .84 to .95 across the five dimensions.

Table 3

Cronbach's Alpha Reliability of the Dimensions

Dimensions	Item	α
Students' Use	17	.91
Perception of Impact	18	.95
Advantages	6	.89
Support	8	.89
Classroom Management Issues	7	.84

Statistical Analysis

Questionnaire responses about the demographics were analyzed descriptively (frequencies, percentages). Also, descriptive statistics were used to analyze and interpret teachers' perceptions of all the five dimensions of the survey (means, standard deviations) (Cohen et al., 2013). Inferential statistics t-test was employed to examine significance differences between gender and two dependent variables (the advantages and the impact of one-to-one computing). One-way Analysis of Variance (ANOVA) was employed to examine significances among teachers with different years of experience with two dependent variables (the advantages and the impact of one-to-one computing). Participants' responses were coded and analyzed utilizing the SPSS (Statistical Package for the Social Science) software.

Ethical Consideration and Limitations

Before proceeding with the study, permission to conduct this research was obtained from the Qatar University's Committee of Institutional Review Board (IRB) and MOEHE since this study involved with human subjects (teachers), To obtain IRB approval, a proposal of the study, a copy of the instrument and the MOEHE approval was submitted.

At the beginning of the questionnaire, participants read and agreed to the consent of approval to participate (See Appendix A). The consent declares that participating in this study is voluntary, and all participants have the right to withdraw from it in any time they want to. Also, it includes a brief description of the study and the significance to the field. Furthermore, it guarantees to the participants that collected data will be used for scientific research and will stay anonymous in all times (Cohen et al., 2013; Creswell, 2013).

Chapter Summary

This chapter discussed the methods of quantitative design that was utilized to examine secondary teachers' perceptions toward one-to-one computing initiative in the Qatari secondary schools. The context of the study, the population of the study and recruitment of the participants were presented in this chapter. Also, this chapter discussed the data collection procedures and the analysis methods that were used in the study. The next chapter, chapter 4 will present the collected data from the questionnaire.

Chapter 4: Results and Findings

Introduction

This chapter presents the results of 365 questionnaire responses and the findings of the analysis. The data from the questionnaire were exported to SPSS and statistical tests were conducted such as descriptive statistics, t-test and one-way ANOVA was utilized to analyze the collected data. This chapter is divided into three sections based on the questions of the research. The three research questions were addressed in this study are the following:

1. What perceptions do secondary school teachers hold about one-to-one computing in terms of (a) student use, (b) perception of impact, (c) advantages of one-to-one, (d) support, (e) classroom management issues?
2. Are there any statistically significant differences (alpha=.05) in teachers' perceptions of (a) advantages and (b) impact of one-to-one computing according to the teacher's gender?
3. Are there any statistically significant differences (alpha=.05) in teachers' perceptions of (a) advantages and (b) impact of one-to-one computing according to the teacher's years of experience?

Research Question One

To address the first question, descriptive statistics were reported for each of the five dimensions: (a) student use, (b) perception of impact, (c) advantages of one-to-one computing, (d) support, and (e) classroom management issues.

As part of the questionnaire's first dimension, teachers were asked to self-evaluate how frequent they ask students to use the Tablet PCs to preform learning tasks in their classrooms. Table 4 illustrates the findings of the descriptive analysis preformed on the items of the dimension students' use. The means and the standard deviations for the dimensions and their items are

presented to address this question. The participants' responses (*N*=365) for the dimension students' use of the Tablet PC in the one-to-one computing initiative are presented in Table 4. It was noted three most common students' Tablet PCs' uses are: to access the internet to collaborate (M=4.95, SD= 1.57) was the most prevalent, closely followed by producing word processed documents (M=4.43, SD=1.73) and to access electronic information sources such as Google and the Web (M=4.35, SD=1.79). Using Tablet PCs to write and illustrate a story had the lowest mean score (M=2.04, SD=1.24). Also, collaborating with other schools had a low mean score (M=2.22, SD=1.17) in comparison to the other items in the dimension, indicating that teachers are less frequently asking students to use Tablet PCs in their classrooms to perform these two tasks.

Table 4

Means and Standard Deviation of Students' Use Dimension

	Students' Use score	
Item	M	SD
Write story & illustrate	2.04	1.24
Collaborate with other schools	2.22	1.17
Collect data & present conclusions	2.78	1.49
Use digital tools & peripheral devices	2.90	1.67
Solve real-world problems	3.09	1.67
Create electronic portfolios	3.10	1.64
Take notes for a class	3.66	1.92
Visually represent/investigate concepts	3.84	1.64
Conduct online research	3.92	1.65
Communicating with others	4.01	1.64
Create video/audio	4.01	1.68
Take quiz/test	4.12	1.11
Do homework	4.13	1.33
Turning-in assignments	4.28	1.26
Use electronic information sources (e.g. Google and Web)	4.35	1.79
Produce word-processed documents	4.43	1.73
Use the Internet to collaborate	4.95	1.57
Total	3.63	1.02

Note. Not applicable =1 Rarely =2 Quarterly =3 Monthly =4 Weekly =5 Daily =6

Table 5 presents the descriptive statistics of teachers' responses (*N*=365) to the second questionnaire's dimension. Teachers were asked to response regarding the perceived impact of one-to-one computing on learning in their schools. Responses were rated on five-points scale (1 very negative and 5 very positive). Overall, teachers' perceptions were relatively positive towards the impact of Tablet PCs on learning environment (*M*=3.56, *SD*=.67) with a slight spread of standard deviation. Teachers' responses indicated using a high quality instructional tool had the greatest impact (*M*=4.01, *SD*=.84), with the highest level of mean among the other items in the dimension closely followed by item impact on team's cohesiveness (*M*=3.93, *SD*=.87). The three items: parents' involvement in the students' schoolwork (*M*=2.59, *SD*=1), students level of reasoning and problem solving (M=3.30, *SD*=.85), and students' self-efficacy (*M*=3.39, *SD*=.82), were reported with lowest mean scores (impact) among other items of the dimension, indicating that teachers felt the Tablets PC have the slightest influence on learning environment.

Table 5

Means and Standard Deviation of Perceived Impact Dimension

	Perceived Impact Score	
Item	*M*	*SD*
Parents' Involvement in the students' schoolwork	2.59	1
Students level of reasoning and problem solving	3.30	.85
Students self-efficacy	3.39	.82
Interaction with parents	3.45	.98
Students' ability to work interpedently	3.45	.91
Students Ability to demonstrate metacognition	3.45	.85
Students Engagement	3.47	.97
Students quality of school work	3.47	.80
Students Attendance	3.56	.86
Students grades	3.56	.86
Students Ability to work cooperatively	3.58	.86
Students Interaction	3.60	.95
Interaction/collaboration with students	3.69	.91
Classroom management	3.78	.95
Students Learning	3.86	.90
Interaction/collaboration with teachers	3.88	.87
Team's Cohesiveness	3.93	.87
Your use of high quality instructional tools	4.01	.84
Total	3.56	.67

Note. Very Negative=1 Negative=2 Neutral=3 Positive=4 Very Positive=5

Table 6

Means and Standard Deviation of Advantages One-to-One

	Advantages One-to-One Score	
Item	M	SD
Students work harder in assignments	2.79	1.06
Students' willingness to do second drafts	2.82	.99
Students' initiative	2.90	1.04
Students create better-looking products	3.07	1.09
Better writing quality when using word processing	3.09	1.07
Students help one another while doing Tablet PC work	3.12	1.04
Total	2.96	.85

Note. Strongly disagree=1 Disagree=2 Undecided=3 Agree=4 Strongly agree=5

Table 6 presents the means and standard deviations of the teachers' perceptions (*N*=365) of the dimension advantages of one-to-one computing initiatives. This dimension reported based on scale of agreement, consisted of five-points scale, ranging from (1 being strongly disagree to 5 being strongly agree). The grand mean of this dimension was (M=2.96, SD=.85). Of the teachers' responses, the item students are willing to help one another while doing Tablet PC work was reported with the highest mean in the dimension (M=3.12, SD = 1.04). This was closely followed

by the item students' writing quality is better with the use of word processing (M = 3.09, SD = 1.07) and students create better-looking products (M = 3.07, SD = 1.09). On the other hand, students work harder on assignments (M = 2.79, SD = 1.06) had the lowest mean among all the items of this dimension.

Table 7 presents the means of the teachers' perceptions (*N*=365) regarding the received support in the schools implementing the one-to-one environment (E-Schoolbag initiative). Teachers were asked to report their access to the technical and instructional support available in the school, on a dimension based on scale of frequency, ranged from (not existent= 1 to Always=5). The overall mean score (*M* = 3.45, *SD* = .87), indicates teachers reported this dimension with sometimes, with a slight spread of dispersion of their responses. Among the items of the dimension support, the item reliable and high-speed Internet access was reported with the highest mean score (*M* = 3.70, *SD* = 1.07). Then followed by item instructional support with a mean score (*M* = 3.76, *SD* = 1.04) and technical support with little or no wait-time (*M* = 3.64, *SD* = 1.01). The mean score of the item offering distance learning opportunities was reported with the lowest mean score among the items of the dimension support (*M* = 2.92, *SD* =1.14). The access to the technical equipment for planning lessons & professional development was also was reported with relatively low mean score (*M* = 3.24, *SD* = 1.34).

Table 7

Means and Standard Deviation of Support Dimension

Item	Support score	
	M	SD
Distance Learning Opportunities	2.92	1.14
Equipment for planning lessons & professional development	3.24	1.34
Sufficient numbers of Tablet PCs and other equipment	3.36	1.23
Appropriate Software	3.49	1.07
Reliability of Tablet PC & other equipment	3.62	1.16
Technical support with little or no wait-time	3.64	1.01
Instructional support that helps me to integrate technology	3.67	1.04
Reliable & high-speed Internet access	3.70	1.07
Total	3.45	.87

Note. Not Existent=1 Rarely =2 Sometimes=3 Often=4 Always=5

Table 8 presents teachers' responses (N=365) to classroom management issues encountered in their classroom and lessons while integrating Tablet PCs. Teachers were asked to rate their responses based on scale of frequency of encountering the items of this dimension. The scale ranged from (1= Always to 5= Not experienced). Examining the items' means scores of this dimension, it was noted that teachers are relatively not considering the items: issues of access to Tablet PCs (M = 3.38, SD = 1.05) and off-task behaviors (M = 3.32, SD = 1.10) as a major concern in implementing one-to-one computing in their classrooms. The most two frequent issues that were reported in this dimensions as hinders are in the one-to-one computing initiative are

differentiating difficulties with mean score (*M* = 2.83, *SD* = .93), and technical difficulties (*M* = 2.95, *SD* = 1.11).

Table 8

Means and Standard Deviation of Classroom Management Issus

	Classroom Management Issus Score	
Item	*M*	*SD*
Differentiating difficulties	2.83	.93
Technical difficulties	2.95	1.11
Low efficiency	3.03	1.05
Students' lack of skills	3.05	1.08
Power issues	3.11	.99
Off-task behaviors	3.32	1.10
Issues of access to Tablet PCs	3.38	1.05
Total	3.09	.75

Note. Always=1 Often =2 Sometimes=3 Rarely=4 Not experienced=5

Research Question Two

This research question seeks to find if there are any statistically significant differences (alpha=.05) in teachers' perceptions of (a) the perceived impact and (b) the advantages of one-to-one computing according to the teacher's gender. Two separate t-test were used to answer the second research question: are there any statistically significant differences (alpha=.05) in teachers' perceptions of (a) the impact and (b) the advantages of one-to-one computing according to the teacher's gender. Gender is the independent variable (factor) while the two dimensions impact and the advantage are the dependent variables.

Table 9 presents the results of *t*-test of teachers' perceptions of the impact based on gender. The mean score of male teachers' perceptions of the impact was (M = 3.54, SD= .7) while the female mean score was (M= 3.59, SD= .63). No statistically significant differences were found between the two means of perceptions of impact t (363) = -.713-, p = .48).

Table 9

T-test Results of Teachers' Perceptions of Impact by Gender

	Male		*Female*			
	M	*SD*	*M*	*SD*	*t*	*p*
Impact	3.54	.70	3.59	.63	-.713-	.48

While examining the scores of means, it was noted they were relatively similar among the categories, female teachers mean score higher than male teachers (M= 3.01, SD=.83). Table 10 presents the results of *t*-test of the responses of advantages as perceived by teachers with gender as a factor, the results revealed there was no significant differences were found between the two categories of teachers t (363) = .-.900-, p = .37).

Table 10

T-test Results of Teachers' Perceptions of Advantages by Gender

	Male		*Female*			
	M	*SD*	*M*	*SD*	*t*	*p*
Advantages	2.93	.87	3.01	.83	.-.900-,	.37

Research Question Three

This question examined if there are any statistically significant differences (alpha=.05) in teachers' perceptions of (a) the advantages and (b) the impact of one-to-one computing according to the teacher's years of experience. To answer this research question, two separate one-way ANOVA were conducted. The dependent variables are the perceived impact and the perceived advantages. Teachers were categorized in four groups based on their years of teaching experiences (independent variable): 0-5 years, 6-10 years, 11-20 years and more than 20 years.

Scores of means were considerably similar among the categories (see Table 11), except of the teachers who are within (5 years or less of teaching experience) scores with the highest mean score among the other categories (M= 3.65, SD=.7). followed by the teachers who are (more than 20 years of teaching experience) with mean score (M= 3.57, SD=.64). Table 12 presents the results of ANOVA of teachers' perceptions of impact by the years of experience, there was no significant differences were found among the categories of teachers ($F(3,361) = .47$, $p = .704$).

Table 11

Means and Standard Deviation of Teachers' Perceptions of Impact by Years of Experience

	Perceptions of Impact by Years of Experience		
Years of experience categories	*n*	*M*	*SD*
0-5	31	3.65	.7
6-10	88	3.50	.72
11-20	135	3.56	.67
More than 20	111	3.57	.64
Total	365	3.56	.67

Table 12

One-Way Analysis of Variance of Teachers' Perceptions of Impact by Years of Experience

Source	*df*	*SS*	*MS*	*F*	*P*
Between groups	3	.643	.23	.47	.704
Within groups	361	164.94	.46		
Total	364	165.59			

While examining the scores of means, it was noted they were relatively similar among the categories (see Table 13), the teachers who are within (11 to 20 years of teaching experience) scores had the highest mean score among the other categories (*M*= 3.03, *SD*=.78). Followed by the teachers who are within (5 years or less of teaching experience) with a mean score (*M*=2.97, *SD*= .84). Table 14 presents the results of ANOVA of the responses of advantages as perceived by teachers with different years of experience as a factor, the results revealed there was no significant differences were found among the four categories of teachers ($F(3,361) = .6$, $p = .621$).

Table 13

Means and Standard Deviation of Advantages by Years of Experience

	Advantages by Years of Experience		
Years of experience categories	*n*	*M*	*SD*
0-5	31	2.97	.84
6-10	88	2.96	.95
11-20	135	3.03	.78
More than 20	111	2.88	.88
Total	365	2.96	.86

Table 14

One-Way Analysis of Variance of Advantages by Years of Experience

Source	*df*	*SS*	*MS*	*F*	*P*
Between groups	1	1.311	.44	.6	.621
Within groups	361	266.84	.74		
Total	364	268.15			

Chapter Summary

To answer the three research questions, quantitative data were collected utilizing a questionnaire from (*N*=365) teachers currently working in ten secondary schools implementing E-Schoolbag project. Data was analyzed using descriptive statistical measures and inferential measures. Overall findings indicated teachers were found to be relatively positive towards one-to-one computing initiative. There were no statistically significance difference in teachers' perceptions towards the advantage and the impact of one-to-one computing initiative based on the two factors gender and years of teaching experience. Additionally, the results revealed no statistically significance difference among teachers with different years of teaching experience in regard their perceptions toward the advantage and the impact of one-to-one computing initiative. The next chapter presents the discussion of the study's findings in regard to the review of the literature, followed with recommendation of the study.

Chapter 5: Discussion and Conclusion

Introduction

Pursing Qatar National Vision 2030 for human development, Qatar has been able to contribute with significance effect in Information and Communication Technologies (ICT) implementation and development, setting a model to be followed by other countries in the Middle East and worldwide (Al-Jaber & Dutta, 2008).

From 2011 to 2013 the Ministry of Education and Higher Education has initiated the implementation of the E-schoolbag project in ten secondary schools. Students in the projects were assigned a TPC, offering wireless Internet access across the schools' buildings for students and academic staff, with intention to create a one-to-one computing environment (Ministry of Education and Higher Education, 2013). This initiative in Qatar stands for the efforts to fulfill 2030 vision, with the intentions to expand to include more independent Qatari schools, it is crucial to build a solid research based results in order to guide the policy makers' decisions.

To answer the research questions a questionnaire was utilized to collect the responses, the questionnaire "Teacher Survey: One-to-One Computing in Educational Research" to address the questions of the study (Prososki, 2015). Due to the cultural context of the current study the survey was translated into Arabic language, following the translation and back translation method (Behling & Law, 2000). The reliability and validity of questionnaire was examined then followed by a pilot study.

The survey examined the responses from all the teachers in the secondary schools implementing the one-to-one computing toward the one-to-one computing initiative. The questionnaire was composed of five domains as follows: (a) student use, (b) perception of impact, (c) advantages, (d) support, (e) classroom management issues (Prososki, 2015). Each of the

domains were analyzed using descriptive statistics (means and standard deviation) were utilized. T-test and one-way Analysis of Variance (ANOVA) was utilized to examine any significance difference among gender, years of experience with two dependent variables (the advantages and the perception of impact).

This chapter presents the finding as they relate to the previous research in one-on-one computing initiatives and Tablet PC integrating in classrooms and providing recommendations based upon the findings.

Limitations

This study utilized a single questionnaire as an instrument to gather data. These findings are self-reported and can be influenced by the viewpoints of the teachers participating in reporting the one-to-one computing. Additionally, the study was limited in scope to those ten schools that implemented the one-to-one computing initiative. It was also limited to the teachers who were serving in these secondary schools during the 2016-2017 academic year.

Research Question One

The first question sought to determine secondary school teachers' perceptions about one-to-one computing in terms of: (a) student use, (c) perception of impact, (c) advantages of one-to-one computing, (d) support, and (e) classroom management issues.

The main objective of implementing E-Schoolbag initiative is to improve learning through supporting school in creating an individualized and flexible learning environment (Al-Jaber & Dutta, 2008). This was supported by the overall finding of the current study, that showed that 365 teachers participated in this study are relatively positive toward one-to-one computing initiative, it was found that one-to-one computing had a positive impact on students' learning (M=3.86, SD= 0.90), these finding are consistent with prior studies that indicated that one-to-one computing were

positively influence on students learning experiences (Johnson, 2013; Maschmann, 2015; Meyer, 2007). The finding of the current study revealed that most teachers perceive one-to-one computing could impact student's grades and therefore his academic achievement (*M*=3.56, *SD*= 0.86). These findings are aligned with the finding Lowther et al., (2012) that one-to-one computing positive impact the students' achievement and learning. Opposing to the findings of Constant, (2011), that found teachers perceive the initiative with little or no actual effect on the students' grades in subjects (Constant, 2011).

It is important to note collaboration and communication in one-to-one computing in the Qatari secondary schools were influenced positively as perceived by the participants, it is one of the most common uses of one-to-one computing is using Internet to collaborate with other students (*M*=4.95, *SD*= 1.57), indicating that is used in a weekly basis in classrooms. Likewise, using electronic information resources (e.g. Google and WEB) (*M*=4.35, *SD*= 1.79), this is aligned with the previous studies' findings indicating that the Internet was the most commonly used tool in one-on-one computing classrooms (Dündar & Akçayır, 2014; Lowther et al., 2012).

The findings of this study revealed that one-to-one computing has a positive impact on students' interaction and collaboration among them (*M*=3.69, *SD*= 0.91). This finding is supported by Li et al., (2010) who found that students are more collaborative while using Tablet PC, and classrooms were described warm and supportive. Meyer (2007) also discovered the one-to-one computing initiative improved the communication among students and parents. This study, however, found that teachers perceived one-to-one computing as having little or limited impact on parents' involvement in the students' schoolwork (*M*=2.59, *SD*= 1), likewise, interaction with parents (*M*=3.45, *SD*= 0.98). This limited perceived impact could be attributed to parents' lack of awareness about the initiative. Furthermore, it was found in the educational reform in Qatar,

teachers facing to challenges in regard to the lack of parental involvement and lack of parents' support to the students as one of the disadvantages of the Qatar reform (Romanowski, et al., 2013). Also, some students in Qatar did not have Internet access in their home nor they get any academic or technological support from any family member (Robinson, & Ally, 2010).

Using Tablet PCs in producing word-processed document was found in the current study as one of the most common uses in one-to-one computing classrooms (*M*=4.43, *SD*= 1.73). This finding was supported by Lowther et al., (2012) that revealed word processing is one of the most frequent uses in the one-to-one computing initiative. Moreover, in the current study it was revealed the improvement of students' written products was considered as one of the advantages of implementing one-to-one computing initiative (*M*=3.1, *SD*= 1.1). Students were found utilizing Tablet PC as a writing tool, specifically word processor. These findings are similar to Russell et al. (2004) findings, that found students viewed their devices as their main writing tool, students tended to write more frequent since the initiative, and eventually improving their writings (Russell, et al., 2004).

Based on the findings of the current study, using Tablet PCs for homework is a frequent task in one-to-one computing (*M*=4.13, *SD*= 1.33). These findings are supported with prior research (Lei & Zhao, 2008; Zuber & Anderson, 2012). It can be attributed to the fact it was perceived more easy and enjoyable to do using devices in one-to-one computing (Dündar & Akçayır, 2014).

Turning-in assignments (*M*=4.28, *SD*= 1.26) was found in the current study as one of the frequent tasks on one-to-one computing. This finding is aligned with the findings of Kocak, (2015), that found one-on-one computing facilitate students' assignments submission. Strikingly, in the current study teachers did not perceive students work harder in their assignment (*M*=2.79, *SD*=

1.06) since the implementation of one-to-one initiative.

Regarding support, Internet access was found in literature as a prominent obstacle that limited teachers and students' usage of technology in classrooms (Garthwait & Weller, 2005; Kocak, 2015; Minshew & Anderson, 2015). The finding of the current study was not found aligned to these findings, teachers' responses reported that the Internet access was found a reliable and high speed Internet access (*M*=3.70, *SD*= 1.07). In fact, this finding may be interpreted in the current study as a supportive factor to the implementation of one-to-one computing initiative . This can be attributed to the Qatar's ICT efforts to improve the Internet connectivity in K-12 schools in Qatar. Furthermore, Qatar ranks within the top half of countries in Internet Connectivity in K-12 Schools International Benchmark (MOTC, 2011).

The current study, teachers' responses reported that technical support was found in the E-Schoolbag with little or no wait-time with (*M*=3.64, *SD*=1.01). Yet, technical difficulties were found as a possible issue in the E-Schoolbag schools, with mean score (*M*=2.95, *SD*=1.11), although well-trained ICT support is presence in the schools' premises with an average of 2.8 full time staff member per-school (MOTC, 2011). This finding is aligned with findings of the Lowther et al., (2012). In addition, Johnson, (2013) highlighted the concern that the lack of reliable technological support frustrated teachers and could influence the implementation.

This study found students' off-task behaviors as possible prominent classroom management issues (*M*=3.32, *SD*= 1.05) teachers tackles in classrooms, this finding supports the previous studies reported students' off-task behaviors as the undesirable side of one-to-one computing classrooms (Dündar & Akçayır, 2014; Zuber & Anderson, 2012).

This study found that teachers were sometimes challenged by issues concerns the access to Tablet PC (*M*=3.38, *SD*= 1.08), which could influence teachers' integrating technology in

classrooms (Inan & Lowther, 2010). Furthermore, the item power issues was reported with a mean score (*M*= 3.11, *SD*=.99). This is similar to a previous research finding, battery issues or students forgetting to charge their devices at homes interrupt the teaching and learning activities (Dunleavy et al., 2007).

Research Question Two

The second question of this study sought to examine any statistically significant differences between male and female teachers' perceptions in terms of the one-to-one computing advantages and the perceived impact of one-to-one computing.

In the context of Qatar as a part of the Gulf Cooperation Council, it is assumed that the culture restricts female's usage of ICT in this region (Khodr, 2011). The Qatar's ICT Landscape Household and Individuals 2013 reports that females and older Qatari citizens lack ICT skills and this is considered a challenge to universal ICT diffusion (Ministry of Information and Communications Technology, 2013). Therefore, gender was considered as a possible factor that could influence the findings.

The overall findings for this question were not found statistically significant. These findings are similar to a previous research in the perceived advantages and impact of one-to-one computing (Prososki, 2015). Previous studies also found no statistical significance differences across gender in regards of integrating one-to-one computing in classrooms (Dündar, & Akçayır, 2014; Liu, et al., 2016). Contradicting the findings of Mathews, & Guarino, (2000), that reported male teachers were found more likely to employ technology in their roles.

Research Question Three

The third question in the current study sought to examine any statistically significant differences among teachers' perceptions with different years of experience, in terms of the one-to-

one computing advantages and the perceived impact of one-to-one computing. The literature addressing teachers' years of experience indicated this could be a factor influence integrating technology in the classrooms (Aldosari, 2007; Inan & Lowther, 2010; Tay et al., 2013). An assumption was projected that beginner teachers representing younger teachers would exceed the teachers with more teaching experience. Based on the findings by Inan & Lowther's (2010), teachers with more years of experience had lower perceptions of readiness to use technology and teachers with more teaching experience could be more resistance to integrate technology in their teaching activities (Prasertsilp, 2015).

The finding of the current study did not support this possibility. The overall findings of this question were not statistically significant. The independent variable is teachers' years of experience and the two dependent variables are the advantages of one-to-one computing and the perceived impact of one-to-one computing. The teachers' responses from the four groups: 0-5 years, 6-10 years, 11-20 years and more than 20 years, were very similar based on the two variables. This finding is aligned with a previous research in the perceived advantages and impact of one-to-one computing based on the level of teachers' years of experience (Prososki, 2015).

The results of research questions two and three may be attributed to the fact that teachers in the independent schools receive rigorous ICT training, in the year 2010 and it was reported that more than one-third of teachers across grades K-12 in the independent schools had ICT training during the past twelve months. In addition, teachers' ICT training increased 27% since 2008 (Supreme Council of Information & Communication Technology, 2011).

Recommendations

Teachers viewed the one-to-one computing initiative as a positive component of the learning process and learning environment. Therefore, it is crucial to sustain and reinforce

teachers' positivity toward integrating Tablet PC in their instruction, address obstacles and challenges teachers face and establish a supportive school community.

Teachers are challenged with the lack of parental involvement and support to the students. As teachers are more involved in the teaching and learning in classrooms it is the schools' leadership role in this initiative is to support the teachers in building a partnership with parents. Schools' leaders should share the E-Schoolbag's vision through liaising with parents in meetings and delivering ICT training to raise awareness of the uses, advantages and impact of one-to-one initiative and its contribution to the students' learning.

Students' off-task behaviors are challenging to teachers in teaching and learning activities in one-to-one computing classrooms. It is recommended to plan a rigorous professional development program for teachers addressing this issue, targeted to teach and support teachers in designing lessons and learning activities and how to motivate students toward learning. Also, schools can establish policies and regulation regarding off-task behavior in classroom by setting the expected norms of students in classrooms. Finally raising awareness among the stakeholders of the initiative and the vision behind implementing technology's initiatives in Qatar and their expected roles in contribution in the initiative.

Another recommendation is to provide charging stations in schools so students can access these during the breaks. These can be mobile stations so teachers can move them to their classrooms based on their needs. In order to enhance teachers' access to technological equipment and Tablet PCs, schools could assign a staff member who would be responsible to facilitate teachers with the needed equipment.

Furthermore, it is important to support the teaching and learning by enhancing the curriculum and the content with appropriate software and soft materials or websites to be used

while integrating Tablet PC in learning.

Future Research

This research by design is quantitative, a questionnaire was utilized, for the purpose of understating the perceptions of teachers in unique initiative in the field of education and innovated the current context, aimed for the finding to be generalized. However, its recommended for further research it is important to grasp deeper insights utilizing individual interviews or focus groups. Including all the stakeholder: students, parents and schools' leaders to provide a meaningful and divers insights of the one-to-one computing initiative.

Furthermore, it was revealed in the current study that one-to-one computing had limited effect on the parents' involvement in the students' schoolwork, this finding was reported as perceived by the teachers. In order to have a deeper understanding of parents' perceptions hold toward one-to-one computing initiative (E-Schoolbag) it is recommended that further research studies examine parents' perceptions toward the initiative.

Another stakeholder plays a crucial role in one-to-one computing initiatives is the technological support staff member in the schools. The current study found that occasionally teachers were hindered with the technical difficulties, examining the perceptions of the support staff in depth will be beneficial and will influence the implementation of one-to-one computing project.

Chapter Summary

The purpose of this study was to determine the teachers' perceptions in ten Qatari secondary schools implementing E-Schoolbag in regard to the effect of one-to-one computing initiative (E-Schoolbag) on learning environment. Teacher perceptions were examined utilizing a questionnaire composed of five domains as follows: (a) student use, (b) perception of impact, (c)

advantages, (d) support, (e) classroom management issues (Prososki, 2015). This study found teachers are relatively positive toward the one-to-one computing initiative. Furthermore, the study yielded that no statistically significant difference existed between gender findings male and female teachers' responses were very similar in terms of perceiving the advantages and the impact of one-to-one computing. Teachers' responses were reported based on the factor years of teaching experiences, no statistically significant differences were found.

This study has important implications for the Ministry of Education and Higher Education and the Ministry of Information and Communications, to measure the impact of the initiative on learning environment, students' uses of the one-to-one computing. Furthermore, planning a future professional development for teachers. Finally, the finding will provide the perspectives and guidance of the expansion plan of the initiative.

References

Aldosari, N. A. R. H. (2007). *Factors affecting the efficacy of icts as instructional tools in the classroom: A study of primary independent schools in qatar* (Order No. U560957). Available from ProQuest Dissertations & Theses Global. (1314564462). Retrieved from http://0-search.proquest.com.mylibrary.qu.edu.qa/docview/1314564462?accountid=13370

Al-Jaber, H., & Dutta, S. (2008). Qatar: Leveraging technology to create a knowledge-based economy in the Middle East. In *World Economic Forum* (pp. 133-134).

Alvarez, C., Brown, C., & Nussbaum, M. (2011). Comparative study of netbooks and tablet PCs for fostering face-to-face collaborative learning. *Computers in Human Behavior*, *27*(2), 834-844.

Behling, O. & Law, K. S. (2000). *Quantitative Applications in the Social Sciences: Translating questionnaires and other research instruments*: SAGE Publications Ltd doi: 10.4135/9781412986373

Bergström, P., & Årebrand, S. (2013, September). The Student-Role in the One-to-One Computing Classroom: Tensions between Teacher-Centred Learning and Student-Centred Learning. In *European Conference on Technology Enhanced Learning* (pp. 424-429). Springer Berlin Heidelberg.

Constant, M. D. (2011). *One-to-one laptop project: Perceptions of teachers, parents, and students*. (Doctoral Dissertation, The Faculty of the Educational Leadership, Western Kentucky University) .

Cohen, L., Manion, L., & Morrison, K. (2013). *Research methods in education*. New York: Routledge. Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed methods approaches*. Los Angeles: SAGE Publications.

Dickerson, J., Williams, S., & Browning, J. B. (2009). Scaffolding equals success in teaching tablet PCs. *The technology teacher*, *68*(5), 16-21.

Dündar, H., & Akçayır, M. (2014). Implementing tablet PCs in schools: Students' attitudes and opinions. Computers in Human Behavior, 32, 40-46.

Dunleavy, M., Dexter, S., & Heinecke, W. F. (2007). What added value does a 1: 1 student to laptop ratio bring to technology-supported teaching and learning?. *Journal of Computer Assisted Learning*, *23*(5), 440-452.

Elwood, S. A. (2008). Embedding Ubiquitous Technologies. In *Encyclopedia of Information Technology Curriculum Integration* (pp. 279-285). IGI Global.

Ferrer, F., Belvís, E., & Pàmies, J. (2011). Tablet PCs, academic results and educational inequalities. *Computers & Education*, *56*(1), 280-288.

Fiorillo, M. (2015). *Teacher Perception of Student Engagement in a One-to-One Computing Environment* (Doctoral dissertation, Saint Peter's University).

Garthwait, A., & Weller, H. G. (2005). A year in the life: Two seventh grade teachers implement one-to-one computing. *Journal of Research on Technology in Education*, *37*(4), 361-377.

Hammonds, L., Matherson, L. H., Wilson, E. K., & Wright, V. H. (2013). Gateway tools: Five tools to allow teachers to overcome barriers to technology integration. *Delta Kappa Gamma Bulletin*, *80*(1), 36-40.

Hatakka, M., Andersson, A., & Grönlund, Å. (2013). Students' use of one-to-one laptops: a capability approach analysis. *Information Technology & People*, *26*(1), 94-112.

Hsu, P. (2016). Examining current beliefs, practices and barriers about technology integration: A case study. *TechTrends*, *60*(1), 30-40. doi:http://0-dx.doi.org.mylibrary.qu.edu.qa/10.1007/s11528-015-0014-3

Ifenthaler, D., & Schweinbenz, V. (2013). The acceptance of Tablet-PCs in classroom instruction: The teachers' perspectives. *Computers in Human Behavior*, *29*(3), 525-534.

Inan, F. A., & Lowther, D. L. (2010). Factors affecting technology integration in K-12 classrooms: A path model. *Educational Technology Research and Development*, *58*(2), 137-154.

Johnson, D. P. (2013). *Implementing a one-to-one iPad program in a secondary school* (Order No. 3604540). Available from ProQuest Dissertations & Theses Global. (1475264216). Retrieved from http://0-search.proquest.com.mylibrary.qu.edu.qa/docview/1475264216?accountid=13370

Keppler, M. P. (2012). *An examination of the impact of one-to-one computing when used as a tool for student writing* (Doctoral dissertation, University of Northern Colorado).

Khodr, H. (2011). The dynamics of international education in Qatar: Exploring the policy drivers behind the development of Education City. *Journal of Emerging Trends in Educational Research and Policy Studies*, *2*(6), 514-525.

Knight, C. L. (2012). *Roadblocks to Integrating Technology into Classroom Instruction*. ProQuest LLC. 789 East Eisenhower Parkway, PO Box 1346, Ann Arbor, MI 48106.

Kocak, U. (2015). *Student engagement with 1:1 tablet computer-based teaching in the secondary english, history, and mathematics classrooms: Multiple case studies of a program implementation* (Order No. 3732237). Available from ProQuest Dissertations & Theses Global. (1728802757). Retrieved from http://0-search.proquest.com.mylibrary.qu.edu.qa/docview/1728802757?accountid=13370

Lavrakas, P. J. (2008). *Encyclopedia of survey research methods* : SAGE Publications Ltd doi: 10.4135/9781412963947

Lei, J., & Zhao, Y. (2008). One-to-one computing: What does it bring to schools?. *Journal of Educational Computing Research, 39*(2), 97-122.

Li, S. C., Pow, J. W., Wong, E. M., & Fung, A. C. (2010). Empowering student learning through Tablet PCs: A case study. *Education and Information Technologies, 15*(3), 171-180.

Liu, M., Navarrete, C. C., Scordino, R., Kang, J., Ko, Y., & Lim, M. (2016). Examining Teachers' Use of iPads: Comfort Level, Perception, and Use. *Journal of Research on Technology in Education*, *48*(3), 159-180.

Lowther, D. L., Inan, F. A., Ross, S. M. & Strahl, J. D. (2012). Do one-to-one initiatives bridge the way to 21st century knowledge and skills?. *Journal of Educational Computing Research*, *46*(1), 1-30.

Maninger, R. M., & Holden, M. E. (2009). Put the textbooks away: Preparation and support for a middle school one-to-one laptop initiative. *American Secondary Education*, 5-33.

Maschmann, B. (2015). *One-to-one laptop initiative: Perceptions of teachers and administrators* (Doctoral dissertation, The University of Nebraska Lincoln)

Mathews, J. G., & Guarino, A. J. (2000). Predicting teacher computer use: A path analysis. *International Journal of Instructional Media, 27*(4), 385.

Meyer, R. C. (2007). *A case study of one-to-one computing: the effects on teaching and learning* (Unpublished doctoral dissertation). University of Nebraska . Retrieved January 11, 2017, from http://www.ncsa.org/sites/default/files/media/dissertations/MeyerDick.pdf

Ministry of Development Planning and Statistics. (2011). Qatar National

Development Strategy 2011-2016. Retrieved from The Ministry of Development Planning and

Statistics: http://www.mdps.gov.qa/en/nds/Documents/Qatar_NDS_reprint_complete_lowres_16May.pdf

Ministry of Education and Higher Education. (2013). *SEC Launches First Phase of 'E-Bag' Project*. Retrieved from The Ministry of Education and Higher Education: http://www.sec.gov.qa/en/media/news/pages/newsdetails.aspx?NewsID=329

Ministry of Education and Higher Education. (2013). *30 Schools join SEC 2 of E-Bag Project 2013/2014*. Retrieved from The Ministry of Education and Higher Education: http://www.edu.gov.qa/En/Media/News/Pages/NewsDetails.aspx?NewsID=3335

Minshew, L., & Anderson, J. (2015). Teacher self-efficacy in 1: 1 iPad integration in middle school science and math classrooms. *Contemporary Issues in Technology and Teacher Education*, *15*(3), 334-367.

Montrieux, H., Vanderlinde, R., Courtois, C., Schellens, T., & De Marez, L. (2014). A qualitative study about the implementation of tablet computers in secondary education: The teachers' role in this process. *Procedia-Social and Behavioral Sciences*, *112*, 481-488.

Montrieux, H., Courtois, C., De Grove, F., Raes, A., Schellens, T., & De Marez, L. (2013). Mobile Learning in Secondary Education: Perceptions and Acceptance of Tablets of Teachers and Pupils. *International Association for Development of the Information Society*.

Oliver, K. M., & Corn, J. O. (2008). Student-reported differences in technology use and skills after the implementation of one-to-one computing. *Educational Media International*, *45*(3), 215-229.

Prasertsilp, P. (2015). Effective teacher training for tablet integration in K-12 classrooms (Order No. 3740039). Available from ProQuest Dissertations & Theses Global. (1750074296).

Retrieved from http://0-search.proquest.com.mylibrary.qu.edu.qa/docview/1750074296?accountid=13370

Prensky, M. R. (2010). Teaching digital natives: Partnering for real learning. Corwin Press.

Prososki, C. R. (2015). *One-to-one computing: A mixed-methods study designed to uncover the perceived effects on the overall classroom environment* (Doctoral dissertation, Northwest Nazarene University).

Robinson, M., & Ally, M. (2010). Female Students' Experience in E-learning: A study from Qatar. Educational Technology, 50(3), 8-12.Shameem, A. (2016). *Influence of culture on teachers' attitudes towards technology* (Doctoral dissertation, Lehigh University).

Roblyer, M. D., & Doering, A. H. (2014). *Integrating educational technology into teaching*. Harlow, Essex: Pearson.

Romanowski, M. H., Cherif, M. E., Al Ammari, B., & Al Attiyah, A. (2013). Qatar's Educational Reform: The Experiences and Perceptions of Principals, Teachers and Parents. International Journal of Education, 5(3), 108.

Russell, M., Bebell, D., & Higgins, J. (2004). Laptop learning: A comparison of teaching and learning in upper elementary classrooms equipped with shared carts of laptops and permanent 1: 1 laptops. *Journal of Educational Computing Research*, *30*(4), 313-330.

Supreme Council of Information & Communication Technology. (2013). Qatar's ICT Landscape 2013 Households and Individuals. Retrieved from http://www.ictqatar.qa/en/documents/document/qatar%E2%80%99s-ict-landscape-2013-households-and-individuals

Tay, L. Y., Lim, S. K., & Lim, C. P. (2013). Factors affecting the ICT integration and implementation of one-to-one computing learning environment in a primary school–A

sociocultural perspective. In *Creating Holistic Technology-Enhanced Learning Experiences* (pp. 19-37). SensePublishers.

Wang, S. K., Hsu, H. Y., Campbell, T., Coster, D. C., & Longhurst, M. (2014). An investigation of middle school science teachers and students use of technology inside and outside of classrooms: considering whether digital natives are more technology savvy than their teachers. *Educational Technology Research and Development*, *62*(6), 637-662.

Williams, N. L., & Larwin, K. H. (2016). One-to-One Computing and Student Achievement in Ohio High Schools. *Journal of Research on Technology in Education*, *48*(3), 143-158.

Zuber, E. N., & Anderson, J. (2012). The initial response of secondary mathematics teachers to a one-to-one laptop program. *Mathematics Education Research Journal, 25*(2), 279-298. doi:10.1007/s13394-012-0063-2

Appendix A: Consent Letter

Dear Teacher,

I am a graduate student at Qatar University. For my Master thesis, I am conducting a study on teachers' perceptions of one-to-one computing effects on learning environment in Qatari secondary schools. The aim of this research is to investigate the effect of one-to-one computing (E-schoolbag project) on learning environment based upon the perceived by teachers in the Qatari secondary schools implementing the E-Bag project (phase one and phase two). The population of this study is all secondary teachers in independent schools implementing the E-Schoolbag project in Qatar. The results of the study may be beneficial to teachers, students, principals, supervisors, coordinators, curriculum designers, policy makers in Qatar.

I kindly request your participation in this study by responding to the questionnaire which will take approximately twenty-five to thirty minutes to complete. Please ensure that you answer all the questions. It is important that you answer the questions honestly, frankly, and from your own perspective.

All participants in the study will remain anonymous throughout any publications and at no point will the researcher use any identifying information or comments. The information obtained from teachers will remain strictly confidential and the reporting of results will be only used by the researcher for academic purposes. All files will be stored on a password protected personal laptop. Data will be stored for three years after completion of the study. Ticking the box below and completion of this questionnaire will be taken as evidence of you giving informed consent to be included as a participant in this study. Your participation in this study is entirely voluntary and you may withdraw from the study at any time. If you want to be informed about the research results or have any further questions, you may contact me, Khalod Al-Mannai on the following email address: 200563433@qu.edu.qa

Thank you for your time and participation.

Appendix B: Questionnaire

Teacher Survey: One-to-One Computing in Educational Research

Demographic Characteristics			
Gender:			
☐ Male	☐ Female		
Grade level taught:			
☐ 10	☐11	☐12	☐More than grade level
Years of teaching experience:			
☐0-5	☐6-10	☐11-20	☐+20
Subject taught:			
☐ English Languages	☐ Arabic Languages	☐ Islamic Studies	☐ Math
☐ Social Studies	☐ Biology	☐ Physics	☐Chemistry
☐ Physical Education	☐ Technology	☐Other	

How often do students in your class(es) use Tablet PC to do the following? Mark "Not Applicable" ONLY if this use does not apply to your subject area:	**Daily**	**Weekly**	**Monthly**	**Quarterly**	**Rarely**	**Not Applicable**
1. Communicate with peers, and others (e.g., over e-mail or through discussion boards)						
2. Solve real-world problems (i.e., involving situations, issues, and tasks that people actually tackle in the outside world)						
3. Produce word-processed documents (e.g. Microsoft Word)						
4. Create video or audio products to produce a multi-media presentation						
5. Conduct online research						
6. Use the Internet to collaborate with students in or beyond your school						
7. Visually represent or investigate concepts (e.g., through concept mapping, graphing, tables)						
8. Use digital tools and peripheral devices (e.g., digital cameras, probes,) to enhance their learning or their school work						
9. Use electronic information sources like the WEB, Google (searching for these efficiently, for example, by using "and" / "or" to narrow/expand a search, identifying						
10. Create electronic portfolios						
11. Collect data from people, newspapers, or the environment, and present conclusions using graphic or spread sheet software						
12. Collaborate with classes in other schools and compile information for a project directed by teachers or by outside scientists						
13. Write a story, then illustrate it with scanned images or digitized pictures, record sounds for the story, and make a multimedia presentation using the computer						
14. Do homework						
15. Take notes for a class						
16. Take a quiz or a test						
17. Turn in an assignment for class						
18. Other						

Please describe your experience of the impact the computers have had in each area.	**Very Negative**	**Negative**	**Neutral**	**Positive**	**Very Positive**
19. Your interaction or collaboration with students					
20. Your interaction or collaboration with other teachers					
21. The cohesiveness of your team or campus					
22. Your interaction with parents					

23. Parents' involvement in your students' schoolwork					
24. Classroom management					
25. Your use of high quality instructional tools					
26. Interaction between and among students					
27. What students learn about the subject you teach					
28. Students' engagement, involvement, and interest levels					
29. Students' ability to work independently					
30. Students' attendance					
31. Students' ability to demonstrate metacognition					
32. Students' ability to work cooperatively or collaboratively					
33. Students' grades					
34. Students' level of reasoning, problem solving, and/or thinking skills					
35. Students' quality of school work					
36. Students' self-efficacy					

The following statements describe possible advantages of implementing a one-to-one computing initiative. Please indicate how much do you agree/disagree to each statement.	**Strongly Disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly Agree**
37. Students create better-looking products than they could do with just writing and other traditional media					
38. Students help one another more while doing computer work					
39. Students take more initiative outside of class time—doing extra research or polishing their work					
40. Students' writing quality is better when they use word processing					
41. Students work harder at their assignments when they use					
42. Students are more willing to do second drafts					

Rate your access to the following items while at school:	**Non- Existent**	**Rarely**	**Sometimes**	**Often**	**always**
43. The type of equipment needed for planning lessons or for professional development (e.g., cameras, scanners)					
44. Sufficient numbers of Tablet PCs and other equipment (e.g., cameras, printers) to implement technology-supported learning opportunities as I want to					
45. Reliability of Tablet PCs, printers, projectors, and other equipment (i.e., it works when I need it)					

46. Reliable, high-speed access to the Internet in classrooms, labs, and media centers					
47. Software, appropriate for my content area and the age of my students to use with my class(es)					
48. Distance Learning Opportunities (e.g., online courses or professional development offered through video-conferencing)					
49. Technical support with little or no wait-time					
50. Instructional support that helps me to integrate technology					

Which of the following are classroom management issues since the adoption of a one-to-ne computing environment?	**Not experienced**	**Rarely**	**Sometimes**	**Often**	**always**
51. Power Issues: plugging in, battery life, etc.					
52. Reliability of Access: are the computers all present when and where they are needed					
53. Off-Task Behaviors: students web browsing, e-mailing, not attending to directions, etc.					
54. Technical Difficulties: logging on, viruses, excessive delays, etc.					
55. Efficiency: getting all the machines on, transitioning between activities, learning routines, etc.					
56. Lack of Skills: students needing excessive help					
57. Differentiating: managing for multiple levels and tasks					

Appendix C: Questionnaire (Arabic)

عزيزي المعلم/ عزيزتي المعلمة،

يسرني دعوتك للمشاركة في دراسة بحثية يجري تطبيقها ضمن متطلبات برنامج الحصول على درجة الماجستير في المناهج وطرق التدريس والتقييم في جامعة قطر. وتهدف الدراسة إلى التعرف على تصورات المعلمين عن استخدام الحقيبة الالكترونية (One-to-One Computing) وتأثيرها على البيئة المدرسية وتعلم الطلاب بشكل خاص.
وستنحصر مشاركتك القيمة في الاجابة عن اسئلة استبانة تتطلب حوالي 20 دقيقة. وتحتوي الاستبانة على جزأين: يغطي الجزء الأول بعض المعلومات العامة عنك وعن مدرستك، ويتعلق الجزء الثاني بالتصورات الخاصة بك، والمرتبطة باستخدام الحقيبة الالكترونية في العملية التعليمية.
وأوكد لك بصفة الباحثة أن أية بيانات ستقوم بتقديمها ستحظى بالسرية التامة، ولن تستخدم إلا لأغراض البحث العلمي. وسيتم تخزين الملفات بسرية تامة لمدة ثلاث سنوات بعد انتهاء الدراسة.

وفي حال اهتمامك بالحصول على نتائج هذه الدراسة، يرجى عدم التردد في الاتصال بالباحثة عبر البريد الإلكتروني
200563433@student.qu.edu.qa

علما بأن مشاركتك في هذه الدراسة تطوعية ولذا، فلا داعي لكتابة الاسم للحفاظ على خصوصيتك، كما أنه لك الخيار في المشاركة أو عدمها، ويمكنك الانسحاب في أي وقت، علما بان نتائج هذه الدراسة قد تساهم في القاء الضوء على أحد الجوانب التعليمية المهمة في قطر.

مع بالغ الشكر والتقدير على جزيل مساعدتك

الباحثة :
خلود عبدالعزيز المناعي
في حال الموافقة على المشاركة يرجى الضغط على (نعم) ، أو الضغط على (كلا) للخروج

استبيان المعلم: لتطبيق مبادرة الحقيبة الالكترونية (One to One Computing) في البحث التربوي

البيانات الديموغرافية			
الجنس:			
☐أنثى	☐ذكر		
صف التدريس:			
☐10	☐11	☐12	☐أكثر من صف معا
سنوات الخبرة في التدريس بشكل عام:			
☐0-5	☐6-10	☐11-20	☐20+
:مادة التدريس			
☐رياضيات	☐دراسات اسلامية	☐ لغة عربية	☐لغة انجليزية
☐دراسات اجتماعية	☐فيزياء	☐ أحياء	☐كيمياء
☐ حاسب الي	☐ تربية بدنية	أخرى☐	

ما معدل تكرار استخدام **الطلاب** للحقيبة الالكترونية للقيام بالمهام الآتية في حصصك الدراسية؟ الاشارة بـ (لا يطبق) **فقط** في حال عدم ملاءمة الاستخدام لمادة تخصصك:	لا يطبق	نادرًا	فصليا	شهريًا	اسبوعيًا	يوميا
1. التواصل مع الزملاء والاخرين (عبر الايميل أو من خلال المحادثات على نافذة محادثة الصف في نظام التعلم الالكتروني مثلا)						
2. حل المسائل/ المشكلات الحياتية (تتعلق بـ مواقف أو مهمات حياتية في العالم الخارجي)						
3. إنشاء مستندات نصية باستخدام معالج النصوص (مثل: مايكروسوفت وورد)						
4. عمل فيديو أو مقطع صوتي لعرض تقديمي بوسائط متعددة						
5. اجراء بحث باستخدام الانترنت						
6. استخدام الانترنت للتعاون مع الزملاء داخل أو خارج المدرسة						
7. تمثيل المفاهيم أو التحقق منها من خلال الخرائط المفاهيمية والرسوم البيانية والجداول						
8. استخدام الادوات الرقمية والاجهزة الملحقة (مثل كاميرا رقمية، مجسات) لتعزيز تعلمهم أو اعمالهم المدرسية						
9. استخدام مصادر المعلومات الالكترونية مثل (WEB، GOOGLE) والبحث بفاعلية مثل استخدام اوامر "or" / "and" في عملية البحث						
10. انشاء ملف اعمال/ انجازات الكتروني (portfolio)						
11. جمع بيانات (من الاشخاص، الصحف/الجرائد) و عرض الاستنتاجات باستخدام برنامج الرسوم البيانية أو الجداول الالكترونية						
12. التعاون مع صفوف في مدارس أخرى وتجميع المعلومات لمشروعات موجهة من قبل المعلمين						
13. كتابة قصة ثم توضيحها بصور ممسوحة ضوئيا أو صور رقمية و تسجيل صوتي للقصة وإنشاء عرض متعدد الوسائط باستخدام الحقيبة الالكترونية						
14. تأدية الواجب المنزلي						
15. تدوين الملاحظات خلال الحصة الدراسية						
16. حل تقييم قصير أو اختبار						
17. تسليم مهام وواجبات المادة						
18. أية مهام أخرى_____						

يرجى وصف خبرتك بأثر الحقيبة الالكترونية في كل من المجالات الآتية:	سلبية جدا	سلبية	محايدة	ايجابية	ايجابية جدا
19. تفاعلك أو تعاونك مع الطلاب					
20. تفاعلك أو تعاونك مع المعلمين الاخرين					
21. اتساق وتناغم أعضاء الفريق التربوي في مدرستك					
22. تفاعلك مع اولياء الامور					
23. انخراط اولياء الامور في المهام/ الواجبات المدرسية لطلابك					
24. الإدارة الصفية					
25. استخدامك لوسائل تدريس ذات جودة عالية					
26. تفاعل الطلاب بشكل فردي أو جماعي					
27. ما يتعلمه الطلاب عن المادة التي تقوم بتدريسها					
28. اندماج الطلاب وانخراطهم ودرجة اهتمامهم					
29. قدرة الطلاب على العمل باستقلالية					
30. التزام الطلاب بالحضور					
31. قدرة الطلاب على اظهار أدراكهم بكيفية تعلمهم					
32. قدرة الطلاب على العمل بشكل تعاوني					
33. درجات/ علامات الطلاب					
34. مستوى الطلاب في الاستدلال وحل المشكلات و/أو مهارات التفكير					
35. جودة اعمال الطلاب المدرسية					
36. فعالية الطلاب الذاتية (تصورهم عن قدراتهم بالنجاح في المهام)					

ما مدى موافقتك على كل من المميزات الآتية في ضوء خبرتك في تطبيق مبادرة الحقيبة الالكترونية	أوافق بشدة لا	لا اوافق	لا أستطيع التحديد	أوافق	أوافق بشدة
37. ينتج الطلاب أعمالا بصورة أفضل من تلك التي ينتجونها بالكتابة فقط أو باستخدام الوسائط التقليدية					
38. يساعد الطلاب بعضهم البعض بصورة أكبر خلال انجاز المهام باستخدام الحقيبة الالكترونية					
39. يبادر الطلاب أكثر خارج الحصة الدراسية لانجاز بحوث اضافية أو لصقل اعمالهم					
40. تتحسن جودة كتابات الطلاب حين يستخدمون برنامج معالجة النصوص (مثل: مايكروسوفت وورد)					
41. يعمل الطلاب بجد واجتهاد أكبر في انجاز واجباتهم حين يستخدمون الحقيبة الالكترونية					
42. تزداد قابلية الطلاب واستعدادهم لعمل مسودات أخرى في أعمالهم الكتابية					

قيّم معدل اتاحة/توفر العناصر الآتية خلال تواجدك في المدرسة :	غير متاح	نادرا	احيانا	غالبا	دائما
43. الأجهزة المطلوبة لتحضير الدروس أو للتطوير المهني (مثل: الكاميرات، الماسحات الضوئية...)					
44. عدد كاف من الحقائب الالكترونية والأجهزة الاخرى حيثما احتجت اليها (مثل: الكاميرات ، الطابعات) لتطبيق فرص تعليمية مدعمة بالتكنولوجيا كلما أردت					
45. جاهزية الحقائب الالكترونية والطابعات وأجهزة العرض والأجهزة الاخرى للعمل					
46. انترنت موثوق وعالي السرعة في الغرف الصفية والمعامل ومركز الوسائط					
47. برامج (Software) مناسبة لمحتوى المادة وأعمار الطلاب لاستخدامها مع حصصي الدراسية					
48. فرص للتعلم عن بعد (كمقررات تعليمية على الانترنت أو تطوير مهني متوفر خلال مؤتمرات عبر الفيديو)					
49. الدعم التقني السريع أو الفوري					
50. دعم عملية التدريس لمساعدتك في دمج التكنولوجيا بالحصص الدراسية					

ما معدل مواجهتك لكل من المشكلات الآتية منذ بدء مبادرة الحقيبة الالكترونية؟	لم يتم مواجهته	نادرا	أحيانا	غالبا	دائما
51. مشكلات مرتبطة بالشحن بالكهرباء (كتوصيل بقابس الكهرباء وعمر البطارية ..وغيرها)					
52. عدم توفر الحقائب الالكترونية في الزمان والمكان المناسبين					
53. انشغال الطلاب بالمهام غير التعليمية: كتصفح الانترنت أو استخدام البريد الالكتروني أو عدم الاستجابة للتوجيهات .. الخ					
54. الصعوبات التقنية (كتسجيل الدخول ، الفيروسات ، التأخير الشديد..الخ)					
55. تدني الفاعلية مثل صعوبة تشغيل جميع الاجهزة أو الانتقال بين الانشطة أو اجراءات التعلم المتكررة.. الخ					
56. افتقار الطلاب للمهارات: حاجة الطلاب للمساعدة المستمرة					
57. صعوبة مراعاة الفروق الفردية					