A Study of Teachers Opinions and Experiences on the Use of Computers and Laptops in Classrooms in the United Arab Emirates

Ruqiyabi Naz Awan [+]

The British University in Dubai, United Arab Emirates

Abstract. Significant investments have been made by educational institutions as well as parents and students purchasing computers and laptops on the pretence that this equipment is as much part of the teaching and learning environment as are pens, books and teachers. The issue as to the 'impact' of this new innovation upon educational practices has generated mixed findings. Teachers at all levels of the education sector are now using (and being expected to use) computers and laptops in their classrooms. In order to assess the affect of computers/laptops on the dynamics of the teaching and learning environment a questionnaire was circulated to teachers currently undertaking a Masters in Education degree programme in order to gather teachers opinions and experiences regarding the use of computers and laptops in their classrooms. The results reveal that teachers in the United Arab Emirates (UAE) in both the public and private sector, that had been educated in various parts of the world, were able to identify key issues pertaining to the advantages and disadvantages to the use of technology in their classrooms. Significant concerns regarding the lack of suitable training in how to deal with and manage the technology from a pedagogical perspective were raised as well as the issue of teaching strategies that would enable suitable technology based classroom management practices.

Keywords: Technology, Computers, Laptops, Teachers, Attitudes, Pedagogical Issues

1. The Use of Computers in Education

A technology literate population where individuals can use technology in a meaningful manner to engage in professional, social and civic life is seen as essential goal for all first world countries [1, 2]. The role of education in realizing this goal has therefore been to extend literacy in the traditional sense of the three r's (reading, writing and arithmetic) and to also explicitly include Information Communication Technology (ICT) literacy as key element in the curriculums objectives [3,4].

The initial move of schools and computer companies investing in developing computer labs in the 80's appeared to identify computer studies as a separate subject within the existing curriculum. Technological developments by the 90's however brought about portable computing devices such as laptops that promoted and re-inforced the notion that technology was not a device for learning per se but could be used as a tool to assist in the learning process across all curricular subjects [3]. This conceptualization of both the technology and of learning as being portable, dynamic entities that are not constrained to the confines of schools and classrooms further added to perceptions of 'education' and 'learning' as being a process that the individual is engaged in constantly throughout their lifecourse and as should be able to accessible 'anywhere' and at 'any time' [5].

Laptops are now perceived of as essential equipment in the classrooms of higher education and there has been a rapid growth in the number of colleges and universities worldwide that are implementing 1-to-1 laptop programs [6]. The perception of the laptop as being an essential device for the teaching and learning

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[+] Corresponding author. Tel.: + 971 4 364 4547; fax: +971 4 366 4698.
 E-mail address: Naz.Awan@buid.ac.ae

environment has been further strengthened by moves by universities to make it a mandatory requirement for students to have laptops upon enrolment [7].

This initiative has also filtered down into school settings and the traditional ICT room is rapidly being replaced by mobile computing labs (laptops that are taken in to different classroom settings and not confined to the one dedicated ICT room [6].

1.1. UAE Adoption of 1 to 1 initiatives

The Government of the UAE has invested significant funds to develop education and has designated ICT in Education as a national priority [7]. The Ministry of Education of the UAE in its strategy document Vision 2020 emphasizes the use of multimedia-based instructional materials in educational institutions and envisages upper secondary schools providing a computer ratio of 1:1 by 2010 [9].

Public and private educational institutions in the UAE have as a result adopted strategies aimed at providing personal laptops to the students in order to assist in improving the quality of offered instruction as well as preparing UAE based students for the demands of modern life [9].

Schools and colleges in the UAE have been encouraged to promote ICT use in their lessons. The impetus for greater laptop use in teaching has been seen to be driven from the need to assist students improve their ICT skills while at the same time allowing students and teachers more access to larger information resources that are subject specific. While ICT initiative both in the UAE and in other countries are focused upon improving students ICT skills, the responsibility for teaching a) core subject material and b)using laptops in a pedagogically and subject specific complementing manner is being placed squarely as an additional role for teachers to take on as part of their daily teaching repertoire [10].

With the use of computers and laptops by teachers and students in classrooms, new learning environments have been created. Moreover an analysis of education policy appears to suggest there is a greater impetus on educational institutions to encourage their staff and students to utilize this technology in classrooms [3, 4]. It is therefore of merit to assess the affect of this implementation on teachers attitudes and experiences towards lessons where both the teacher and the learner have access to and the use of technology in order to comment on how the technology is being used, and its role and relationship to the teaching and learning experience.

2. Teachers Attitudes Towards Technology in their Classrooms

Research concerning the barriers to ICT use in schools suggests that the reported attitude of teachers towards ICT tells us more about the equipment the teacher has access to, the training they have had, and the sort of teaching and learning community they are part of, than it does about the willingness of the teacher to use ICT [11, 12, 13].

The idea that teachers resist change as a result of their personal beliefs is however questioned by research that suggests that the reported attitude of teachers towards ICT tells us more about the equipment the teacher has access to, the training they have had, and the sort of teaching and learning community they are part of, than it does about the willingness of the teacher to use ICT [11]. Schools themselves can also be seen to be resistant to the changes needed to successfully integrate Information Communication Technologies as a result of their organizational structures and if teachers are to benefit from ICT in their work and their student's learning; the school environment needs to be supportive to the needs and concerns that teachers have regarding technology implementation in their classrooms [14].

Research has been conducted that has attempted to make sense of how teachers negotiate meaning with technology by looking at the role of external variables that characterize outside influences that teachers perceive as affecting their 'ease of use' in working with ICT , as well as teachers' perceived usefulness of ICT [15].

These models have however typically been based upon students working in ICT rooms. Desk top computers do not offer the same portability as laptops, nor do they account for the various environments that laptops can be used within, e.g. as a personalized social communication device, a personalized repository of information, materials, applications that are meaningful to the owner of the laptop. These factors therefore

bring with them qualities that may significantly affect the dynamics teaching and learning experience in ways that previous studies have not encountered.

3. The Present Study

The research evidence concerning the learning and academic gains made from students using a computer/laptop have however generated mixed findings with some studies suggesting positive learning gains and academic achievement when students use laptops [16, 17] while others suggest serious negative effects on students learning primarily because it acts as a distracter[18, 19, 20].

If educational technology such as laptops are perceived of as 'tools' whose role is to assist the teacher and student in 'process teaching and learning' within the context of an educational establishment, then the opinions, views and experiences of teachers must be consulted in order to assess the affect of this technological innovation upon their role as facilitators of the learning process [21].

From a teaching perspective the issue of whether laptops should be banned, or limited in terms of their use because of the problems of distraction that laptops cause when students use it for non-educational purposes during educational activities time [5, 22] have been raised. Furthermore, concerns regarding their use to facilitate cheating [6], coupled with the fact that teachers often receive little or no formal training in how to use this technology to teach with [10] has lead many teachers to question the educational merits and instances when this is a helpful aid and/or a hindrance [23].

The purpose of this study was to investigate the experiences of teachers in using laptops in classrooms, to provide them with an opportunity to state what they perceived the advantages and disadvantages of working with the technology in their classrooms, and to give their reasons why.

The key questions in this research study focused upon:

- What were teachers opinions of the training the training they had received for working with laptops in their classrooms?
- What types of activities do teachers typically use laptops in their classrooms for?
- What did teachers perceive to be the advantages and disadvantages of using laptops in their classes?
- Generally speaking, how do teachers they feel about the use of computer and laptops in classes at schools and colleges?

3.1. Participants

Full and part time post graduate students enrolled on a Masters of Education (MEd) programme in the United Arab Emirates (UAE) were identified as being suitable participants in this study. The entry requirement on the MEd programme requires students to have at least two years teaching experience and the majority of students are teachers in both public and private sectors in various schools and colleges across the UAE.

3.2. Materials and Procedure

A 17 item questionnaire designed to capture information pertaining to teachers' experiences and opinions towards latop use by students in classrooms, school and colleges in the United Arab Emirates (UAE). This questionnaire was also administered to MEd students taking a first term core module during one of their taught session. The questionnaire clearly stated that to all participants that their participation in the study was voluntary and that they were free to decline the invitation to participate without consequence.

The questionnaire comprised of closed questions (12 items) and open ended questions (5 items) and was divided into two parts. The first part was designed to collect demographic information regarding the teacher's qualifications, years of teaching experience both in and outside of the UAE, subject specialism and the teachers estimated use of technology in their classes. The second part of the questionnaire dealt with issues pertaining to the type of ICT training received by teachers and their opinions of their received training, as well as teachers opinions on the advantages and disadvantages of laptop use in classes in schools/colleges and their general 'feelings' about the use of laptops in schools and colleges .

Completed questionnaires were either emailed back to a return email address or handed to the Faculty Administrator.

4. Results

The results were recorded and analysed using a statistical software tool. In understanding participants response to open ended questions a thematic analysis [24] was used in order to identify recurring themes for each questionnaire item. In order to ensure there was no researcher bias or a biased coding framework/procedure, a research assistant was asked to thematically analyse half of the completed questionnaires (n=32). The themes that were explicitly documented by the two researchers were then compared to assess their validity. While multiple responses were noted by participants, this research will for the sake of brevity and clarity highlight only a few of teachers' comments to highlight each theme.

4.1. Teachers Demographic Information

64 completed questionnaires were received in total after one month from the time of initial administration, via email and handed out to students in a class. The results that follow are based upon the responses provided by 23 males and 41 female participants that all have a first degree and are all currently working as teachers and are studying for their Masters in Education degree. All those that responded to the survey reported to owning either a computer/laptop that they used for the purposes of their Masters study and as a social communication device (emails) and information resource (internet) (N=64).

All participants had a first undergraduate degree (n=64), however only 4 participants had an undergraduate degree that was recognized as an 'international teaching qualification'.

The number of years teaching experience ranged from 1 to 20 years, with an average of 8.1 years($\bar{x}$ =8.1 years, S.D=4.5 years, N=64). Numbers of years teaching experience in the UAE ranged from 1 to 20 years also with an average of 5.7 years ($\bar{x}$ =5.7, S.D=3.7, N=64).

The overwhelming majority of participants were from Middle Eastern countries (n=54) with significantly smaller numbers coming from European Union countries (n=3), North America (n=2), Australia (n=1) and Asia (n=4).

A large number of the sample worked at public schools (Government schools) (n=47) and the rest at private schools (n=17). Most of the participants worked in single sex schools, Boys school (n=26), Girls schools (n=21), Co-educational schools (n=17).

The age of the students the participants taught revealed that 60% of the sample were involved in teaching 14-16 year olds (n=39) with others teaching 11-13 year olds (n=10), 7-10 year olds (n=13), and 5 to 7 year olds (n=2).

Most of the sample were English language teachers (n=47), followed by Science teachers (n=10), Maths teachers (n=5) and finally Physical Education teachers (n=2).

In response to a question that asked how often teachers used a laptop and/or computer for teaching purposes in their classroom sessions 18.8% responded with 'Never' (n=12), 15.6% responded with 'Not Very Often' (n=10), 23.4% responded with 'Sometimes' (n=15), 7.8% responded with 'Often' (n=5), 14.1% responded with 'Quite Often' (n=9), 6.3% responded with 'Very Often' (n=4), and 14.1% responded with 'All the Time (n=9).
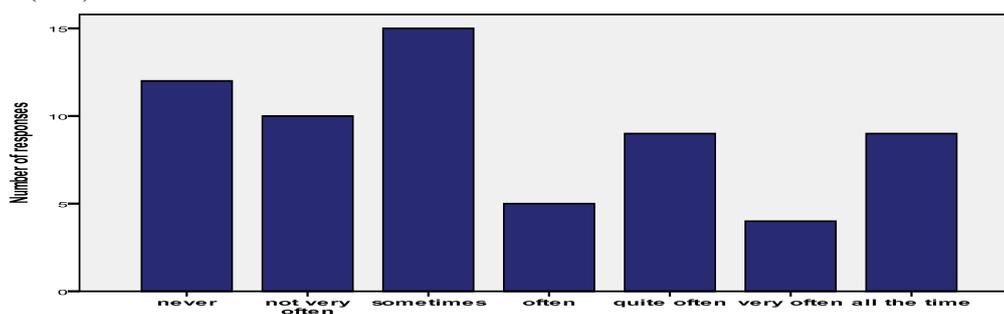

Figure 1: Frequency of laptop and/or computer use by teachers in their lessons

When asked if they had taught classes where all students were asked to use laptops in order to participate, 48.4% answered 'Yes' (n=31), and 51.6% answered 'No' (n=33).
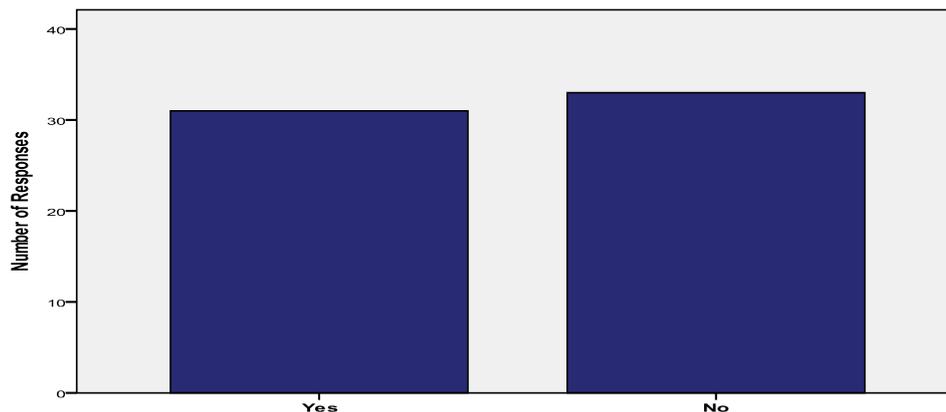

Figure 2: Had teachers taught any lessons where all students were required to use laptops or computers in order to participate.

4.2. ICT Training – Teachers Experiences

In response to a question that asked if teachers had been provided with any training in managing a classroom with computers/laptops in a teaching and learning environment, 89.1% answered 'No' (n=57) and 10.9% answered 'Yes' (n=7).
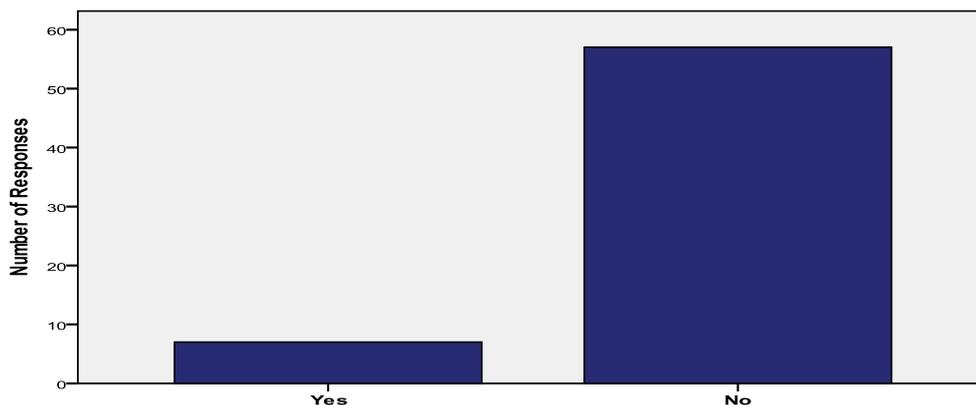

Figure 3: Had teachers received any formal training in teaching and managing a classroom where technology is being used for teaching and learning purposes

In order to gain further information pertaining to teachers perceptions of the training they had received a follow up item stated 'if you have had training, please indicate the type of training you had and whether you were happy with the training you received'. Seven responses were noted with one dominant theme emerging:

Training focuses on developing ICT skills and not on how ICT can be used in classrooms

"Training focused on our ICT skills but nothing on how to use ICT in our classrooms".

"Our school organized us (the teachers) some training but the training was directed more or less on using the tools inside the laptop (applications) rather that utilizing the tools for classroom teaching. I cannot say that I am happy with the training I received".

"Basic training from IT department – it was not helpful, I still don't know how to use ICT as a good teaching tool".

"It was done by the Ministry of Education – it was very basic. It was mainly about using technology but told me nothing about using specific strategies or technologies in the classroom".

4.3. How computers/laptops are used in lessons – Teachers opinions and experiences

The issue of how are computers and laptops are used in lessons by the teacher was also put to participants. Teachers' responses were thematically analysed and six main themes were found to emerge:

1. Games

'Mostly games'

'there are lots of games that are educational and its easy to find games that are related to what I've taught that will keep students interested in the lesson'

2. Searching for information online

'As remedial work for certain skills or for collecting information in order to complete a project'

'Searching for suitable material'

3. Online quizzes and tests

'Online tests and quizzes'

'Most of the activities are online quizzes or exploring websites related to the course'

4. Language training – authentic materials

'Webquests, reading comprehension with multiple choice questions, grammar activities, story writing'

'Listening to authentic materials'

5. Uploading documents and activities that can be downloaded or printed off by students (are accessible to students)

'Teachers are very highly recommended to use either BlackBoard or Microsoft OneNote as their main tool for teaching. Therefore, students have access to all kinds of interactive, online tasks using their laptops'

'Only designing some powerpoint slides for students projects in addition to producing a few research papers or worksheets that are uploaded for students to work with'

6. Laptop and computer use assigned for home activity only

'I use the computers and laptops for the basic stuff like uploading documents for students to use but really ask my students to use their laptops/computers at home to search for relevant information, produce reports, presentations and so on – its more of a tool for them to use to help them with their homework'

'I get my students to use their laptops and computers more for their homework than I do for any class activity – I just don't have the time, patience or know how to manage all my students using laptops/computers at the same time in a 45 minute class'

4.4. Teachers opinions of the advantages of using computers/laptops in class

Teachers 'opinions of the advantages of using computers/laptops in class' were also addressed in the questionnaire. Teachers' responses were thematically analysed for 'advantages to using computers/laptops in class' and the following seven themes were found to emerge:

1. Motivates students

'It's a very user friendly way for teaching and learning to happen as its interactive and this therefore is more attractive to students, it keeps them motivated and interested'

'Motivate students by drawing more attention to the tasks'

2. Provides students with lots of up to date information via the internet

'Great way to visit different places at the end of your fingertips'

'Students have a wider exposure to information – it expands their horizons'

3. Appeals to different learning styles and learners needs

'Provides varied ways of learning opportunities'

'Learners are tactile and technology also appeals to learners with different learning styles'

4. Helps develop self regulated independent learners

'It enables students to be independent researchers but that will be achieved only if the task is pre-planned with the students'

'It encourages autonomous learning'

5. Ease of use for teachers

'Easy to use for teachers (oh yes and students)'

'Easy access to information and material (easy for teachers to upload and students to download)'

6. Provides students with key ICT skills that are essential for their future

'Students will be able to learn basic ICT skills that are necessary for their future lives and careers'

'Schools and colleges are preparing students to be better equipped when they start working in the 'real' world'

7. Provides students with multiple representations of the problem space

'Laptops make it easier for the teacher to explain complicated ideas especially concepts that require animation (maths and science)'

'ICT helps explain some subject better than others as students can see the concepts rather than imagine them like in science and history'

4.5. Teachers opinions of the disadvantages of using computers/laptops in class

Teachers' responses were thematically analysed for 'disadvantages to using computers/laptops in class' and six main themes were found to emerge, with two sub themes (*distraction* and *creating classroom management issues*):

1. Computers/laptops when used by the teacher and student in class create a barrier in the teaching and learning process

'Students rely a lot on the computers and their laptops in class this means the level of interaction and group work or peer work is reduced'

'Students tend to miss the 'essense' of the subject being taught as they are too busy concentrating on 'having fun' or chatting online to their friends when they should be working or at least engaging with the process of learning'

1a. Distraction

'Most obvious one is the distraction they create (computer games, chatting and so on)'

'Distracting - Students get distracted, wander off task and use the internet to visit sites and use applications that have nothing to do with the task set by the teacher'

1b. Classroom management issue (keeping students on task)

'It requires a lot of effort to prepare tasks before hand with a lot of control in the classroom while working on tasks with students (that are using laptops)'

'Its difficult to control students and to give students instructions and even help students as you have no idea what they are working on (if they are working on what you set them at the beginning of the class)'

2. Hardware/software problems (time lost in class dealing with technical problems)

'If it was supposed to reduce teacher time it does the opposite as you constantly have to sort out problems that have nothing to do with the contents of your lesson, e.g. computer problems, students using their laptops for things they shouldn't be doing'

'System/network problems, hardware and software problems disrupt my class – you need to prepare two lessons one if the equipment works ok and another if the technology fails'

3. Inappropriate content and environment online

'Some of them (students) use their technology 'wit' and hacking abilities to download 'inappropriate' material'

'Inappropriate material being viewed by students in class time'

4. Psychological and physiological problems

'Physiology of students change as they lean to forward to stare at their screens – creates serious health problems'

'I'm sure the number of children that are addicted to computers and laptops is increasing and in schools and colleges we're encouraging this behaviour'

5. Lack of ICT skills needed to participate in lesson – causes a problem with participation

'Not all the students have sufficient technology knowledge so it's difficult to get activities that are good for all students to participate in'

'My students have different ICT skills, it makes it difficult to design lessons that allow for all my students to participate without any one feeling left out or left behind'

6. Not enough planning time, too many resources and not enough training in how to teach with technology

'There are too many sources/materials that can be used, trying to work out which is most suitable takes too much time'

'I don't know enough about computers or laptops to feel confident enough to teach a whole class with it myself let alone getting my students to spend an entire lesson using them'

4.6. Teachers opinions on how they see students use of computers/laptops

The final item on the questionnaire asked teachers 'In general, how do you feel about students use of computers/laptops in classes, schools and colleges?' responses were thematically analysed and were categorized under the main heading of 'positive aspects of technology use' and 'negative aspects of technology use' before being further reviewed to assess what themes emerged. In relation to teachers' perceived *positive aspects of technology* in relation to the use of computers/laptops being used in classes, schools and colleges *three main themes were found to emerge*:

1. Accessible resource – lots of information available to teachers and students

'I think they are a good tool to have in class, not sure why but I feel it's a good thing – it's a great information resource'

'I think it's a good tool for teachers and students – more information and lots of activities'

2. ICT is a core skill for the future

'It is helpful for students to use a tool that they will need to use later in their working lives'

'It's a core skill for the future so should be incorporated into lessons across the curriculum'

3. Develops self regulated learners

'I think if used well it can assist in developing self regulated learners'

'It also allows students to become independent learners and allows the teacher to create lessons that are truly learner centred'

In relation to teachers' perceived *negative aspects of technology* in relation to the use of computers/laptops being used in classes, schools and colleges *five main themes were found to emerge*:

1. Teachers not provided with time or necessary ICT skills to plan or develop appropriate lessons that meaningfully integrate technology

'For effective use of technology in class ample preparatory time needs to be provided to the teacher to plan how to use it meaningfully in the class and with the curriculum that needs to be covered – this just doesn't happen'

'Lack of teachers and students experiences with the use of the computer and its software is one of the factors that hinder their ability to use technology in class. Moreover, schools have old fashioned computers that contain old software with very low capacity'

2. Used as a toy (social communication device) and not as an educational tool by students

'Students are well adept in the use of computers. But often they use it to log onto social networking sites rather than use it for academic progression'

'It's a lot of money to spend on something that is supposed to be educational but is really social'

3. Classroom management problems

'Students get distracted and its difficult if not near impossible to keep students focused and on task'

'It cannot be used by all students – not all students are responsible enough to manage their own learning, many cannot stay on task when a laptop is involved'

4. Loss of attention form subject area core knowledge with more focus being placed on ICT skills

'Students tend to become dependent upon them for learning, it also opens the doors to plagiarism and taking other peoples thoughts, ideas and work and pretending they are your own. I believe that nowadays the focus is shifting away from constructivism and teaching content knowledge to enhancing animations and technology skills. Being 'computer savvy' does not necessarily mean that a student has mastered the subject being taught and the necessary knowledge embedded within a lesson'

'Students are falling into a bad habit of relying on their laptops for the purposes of research, they seem to have forgotten the importance of libraries and also from learning from one another or the teacher, while self directed learning is important, you can't treat everything on Wiki as a reliable source!'

5. Schools buying into the technology trend

'I don't feel teachers have a say as to whether it is suitable or not suitable to use technology in our classes, we are just expected to use it and get on with it'

'Too much emphasis is being placed by schools and colleges on computers – they are a tool to assist learning and appear to have someone been mistaken as the main means by which learning takes place'

5. Discussion

This study sought to investigate the experiences and opinions of teachers towards computer and laptop use in their lessons at schools and colleges. The results suggest that the majority of teachers receive no training. Moreover when training was offered it was limited and did not address the issue of how to use educational technology in class to assist the teaching and learning process. Martinez [25] argues that "Professional development for teachers related to laptops tends to focus on the logistics of using laptops and learning new features. This leaves the most important and most difficult changes to chance, such as expectations that the learning will become more students-centered, teaching will become more collaborative and project based, the students will become more- self-directed learners".

Another main finding was that teachers found computers and laptops in class as creating a barrier to the teaching and learning process. An analysis of teachers' comments suggested that the use of computers and laptops in class tended to distract students and created a greater number of classroom management issues for teachers to deal with. Similar findings have been observed in other studies that have noted the negative effect of laptops and computers on students learning, with researcher observations and teachers comments highlighting that students appeared to spend more time multitasking on their laptops and were therefore distracted from the primary lesson itself [5, 22, 26].

Teachers' comments did not clearly illustrate the specific benefits they saw ICT bringing to their respective subject areas but noted the increased use of ICT in schools as being attributable to the need for a future ICT literate workforce [3, 4]. Teachers were most positive in their comments regarding the use of computers and laptops in lessons in terms of the technology's ability to make their job easier from an administrative perspective. The value of computers for teachers from their noted comments appears to suggest the use of computers and laptops as a materials repository as well an efficient and quick way of communicating and disseminating information to all students. The findings from this research suggest that for the teachers in the survey the use of computers and laptops whilst 'understood' to have benefits for teaching and learning were used primarily and extensively as an administrative tool.

The finding noted in the current study are similar to a previous study where it was found "In studies where laptops proved to be more of a distraction than a benefit, the main teaching strategy was a traditional lecture. In order to maximize the benefits of laptops in higher education, it may be necessary to develop meaningful laptops based activities and move away from the passive dissemination of knowledge" [27]. The

issue of using pedagogically grounded teaching strategies when using technology and technology based applications with students has highlighted that when good online constructivist learning environments are created and used with students they can challenge students existing concepts, assist them in using inquiry based learning as well as promoting greater reflective and self regulated learning skills [28]. Findings from this research study concur with previous research that teachers are not suitably trained to use laptops as pedagogic teaching and learning tools [23, 12].

The suggestion that the teachers aversion to teaching with a laptop may be the result of the teachers own level of laptop/computer use [29] appears to sit uncomfortably with the fact that all the surveyed teachers in the present study reported owning and using a laptop/computer for their own personal social and educational purposes. Furthermore teachers were clear as to the noted value of computers/laptops as teaching and learning aids (beyond their assistance as administration tools), this appears to suggest the uncomfortable relationship teachers have in knowing that the technology can be useful if used in a pedagogically meaningful manner but that due to lack of training and sufficient time to plan for lessons where technology can be meaningfully incorporated and managed, its use is limited, superficial and problematic [23, 12]. Espinosa and Chen [23] contend that all teachers can become technologically literate and that most can learn constructivist teaching practices. The difficulty, as demonstrated by this research, is how best to combine these two complex skills set in the context of a classroom [10].

The suggestion that technology use has a beneficial effect on the learning process appears to be grounded on the premise that future high-quality jobs will not be possible without digital age literacy, interactive communication and that these two entities are fundamental to creative innovative thinking as well as participation in society in the future [30]. A question the observed results of this study also raise concern whether the opinions and experiences expressed by teachers participating in this study are due to a lack of training or whether there is an latent awareness amongst teachers that the marrying of technology in class is not the panacea for the issues education is being expected to address [31], ultimately how to suitably equip students for employment in a world where employment issues are globally based, ever evolving and subject to external forces such as environmental issues and an ever growing world population. The wider issue was also highlighted as to whether the educational technology industry is driving the demand for 'ed-tech solutions' or whether the education sector is pushing the ed-tech sector for solutions to the ever increasing demands being made on the education sector for producing the future 'digital literate' workforce [4]. The policy consensus globally appear to be that the role of education is to create not only informed generalists and subject specialists but also a digitally literate future workforce that are creative, innovative and able to adapt and evolve to the technological environment they are living within [3]. The findings of this research however suggest that the manner, in which this is to be achieved within the teaching and learning environments that presently exist in schools, colleges and further and higher education institutions, is a subject for further investigation.

6. Conclusion

Education technology was deemed by world leaders, policy makers and industry experts as a phenomenon that would significantly transform the nature and practice of education; thus far the research evidence does not support these grandiose claims [3]. The findings of this study suggest that teachers whilst seeing particular benefits of technology use, they are also acutely aware of the problems with its implementation and use in their classrooms. Furthermore there appears to be a lack of suitable training available to teachers in providing them with the knowledge and skills they require to marry their lesson outcomes, to pedagogically sound teaching and learning practises for class based activities that require technology use [23]. The results of this study support previous research findings that suggest "technology implementation is a diverse process mediated by teacher characteristics, technological framework and conditions within the school" [10].

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