



How one-to one E-learning enhances and affects high school students' learning performance in the UAE

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Abstract

The one-to-one E-learning solution has become a significant tool of 21st century teaching art within UAE. It also has become the language that UAE youth speak. Therefore, this paper discusses how this new injected solution affected and enhanced high school student learning performance based on a case study of the first high school in UAE which implemented this kind of solution for their students from K-10 through K-12. The paper also displays how students in high school age are attracted to such a way of learning, that transferred them from the old fashion learning environment where student needs to come early to the class and sit all the day listening to what teachers say, to a more motivated and energetic learning environment.

Furthermore, the way teachers participated in implementing such a solution by designing affected curriculum for the students that is integrated and fit within one-to-one solution, added valuable value to the teaching process and gave more confidence to the teachers, because they consider themselves part of it.

However, teachers need to be engaged in curriculum design of one-to-one E-learning solution, because from the daily interaction with students they can extract creative curriculum to student. Moreover, such a learning solution needs the maximum support from the management in financial, educational and technical side in order to succeed.

Finally, more studies need to be conducted on the influence of the usage of one-to-one solution of E-learning on teachers' expectations and how such a solution affect teachers career of opportunities and chances.

Keywords: (High Schools, E-learning, one-to-one E-learning, traditional performance and E-learning technology performance)

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List of Definitions and Abbreviations

IAT: Institute of Applied Technology

ICT: Information and Communication Technology

E-Learning: Electronic Learning

LMS: Learning Management System

CTE: Career-based Technical Education

Chapter 1- Introduction

Preface

This paper addresses how one-to-one E-learning solutions applied in UAE high schools, grades 10 to 12 have enhanced the students' learning performance. In particular this paper will describe what a one-to-one E-learning solution is, how it has been applied in some UAE schools and how it works. In addition, it will talk about why one-to-one E-learning is important for students and teachers in order to develop their learning and teaching skills.

Moreover, this paper will argue the effects of this learning style on students and teachers; and it will also discuss its advantages and disadvantages.

1.1 Overview

At the beginning of this century UAE schools started focusing on injecting technology in the educational process in order to enhance teaching methods and leave the chalk and talk model behind.

Since the government of the UAE believes that implementing technology is going to develop the educational system as well as satisfy the huge demand for technological learning employees in UAE competitive market. Therefore, this type of education will keep UAE students competitive in the local market.

Moreover, the country encourages E-learning system to educate and train UAE future workforce, especially high school students, by using the 21st century learning skills which includes:

- Problem solving skills
- Critical thinking skills
- Creativity and innovation skills
- Communication skills
- Presentation skills

It is very important to prepare high school students with technology and E-learning in order to be ready for UAE higher educational system in universities and colleges. UAE high schools started implementing technology devices such as computers, smart boards and overhead projectors in their E-classrooms as the primary information delivery system.

Recently, UAE educational system started moving forward towards providing one -to- one E-learning solution where each student has his/her own laptop to communicate with his/her teachers and classmates within the same learning environment.

1.2 Background

According to Lee & Lee (2008) (in wen, 2008), p# 3,” the e-learning system is defined as a web-based information system of teaching and learning methods that allow flexible learner – centered education. In their definition, e-learning provides an inter-disciplinary approach between information technology and educational engineering. As for the researchers, the e-Three System works as a powerful tool of ongoing interaction between teachers and students, students and course content, and among students”.

In the UAE the same definition is applied. Students are forced by the university or college to have their own Laptop/Notebook computers as an essential part of the university or college E-learning structure. They will be able to interact with teachers, course content and with other students. This research focuses on the first government high school in the UAE that applied one-to-one E-learning solution for its students and teachers from grades 10 to 12. It is the Institute of Applied Technology (IAT); a governmental educational institute, which offers Career-based Technical Education (CTE) in English at the secondary and tertiary levels. The institute’s five campuses are located in Abu Dhabi, Al Ain, Dubai, Ras Al Khaima and Al Fujairah.

The Institute was found in 2005 through a Royal decree of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the United Arab Emirates, Ruler of Abu Dhabi as a corporate body with full financial and administrative independence.

1.3 E-Learning versus Traditional education

During the last decade, E-learning has been known and practiced in higher education in the UAE, especially government universities and colleges. In contrast the traditional education was adopted only by primary and secondary schools, where the educational process is based on the

black board and chalk along with some educational aids that teachers use to explain the lessons for students.

Recently, there was an initiative from Abu Dhabi Government to make one-to-one E-learning the standard learning method in Abu Dhabi Schools in which computer and internet are an integral part of the student's curriculum. The student is required to work on a project as a part of his/her class activity. Furthermore, the government emphasizes that students' and teachers' laptops should be integrated with the E-learning class components such as: projectors, lecture capture device, camera, smart board and others.

Furthermore, it is essential to all students to use their computers and to access the library and internet to do their work. So, they will be able to gather information and prepare presentations and reports.

However, E-learning has the following advantages and disadvantages, Mousa Afaneh et al (2007):

Advantages:

1. Students should be allowed to work and learn without any time restrictions that are in the traditional learning.
2. E-learning provides access to all learning aids all the time.
3. Students can learn from anywhere in the world and interact with other students in other schools.
4. Students can interact easily with teachers and school administrators.
5. The use of paper has been reduced by having exams, exercises and assignments electronically.

Disadvantages:

1. There is a Lack of immediate interaction between students and teachers.

2. An expensive solution, where a school needs to be prepared for it by having stable IT infrastructure (Wireless and internet).
3. Teachers and learners need to have computer skills to use it.
4. Managing computer files, E-learning system, learning new software and applications related to E-learning.
5. Students might feel isolated or miss social interaction.

1.4 One –to- one E-learning Solution

1.4.1 Overview

One-to-one E-learning solution is known as portable laptop for students to be used anywhere and at anytime. With this solution each student has his/her own personal laptop computer to enhance his/her opportunities for learning. The laptop helps schools to integrate its digital tools and equipments by one-to-one learning experience.

IAT is the first school in the UAE which implemented such a solution for its students. Each Student in IAT has Mac Apple notebook device in which he/she can communicate with his/her teachers and classmates in real world contexts. Also it can help them in learning multimedia software, online tools and applications. Students can communicate with teachers and colleagues through various kinds of learning aids. They can respond to and keep records of feedback, including multimedia records of their learning. They have wireless connection all over the campus to stay connected everywhere and all the time.

The one-to-one Learning approach within IAT can open up new possibilities for learning and facilitate the utilization of existing learning opportunities. The learning process can be more active and attractive to students in order to support personalized learning and ICT integration into learning activities.

Figure (1:1) illustrates the infrastructure of one-to-one E-Learning components and how they are interconnected. The solution consists of three main layers, which are IT infrastructure layer, application layer and user access layer.

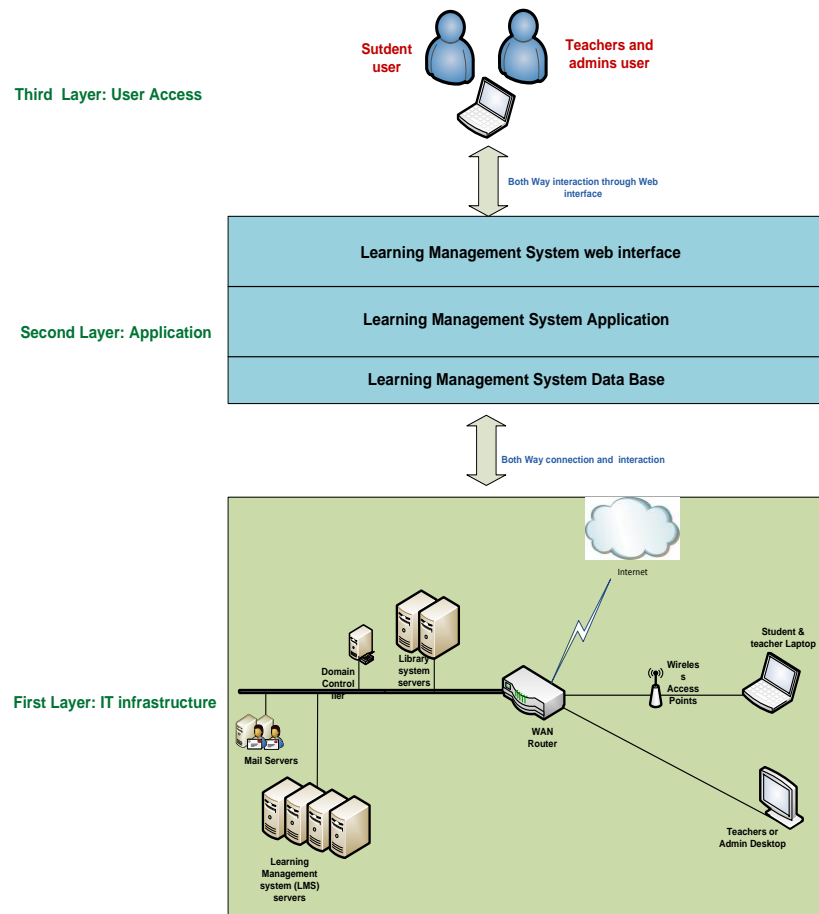


Figure (1:1): How one-to-one E-learning components are connected and integrated to each other.

In the first layer, we have the IT infrastructure foundation of any E-learning solution, which consists of application servers, wireless and wired networks that provide connectivity for students' and teachers' laptops. Through this connection the learner will be able to access all the required resources such as: internet, LMS, Library system and email.

At the second layer, we have the Application layer where the learning management system database is installed along with the learning applications that retrieve the data from this installed database.

The access layer is the third layer, where the student or the teacher uses his/her laptop to access the school E-learning system through a web graphical user interface after they got connected to the school network.

1.4.2 Benefits of one-to-one E-learning solution

The one-to-one E-learning solution is a part of an international transition towards individualizing learning, which can increase independence and self-initiated learning for high school students, and extend their learning beyond the classroom. It can extend formal learning communities to include parents as well. In addition, the solution may lead to initiating global communication and collaboration and develop a creative expression.

“This type of learning develops the skills and competencies needed in the 21st century, in particular to ensure that learners have the digital literacy skills required in their disciplines, profession or career. Bates (2009), states that a major argument for e-learning is that it enables learners to develop essential skills for knowledge-based workers by embedding the use of information and communications technologies within the curriculum. He also argues that using e-learning in this way has major implications for course design and the assessment of learners”.
[<http://en.wikipedia.org/wiki/E-learning>].

The one-to-one E-learning solution has its benefits, not only for students, but also for teachers, who can create teaching materials, correct students' assignments and conduct exams and quizzes online which saves their time and efforts.

Moreover, teachers will be able to communicate with their students and create their own teaching materials, in addition to uploading their lectures online for students to review. By doing so, the productivity of the teachers will increase because e-learning is a great means that provides them with the tools and skills needed to enhance their performance and the way they deliver the knowledge to their students.

Furthermore, E-learning allows teachers to create a standardized process and consistency in the delivery of contents which also reduces delivery time.

Another benefit of one-to-one e-learning is that many people see it as only the authored courses. But it includes all sorts of online technologies including incorporating some of the tools that allow collaboration and conversation, with which, students and teachers can capture organizational knowledge that is available for future learners.

[<http://www.articulate.com/rapid-elearning/why-e-learning-is-so-effective/>].

1.5 Problem Statement

This research answers the following question:

“How does one-to-one E-learning solution enhance and affect high school students' learning performance in UAE?”

This solution has been implemented in UAE in IAT high schools, and a lot of investment has been made in providing such a modern method of learning. This motivates us to study the results of these efforts and investment spent on implementing this kind of learning solution.

Therefore, I propose to conduct an in-depth study to investigate whether or not this solution has created a new interactive learning atmosphere for students inside and outside the school campus, and how this solution motivated high school students to learn and improve their personalities.

Also, we try to answer what is needed and what is the proper way to implement such a solution? In addition, how we can make the teachers ready for such a teaching way.

1.6 Aims and objectives

The main objective of this research is to achieve three things. First, examining what is the one -to- one E-learning and how to implement it technically to deliver a modern way of learning for students as well as a modern way of teaching for teachers.

Second, to investigate the improvement on high school students' performance before and after applying the one -to- one E-learning solution.

Third, looking into the advantages and disadvantages of one -to- one E-learning solution on both Students and teachers.

This study seeks to explore and investigate the impact of implementing new technology in learning on student's performance, but it will not deal with the impact of this way of learning on teacher's career opportunities.

1.7 Summary

Through this chapter, the research topic overview has been clarified along with problem statements and the research objectives.

In the following chapters of the research will illustrate previous work in this domain and what has been found in the literature review chapter. Then, the research methodology and procedures will be showed in methodology chapter.

At the end of this research, the findings will be presented to find out if this type of learning has really affected the performance of the high school student and to what limit. Afterwards, recommendations will be presented to enhance and develop new solutions.

Chapter -2 Literature Review

2.1 E-learning Definition

E-Learning has different definitions from different perspectives. According to Deborah Picar, (2004), E-learning is a “planned educational event that occurs at locations other than the teaching. Instructional resources are delivered online through computers using multimedia and other communication tools”. She also stated that “E-learning can also be combined with traditional classrooms and is referred to as a blended learning solution.”

On the other hand, Coletta Hill, (2005) defined E-learning as a “distance Learning, for good reason, the learners is often at great distances from each other as well as the instructor.

Computers and the internet do not by nature tend to bring learners together, but there are tools such as chat, message boards, threaded discussion, online conferencing, email, blogs and list serve which can be employed in the design of online courses that could enable collaborative learning over the Internet. “

While Jonathan Anderson, (2005), has a different opinion about E-learning, that “it is a broader concept than online learning, encompassing a wide set of applications and processes which use all available electronic media to deliver vocational education and training more flexibly”.

The third definition by Jonathan Anderson, is more suitable and inclusive for defining E-learning because it includes all E-learning components which are connected to each other as a tool and process for teachers, students, curriculum design and for all teaching environment such as (real class rooms, virtual class rooms and distant learning) .

2.2 Technology and Student motivation in E-learning

A lot of studies focused on the impact of technology on Students’ motivation and achievement as future workers, Landon Shultz wrote in the spring 1999 edition of Texas study: " Because of the quality of the human resources we are working with, our schools have succeeded in doing remarkably well in spite of the limitation of the factory model of education. Just think how successful we can be if we move to a more powerful model as we enter the 21st century”.

Therefore, Most of the researchers agreed on how important the technology is in motivating student within E-learning environment, according to Nicole Montagna, 2008, “The dynamic online learning environment allows for us to move beyond static text or images as the dominant learning objects to include video components. Video is an effective way to present engaging and informative information across distance. Students report that they are able to maximize their

learning with the use of video in instruction. The more they use video as learning objects they increase their ability to learn from this kind of tool (D'Angelo & Woosley, 2007). With use of animation and other special effects and graphics it is easier to show meta- information, like met cognition, visually mapping out mental and intangible processes. These “dynamic visualizations” can represent cognitive processes via graphic design elements. Recorded images of target behavior modeled for learners have become an important part of the iterative learning process (Paas, Tabbers, & Wouters, 2007) “.

Dr. Robert Bolometer (2002), Studies’ documented” the impact of these more sophisticated technology systems showed increased teacher-student interaction, cooperative learning and most important problem solving, inquiry and problem-based learning”. And it showed evidence that “use of these new learning technology in the schools could demonstrate a positive impact on higher order thinking skills and cognitive abilities.

Nicole Montagna (2008) agreed on what mentioned above and he added that “students posting and viewing their work online generates a sense of self efficacy and bolsters their self esteem”.

Others like Deborah Picar study have different perspective about student motivation. Deborah Picar, 2004 said that “the use of more technology does not lead to motivated students. Online instruction has morphed the student teacher relationship and has made it less personal”.

Maybe using technology on E-learning has disadvantage, but its advantages are more. Using learning technologies in the schools could able students to be more interactive and excited to discover new knowledge. In addition, improve students’ communication and collaboration skills.

2.3 The difference of teacher role in E-learning and traditional learning

Jonathan Hays (2006) , reviewed certain publications of teachers’ roles and professional learning in communities of practice supported by technology in schools, one of them was Hartnell-Young’s paper (2006) “is a research study investigating the role of Communities of Practice Within the school system in Victoria, Australia.

Four topics were studied by focusing on the use of internet portals by teachers: designing learning environments, managing people and resources, mediating student learning, and improving practice.

By analyzing the rejections and interactions of teachers, Hartnell-Young made the following conclusions: First, teacher reflection and openness to communicate with peers lead to a positive social environment. Second, teachers require support from the administration and statewide technology infrastructure to initiate collaborations. Finally, Hartnell-Young suggests that teachers operating in a community of practice can share responsibility for designing learning environments, managing people and resources, and mediating student learning”.

Furthermore, according to Pat Reiners et al (2005), learning with technology makes the teaching processes less and teachers will become more collaborative with each other and with students. And if teachers are using technology to motivate students, they will enjoy their work more and feel more successful with their students. Effectively integrated technology within E-learning system, enables teachers to present more complex tasks and material as well as curriculum might be organized as projects involving longer periods of time and group investigation.

Much research has been carried the same idea of teachers role in E-learning solution. Unlike face to face learning, teachers with E-learning are responsible for designing electronic curriculum material and motivate students to use different tools and application to review these study material anytime and anywhere.

2.4 Summary

From reviewing previous works on the same filed, it is summarized that “E-learning” phrase has different meaning depends on the way it has been implemented and applied as well as has different impact on the students depends on the type of E-learning solution installed. Some research showed that using video games and video streaming is an effective way of E-learning, while others proved that school web based portal is the effective way of E-learning for students. But from all we can say that E-learning solution become an effective and motivated solution when all its components are integrated together.

Chapter 3- Methodology

3.1 Methodology of the research

Since this study is about measuring students benefiting from one-to-one E-learning solution within IAT schools. Because students of grade 10, 11 and 12 need to be communicated through simple and understandable questions. This research was accomplished using a questionnaire survey and a case study of IAT students and teachers.

The reasons to conduct this study on students and teachers are, to know what within this solution motivated high school student to interact and collaborate using the new learning style as well as to measure teachers' readiness and feedback about the solution affects on student learning process.

The research plan will proceed in two phases as following:

Phase (1), Case Study: IAT One-to-one solution with Apple and Intel

The first phase presents a case study of the first high school in the UAE to implement one-to-one E-learning solution in all its branches all over the Emirates. It will lay the groundwork for the second, so I will be prepared to create a baseline assessment of the solution components and their implementation.

When UAE started to deploy and implement one-to-one E-learning solution for higher education students who were provided with Intel based laptops from different vendors, IAT chose to go for Mac laptops powered by Intel Core 2 Duo Processors as for the following reasons:

1. Apple Mac Book devices have the world's most advanced operating system and software applications.
2. Apple Software has standard features catering for all students, regardless of their learning style or physical capabilities.
3. It is a very simple to use a device that allows both students and teachers to be more productive and makes class work more engaging.
4. Mac Book laptop from Apple is loaded with features that make a difference in education such as:

- a. Stable Operating System
 - b. Safe For Schools and students because it is based on Linux platform
 - c. Flexible , compatible and rich in tools necessary for collaboration
5. The advantage of this combination between Apple and Intel is that, Intel designed Intel Teach Essentials Course to train teachers on how to integrate technology into their lessons and promote problem solving, critical thinking and collaborative skills among their students. Intel Teach is the largest, most successful program of its kind and having trained more than six million teachers in over fifty countries.[<http://point.iat.ac.ae>]

“Technology has become an integral part of our day-to-day activities of the young generations. The One-to-One eLearning solution will create a world-class rich environment that enhances the teaching and learning of both traditional subjects and 21st century skills. It allows teachers motivate and engage students, cultivate self-directed learners, and provide students with anytime, anywhere access to learning resources. ” said Dr. Abdullatif Alshamsi, Director General of IAT who asserted that IAT One-to-One solution for high schools is a first of its kind in the region and underscore’s IAT’s commitment to support the directions and vision of His Highness Shaikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, to advance the educational system by embracing the latest world-class technologies and apply best practices across all sectors.

[www.iat.ac.ae/downloads/]

Phase (2): Research Questionnaires

Within the second phase, purposive samples will be selected from students and teachers from the case study school, to conduct questionnaires and surveys in order to determine the advantages and disadvantages of the solution on both, also to know the impact of this kind of learning method on students and how they are motivated by one-to-one E-learning. Furthermore, at the end of this phase, a survey was conducted for teachers to observe how they are prepared for using one-to-one E-learning solution and their role in designing the curriculum to align and integrate with the solution.

After collecting data process through the above mentioned quantity methods and analyzing it, the answer of the research question will be clearly defined.

3.2 Student Questionnaire Design

The student survey consisted of sixteen questions (please refer to the appendix A for more details about the questionnaire) that is distributed online to all IAT School students (about 3000 students in total of all the campuses) with 200 female students.

Questions have been classified to four main categories as following:

The first questions category is for individuals where a student's grade and gender are individual variables. They are used distinguish between the responses in order to be able to measure properly the benefit of having their own laptop computers used for learning purposes.

Following are sample questions of the first questions category:

Grade:	K-9 <input type="checkbox"/>	K-10 <input type="checkbox"/>	K-11 <input type="checkbox"/>	K-12 <input type="checkbox"/>
Age:	11-13 <input type="checkbox"/>	14-16 <input type="checkbox"/>	16-18 <input type="checkbox"/>	
Gender:	Male <input type="checkbox"/>	Female <input type="checkbox"/>		

The Second questions category is about the computer specification and IT infrastructure availability in terms of wireless connectivity and internet access. These questions are important to check the availability of the IT network connectivity inside and outside the school campus; whenever is required because their laptops are already provided with wired and wireless cards, and also to define the activities they perform using their laptop computers.

Following are sample questions of the second questions category:

1. What are the specifications of the computer that you mainly use?
 - A. Intel/Pentium with Windows OS
 - B. Intel/Pentium with Linux
 - C. Mac with Windows OS
 - D. Mac with Linux OS
 - E. Other.....
2. If you have a laptop/notebook computer, is it wireless enabled?
 - A. Yes
 - B. No

C. I don't have a laptop/notebook computer

3. What kind of activities that you use your laptop/notebook computer and internet for?

- A. Play online games
- B. Work on your assignment and project
- C. Use chat rooms & forums
- D. Access School E-learning Material
- E. Others.....

The Third questions category is for either agree or disagree questions along on how the students access and use their laptop computers for learning purpose.

These questions have a range between two extremes (1-5) for each answer as follows:

1. Strongly agree means that this item is very essential for students' learning process and students are much interested in practicing it.
2. Agree option means the students are still interested in these items but with a level that is a little less than strongly agree option.
3. Neutral option indicates that students neither agree nor disagree about the choice; also this option indicates that no changes have been applied on students and the learning situation for this particular choice is the same as before.
4. Disagree option means the students are not interested in this item and it does not apply to his/her learning status.
5. Strongly disagree option indicates that this option is highly rejected by students and is not at all applied to them.

The following is a sample of agree and disagree questions to illustrate students opinion about E-learning solution.

	strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
E-learning is an important element of my study	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Without e-learning I would be unable to study	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-Learning makes my class more enjoyable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Getting access to an internet is a problem for me with my laptop/notebook computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Fourth category ,are questions where students must identify how often they practice certain learning activities through one-to-one E-learning solution in order to measure which activities the student likes to perform using his/her laptop computer and link them to his learning process.

Below is a sample of fourth category questions (how often the student practices certain activities)

	Every day	A few time each week	Between once a week and once a month	Less than once a month	never
Games and YouTube on a computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Doing a learning task collaboratively	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power point for Presentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The computer for electronic communication (e.g email, chat rooms or Forums)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.3 Teacher Questionnaire Design

The teacher's questionnaire has been designed similar to the student's with more focus on teacher's computer and technology skills to evaluate his/her readiness to implement and develop one-to –one E-learning solution. This questionnaire has been distributed online among IAT teachers. The rank for each question is from 1 to 5.

Teachers' questions have been classified to three main categories as following:

First category is general information about the teacher, his/her major, age and his/her teaching experience. By this question we will know IAT teachers' specialization and their years of experience in the teaching domain.

Below are samples of first category questions

Age:

24-35

36-45

46-50

51-60

> 60

Gender: Male ☐ Female ☐

How many years have you been teaching in a high school level?

Second category is questions about teachers' computer skills, how they use computer to prepare and present class material through certain software applications and devices such as projectors and smart boards. Also within this category there are some questions that show teachers' knowledge in computer programs and applications.

Below are samples of second category questions:

	Expert	Good	Not Too much	Can't do anything	Can't say
Word Processing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spreadsheet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power point presentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Download pictures ,files from digital devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use Graphics Arts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use the internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Can you use and setup a projector and laptop for a power point presentation?

- A. YES
- B. NO
- C. A little
- D. Need More Training

Can you produce handouts and exercises on a computer?

- A. YES
- B. NO
- C. A little
- D. Need More Training

Third category is questions about teachers' awareness of E-learning and their expectation and how certain activities are practiced by students during the class which will define the teaching method of the teacher.

Below are samples of third category questions:

What do you think E-learning is?

- A. Is an integrated component of your business?
- B. Should be a climate that support classroom learning
- C. Should embrace learning as a whole
- D. All what mentioned above

What expectations do you have about using E-Learning?

- A. To prepare and upload course material
- B. To participate in student-teachers OR teacher-teacher forum conversation
- C. Make contact with students
- D. Other (specify)

While the below sample questions demonstrate what teaching activities the teachers practice in the class with the students by using one-to-one E-learning solution. As shown below within the demonstrated sample, answers for this type of questions should be one answer that defines how often these activities are practiced within the class room between the teacher and the students.

	Never	Some Days	Most Days	Every Day
Students work in groups using their laptop computers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students suggest subjects or topics to be covered in the class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students are encouraged to find out things themselves by accessing internet materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you use video or audio materials in the class that students played on their laptop computers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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other example as shown below, are agree or disagree questions that are related to a third group and designed to show teachers' opinion about E-learning and IAT schools' IT infrastructure readiness, which will give us an indication on how all these things affected and changed the learning process for IAT students and teachers.

	strongly Agree	Agree	Neither agree or Disagree	Disagree	Strongly Disagree
Wireless access is available in the school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet access is available in the school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I participate in designing or suggesting E-learning curriculum in the school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Student's performance has been enhanced after one-to-one E-learning solution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am getting IT technical support whenever needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.4 Summary

As a conclusion, the objective of using quantitative research method within this paper is to classify and count one-to-one E-learning solution features and impacts on both IAT students and teachers, as well as to construct statistical models in an attempt to explain what is observed as a result of this paper.

Chapter 4-Findings

4.1 Data Analysis

This research surveys were conducted online for IAT students and teachers. Two hundred and fourteen (214) out of 3000 Students in IAT schools responded to the student related survey, while forty six of IAT's teachers responded to teacher's survey. And the findings were as following:

4.1.1 Survey Respondent Characteristics

Students: Data collection analysis showed that 75% of the participants were male and 25% were female. 36% of them were grade 12 students, 29% were grade 11 students and 35% were grade 10 students. Their ages fluctuated from 11 to 18 years old as illustrated in figure (4:2) below.

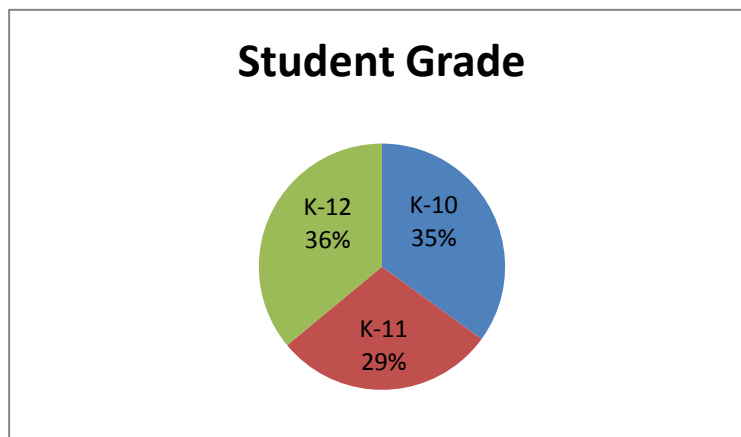


Figure (4:1): Respondent students Grade

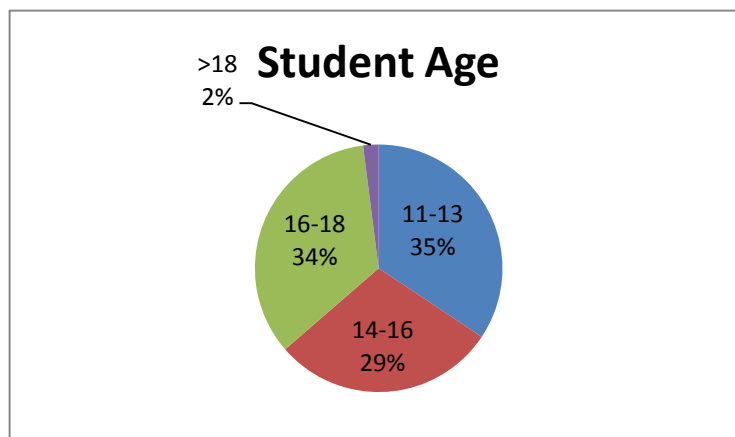


Figure (4:2): Respondent students Age

Moreover, 42% of the participated students stated that they have from three to five years experience in using computer and all of them have their own personal computer as illustrated in the below pie chart figures (4:6) and (4:7). We conclude that, most of the IAT students already have an experience in using the computer before the school applied one-to-one E-learning solution for them.

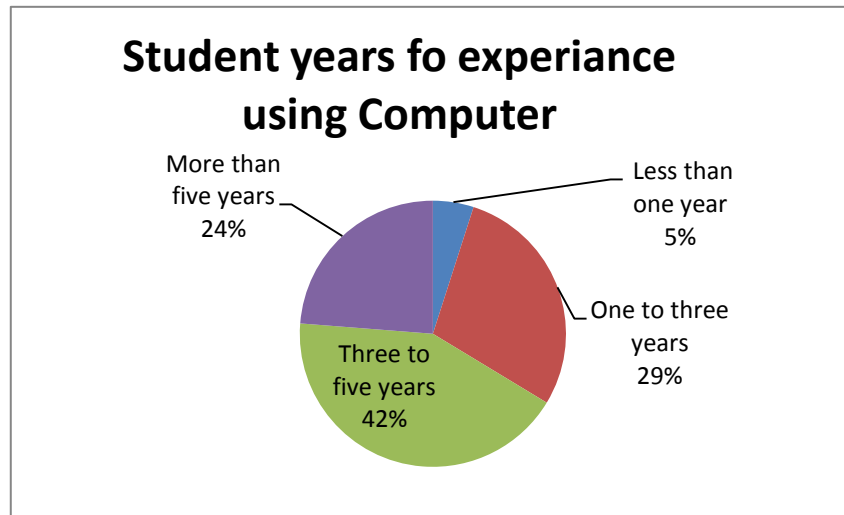


Figure (4:3): Respondent Students' years of experience using Computer

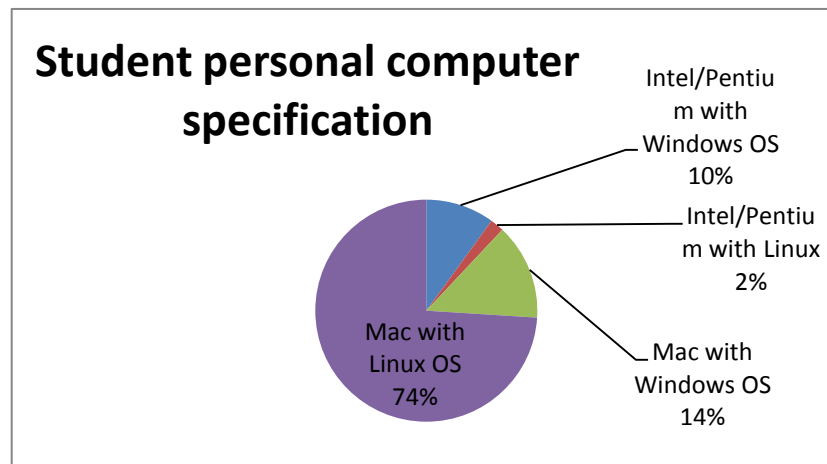


Figure (4:4): Respondent Students' Personal Computer Specs.

Teachers: As shown in figure (4:3) to figure (4:5) below, teachers of different majors and years of experience participated in this research questionnaire. These figures' statistics proved that most of IAT teachers are young and 34% of them have from one to five years of experience which means they belong to internet and computer generation. Also their specialization differed between Mathematics, English, Engineering and Science, which indicate that they might have a technical knowledge about the existing education technological tools.

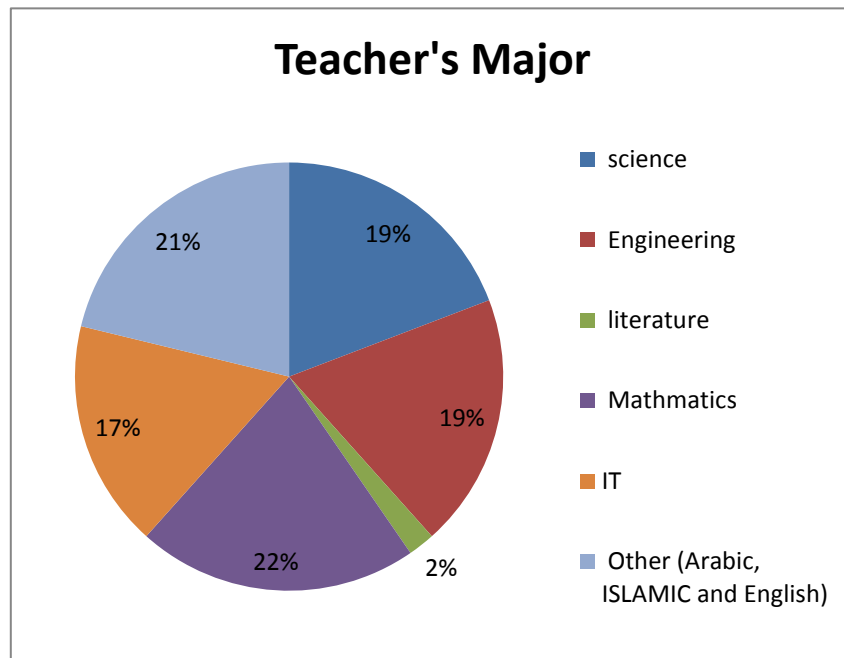


Figure (4:5): Respondent Teachers' Major

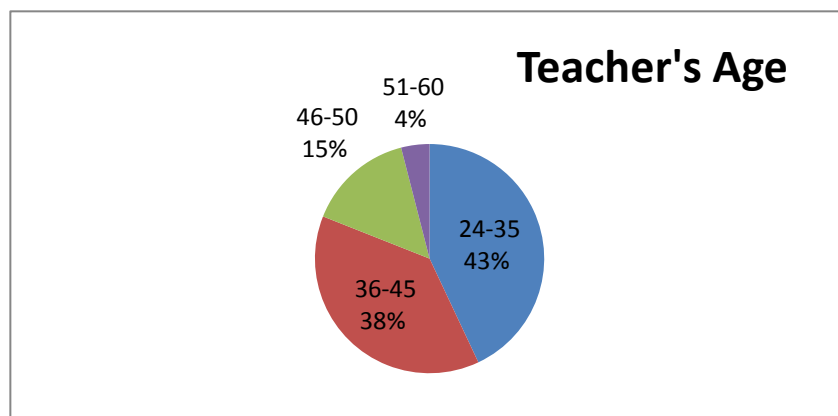


Figure (4:6): Respondent Teachers' Age

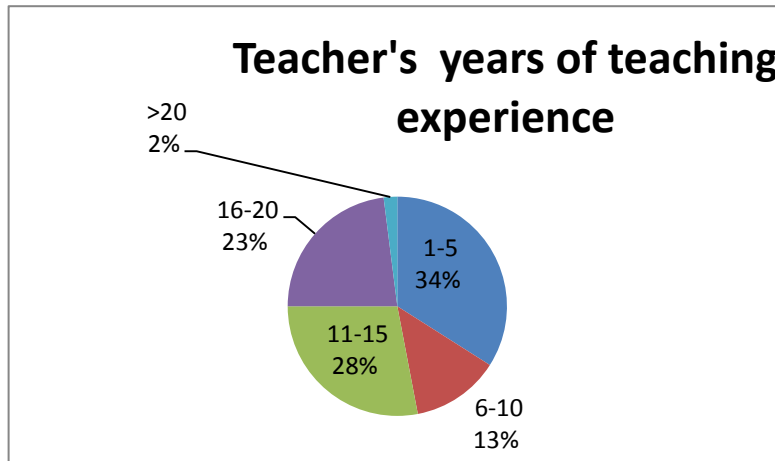


Figure (4:7): Respondent Teachers' years of experience in teaching

4.1.2 Nature and Extent of one-to-one E-learning Solution in IAT

1. Wireless connectivity and internet access:

Before implementing one-to-one E-learning solution, IAT was aware that without a solid and stable IT infrastructure such a solution will not succeed. Therefore, IAT's management provided wireless connectivity for each campus along with high speed internet access. As shown in the figures and table (4:1) below 97% of the students and 81% of the teachers confirming the availability of a wireless connection within the school campus and 77% of the teachers and 97% of the students confirming the availability of internet access.

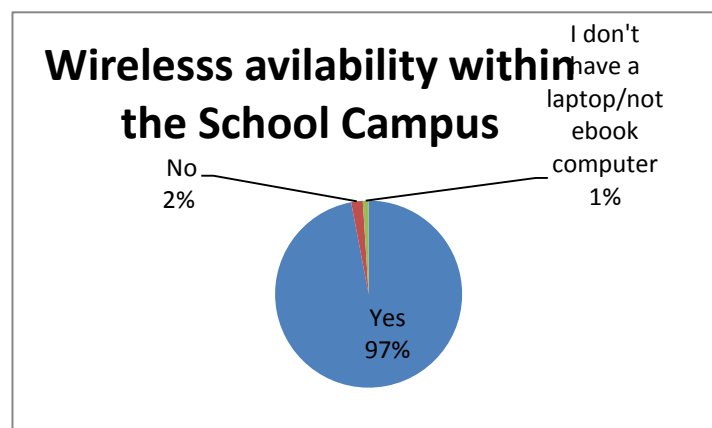


Figure (4:8): Wireless Availability within the school (Students response)

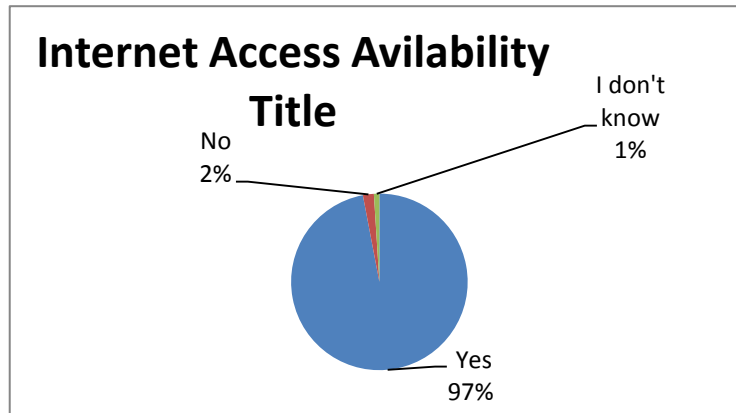


Figure (4:9): Internet Availability within the school (Students response)

	Strongly Agree	Agree	Neutral	Dis agree	Strongly Dis agree
Wireless access is available in the school	81%	15%	0%	0%	4%
Internet access is available in the school	77%	17%	2%	2%	2%

Table (4:1): Teachers response about wireless and internet availability

2. Technical support availability :

66% of the participant teachers strongly agreed that they are getting the technical support whenever needed within the school's campus as well as 75% of the students stated that they always had IT technician available to resolve any technical problem.

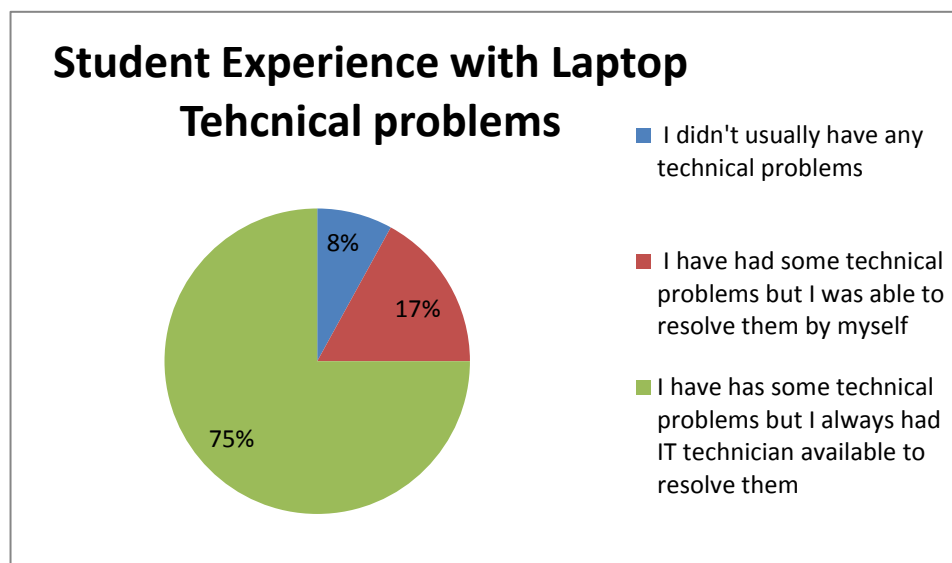


Figure (4:10): Student experience with laptop technical problems

3. Teachers' capabilities:

The research survey output showed that IAT have good computer skills that allowed them to practice the learning process effectively by using the integrated technologies such as smart boards, over head projectors, presentation tools and surfing internet along using one-to-one E-learning solution. As illustrated in Figure (4:11), 25% of the teachers prefer to combine multi teaching tools in their teaching process including:

- Computer based assignments and tests
- Computer based classes
- Smart boards and overhead projectors
- Email
- Paper based practices.

Also Table (4:2) shows a list of skills that IAT teachers know about internet and computer.

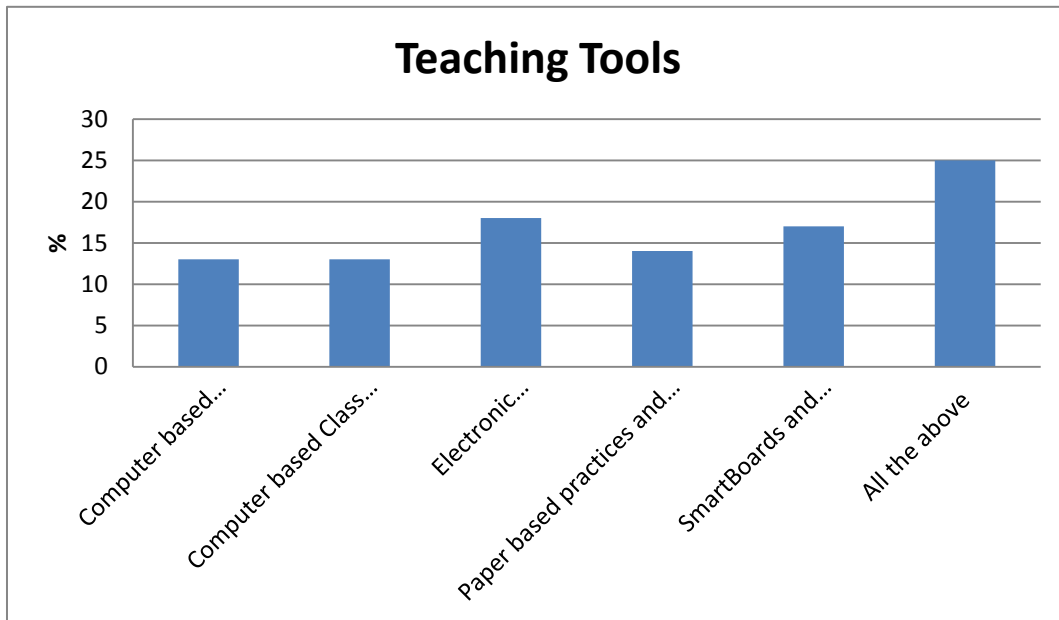


Figure (4:11): Teaching tools

	Expert	Good	Not Too much	Can't do anything	Can't say
Word Processing	83%	17%	0%	0%	0%
Spreadsheet	70%	23%	4%	0%	2%
Power point presentation	81%	19%	0%	0%	0%
Download and upload Data (Also from the internet)	74%	26%	0%	0%	0%
Install programs	51%	40%	9%	0%	0%
Download pictures ,files from digital devices	79%	19%	2%	0%	0%
Compress Data	64%	30%	6%	0%	0%
Printing & Scanning	81%	19%	0%	0%	0%
Burn CDs & DVDs	72%	23%	4%	0%	0%
Play Games	21%	26%	34%	13%	6%
Use Graphics Arts	17%	21%	40%	17%	4%
Use the internet	83%	17%	0%	0%	0%
Surf the internet & use search engines	81%	17%	2%	0%	0%
Chat and Discussion forums	60%	30%	9%	2%	0%
using smart board with the computer to save and upload class material	49%	40%	6%	2%	2%
programming in house applications	11%	17%	21%	26%	26%
Guide students how to use educational applications on their laptops computer	32%	34%	30%	4%	0%

Table (4:2): Teachers' internet and computer knowledge.

Moreover, IAT teachers show awareness about one-to-one E-learning solution. 70% of the respondent teachers reported that they look to E-learning as a learning process created by interaction with the digitally delivered content, services and support as shown in figure (4:12). In addition to 33% of the teachers indicated that one-to-one E-learning solution is about applying teaching process electronically with minimum use of paper and chalk as shown in figure (4:13).

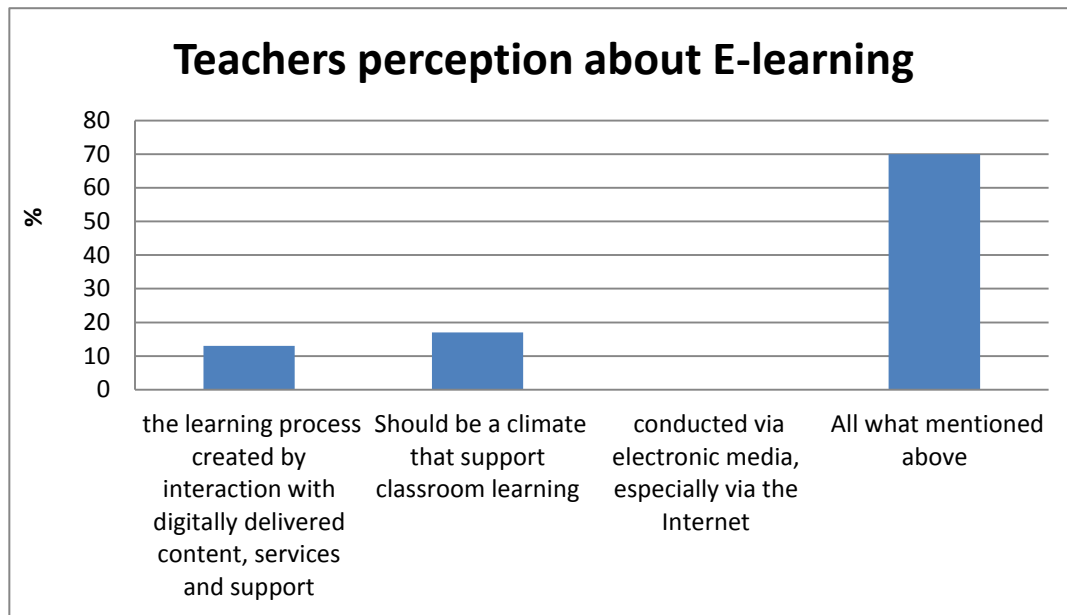


Figure (4:12): IAT Teachers perception about E-learning

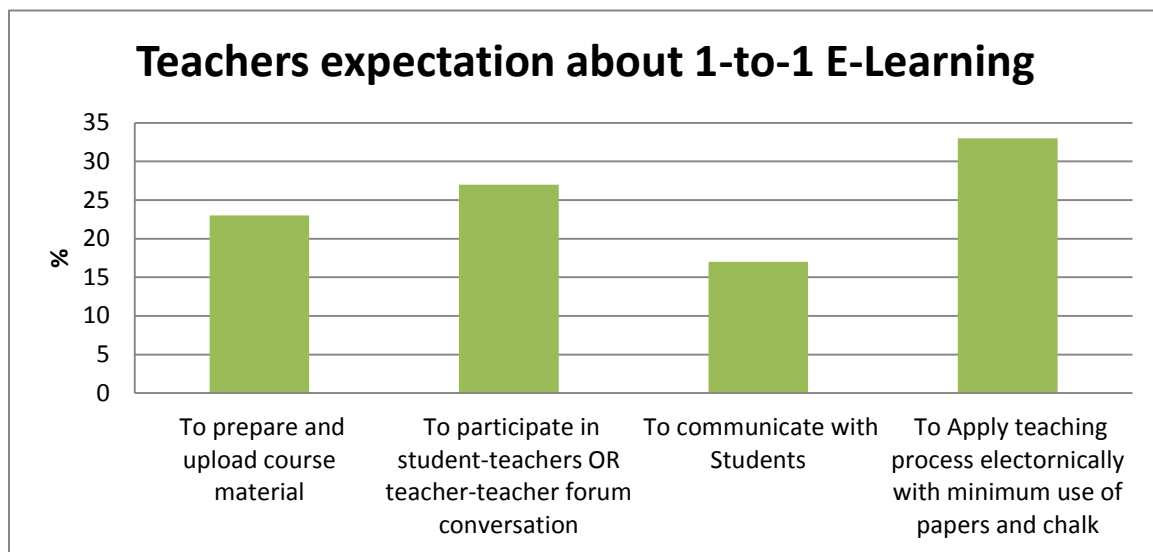


Figure (4:13): IAT Teachers expectation about one-to-one E-learning

4.1.3 The impact of one-to-one E-learning on Students

The results of the data analysts show that the effective integration of technology into classroom instruction can positively impact student motivation, involvement and interest in learning.

Student Motivation: Respondent students in this study reported that using one-to-one solution made them feel special and important. 71% of students reported that one-to-one E-learning Solution made their classes and learning process more enjoyable.

Furthermore the same study concluded that classroom technology and using one-to-one solution contributed significantly to the self-esteem and capabilities of students. 70% of the students stated that they interact more with others by one-to-one E-learning solution while 75% reported that it is very important for them to work on computers.

Teachers' responses confirmed the same result .They reported that students work in groups using their laptop computers most of the days by 36% and some days by 38% with little bit differences. Also teachers confirmed that 72% of the students are encouraged to present their works by using power point presentation tool some days when it's required.

Figure (4:12) below illustrates the preferable study style for students , as shown 61% of the students prefer a combination learning style of video, audio, experiments and games.

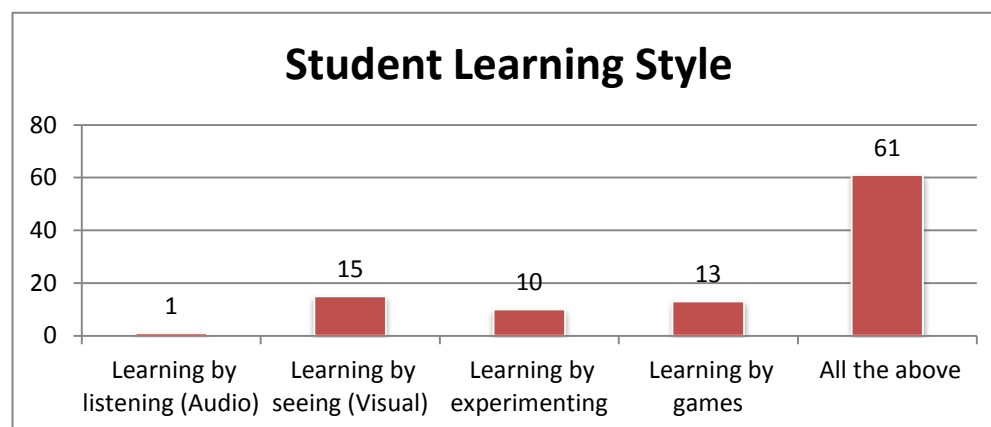


Figure (4:14): Respondent Students' Learning Style.

Teachers' input supported this point; from their responses the conclusions are:

- 57% of teachers are encouraging students to use their laptop software applications to express their ideas through video, images and text most of the learning days
- 38% of teachers confirmed that Students use their laptop machines to access and use school's educational programs and internet every day

This led us to indicate that teachers' believe that one-to-one E-learning solution helps increase interest and attention among students.

Students' activities and interests:

This research survey results showed that educational software such as mathematics and engineering programs can provide highly interactive learning atmosphere that keeps students busy with continuous activities and tasks. 92% of the student reported that they are using their laptop computers everyday to access educational software such as Mathematics and Auto Cade program and 93% of them use their computers to access internet for information in daily bases. Table (4:3) shows students' response in terms of their learning activities.

	Every day	A few time each week	Between once a week and once a month	Less than once a month	never
Games and YouTube on a computer	64%	29%	7%	0%	1%
Internet to search for information	93%	5%	1%	0%	1%
Doing a learning task collaboratively	92%	4%	2%	1%	0%
Power point for Presentation	26%	26%	43%	5%	0%
The internet to download software, games, Videos	37%	20%	38%	4%	1%
Drawing and graphics design programs	68%	17%	13%	2%	0%
Educational software such as Mathematics and engineering programs	92%	4%	2%	1%	0%
The computer to help you learn school material	93%	3%	2%	0%	1%
The computer for electronic communication (e.g email, chat rooms or Forums)	94%	3%	1%	0%	1%

Table (4:3): How often students use their laptop to perform the listed activities.

Table (4:5) shows how frequently the listed activities are occurred in the class.

	Never	Some Days	Most Days	Every Day
Students work in group using their laptop	15%	38%	36%	11%
Students suggest subjects or topics to be covered in Class	38%	49%	11%	2%
Students are encouraged to find things out for themselves by accessing online materials	0%	38%	47%	15%
You use video or audio materials in the class that students played on their laptops	11%	66%	17%	6%
Online exams and quizzes	19%	66%	13%	2%
Encouraging students to present their works by using power point presentation tool.	6%	72%	15%	6%
Students are encouraged to use their laptop software to express their ideas through video, images and text	9%	19%	57%	15%
Students use their laptop machine to access and use school's educational programs	2%	17%	43%	38%
Students are encouraged to prepare for the next class lesson by download and review online materials.	4%	30%	55%	11%

Table (4:4): How frequently the listed activities are occurred in the class.

4.2 Answers of research hypothesis

Hypothesis (1): What are the implications of a student having a laptop on his personality?

From the above results, it is clearly concluded that one-to-one E-learning has affected IAT student's personality positively and negatively.

Positive impact:

1. Students has access to their Learning system from anywhere and anytime , which make them able to work on their assignments and projects inside and outside the campus

2. Paper use has been decreased, since students use their laptops for typing class notes instead of carrying handwritten notes, which is more efficient for them and make them more interactive and attracted to technology
3. Students became self confident and able to communicate when they use their personal laptop computers to prepare a presentation to illustrate and present their work within the class and when they send and communicate with their teachers and colleges by E-learning iChat solution or via email
4. Using a laptop to run educational application, Increase critical thinking and problem solving skills, which make students daring to express their ideas and feedbacks
5. Students build their own knowledge and create learning environment at their own pace

Negative impact:

1. Student like to access video streaming, internet websites and forums every day, 64% of the students reported that they play games and access YouTube every day using their personal computer, and 93% access internet every day to search for information. These percentages gave indication that students have addiction on using internet most of their time and this has a negative impact their social life, because they continue depending on online communication tools to communicate with others without any face to face or physical interaction.
2. The above mentioned practice has negative impact on student health. By sitting long time in front of the computer might cause arthritis and eyes diseases.
3. In addition to what has been mentioned above, having a personal computer to be used by students in the class might distract them from following up with the teacher if their access was not properly managed by the teacher during the class.

Hypothesis (2): What is the difference between one -to- one E -learning method and other E-learning Methods

During the study and using IAT's case, one-to-one E-learning basically is an integrated combined solution where IAT students have access to their study materials, Learning systems, library resources and internet from their personal computers that they carry with them.

With one-to-one E-learning solution, Student will be able to do the following:

1. Practice and run all the educational applications and software such as Auto Cad and lap view math application from his machine, because it is ready and installed on his laptop when he received it.
2. Work on groups and have oral communication among themselves and with their teachers.
3. Integrate their laptop with the school technological teaching aids.
4. Interact with teacher instruction within the class by using educational video games and new educational tools.

On the contrary, other E-learning methods depend on distance learning and learning management content only, where students from anywhere and from any machine can have access to the study material and do the learning process by themselves without attending classes or interacting physically with colleagues or teachers. In this method the communication tools they use are the email, chat and forums which require that the student have internet access in his place as well as a Computer access, and that he can run his classes on his convenience.

Moreover, E-learning methods like distance learning does not offer immediate feedback to the student because instructors may spend time reviewing student's work and respond to it and

Hypothesis (3): What are the advantages and disadvantages of one -to- one E-learning method on students and teachers?

The One-to-one E-learning method has its advantages and disadvantages on IAT students and teachers as follows:

Advantages for Students:

1. Exposure of student during high school age to such a technology causes them to interact more and be attracted to try and use this kind of learning method.
2. Students start to enjoy and have fun within the class with their teachers by using this type of learning style, because they have a variety of learning tools, such as: games, videos and educational programs.
3. Students became more excited to work individually or within groups on a certain project by using their own laptop computers.
4. Students gain communication and internet surfing skills.
5. Students presentation skills improve.

6. Study materials are available at any time and students can get them via LMC with no need to contact the teacher or wait for him to provide them.
7. One-to-One E-learning is a preparation stage for students to have computers, internet and E-learning knowledge ready for higher education.
8. High school students are encouraged to express their ideas and thoughts by using the available tools within their laptop computers and that encouraged them to be more creative.
9. Students were able to get their grades online through the system whenever they want and anywhere since they are taking exams and quizzes online.
10. 49% of the respondent teachers stated that students' performance has enhanced after implementing E-learning solution.

Disadvantages for Students:

1. Students depend on online resources rather than on campus library and reading books
2. Since students in high school age got excited about one-to-one solution, sometimes they get distracted with their laptop computers instead of following up with the teacher
3. Some students spend a lot of time on internet, playing games and chatting which affects their performance and social activities
4. Students using this technology for non-educational purposes, for example accessing non-educational videos and websites
5. Makes students depend on online materials more than teacher's instructions and explanation

Advantages for Teachers:

1. Gaining more computer and internet skills.
2. Have a good chance to participate in online curriculum design for E-learning solution.
3. Makes it fast and easy for them to prepare the lessons and exercises by using the laptop computer.
4. Having internet access enables them search for the information very fast.
5. Makes it easy for them to track student absences and activities.
6. Their knowledge and experience with E-learning has been improved which opened job opportunities for them anywhere in educational field.

7. By one-to-one E-learning solution, teachers became more able to organize their study materials and exams on their laptop computers and distribute to students via email or learning system.
8. Correcting exams and assignments online is easy and fast for teachers than doing it manually on paper.

Disadvantages for Teachers:

1. Spending a lot of time on computers for preparing class materials and handouts, cause them health and social problems
2. Difficulties in managing students in the class because they are distracted by their laptop computers rather than paying attention to the teacher
3. Like students, some teachers prefer to spend some time searching for the information over the web instead of searching in the library books
4. Old aged teachers need to improve their computer and E-learning skills in order to be able to deliver class materials through the E-learning system

Chapter 5-Conclusion

5.1 Conclusion

In conclusion, and from the statistics shown in chapter (4), the one-to-one E-learning solution has implication on teachers and students. It allows students to practice newly acquired skills and students are highly motivated and provided meaningful learning situation.

Based on the results, we can conclude that one-to-one E-learning solution impact student's performance through three main areas, Motivation, socialization and other acquired skills.

In terms of Motivation, students were able to use their own laptop machines in doing quizzes, reviewing lessons, participating with group discussion through forums or chat and preparing and organizing class assignments and projects.

When we examined socialization, students were able to interact with other students and with teachers via chats, forums and emails. Also student were asked to do projects and assignments in group then present the achieved work in the class in group as well.

Also, Students were encouraged to use the available tools to express and show their ideas and thoughts either by video and audio software or by text and imaging software.

There are also other acquired skills, such as communication skills, group works, planning skills where students asked to plan and prepare project and present the result to their class mate and teachers which let them gain presentation skills as well.

Finally, one-to-one E-learning Solution impact teacher's role and teaching way. By this learning style teachers become more collaborative and use it to motivate their students in class and attract them to learn and perform well. As a result, teachers were enjoying their work and feel more successful with their students. They teach less and mentor more.

At the end, I have to mention that one-to-one E-learning solution experience within IAT schools improved students' performance from K10 to K12 and prepared students to be more familiar and ready to deal with class technology. In addition, IAT Management and support was very important to success of implementing this kind of learning; without their support; this solution might failed especially when essential preparation works need to be ready in terms of IT infrastructure cost and installation as well as train teachers and convince them to use this kind of solution as their teaching style.

5.2 Limitation and Recommendations

Limitation

The main limit of this research is the reservation of teachers and technical team from exposing more details about the solution implementation and solution full components, due to confidentiality. Also teachers refused to participate in interviews and preferred to participate through questionnaire.

The technical team refused to participate in this research data collection stage, due to work load and busy time. Therefore this research focused on student performance only and didn't deal with teachers influence and implication of one-to-one on them in more details. Because of that this research relied on quantitative techniques to be applied on IAT students using web based questionnaire that has been sent to them via email.

Recommendation

1. It is better to use qualitative techniques to be applied on samples of students and teachers in more schools in UAE ;when they are ready with one-to-one solution; rather than IAT and compare the results of implication on both and the aim will be to identify problems which appear in the use of one-to-one E-learning solution.
2. I recommend more studies to be conduct on the influence of the usage of one-to-one solution of E-learning on teachers' expectations and how such a solution affect teachers career of opportunities and chances.
3. Such studies need to cover how the way one-to-one solution technically implemented can affect the E-learning use and deliverables.
4. I believe if there is a time and chance with curriculum team within IAT to cover the curriculum design and planning through E-learning solution will add strength point to the research in illustrating how this part has important impact on any E-learning solution project success.

References

1. Anderson, J. (2005). IT, e-learning and teacher development, *International Education Journal*, ERC2004 Special Issue, 5(5), 1-14.
2. Akpinar, Y. And Simsek, H. (2007). Should K-12 Teachers Develop learning Objects?, Bogazici University, Istanbul, Turkey, *Proceeding of the 2007 informing Science and IT education joint Conference*.
3. Berteau, P. (2009). Measuring students' attitude towards E-Learning. A Case Study, *The 5th international Scientific Conference*. E-learning and software for Education. Bucharest.
4. Blomeyer, R. (2002). Online Learning for K-12 Students: What Do we know now? North Central Regional Educational Laboratory. [Accessed 13 June 2010]. Available at: <<http://citeseerx.ist.psu.edu>>
5. Brian, B. (Spring 2005). "What next, Mr. Brian?" where does e-learning go from here, and what can teachers do about it, *ITEC 865*.
6. Ceballos, C. (undated). Motivation in Online Learning, *ITEC 860*.
7. Charoenruk, D. (undated). Communication Research Methodologies: Qualitative and Quantitative Methodology. [Accessed 13 March 2010]. Available at: <<http://utcc2.utcc.ac.th>>
8. Chi, J. (2008). Cultivating 21st century learners through an e-classroom in K-12 school system, *ITEC 865*, San Francisco State University.
9. Cradler, J and Bradford, E. (undated). What does research and experience tell us about the benefits and the most appropriate uses of technology and telecommunications to support and expand teaching and learning? , Recent Research on the effects of Technology on Teaching and learning. WestEd. [Accessed 22 April 2010]. Available at: <<http://troymi.gov/futures/Research>>
10. Donaldson, R. and Haggestorm, M (undated). Using Computer technology to make students better and more motivated readers. Modern language and Literatures, Loyola College in Maryland. 4501N. Charles Street, Baltimore, USA. [Accessed 22 April 2010]. Available at: <<http://gandalf.aksis.uib.no/allc-ach96/Panels/>>

11. Eman, K. (Fall 2006). High School Has a New Look: Distance Education, *ITEC 860*.
12. Fannan, C. (2005). Using Interactivity to Create Effective Web-based Learning Systems, *ITEC 865*
13. Hays, J. (Fall 2006). Communities of Practices: informal e-learning as professional development for educators, *ITEC 860*: Paper 2.
14. Heafner, T. (2004). Using technology to motivate students to learn social studies. *Contemporary Issues in Technology and Teacher Education*, 4(1), PP 42-53.
15. Hill, C. (2005). Collaboration and E-Learning, *ITEC 865*, Paper #3.
16. Huang, C. (undated). The effects of learning WWW and the computer attitude on technology Education programs, National Taichung Teachers college, Taiwan, R.O.C. [Accessed 19March2010]. Available at:
<<http://www.iteaconnect.org/Conference/PATT11/Huangdef.pdf>>
17. Jeong, G. (undated). E-learning in Primary & Secondary Education, Ministry of Education & Human Resources Development, Republic of Korea. [Accessed 19March2010]. Available at: <www.elbaproject.net/articles-100061_archivo.pdf>
18. Jordan, C. (November 2006). Building Motivation into Online Education, *ITEC 860*.
19. Kleiman, G. (2004). Myths and realities about technology in k-12 schools: Five years later, *Contemporary Issues in Technology and Teacher Education*, 4(2), PP 248-253.
20. Kulicova, L. (Spring 2006). Rapid e-Learning, *ITEC 865*.
21. Kulik, J. (2003). Effects of Using Instructional Technology in Elementary and Secondary Schools: What Controlled Evaluation Studies Say, SRI international. [Accessed 19March2010]. Available at: <www.sri.com>
22. Lee, J.-K & Lee, W.-K (2008). The relationship of e-learner's self-regulatory efficacy and perception of e-learning environment quality. In computer in Human Behavior 24, PP 32-47. [Accessed 1 March 2010]. Available at :<www.editlib.org>
23. Loke, M. (2003). Research into DE technologies: Effects of technology in student learning in distance education.
24. Lopez, C. (undated). Scenario Based E-Learning is it effective without the traditional learning? , *ITEC 865*.

25. Merling, D. (2008). A perspective on ELearning in the K-12 Classroom, *ITEC 865: eLearning Design and Development*.
26. Miles, D. (2008). Using Flash Video in E-Learning, *ITEC 860*.
27. Montagna, N. (2008) Video as a 21st Century Instructional Tool: Current Trends and Pedagogical Foundations, *ITEC 860*.
28. Motah, M. (2007). Learning, Types of Learning, Traditional Learning Styles and the impact of E-learning on the performance of Secondary School Students: The perception of Teachers, University of Technology, Mauritius, *Proceedings of the 2007 Computer Science and IT Education Conference*.
29. Patrick, S. and Powell, A. (2009). A Summary of Research on the Effectiveness of K-12 Online Learning, iNACOL. [Accessed 14 May 2010]. Available at :
< www.inacol.org/research/docs>
30. Patton, M. (1990). *Qualitative evaluation and research methods*. (2nd ed.). Newbury Park, CA: Sage.
31. Picar, D (December 2004). E-Learning and Motivation, *ITEC 860*.
32. Picciano, A. and Seaman, J. (2007). K-12 Online Learning, a Survey of U.S. School District Administrators, Hunter College-CUNY, the Sloan Consortium. [Accessed 22 Feb 2010]. Available at: < <http://sloanconsortium.org/publications/survey/>>
33. Ramsaran, C. (Spring 2005), current E-learning topic, *865 E-learning developments*.
34. Rashid. , N., Majid, O. and Yen, C. (2002). E-learning Management System for Secondary School in Malaysia, University Sains Malaysia. [Accessed 3 May 2010]. Available at: <<http://eprints.usm.my/>>
35. Reiners, P., Renner, K. and Schreiber, J. (2005). The effect of Technology integration on Student motivation, Engagement and Interest, Dakota State University. [Accessed 17 March 2010]. Available at: < <http://kr012.k12.sd.us/Portfolio/>>
36. Sherry, L., & Jesse, D. (2000). The impact of technology on student achievement. *Texas Study of Secondary Education*, X (2), 15-17
37. Tutunea, M. , Rus, R. And Toader, V.(2009). Traditional Education vs. E-learning in the vision of Romanian business students, *International Journal of Education and information Technologies*, Issue 1, Volume 3.

38. Villicana, S. (undated). The Effectiveness of Distance Education in the k-12, *ITEC 860*
39. Wen, Y. and Wang, S. (November 2008), Student Backgrounds vs. Behaviors in e-learning: A case Analysis of E-Campus Coursework. National Formosa University. *International journal of cyber society and Education*, pages 121-130, Vol.1, No 2.
40. "IAT internet website". www.iat.ac.ae [Accessed April 30 2010]
41. "IAT Intranet Website" <http://point.iat.ac.ae>. [Accessed May 25 2010]
42. <http://www.nerel.org/sdrs/areas/issues/methods/technology/te800.htm> . [Accessed Feb 18 2010]
43. <http://www.articulate.com/rapid-elearning/why-e-learning-is-so-effective/>. [Accessed Nov 23 2009]
44. <http://en.wikipedia.org/wiki/E-learning>. [Accessed March 9 2010]
45. <http://www.about-elearning.com/e-learning-advantages-and-disadvantages.html>. [Accessed April 30 2010]
46. http://iit.bloomu.edu/spring2006_ebook_files/chapter1.htm. [Accessed April 17 2010]
47. <http://www.thefreelibrary.com/eLearning+initiative+to+enhance+teaching+in+UAE.-a0202034514>. [Accessed May 4 2010]

Appendices

Appendix (A): Student Questionnaire

Appendix (B): Teacher Questionnaire

Appendix (A): Student Questionnaire

Grade:	K-9 <input type="checkbox"/>	K-10 <input type="checkbox"/>	K-11 <input type="checkbox"/>	K-12 <input type="checkbox"/>
Age:	11-13 <input type="checkbox"/>	14-16 <input type="checkbox"/>	16-18 <input type="checkbox"/>	
Gender:	Male <input type="checkbox"/>	Female <input type="checkbox"/>		

4. How long have you been using computers?
 - A. Less than one year
 - B. One to three years
 - C. Three to five years
 - D. More than five years

5. If you have to use a personal computer for your studies, is it?
 - A. A desktop computer
 - B. A laptop/notebook Computer
 - C. Both a desktop and laptop
 - D. Not Applicable

6. What is the Specification of the Computer that you mainly use?
 - F. Intel/Pentium with Windows OS
 - G. Intel/Pentium with Linux
 - H. Mac with Windows OS
 - I. Mac with Linux OS
 - J. Other.....

7. If you have the use of laptop/notebook computer is it wireless enable?
 - D. Yes
 - E. No
 - F. I don't have a laptop/notebook computer

8. What kind of activities that you have used your laptop/notebook computer and internet for?
 - F. Play online games
 - G. Working on your assignment and project
 - H. Use chat rooms & forums
 - I. Access School E-learning Material

- J. Others.....
9. If you use the internet for learning and studying, please tell us more about what you use internet for?
- A. To access useful readying material on the internet
 - B. To listen and watch learning videos
 - C. To do quizzes
 - D. To write course work/assignments
 - E. To take part in online discussions related to learning /studies
 - F. All the above
10. What were your experiences of having technical problems in using computers?
- A. I didn't usually have any technical problems
 - B. I have had some technical problems but I was able to resolve them by myself
 - C. I have has some technical problems but I always had IT technician available to resolve them
 - D. Other experiences (Please specify).....
11. How often do you access internet?
- A. Daily
 - B. Every other day
 - C. Twice a Week
 - D. Once a week
 - E. Less than once a week
12. What is your best learning style?
- A. Learning by listening (Audio)
 - B. Learning by seeing (Visual)
 - C. Learning by experimenting
 - D. Learning by games
 - E. All the above
13. Please indicate whether you strongly disagree, disagree, neither agree nor disagree, agree or strongly agree with each of the following statements:

	strongly Disagree	Disagree	Neither agree or Disagree	Agree	Strongly Agree
E-learning is an important element of my study	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Without e-learning I would be unable to study	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-Learning makes my course more enjoyable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
With E-learning I interact more with other students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I Find using my laptop/notebook computer difficult	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I Find using technological devices difficult (Smart board, projector, AutoCAD,.....ect)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Getting access to an internet is a problem for me with my laptop/notebook computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have a laptop to be use in E-learning makes the study easier for me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is very important to you to work with a computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. I am using 1-to-1 E-learning to practice the following activities:

	strongly Disagree	Disagree	Neither agree or Disagree	Agree	Strongly Agree
Communicating with Students inside and outside my school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communicating with Family & Friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communicating with teachers and School admins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Doing a learning task collaboratively	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Doing a learning task individually	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gathering information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oral Presentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Planning a group learning task	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Planning an individual learning task	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Viewing and Reading lessons Material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Revising for an exam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Doing Self Assessment exercises	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Writing an Assignment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt having my own laptop is very useful in supporting learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
By having a laptop I found enough/easily information of the subject (lectures, exercises) that I was looking for	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is important to know the class material before beginning the class.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. How often do you use:

	Every day	A few time each week	Between once a week and once a month	Less than once a month	never
Games and YouTube on a computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet to search for information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Word Processing (e.g Microsoft Word)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Doing a learning task collaboratively	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet to collaborate with a group or a team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spreadsheets (e.g Microsoft Excel)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power point for Presentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The internet to download software, games, Videos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drawing and graphics design programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Educational software such as Mathematics programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The computer to help you learn school material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The computer for electronic communication (e.g email, chat rooms or Forums)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix (B): Teacher Questionnaire

Am a teacher of: Science ☐ Engineering ☐ literature ☐ Mathematics ☐
linguistic ☐ IT ☐ Other (please specify)

Age: 26-35 ☐ 36-45 ☐ 46-50 ☐ 51-60 ☐ > 60 ☐

Gender: Male ☐ Female ☐

1. How many years have you been teaching high school level?

- A. 1-5
- B. 6-10
- C. 11-15
- D. 16-20
- E. >20

2. Do you have a laptop machine to be used in your work?

- F. YES
- G. NO
- H. Need More Training

1. Can you use PowerPoint to produce a presentation?

- A. YES
- B. NO
- C. A little
- D. Need More Training

2. Can you use and setup a projector and laptop for a power point presentation?

- E. YES
- F. NO
- G. A little
- H. Need More Training

3. Can you produce handouts and exercises on a computer?

- E. YES

- F. NO
- G. A little
- H. Need More Training

4. Which of the following do you use in your teaching?

- A. Computer based assessments
- B. Computer based class related information
- C. Electronic Communication with Students (E-mail, Forum, chat rooms, Video Conferencing group)
- D. Paper based practices and exercises
- E. Smart Boards and projectors
- F. All the above

5. What do you think E-learning is?

- E. IS an integrated component of your business?
- F. Should be a climate that support classroom learning
- G. Should embrace learning as a whole
- H. All what mentioned above

6. What expectations do you have about using E-Learning?

- E. To prepare and upload course material
- F. To participate in student-teachers OR teacher-teacher forum conversation
- G. To Communicate with students
- H. To Apply teaching process electronically with minimum use of papers and chalk
- I. Other (specify)

7. Below are a number of statements about teaching. Please indicate how frequently the following things happen in the class:

	Never	Some Days	Most Days	Every Day
Students work in group using their laptop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students suggest subjects or topics to be covered in Class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students are encouraged to find things out for themselves by accessing internet materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You use video or audio materials in the class that students played on their laptops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Homework is taken up for correction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Homework is checked in class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Online exams and quizzes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Encouraging students to present their works by using power points tool	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students are encouraged to use their laptop software to express their ideas through video, images and text	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students use their laptop machine to access and use school's educational programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students are encouraged to prepare for the next class lesson by download and review online materials.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Please Specify the following:

	strongly Disagree	Disagree	Neither agree or Disagree	Agree	Strongly Agree
Wireless access is available in the school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet access is available in the school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I got participate in designing or suggesting E-learning curriculum in the school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Student performance has been enhanced after 1-to-1 E-learning solution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Am getting IT technical support whenever it needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you perceive E-learning as efficient and cost effective	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have prior experience with E-learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have access to the school intranet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your school is well prepared for E-learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Preparing online exams and quizzes is much easier to mark than paper exams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students get more interact with technology education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using educational programs is so effective and interactive to students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I prefer to receive student's homework by E-mail or through learning management system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Specify your computer and internet knowledge

	Expert	Good	Not Too much	Can't do anything	Can't say
Word Processing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spreadsheet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power point presentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Download and upload Data (Also from the internet)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Install programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Download pictures ,files from digital devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compress Data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Printing & Scanning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Burn CDs & DVDs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Play Games	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surf the internet & use search engines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chat and Discussion forums	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
using smart board with the computer to save and upload class material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
programming in house applications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Guide students how to use educational applications on their laptops computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use Graphics Arts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use the internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surf the internet & use search engines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discussion forums	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>