TEACHERS' PERCEPTIONS OF THE eCONNECT AND LEARN PROGRAMME FOR ENHANCING TEACHING AND LEARNING AT A SECONDARY SCHOOL: A CASE STUDY

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Teachers' Perceptions of the eConnect and Learn (eCAL) Program for Teaching and Learning Enhancement at a Selected Secondary School: A Case Study.

Abstract

This qualitative case study was conducted to investigate teachers' perceptions of the eConnect and learn (eCAL) program for enhancing teaching and learning at a Secondary School in Trinidad and Tobago. The research issue was explored by interviewing seven teachers at the selected school. Also, observation was employed to investigate the research issue.

Result show among others that majority of the teachers are of the opinion that the eCAL program enhances their teaching practices because it offers them different avenues to deliver lessons. Also, results from the study show that many of the participants are of the opinion that the program has some negative effects on the students' learning such as causing distraction to learning.

All the participants indicated that there are barriers to the successful integration of the program that are hindering its positive effects on teaching and learning such as inadequate infrastructures and facilities; hence they all made suggestions that can help to improve the program.

Keywords: Information Technology, eConnect and Learn Program, Teachers' Perceptions, Trinidad and Tobago, Caribbean Schools, Secondary Education, Developing countries.

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Chapter One

Background

Personal Experience: I started my Masters in Education program in August 2012 and during the course of my program I had opportunities to interact with my classmates. I have listened to my fellow M.Ed. students who are teachers at secondary schools express negative feelings and concerns about the eConnet and Learn (eCAL) program. They see the program as a waste of money. Others indicated that no piloting was done while others opined that there was no proper training for teachers and that the process of integration and implementation was not clear. Other concerns expressed by the teachers about the program included lack of facilities to support integration, students using their laptops for purposes they were not meant for and students being distracted from learning. Asides the teachers verbal expression of comments, were also some newspaper articles pertaining to the eCAL program which are similar to the teachers' concerns. These formed my reasons for deciding to do a study on the eCAL program as it pertains to the teachers' perceptions of the program for enhancing teaching and learning, teachers being the key implementers of the program.

It is pertinent to note that other teachers have conducted similar studies in other schools and found the same issues at several schools for their M.Ed. researches. However, conducting this study at the selected school may help to show whether or not the issues are similar or dissimilar.

Introduction

This study investigated teachers' perceptions of the eCAL program, an Information communication and technology (ICT) tool in Secondary Schools. Perception is the process one becomes aware of objects, people and events around him or her, through the senses (Devito, 2006). For this study, the teachers' perceptions are the teachers' opinions, awareness and experiences as they relate to the eCAL program at their schools. ICT is one of the teaching strategies that education sectors around the globe have been adopting for a number of decades because of its transformative value. Schools are now integrating ICT across all disciplines of the curriculum. ICT is believed to be one of the tools for transmission of the 21st Century skills; ICT is regarded as a vehicle for new and faster ways of delivering and assessing information and also providing educational opportunities for all (Ministry of Education (MOE),2005). The use and integration of ICT "expands and enhances teachers' practice, as teachers are now required to design learning experiences that access wireless learning technology and diversify classroom practices"(MOE, 2010, P.2).

In light of the above, the governments of some countries, through their ministries of education, have introduced ICT integration in their educational systems. Some of these countries provide personal laptop computers to students. Laptop computer is one of the ICT tools to improve the quality of education and improve learning and curriculum delivery at schools.

Likewise, in order to enhance teaching and learning in schools through ICT integration, the government of Trinidad and Tobago in 2010 introduced the eConnect and Learn Program(eCAL)

Which is geared towards providing laptop computers to students entering secondary schools. ICT tools such as laptops are the latest technological innovation believed to have a major impact on the educational process (Norton & Sprague, 2001; Roblyer & Doering,2013), and also one of the tools used to transmit the 21st Century skills that students need to succeed in life, school and work; and to fit into the global economy.

ICT integration is an integral part of the school curriculum that can be used to enhance teaching and learning. The integration of technology into the curriculum motivates students to learn and also supplies relevant and meaningful contents that get students to reason and solve problems. It also helps teachers to deliver their lessons faster and more efficiently (Norton et.al, 2001). Furthermore, ICT integration in schools enhances and stimulates student's interest in school. It increases academic performance and teacher productivity, enhances problem solving, fosters creative and critical thinking, (Clarke, 2007; Maloy, Verock-O'Loughlin 2011; Almadhour, 2010; Gundy & Berger, 2010; and Roblyer et.al 2013). Studies have been done to investigate teachers' perceptions of ICT integration into the curriculum such as the ones conducted by Amshad (2012), Buabeng-Andoh (2012) and Tondeur, Keer, Braak and Valcke (2008). ICT integration can be said to be important and helpful for both teachers and students in the enactment of the curriculum across schools globally.

Global Context

Many countries have recognized that infusing ICT into the subjects enhances teaching and learning. Hence all European Economic Unions countries have made the integration of ICT into

the curriculum a priority by investing heavily on ICT, although it has not been successfully implemented in some countries (Rampersad, 2011). Some countries like USA, Australia, Singapore, South Korea, France, Turkey, Canada, Japan, and the UK have adopted 1:1 computer integration in their educational system.

The use of iPad is prevalent in US schools. For example, by October, 2011 Clarke and Svanaes (2012) indicated that about 1000 k-12 schools had one-to-one iPad program. Some schools in US have gotten stakeholders to help implement one to one laptop program while some parents provide laptops for their children. Also in USA, ICT integration into the curriculum comes under different names coined by different schools. In San Domenico Independent High School, California, the integration of ICT into the curriculum is called the Macbook program where every student is issued an Apple Mac book; the objective of this program is to provide every child with a Mac book so that they have equal access to technology and also to develop the 21st Century learning strategies and skills. A report from the National Endowment for the Arts in 2007 shows that technology integration into the curriculum has distracted students from academic learning, that is negatively affecting their achievement; also reading habits are in decline among US teenagers and young adults (Maloy et.al, 2011).

In Kenya, the president, Uhuru Kenyatta in an election campaign, promised to provide every class one student with a solar-driven laptop from January, 2014 estimated at the cost of Ksh 10 billion believing that this is a means of providing the basic educational needs to the students which will help in the development of cognitive skills in students (Odero, 2013). In Australia,

the Australia Commonwealth Government Digital Education Revolution Initiative launched a program, “The Digital Education Revolution (DER)” in New South Wales (NSW). This program is to provide one-to-one wireless laptops to all students from nine to twelve years old by the year 2012. The program is funded by the Australian Government’s National Secondary School Computer fund (Howard & Carceller, 2011). Also in Uruguay, their national policy makes provision of free laptops to every child and teacher through its El Ceibal project, this goal was achieved in 2009 (UNESCO, 2O12).

In the UK, there has been emphasis on the need for schools to integrate ICT into their curriculum because of the many benefits it has on teaching and learning. The UK Information Technology (IT) educational system has been criticized of wasting its technological talents due to inadequate IT integration into the curriculum, although integrating IT into the curriculum comes with a lot of distractions that hinder students’ learning (Hall, 2011). However, a focus group interviews using 18 teachers by Hennessy, Ruthven and Brindley (2005) indicated that teachers view ICT integration in schools as a means for enhancement of their classroom practice. On the other hand, Hertzler (2010) opined that there is need for further research to determine the effect ICT integration has on teaching, students’ achievement and behavior because teachers are faced with problems while integrating ICT in their subject areas. Also, as Clarke (2007) explained that teachers are faced with the problem of a psychological tug-o-war because school leaders, technocrats and change facilitators pay little or no attention to their perceptions and the challenges that confront them while integrating ICT in their subjects.

Teachers and students are the major stakeholders to successful ICT integration. Result from a research conducted in Singapore schools stated that some teachers perceive ICT integration as a novelty to be used to break the daily monitoring of chalk and board teaching. Hence they felt that they could teach better and quicker with the traditional teacher-centered approach (Lim & Khine, 2006). Similarly, according to Jackson(2012), some secondary school teachers view technology integration as a tack-on for an already packed full program and they do not think they have time and space for it , that is because they cannot envision technology as being a means of delivering and improving the curriculum they teach. Buabeng-Andoh (2012) conducted a study on "Teachers' Perceptions and Practices of ICT in Teaching and Learning" in Ghana. Result from that study showed that teachers' teaching methods have not changed with ICT integration and also ICT integration has no impact on their teaching. Another study by Tondeur, Keer, Braak and Valcke (2008) indicated that teachers are of the opinion that: for ICT integration to be effective in teaching and learning, that school's ICT policies should be well developed and utilized.

In summary, despite the many benefits of ICT integration on teaching and learning, there are reports that ICT integration into the curriculum comes with distractions and challenges that hinder learning and teaching.

Caribbean Context

In the English speaking Caribbean countries, some teachers have articulated that ICT integration is needed in secondary schools because of the many benefits teachers and students can derive

from it (Clarke, 2007). The Jamaican educational sector has also recognized the importance of ICT integration into the curriculum that is why some private sectors have initiated one laptop per child (OLPC) program where they distributed laptops to students to use at home and school. Furthermore, computers have been placed in Jamaican school laboratories by a number of initiatives such as Jamaican 2000 Project, Ed Tech Project 2020 and the Ed Net Project. . An ICT Training needs Assessment Survey conducted in Jamaican in 2011 shows that putting ICT in school does not guarantee that it will be used effectively by teachers to improve teaching and learning. Malcolm-Bell (2011) stated that there is not enough study in Jamaica on technology integration process, its effects and teachers' perceptions of such in Jamaican schools and also there is a low level of ICT integration at all segments of the education sector. The government of St. Vincent and Grenadines promised one laptop per child to every secondary school student in 2010. Following up on that promise, in September 2013, their Prime Minister, Dr. Ralph Gonsalves, announced in September 2013, the government had sourced 15,000 laptops at the cost of US$6 million through the Ministry of Education and Technology and arrangements for more laptops to be bought for students (Searchlight, 2013).

A study conducted by the Inter-American Development Bank (IDB), has indicated that provisions of one to one laptop to students will do little to improve the quality of education in Latin American and Caribbean countries. In its stead these countries should invest in teacher training and develop educational software for students. The study also found out that students with weak adult supervision at home may spend more time on their laptops on things that will

not help them academically. So the study proposes more evaluation that will measure the effectiveness of such programs like one to one laptops in the region (Chong, 2011) and one of the ways to accomplish this is to explore teachers' perceptions on 1:1 laptop programs such as the eCAL program.

Similarly, although there might be high rate of ICT integration in the Caribbean schools as reported by UNESCO Institute for Statistics' Survey (UIS) on ICT integration (UNESCO, 2012), ICT integration in the region may not be improving teaching and learning for there might still be limitations to technology integration that hinder its effectiveness in the learning process, which are yet to be studied (UNESCO, 2012). Also Mason (2007) indicated that there are not enough studies in the Caribbean on how ICT is used at the educational level including its integration.

From the Caribbean context, it can be observed that while some studies indicated that ICT integration into the curriculum is not improving teaching and learning, the Caribbean countries are doing a lot and spending huge sums of money on programs pertaining to ICT integration in schools (Trinidad Express, 2012 and Searchlight, 2013). As a result, a study on ICT integration and teachers' perception about it in the Caribbean will add to the body of knowledge within the Caribbean by providing some basic and actual measurements in the area of ICT integration and extent of it enhancing teaching and learning thus forming the premise for the choice of the study topic in the school in Trinidad and Tobago.

The eConnect and Learn (eCAL) Program

The Ministry of Education in Trinidad and Tobago (MOE, 2010) opined that the introduction of the eCAL program is a way to improve and strengthen ICT integration in secondary schools. It indicates that the rationale behind its introduction by the government of Trinidad and Tobago is to make ICT accessible to every student in the country since education is very important for national development. Further, it states that this will help students to fit in the global economy while acquiring the 21st Century skills. In addition, the integration of ICT in the curriculum expands and enhances teachers' practice, as teachers are now required to design learning experiences that access wireless learning technologies and diversify classroom practices (MOE, 2010).

It is pertinent to note that Trinidad and Tobago was among the signatories to the Dakar framework for action 2000 in Senegal (UNESCO, 2000) which advocated the use of ICT in schools to help achieve Education for All (EFA) goals by the year 2015. There is however the need for countries to produce students who will fit into the global economy as well being productive citizens, hence the need to integrate ICT into the curriculum. The eConnect and Learn project is an initial step in realizing a comprehensive program of educational transformation with the objective of achieving a seamless, high quality and comprehensive education via contemporary solutions that will facilitate the country's integration into the global information society (MOE, 2010).

Although the government of Trinidad and Tobago introduced the eConnect and Learn Program in 2010, its implementation started in 2010/2011 academic year through the Ministry of

Education. According to the Ministry of Education (MOE, 2010, p.1), the primary objective of the eCAL program is to "leverage the potential of Information and Communication Technology (ICT) to significantly enhance the Trinidad and Tobago education system through the provision of laptop computers to secondary school students". The goals of eCAL program (MOE 2010, p.3) include the following:

1) To improve the learning environment for students in a changing information age.
2) To improve the quality of teaching and learning and support the infusion of ICT in teaching and learning and development of 21st Century skills in students.
3) To make computer available to all students thereby reducing inequality between students from poor and rich families in accessing computer and information.
4) To improve students achievement through the use of educational software and
5) To help facilitate team work in teaching and teach among students within the school, teachers, schools and between teachers and students.

The first stage of eCAL program which started in 2010/11 academic year had Hewlett-Packard laptops distributed to 17, 3000 form one students while 3000 teachers received laptops at the cost of $83 million TT dollars. Also, more than 1,000 teachers, supervisors and principals were trained on the use of the program (Allaham, 2011). As at October, 2013, about 73,000 laptops have been given to students and 5,000 laptops given to school teachers, Principals and Supervisors.

Although there were trainings for teachers, supervisors and principals on the use and integration of laptops, these trainings were not adequate, the first vice president of the Trinidad and Tobago Unified Teachers' Association (TTUTA), Devanand Sinanan described these trainings as "Cascade Approach", teachers were trained for two days and they in turn became trainers of their fellow teachers although this cascade approach is not always a successful one. It was however indicated that this cascade approach to the eCAL may not be achieving its goals (Allaham, 2011). Subran (2010) also predicted that when teachers are not adequately prepared to use computers, it would have a negative effect on teaching and learning; and on how they integrate the eCAL program.

It is my belief that how teachers integrate the eCAL to enhance teaching and learning; and how they utilize the integrated approach are important and related to their belief about pedagogy, training, professional learning and support (Holcomb, 2009).

Monitoring and Evaluation of the eCAL Program

The Ministry of Education in order to effectively monitor and evaluate the eCAL program, has assigned roles and responsibilities to the stakeholders namely: school supervisors, curriculum officers, school principals, subject teachers, parents/guardians and students. For example, the Principals would work with their Vice Principals, Deans, and Head of Departments. They are responsible for the implementation of the policies and procedures in their schools and report their evaluation to school Supervisors 111. The schools Supervisors 111 would work with the curriculum officers to supervise monitor and evaluate the implementation of policies and

procedures through school visits, checklist and monthly report; and report outcomes to the chief education Officer. Subject teachers have the responsibility of ensuring that the program is used for quality teaching and the development of 21st Century skills in students (MOE, 2010). Although there are outlined procedures for monitoring and evaluation of the program, Briggs (2013), indicated that there are no reports yet on the eCAL program to the public.

MOE, also in its' evaluation plan has initiated an eCAL ICT in Education Innovative Award for primary and secondary school teachers and students in Trinidad and Tobago to encourage effective integration of ICT across schools in the country. The eCAL annual student ICT competition 2013 was focused on Digital storytelling, this is to inspire students to think critically, creatively and communicate their learning (MOE, 2012).

Stakeholders' Concerns

There have been views and concerns expressed by stakeholders since the start of the eCAL program. Teachers and parents have concerns that form one students whom by nature of their ages, are not responsible enough to care for their laptops and distinguish between good and bad things learnt from laptops. As a result these, students see their laptops as technological toy to play with and this may affect their performances at school. In addition, parents and teachers have complained that their children and students spend most of their time with their laptops on games, YouTube, face book and other social networking (Leacock, 2012). TTUTA in 2010, through their president, Roustan Job has expressed concerns about the eCAL program, including additional cost for electrical wiring, wireless internet, inadequate trainings for

teachers, security and storage facilities for students who choose to leave their laptops at schools (Allaham, 2011).

In conclusion, these views and concerns stated above by stakeholders may be factors militating against achieving the goal of the eCAL program as an enhancement for teaching and learning. The integration of ICT into the curriculum through the provision of 1:1 laptop to students does not guarantee improvement in learning and curriculum delivery. Thus a call has been made for the governments of Caribbean countries to evaluate and assess one - to- one laptop initiatives since uncertainty still remains about the effectiveness of providing laptops for every student (Chong, 2011). Similarly, for any program to be deemed successful, the objectives and goals must be attained. This study proposes to investigate if the eCAL program is enhancing teaching and learning which is one of the goals of the program through exploring teachers' perceptions.

Statement of the Problem

There are a lot of views, concerns and issues expressed by teachers and parents about the eCAL program as indicated in the background. Some of these issues and concerns are namely: lack of facilities to support the eCAL program, lack of proper care for the laptops, inadequate training for teachers, students using their eCAL laptops as "technological toys", students being distracted from learning. Although, there are research on ICT integration into the curriculum, the researcher observed that none has been done at the selected school as to whether or not the program enhances teaching and learning at the school; hence the need to investigate teachers' perceptions of the eCAL program at a selected school in Trinidad and Tobago.

Purpose of the Study

The purpose of this study is to explore the perceptions of teachers at a secondary school in George East School District, in Trinidad and Tobago, about the eCAL program, and whether or not the program enhances teaching and learning at the selected secondary school.

Research Questions

Overarching Question: What are the teachers' perceptions of the eCAL program for enhancing teaching and learning at the selected secondary School in Trinidad and Tobago?

Sub Questions:

1. To what extent do teachers perceive the eCAL program as an enhancement for teaching at their school?
2. To what extent do teachers perceive the eCAL program as an enhancement for learning at their school?

The sub questions were selected for operationalization.

Expected Outcomes

The study is expected to highlight the perceptions of teachers as they pertain to whether the eCAL program enhances teaching and learning. This study is expected to provide valuable data on the eCAL program for enhancement of teaching and learning that can be used in forming evidence-based policies on ICT integration into the curriculum at the selected school and possibly be extended to similar schools in Trinidad and Tobago. The study is also expected to

contribute to the body of knowledge in this area on ICT integration and whether or not it influences teaching and learning in schools in Trinidad and Tobago. Finally, the study will make recommendations based on its findings.

Significance of the Study

As this study will determine the teachers' perceptions on the eCAL program in the selected secondary school, this knowledge is expected to add to the literature in the area. This contribution will help close the already indicated gaps identified following scarcity of literature in the area in the Caribbean, a fact unearthed in the process of this study. Further, the result of the study will add information on integration of ICT into the curriculum, regionally and in Trinidad and Tobago. This will ultimately assist curriculum developers, technocrats and policy makers in designing curriculum and making evidence-based policies related to ICT integration into the curriculum. It is also the researcher's belief that the understanding of teachers' perceptions of the eCAL program will be one of the ways of getting feedback from teachers on the program, albeit from one school. Finally, it is also envisaged that this study will be a pilot for a much larger study of the entire program with a view to ensuring that the program realizes its goals.

Definition of Terms

Information and Communication Technology (ICT): ICT for the purpose of this study is defined as, all the technologies used for the handling, and communication of information and their uses, specifically in education. These technologies include desktop computers, tablets, laptops, the Internet, virtual learning centers, local and wide area networks (wired and wireless),

instructional software and print media(MOE, 2005). ICT is “the study or business of developing and using technology to process information and aid communication” (MOE, 2010, p.2). The eCAL ICT tool for the purpose of this study is laptop computer.

Program: Program is an ongoing, planned intervention that is planned to achieve some particular outcomes in response to some perceived educational, social and commercial problems. (Fitzpatrick, Sanders & Worthen, 2004). The selected program for this study is the eCAL program.

Integration: This is when ICT incorporated in all or almost activities related to teaching and learning for delivery, record keeping, planning, communication, administration and assessment (Rampersad, 2011). Integration for the purpose of this study is infusing the use of ICT devices such as laptops, instructional software, and internet into the curriculum thereby making it a part of curriculum delivery in schools.

eCONNECT and Learn Program (eCAL): eCAL is an ICT integration program introduced by the government of Trinidad and Tobago in 2010 through the Ministry of Education to provide computers in form of laptops to every form one student entering secondary school as a result of Secondary Entrance Assessment (SEA) Examination as instructional tool for use in school and at home throughout their secondary education (MOE, 2010), and this is to be implemented through an integration approach.

*Perception***:** Perception is the process of becoming aware of objects, events, and people through the senses of sight, smell, taste, touch, hearing (Devito, 2006). Fishbein and Ajzen (1975) as citied in Miima, Ondigi and Mavisi(2013) stated that perceptions could be objectively true, mere opinions, prejudice and stereotypes; teachers perceptions could be as a result of their gender, training, personality, things around, education, experiences. Perception result from what exists in the world and from experiences, desires, needs, wants etc, therefore teachers' perceptions for this study can be based on their experiences and what exists around their environment or school as it relates to the eCAL program.

Chapter Two

Literature Review

This chapter dealt with results from studies on ICT integration into the curriculum and teachers' perceptions of it. The theoretical framework was also discussed later in the chapter. The inquirer used these data bases to search for related studies on the research issue. They are: UWI online public access catalog, UWI space, web online data base, UWI library catalog and UWILinC. These descriptors were used to include "ICT integration" and "Teachers' Perception of ICT integration". Most information on literature was gotten from articles in journals, published thesis and dissertations. The period of time for this literature review was between 1990 and 2014.

ICT Integration Effects on Teaching and Learning

There have various opinions about ICT integration and its effects on teaching and learning. Oppenheimer (2003) opined that the 1:1 laptop in schools is a waste of money and a distraction that is detriment to students' achievement, some researchers have argued that integrating ICT into the teaching and learning will not improve students' learning (Almadhour, 2010; Gundy&Berger, 2010). Also most teachers see one to one computer program in schools more of a nuisance rather than beneficial (Allaham, 2011; Livingston, 2009).

In contrast, there are series of results from research that reported ICT integration as having a positive impact on teaching and learning, such results indicate that ICT integration enhances students' learning by actively engaging them in learning, motivating them, making them to be

creative and offers them different ways of learning. Teachers on the other hand, have expressed that ICT integration helps to cover content of their lesson faster, provides an avenue for them to meaningfully communicate with their students and helps weaker and introvert students to learn better (Dockstoder, 1999; Mason, 2001; Almekhlafi & Almeqdadi,2010; Rampersad,2011 and Hertizler,2013).

One of the rationales behind the integration of ICT into the curriculum is to improve teaching and learning through the use of computer educational software. It is believed that computer integration can change the way teaching and learning is carried out because according to Drenoyianni and Selwood(1998),some subjects may no longer need to be taught , as they can be replaced by ICT integration and also shift the balance from rigid curricula , role – learning and teacher – centered lessons to more open ended and student – centered approaches to teaching and learning; there by enabling learners to take control of their own learning. Naevdal (2007) as citied in Amshad (2012) expressed that appropriate ICT integration has a significant positive effects on students' academic learning, self confidence, self esteem and social competence.

On their study of "teachers' perceptions of computer integration", Almekhafi and Almeqdadi (2010), used questionnaires and interviews to collect data from 2 schools. The participants were 40 females and 60 males. The result from the study shows that teachers highly regard their competencies in technology integration, and considered it as enhancing their teaching. Most teachers, who were willing to use technology, expressed positive experiences with

technology integration. They increased their use of technology by integration in the classroom and used technology more creatively, thereby enhancing their teaching. Also, results from a randomized control trials conducted by Murphy (2007) to test for the effects of the use and integration of computer in foreign language comprehension found significant positive effects.

On the other hand, there have been studies that show that computer integration in the classroom made no significant difference in improving teaching and learning. Despite the infusion of ICT with internet, emails, simulations and multimedia, today's teaching is no different from those of yester- years in terms of impacting positively on teaching and learning(Salmom, 2002 as cited in Buabeng-Andoh, 2012; Kwaku & Ansong- Gyimah, 2010). Delivery of lessons with ICT integration has not changed from being teacher - centered. The result of a study done to test the effects of powerful learning environments with or without computer, indicated no significant difference in students learning of reading and mathematics with or without computer on standardized test scores, it found no significant improvement in scores between treatment and control groups in either subjects(Kwaku and Ansong- Gyimah, 2010).

Amshad (2012) in his study in all boys secondary school in Trinidad using a mixed method showed that the eCAL program does not improve students' academic performance due to negative impacts of the program. It indicated that of the 6 teachers interviewed, 4 indicated that the eCAL program has no impact on their teaching while two teachers stated that it improves their teaching.

In other studies , Makgato (2012) and Adeyinka, Majekodunmi and Ayodele(2007) showed that although the integration of ICT in schools improves teaching and learning there is still slow integration of ICT in the classroom due to lack of trainings, lack of expertise and technical support. However, the Great Britain's office for standards in Education (OFSHED) published a report that integration of ICT in secondary schools' curriculum does not meet the needs of all students (OFSHED, 2012). The slow rate of ICT integration has led some educators to conclude that computers have not and will not produce substantive changes in teaching and learning.

Effects of ICT Integration on Students' Achievement

In a study done at Military Academy, West Point, USA by Efaw, Hampton, Martinez and Smith (2004), to determine the performance of students who were taught with ICT integration and those taught with the traditional method of teaching, the result shows that students whose instructors integrated ICT into their classroom strategies have an average score on exam of 86.8% while the average score on exams of students whose instructors did not integrate ICT in classroom was 83.5 percent. The difference was adjudged to be statistically significantly ($p<.05$). Also, Students develop computer pedagogical skills with ICT integration which results in better educational achievements and learning outcomes, (UNESCO, 2012).

Teachers' Perceptions on ICT Integration

In an exploratory survey design that 45 teachers participated through questionnaire and interview done by Maiima, Ondigi and Mavisi (2013) in Kenya on teachers' perceptions about

ICT integration showed that teachers understand the benefits of ICT integration but are not ready to adopt it due to various challenges.

Result from a case study done to determine secondary teachers' perception of ICT integration, utilizing a mixed method design, interviewing 6 teachers who also responded to questionnaires. Observation was also employed. The result shows that teachers see computer integration as a means of enhancing learning and their classroom teachings (Bauer&Kenton, 2005).

In a study conducted by Drenoyianni and Selwood (1998) to determine teachers' perceptions of computer use in the classrooms, questionnaire and interview were used with 50 and 11 teachers respectively. It showed that 72.9% of teachers perceived that computer integration has positive effects on students' learning such as motivational effects as well as improving basic skills and concepts. Also 89% of the teachers said that computer integration did not change their teaching practices but it had a positive effect on the way they managed work in the classroom, this result concurred with other researchers like Cox and Rhodes (1990), Martin (1991), and Amshad (2012) found out from their studies. Also a survey study done by Gorder (2008) on teachers' perceptions of technology integration, in which 300 k-12 teachers were the participants, the Technology integrated matrix (TICM) was used to determine teachers integration of technology, the results shows that teachers use technology in class to facilitate and deliver instruction but do not integrate technology as well into their teaching and learning. Furthermore, the result also indicates that there is little difference in perceptions of integration based on demographic characteristics. The only significant difference in technology integration

and uses is based on grade level as teachers in grades 9 – 12 tend to integrate and use technology more than those in grades 5 – 8. He calls for further research on teachers' perceptions of one- to- one computing where students have their own mobile computer.

Laptop as an ICT tool is used to process and access information, with 1:1 laptops, students work independently, work at their pace to process and access information, although Dunleavy,Dextert and Heinecket (2007), stated that teachers express concerns over 1:1 laptop initiative, that students can access inappropriate materials such as games, pornography and also students can waste time with ineffective or inefficient searches. On the other hand, some teachers devise means to guide against using inappropriate site like totally circumscribed their students internet access by filtering and presenting acceptable websites via a third party website called Nicenet (http://www.nicenet.org/). Some of the challenges expressed by the teachers at the study by Dunleavy et.al (2007) are grouped into two namely Management and Hardware issues (examples are: non-charged batteries, not coming to class with their laptops, repair problems) and all these have negative impact on students' achievement, teaching and learning; slows down the proper use of ICT integration .

Results from the literature review above showed that ICT integration into the curriculum has both positive and negative effects on teaching and learning. Some of the results also indicated that there are factors that are hindering effective and efficient ICT integration.

Theoretical Framework

The Technology Integration Planning (TIP) Model Diagram

Figure 2.1:

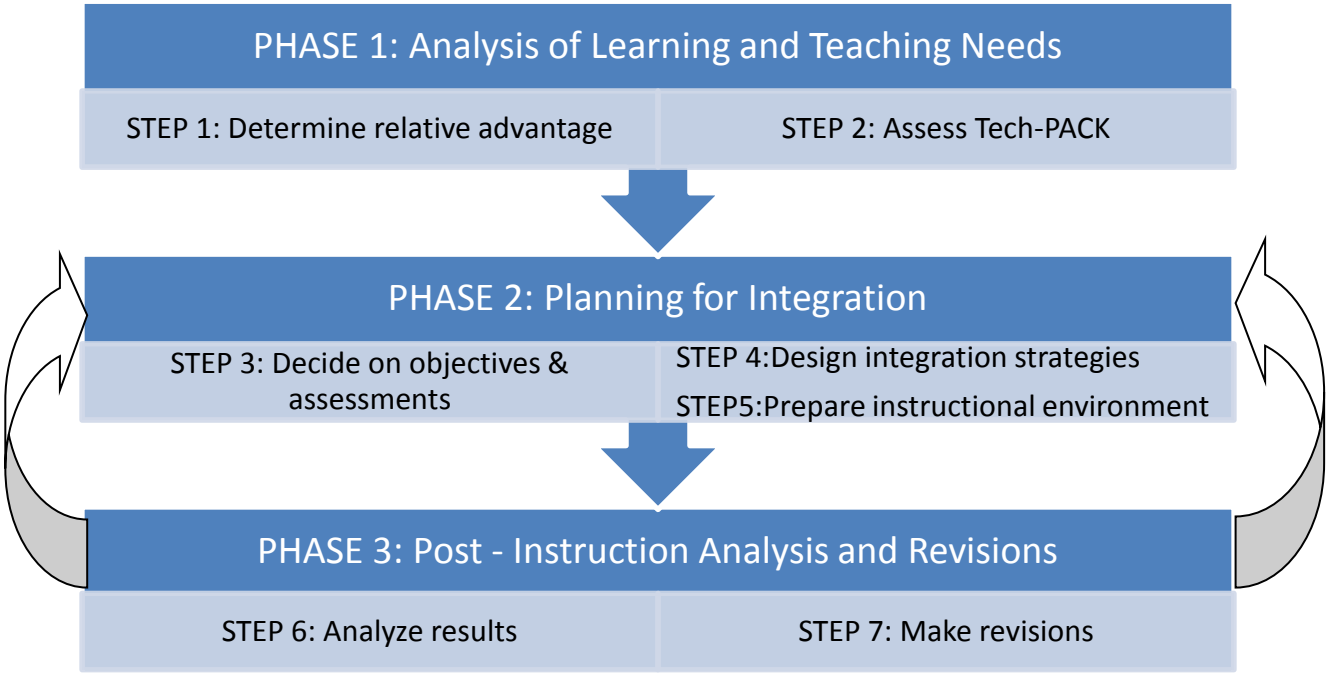

Diagram from Roblyer and Doering (2013,p.53). Integrating Educational Technology into Teaching (6th Ed.)

The TIP model is an approach used by teachers to ensure successful technology integration. It is a model designed to help teachers effectively plan for, implement and assess the use of technology in the classroom. It also gives teachers "a general approach to identifying and addressing challenges involved in integrating technology into teaching" (Roblyer & Doering 2013, p. 52). The TIP model diagram above has 7 steps within three phases, phase 1 is the

analysis of learning and teaching needs, phase 2 is planning for integration while phase 3 is post-instruction analysis and revisions. The seven steps help to ensure that technology is efficiently and meaningfully integrated to meet teaching and learning needs.

The TIP model provides a framework that helps teachers to ask important questions that help them focus on why ICT is integrated into the lesson activity. When ICT integration is not used to improve classroom practices in some way, then there will be no opportunity for it to be used to enhance learning experiences (Warren, 2011). Similarly, if the TIP model is used by teachers at the school for this study, it is more likely to help them focus on how successfully they can integrate the eCAL program in their lessons activities and achieve goals, if the eCAL program is not being used to improve the teaching and learning experiences but a merely substitution for existing teaching approaches, then opportunities for it to enhance the teaching and learning experiences are lost. The eCAL program as stated in the policy document has the potential benefits of enhancing teaching and learning, so if teachers who integrate the program see these benefits, they are more likely to embrace it because of its relative advantage over their old method of curriculum delivery.

Theories of Perception

According to DeVito (2006), perception is how individuals interpret things around them based on their understanding of it, the process by which one becomes aware of objects, events and people through their senses of sight, smell, touch, taste and hearing. Perception is the ability of one to be aware or conscious of things happening in his or her environment and be able to

interpret them. In other words, people understand things based on their perception. How people perceive a situation determines their reactions and each reaction creates a different outcome. Therefore perception determines reaction to a given situation. In most cases the truth is based on consensus, thus things appear the way most people see it. The first part of perception are things that grab our attention through the different sense organs, other things such as our expectations, past experiences, cultures, knowledge, skills and empathy influence our perception (Gibel-Molini, 2008; Young, 2007).

Similarly, teachers will respond to the research questions of the study based on their understanding of the eCAL program for enhancement of teaching and learning through their senses. The research issue will be understood clearer based on the teachers' perceptions of it and their perceptions ascribe will be as a result of their awareness of the eCAL program at their school.

Theoretical Approaches to the Study of Perception

Bottom-Up Theory (direct theory): This theory of perception is proposed by James Gibson in 1966. In this theory, Gibson argues that perception is direct and it is not subject to hypotheses testing. For him there is enough information in our environment to make sense of the world in a direct manner. He also believes that what you see is what you get (Mcleod, 2007).

There is information about the eCAL program in the selected school for the study that will help teachers respond to the research questions. Teachers will put these pieces of information

together and make sense out of them while responding to the research problem. Gibson (1972) is of the view that sensory information are analyzed in one direction, our perception of surfaces is more important than depth perception because surfaces features are sufficient to distinguish among objects from each other. Perception involves identifying the function of the object. Bottom-up approach is like the structuralism approach, which states that perception of object is data driven, i.e. piecing data together until a bigger picture is arrived at. For example , an object like book will be perceived as being new if the stimulus cues of colour, shape, content, size add up to a new book.

Top-Down Theory (indirect theory): Richard Gregory in 1970 proposed the top down also called the constructivist theory. He argued that perception has to do with a constructivist process which relies on top-down processing. Gregory explains that perception involves making inferences about what we see and trying to make the best guess. To him perception is a hypothesis. Prior knowledge, stored information and past experiences are crucial in perception. Our perception is linked to what we already know and our perception of reality is actively constructed. When information is received from the environment, it is combined with what is already known about the world as a result of experiences (Mcleod, 2007). Our environment is made of objects that allow us to perform action. The teachers' response to the research questions will be based on their prior knowledge and past experiences with the eCAL program at their school.

In summary, the eCAL program and students are things around the teachers in the study. Teachers in the study will bring in their skills and past experiences in responding to the research questions. The eCAL programme can be perceived by teachers to enhance or not enhance teaching and learning depending on the information, things around them, their experiences and prior knowledge in relation to the eCAL program at their school.

Chapter Three

Methodology

This study explored teachers' perceptions of the eCAL program for enhancement of teaching and learning. The researcher employed certain techniques such as sampling, data collection and analysis rooted in the qualitative paradigm of research design.

Research Design

The researcher employed a qualitative case study in order to understand the research issue under investigation. The study is rooted in the qualitative paradigm of research approach. Qualitative study is best suited for this research because the researcher wanted to understand the research issue from the meanings teachers ascribed to it and also form their experiences as it regards to the eCAL program as a way of enhancing teaching and learning. Also, the study is to provide an in-depth investigation into the participants' thoughts, experiences in relation to the research issue. The experiences and the meanings the participants ascribed to the research issue were important to answer the research questions of this study because the participants are the ones that use the eCAL program through an integration approach. The participants in this study responded to research questions based on the information and their experiences regarding the eCAL program as also explained in the theories of perception. The researcher interviewed the participants to elicit what they know and have experienced with the program in its natural setting. This supported what Denzin and Lincoln (2000) as cited in Creswell (2007,

p.36) opined that “qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret phenomena in terms of the meanings people bring to them”. The researcher explored the experiences, meanings and multiple realities of the participants in relation to the issue under study.

This is a case study that enabled the investigator to understand the research problem using the case of a specific Boys’ Secondary School, as stated by Creswell (2007), case study research involves the study of a research problem explored through one or more cases within a bounded system. The case study was employed since the research issue was examined by exploring the eCAL program as to whether or not it is enhancing teaching and learning at the particular Boys’ Secondary School. To examine the case of the selected school, the researcher interviewed seven teachers and also observed a few teachers during their lessons deliveries at the school. According to Merriam (1998), case study is appropriate for investigating, evaluating educational programs and innovations; and also for informing policy. Furthermore, this research involved an in-depth description of the eCAL program as to whether or not it is an enhancement for teaching and learning at the selected Boys’ Secondary School in Trinidad. Therefore, this study examined teachers’ perceptions’ of the eCAL program for enhancement of teaching and learning at the school.

Sampling Procedure

The researcher used purposeful sampling technique to select participants for the study. There are forty-five teachers at the selected school. From this population, seven teachers that teach

forms one to four and with at least four years of teaching experience were selected for interview. The interview was conducted at the participants' school. Purposeful sampling was used because the participants were selected on the criteria that they integrate the eCAL program at the school and they teach forms one to four, as stated earlier, the eCAL program started in 2010/11 academic year, that is four years ago, so presently only form one to four students are in possession of the eCAL laptops.

Seven teachers were selected for interview. Five teachers were taken, one from these departments: Language, Social Science, Science, Visual and Performing Arts and Mathematics Departments. Two teachers were selected from Information Technology (IT) Department that teach IT and Technology Education respectively. The participants were four male and three female teachers. The inquirer selected the participants and site for the study because they can purposefully inform an understanding of the research problem. The selected seven participants have more than ten years of teaching experience and have been teaching at the selected school for more than four years. These participants also integrate the eCAL program into their lesson deliveries. They are in contact with students who are in possession of the eCAL laptops. Pseudonyms will be used in place of the names of the participants. Therefore, throughout the study, the researcher will refer to these participants as: Ali, Jane, Anne, Ahmed, Asha, Tony and Adams.

Data Collection Methods

The researcher as the main instrument for data collection conducted a face-to-face, one-on-one semi-structured interview with the participants. The questions for the interview were written in advance, reviewed and used to understand the research issue. The semi-structured interview allowed the voices of the interviewee to be less constrained and they were able to voice out their perceptions of the eCAL program for enhancing teaching and learning; and it also gave room for the researcher to probe and get a rich thick data.

The interview questions started from general questions to specific questions and closing question. The questions were open-ended questions that allowed the participant to elaborate more of their perceptions of the research problem. The interview was tape-recorded and later transcribed. This facilitated subsequent data analysis.

The researcher made use of multiple data collection methods to enhance the validity of findings from this qualitative case study. Therefore, in addition to interview, the investigator explored the issue under investigation using other forms of data collection such as observation and artifacts. Creswell (2007) stated that in qualitative case study, the investigator explores a case overtime, through an in-depth data collection involving multiple sources of information like observation, interview and documents. Observation was used and it allowed the researcher to gather live information within its context and also for the purpose of triangulation, which is to add more validity to the study. According to Creswell (2008), researchers use triangulation to enhance accuracy of their study. The researcher observed forms one to four lesson periods.

Furthermore, there was observation of documents like artifacts in relation to academic work such as animations produced with the help the eCAL program. The researcher looked at these artifacts because they were written and drawn representation of thoughts. The artifacts were academic tool for enhancing teaching and learning that showed students' creativity. The researcher wrote down notes as the teachers responded to interview questions and during the observations. The interview and observations were conducted for about three weeks. The observation was done for a period of three weeks at the selected school. The researcher used this observational checklist:

i. Is the eCAL program present at the school?
ii. Do teachers at the school integrate the ecal program?
iii. How often is the program integrated?
iv. How is the eCAL program used at the school?
v. Are students involved in the lessons?
vi. What are students doing?
vii. Does the program have any effects on teaching and learning?
viii. What type of ICT tool is used?
ix. How do students use their laptops?
x. How essential is the eCAL program to the teaching and learning activities?

See Appendices A and B for the guiding interview questions and observational notes respectively.

Data Analysis

Thematic analysis was used to analyze data from the interviews and observations. Thematic analysis is a process of developing codes that serves as labels for sections of data (Boyatzis, 1998). Thematic analysis is a way of categorizing strategy for qualitative data which helps researchers in developing themes. For this study, codes and themes were developed from the interview and observation data. The participants' responses to the interview questions were transcribed verbatim. It was typed in the word document and printed out as transcript. The data were scrutinized line by line using the open coding method to form codes and categories. Themes were generated from the categories formed and story was built around the generated themes. The table 3.1 below is the summary of the methodology for this study.

Table 3.1: Research Design Matrix

RESEARCH QUESTION	DATA SOURCE	DATA COLLECTION INSTRUCTMENT	DATA ANALYSIS
1. 1. To what extent do teachers perceive the eCAL program as an enhancement for teaching at their school?	Teachers Observations Documentation: Artifacts	Face-to-Face Interview, Field notes. Field Notes Field Notes	Data Coding / Thematic Analysis.
2. 1. To what extent do teachers perceive the eCAL program as an enhancement for teaching at their school?	Teachers Observations Documentation: Artifacts	Face-to-Face Interview Field notes Field notes	Data Coding/Thematic Analysis

Credibility of the Study

To ensure credibility of study, the interview and observations were done at the participants' school for about three weeks. There was prolonged engagement interview with the participants which provided clearer pictures of their perceptions on the research issue. Also, there was peer review which allowed the researcher to work with her peers to exchange ideas on the codes, categories and themes generated from the data.

Ethical Considerations

Research involves collecting data from people and about people at various locations so all social research involves ethical issues (Punch, 1998). This research involved collection of data from teachers at their school; as such it required some ethical issues. The researcher considered the following ethical issues:

Firstly, permission was sort from the Principal of the selected school to conduct the study at the school. There was informed consent; informed consent means the knowing consent of individuals to participate out of their own free will, free from fraud, deceit, duress or manipulation (Berg, 2009). The participants were informed of the purpose of the study and were also informed that they have the right to withdraw from the study at anytime, so the interview was conducted openly without deception. The participants were assured that their participation will be confidential; the researcher used pseudonyms in referring to the participants in the study.

Limitations

Limitations are those factors which can restrict the study that the researcher cannot control during the study. The researcher is not properly skilled in conducting interviews and research methods. Time factor was a constraint to the study; the study was being done a long side academic work. Also, flexibility was required of the researcher to fit into the participants' time

and schedule; in other words, getting teachers and finding time for the interview and observations posed some problems for the researcher.

Delimitations

By ensuring that the interviews were done at the participants' school at St. George East District, it assisted with the fact that the participants were at ease with the researcher and with the environment. It would assist with their recollection which enhanced the quality of the data collected from them. This decreased the effect of data quantity and as well as quality. Although the result cannot be generalized to other schools in Trinidad and Tobago, it can be relied upon to provide sufficient basis for considering studies of similar nature across the length and breadth of Trinidad and Tobago.

Reflection on the Conduct of the Study

The investigator went through a lot of process during the conduct of this research which was not easy. This study started in October, 2013 after I was assigned a supervisor. Chapter one to three was written and revised over and over to capture the relevant information of research issue, that hurdle was crossed with the help of my supervisor. My research topic was changed up to three times to enable me focus the study; this shows the emergent nature of qualitative research. I did my research proposal in January, 2013, preparing the chapters one to three for presentation was not easy at all. I was studying for the courses in the first semester as well as writing up my research proposal, at the same time.

I received suggestions and corrections after I presented my research proposal. The suggestions and corrections were made before I went into the field for data collections. It took me about three weeks to collect the data. I began the data collection later in March, 2014 and ended at the middle of April, 2014. I had the challenge of finding time and space for the interview, at many occasions, the interviews had to be rescheduled to accommodate the participants. I transcribed the interview immediately the interview; sometimes I had to go back to the participants for clarifications. The data open coding process was another challenge; I had to read the interview transcripts many times to form codes, I later formed categories and themes form the codes. The codes and categories were regrouped many times; peer review helped me to come up with some codes, categories and themes. The data collection and analysis were done simultaneously during the months of March, April and May, 2014; and then chapter five with the final write-up was concluded by the end of May, 2014.

The whole process of this research taught me the importance of understanding people's values, realities and experiences when undertaking a study in the qualitative paradigm .I was able to explore and understand teachers' perceptions of the eCAL program for enhancement of teaching and learning at selected school through the participants' values, experiences with the program. In conclusion, the information at the school and multiple realities of the participants helped me to get insight into teachers' perceptions of the eCAL program for the enhancement of teaching and learning.

Chapter four: Analysis and Findings

This study was carried out to explore teachers' perceptions of the eConnect and learn (eCAL) program for enhancing teaching and learning at a Boys' Secondary School in Trinidad and Tobago. Data were collected for a period of three weeks at the selected school. Seven teachers who taught at the school were interviewed to elicit their perceptions of the research issue; observations of classroom activities and artifacts were also made at the school.

Table 4.1: Demographic characteristics of the participants

Pseudonyms	**Gender**	**Department**	**Years of teaching experience**	**Classes/Forms taught**
Ali	Male	Mathematics	10	2, 4 and 5
Jane	Female	Language	17	1,2,3,4 and 5
Anne	Female	Visual and Performing Arts	13	1,2,3,4 and 5
Ahmed	Male	Technology Education	28	2
Asha	Female	Social Science	28	4 and 5
Tony	Male	Science	9	1,2,3,4 and 5
Adams	Male	Information Technology	12	3,4 and 5

This section is presented in two parts, the first part is the analysis of the first research question and the second part is the analysis of the second research question. The analysis is based on the themes derived from the categories formed after openly coding the interview transcripts and field notes. See appendices C and D for codes, categories and themes derived from the data.

Research Question 1: To what extent do teachers perceive the eCAL program as an enhancement for teaching at their school?

To answer research question one, the data collected from the school were scrutinized to form codes and categories. The following themes emerged from the categories:

Clarity and uses of the program

Level of integration

Effects of the program on teaching

Hindrances to effective use

The way forward

Clarity and uses of the program

This theme is on the amount of information teachers have on the eCAL program and the different ways teachers at the school use the eCAL program through an integration approach to enhance their teaching.

Internet access: The program is used in devise ways by the teachers not only to improve their classroom practices but also to teach faster. Through the program, students download lesson notes from their teachers. Teachers and students share information via the internet, teachers teach students using web ad tutorials web page. All students have equal access to the internet. This is supported by what Anne said:

> I have students download notes and bring to the classroom. I also use educational games and software to teach my students. When I project images on the projector, the students have the same image in front of them on their laptops. Sometimes, I have students e-mail their assignments to me.

Similarly, Adams said:

> I have class marker, students do on line exams. I use websites to do animation and Projects.

Parental involvement: Some teachers also use the program to get parents involved in their children's academic activities. Parents have access to information put up by teachers on the different websites like the School rack, Edmodo. Jane expressed:

> …a lot of work like the syllabus and homework are put up on the websites so that parents can access them and know what their kids are doing so that school works are not taken for granted.

Limited information: Although teachers expressed many ways they use the program and how it can be integrated, some teachers do not know the benefits of the program because they do not have enough information about the program. Some of the teachers said that the Ministry of

Education did not do much in terms of dissemination of information about the program and its' implementation process. Ali expressed:

> I don't use it much because I have not been introduced to the eCAL in a formal way; I have not been introduced to the concepts formally, so I don't clearly understand the benefits of the program.

There was little or no information about the program on some subject areas and there was no follow up on its implementation. Most teachers are familiar with the program because they know laptops were given to students by the government and teachers are supposed to incorporate the program into their lesson but there was little or no information about the actual implementation of the program. Anne said:

> There have been limited information as it pertains to the subject I teach.

The researcher during observation at the school came across a teacher who started teaching at the school about two years ago who has very limited information about the program and its implementation process. The teacher said the ministry should create an avenue where new teachers will be educated on how to infuse the program in their lessons.

Level of Integration

Most of the participants opined that the eCAL program is integrated mostly at the lower classes (forms 1 and 2). The integration of the program starts to dwindle as the students move to higher classes. *Damaged laptops:* The teachers indicated that there is sometimes

discontinuation of laptop use from form two because at this time, most of the students' eCAL laptops are damaged. Asha stated:

> …by the time students are in form two, they laptops are no longer working and you cannot do anything with it when majority of students do not have functioning laptops.

Examination factor: Some teachers indicated that because they have too much work to do in preparing students for external exams, they do not integrate the program often in the classroom, as Jane pointed out:

> I use it more often for form one and two. In form three we have to get them ready for NCSE and that is the time we have to do a lot of drills and stick to the books.

Limited integration: Furthermore, data from the observation shows that there is limited integration of the program in higher classes of forms three and four. Some teachers do not integrate the eCAL program into their lessons but mostly give students assignments, research and group projects to be done using their laptops.

Effects of the program on teaching

With regard to effects of the eCAL program on teaching, the teachers indicated both positive and negative impacts of the program on teaching.

Positive effects: Five participants indicated that the eCAL program has positive effect on their teaching at the school. According to them, the program reduces paper work because some of the assignments can be e-mailed. Also, some of the class activities like assignments can be done and graded via the Microsoft word, Microsoft office excel and power point. The program helps

to keep the class activity active and interesting; it breaks the monotony of chalkboard-talk teaching method which has existed for a long time. Teachers also present their lessons in different ways to cater for the different students' learning abilities. Jane stated:

> …if I find it too much talking, I will introduce something like technology into the lessons to make it a little more interesting, to pick their interest, it could be something on multiple choice, something to research, it could be some power points and video.

From observation, the researcher observed that teachers were able to move around the class while delivering their lessons. They were able to stay at any angle of the classroom teaching and monitored students' activities in the classroom and this was possible because students have some of the lesson notes, videos, power point presentation on their laptops in front of them.

Also, Jane in her view stated that:

> I think we have gotten a bit archaic in our teaching and everything has to be from the textbook or just on the board…. our society is advancing, so we have to advance as well especially in the use of technology in the classroom.

The eCAL program is helping the teachers to get more advanced with the current trend of teaching. Some of the teachers expressed that there are various benefits the program can offer; and these benefits are positively impacting their teaching practices.

Negative effects: Two teachers are of the view that the program has negative effects on teaching. These teachers said that there is the challenge of controlling and monitoring the students while teaching. Ali said:

> It is hard to get the students focused because the internet provides a lot of distractions for students, in using the laptop in the classroom. It poses challenges in that we have to move around in the classroom to make sure students stay on task because they are ready to go to face book or the You tube or pull out other websites that may be more attractive to them…so we have their attention for a short period and they are quick to go to other sites.

Most students switch over to other web sites and do things that are not related to the class activity. A lot of time is spent on trying to keep the students on track and getting them to do class works.

Hindrances to effective integration

All the seven participants in the study said that there are hindrances to effective integration of the eCAL program.

Management and Maintenance issues: As stated earlier, the program has a lot of benefits to it but some factors according to teachers such as: insufficient information, technical problems with the laptops, most students' laptops damaged or stolen, inadequate infrastructure and lack of resources as seriously affecting proper and efficient integration of the program.

Asha stated:

> It is usually difficult when you come to class and only five boys have functional laptops and three quarters of the class do not have working laptops, there is little you can design as a teacher with the program and we don't have enough online resources to assist us.

Internet Inaccessibility: Some of the participants explained that another hindrance to the integration of the eCAL program is internet inaccessibility. There are cases of some teachers

after designing their lesson to infuse the technology get frustrated because the school internet system could not function well. Anne said:

> I have wanted to do stuff since the introduction of the program because I have found a lot of free wills things but I can't because of the limitation of the band width of the school, so I have to scrap off any idea of sort.

Also, during the last week of data collection, the investigator observed that the school's internet system crashed; as a result of that teachers could not do internet related activities and also could not retrieve any reports on the program. In conclusion, there are both positive and negative impacts of the eCAL program on the selected school. Also, there are challenges teachers encounter while trying to integrate the program at the school.

The way forward: There are barriers indicated by the teachers that are hindering the program from improving their lesson deliveries. Some of the participants pointed out that infrastructure such as storage facilities for the laptops, internet system, online resources and computer laboratory should be properly fixed for the program to successfully improve their teachings. Adams said:

> The implementation should have been done in stages. The infrastructure should have been fixed first and then they start dissemination of the laptops; also resources for teachers to use online, that will make it a more successful program. They put the horse before the cart.

The teachers suggested that there should be proper training for teachers on how to use the technology for school activities. Also, they said that there should be on-going training and appraisal of the program to keep the teachers on track and informed on the latest information about the program. Anne stated:

> There should be proper training for teachers and the training should be on-going because technology changes regularly and I think the curriculum needs to be looked at.

In addition, Jane said:

> We need to be informed of any changes taking place so that we can change as well to give the children better education. The Ministry can have literature about the eCAL program that they send out weekly, monthly, yearly like newspaper, bulletin or journal.

In conclusion, Most of the teachers perceive the eCAL program to be enhancing teaching. Although, some teachers said there is limited information about the program. All the participants indicated that there are hindrances to the integration of the program such as non-functional laptops among others. They all offered suggestions to the improvement of the program. See Appendix E for consistency of responses by the participants for research question one.

Research Question Two: To what extent do teachers perceive the eCAL program as an enhancement for teaching at their school?

To answer research question two, there was open coding of the data collected. Codes were formed; categories were derived from the codes. The following themes emerged from the categories formed:

Uses of the program in learning

Usefulness of the program

Negative effects

Barriers to effective integration

Uses of the program

The eCAL program in its pure design was meant to be used and integrated by teachers and students to enhance teaching and learning in Trinidad and Tobago. Some of the participants explained various ways the program is used at the school by students.

Problem-based learning: The program is used for problem-based learning as students use it for research and projects. Students create videos and do animation using their laptops. Adams said:

> Students can go home and use their eCAL laptops to research and do their homework. I do project because a lot of my stuff is on project based learning, when students have project to do, they would have access at school and home, as well as having internet access so it really helps that way.

Individual and group work: Students use the eCAL program to engage in private studies, do individual and group assignments; sometimes they do power point presentations with their personal laptops. Ahmed said:

> They use it more to do research and projects. Previously, when I give them research some of them won't be able to do it but now they have access to laptop and internet even if they don't have internet at home, they can do their research in the school.

Data from artifact: The researcher was able to watch two animations created by students. The animations were "on proper laptop use" which can be viewed at this link: http://1drv.ms/1n6tEOg. In conclusion, Students use the eCAL program to access the internet

for academic activities. One thing with students having their personal laptops is that they can use it anywhere at their time for their learning**.**

Usefulness of the program

The eCAL program can be beneficial to students for their learning if used properly.

The 2Ist Century Skills: Some of the participants expressed that the program is useful to students and helps them in their academic pursuit. According to the participants, the program exposures the students to internet use, students develop technology skills, become creative and innovative, collaborate with other students, and interact with technology while at the same time acquiring the 21st Century skills. Adams said:

> …they are getting to interact with technology rather than disconnect from technology while in the classroom which are two big areas and it helps students acquire the 21st century skills which is the new drive now. The students on their own look for solutions for problems, research and get their school work done using the technology.

In addition, the artifact viewed by the researcher shows students creativity and critical thinking skills. The students were able to create insightful animations on care and proper use of the laptops, these animations can be viewed on this link: http://1drv.ms/1n6tEOg.

Different learning experiences: It makes learning to be student-centered as students take active role in the class. It gives students autonomy to research and do assignments easier than before. The program has provided new learning experiences for students and caters for students' different learning abilities, Anne in her view stated:

> It is a different tool for us teachers to get students to learn because each child is different. If you may find a child who is a visual child, you can find a program that has a lot of visual images; it will work in explaining the subject matter. It also assists each child's learning ability, as well as gets them familiar with using the technology.

Students get excited when they use the technology especially in certain subject areas like Mathematics, Adams said:

> It gets students more excited about certain subject areas, for example in Math class…I have seen teachers using it, and they might have a projector showing certain sites, example we use Mymath website and I see students on their laptops doing assignment the teacher assigned to them on Mymath. They are looking at videos with their laptops, looking at how things are done; they become more excited about the subject area.

Motivational tool for boys: The teachers explained that when one method is used in teaching sometimes, the boys get bored and lose interest in learning but with the program, teachers can present their lessons in different forms; so they see the program as a motivational tool for boys. It inspires them to pay more attention and get more interested in school work even as they interact with technology. Jane said:

> …it takes away from the students seeing a person in front of them all the time, inducting, you know, especially at the school, a boys' school. I think it is the way forward for education for boys, for young men is something hands-on, something with visual, not just reading, remembering and giving back, so that's why I find this as a good program, it is good especially for young men if I may be bias.

Students also are more motivated and interested in school activities. Students while using the program become creative, develop confidence, take ownership of their work and also acquire higher order thinking skills. Some of the participants also explained that initially during the first two years of the program, it was helping students to learn. Asha explained:

> …the boys were able to explore their interest, develop their confidence as researchers, gives them ownership of their work; and we have a program in the library for form one, where we expose them to research techniques. Our form one did beautiful work using their technology; it really inspired them to learn.

School factor: The researcher observed that the school is a technology school and emphasizes that teachers integrate technology in their teachings. The school has certain mechanism put in place for teachers to use technology. It has a well equipped computer laboratory and every teacher has a desktop computer and all the classrooms have projectors.

Furthermore, the school has designed and also paid for some websites that are aiding teaching and learning at the school. Examples of such websites are Edmodo which is used for library and Information subject and Mymath. On Mymath website, students answer mathematical questions on their own and the site corrects their answers and gives them feedback.

Negative Effects

All the participants opined that the eCAL program has some negative effects on students learning despite some positive impacts it has on learning.

Distractions: Most of the participants indicated that students abuse the program by using their laptops for non-educational related activities. Some students are no longer do proper studying and there have not been any marks improvements. There are also cases of reported cyber bullying by students. Students most times get distracted from learning because they are playing games, viewing you tube, using face book when they are suppose to be learning.

Ali in his opinion said:

> …from my experience a lot of students get distracted easily unless there are measures put in place to ensure that students stay on task, and parents and teachers are supervising. The internet provides a lot of distractions. Students engage in cyber bullying. Since the distribution of the laptops to students, we have had quite a challenge in getting the students focused, especially for forms one and two students whose priority seems to be playing games.

Also, the researcher observed that some students get easily carried away and lose concentration in class while lessons are going-on because they focus all their attention on watching the video on the screen of their laptops.

Inappropriate sites: There are cases where students view inappropriate and restricted sites. Tony stated:

> …there are no restrictions as regards to the laptop, because students are able to assess sites that are supposed to be restricted, they view pornographic materials.

Students use the laptop a lot of the time for purposes that are not designed to enhance their learning.

Age inappropriate: Some form one and two students due to their age, misuse the eCAL program. They mostly use it for playing games instead of studying with the technology. Ahmed expressed:

> …but it not necessary for form one and two levels, most times I have seen them misuse it on gamming. The form one and two do not need the laptop that early; by form three into form three, I think that's when they need it.

Safety issues: Students are exposed to safety risk as they are sometimes accustomed by students or other people and have their laptops stolen. Asha stated:

> …when you give the laptops to students it became a security issue for children, personal safety because we have report of children's laptops stolen on the roads. I felt it is exposing children to unnecessary risks.

Barriers to Effective Learning

There are barriers to the effective and efficient use of the eCAL program by the students to improve their learning. All the seven participants indicated that the program has some limitations that are jeopardizing its enhancement for learning.

Management and Maintenance Issues: The management of the program according to the teachers is seriously affecting the effectiveness of the program for learning improvement; schools are not equipped with the adequate infrastructures and facilities to support the program. Anne expressed:

> The accessibility of the internet in the classroom at the school is a problem…when students who do not have internet access at home, try to do their school work using the technology in the class, it comes with problems that are out of control. Our Wi Fi system, the broad band is too narrow. There is limited amount of internet service that they could use in the class.

A lot of the laptops are damaged and no repairs are done, as a result many students cannot use their laptops anymore. Asha said:

> The use of the laptops started to diminish in that most of our students come with damaged laptops and the ministry was not able to maintain it in terms of repairs and so on. So when half of the class does not have the technology, you can't use it any more in the way it was initially designed.

Improvement: There is still room for improvement for the eCAL program. The teachers stated that if all these limitations explained above are checked, that the program will go a long way in improving learning at the school. They offered suggestions such as constant supervision by parents and teachers. Students' activities should be monitored to check what they do with the technology. According to Ali:

> There should be measures put in place to ensure that students stay on task. Parents should be involved in the care of their children's laptops; and parents, teachers inclusive are supervising the students' activities on their laptops. Government should devise means of monitoring what students do with the laptops.

Also, some teachers stated that strict penalties should be given to students who violent the rules of using the program. Tony said:

> Students who misuse the laptops should be strictly disciplined.

The teachers also suggested that the program should be for students in higher forms who will be able to cater for the laptops and have value for it. Ali stated:

> The laptops should be given at later form where the students are matured and are able to manage the laptops.

In conclusion, three participants indicated that integrating the program enhances learning. Four participants were of the view that the program does not enhance students' learning and some of them indicated that there have not been any improvements on students' marks since the program started. According to some teachers, the program was enhancing learning initially, but now it is not because of a lot of challenges like problems with damaged laptops and students' being distracted from learning. Five participants indicated that the program has negative effects

on students' learning because there are a lot of distractions that come with the program even though all the participants opined that students use the program for individual and group assignments. All the participants are of the opinion that the program can be improved to enhance learning; hence they made some suggestions for its improvement. See Appendix E for consistency of responses by the participants for research question two.

Chapter Five

Discussion and Recommendations

This qualitative case study investigated teachers' perceptions of the eCAL program, an ICT integration program at a selected Boys' Secondary School in Trinidad and Tobago. The investigator interviewed seven teachers at the school to explore their perceptions on the research problem. The investigator also did some observations at school. There were findings from the research of which some concurred with previous research. The findings will be discussed under each research question.

Research question one:

Clarity and uses of the program: The theme clarity and uses of the program was arrived at in this study. One participant explained that the program is under used by teachers because there has not been a formal introduction of the concept and benefits of the program. This result is similar to what Roblyer et.al (2013) opined at the first stage of the TIP model framework that when teachers see the benefits of any innovation and its relative advantage over their old method of teaching then it can aid teachers to successfully integrate the technology.

Level of integration: Result from the study under the theme level of integration shows that there is limited integration of the program because many students do not have their laptops due to damaged issues, this is in line with the result from a study done by Dunleavy et.al, which shows that there is slow integration of ICT as result of hardware issues such as non workable

and damaged laptops. Also, the result from this study shows that there is limited integration of the eCAL program at higher forms. Some teachers indicated that they integrate the program lesser in higher classes of form three and four because integration of ICT into teaching comes with more work load. They also said that form three and four students are being prepared for external examination; as a result there is no time to incorporate the technology into their lessons. This result is in contrast with result from a study done by Gorder (2008), which showed that teachers integrate ICT more in higher grade levels 9-12 than in lower grades of 5-8. In addition, from the findings, it appears that there is limited integration of the eCAL program as a result of inadequate trainings on how to use the different components of the program. The teachers expressed that they were not properly trained on how to implement the program.

Effects of the program on teaching: Results from this study indicated that the eCAL program has some positive effects on teaching. Some of the participants articulated that with the integration of technology, they teach faster and make their teaching practices more creative and interesting; this finding is similar to the results from studies done by Almekhafi et.al (2010), Hennessy et.al (2005), Murphy (2007) and Norton et.al (2001). Although some participants said that the program has no positive effects on their teachings and this is similar to the result from a study done by Amshad (2012) in which some teachers said that the eCAL program has no impact on their teaching.

Hindrances to effective use and integration: There are studies done that have indicated hindrances to effective integration of ICT such as the one done by Dunleavy(2007) which

indicated that when students have damaged laptops, it negatively affects ICT integration by teachers. These hindrances pose challenges to teachers as Clarke (2007) stated that teachers are faced with problems while integrating technology in the classroom. Likewise, result from this study shows that non functional laptops at hinder the program's proper integration.

Research Question two:

Uses of the program: There are findings from the study that show the eCAL program is used in different ways for enhancement of learning at the school. Students use their laptops to access the internet, engage in private study, do individual and group assignment; in like manner with result from a study done by Hertizler (2013).

Usefulness of the program: The eCAL program was found to be a motivational tool for learning, specifically this study found it to be a motivational tool for boys. In addition, some teachers opined that the eCAL program is useful and improves students' learning and helps them to acquire the 21st Century Skills. Students are able to collaborate as they work together as a group to do group projects; they become creative, innovative and critical thinkers as they design animations and do other things using their laptops. The eCAL program also enables students acquire problem-solving and decision-making skills, as well making them take ownership of their works. The classroom activities are now shifting from teacher-centered to student-centered because according to the participants, they now engage students, making them participant actively in most of the classroom activities. These findings are in line with some of the goals stated in the policy document of the program. Likewise, the findings are the

same with findings from studies done by Almadour (2010), Clarke (2007), Drenoyianni(2004), Gundy et.al (2010) and Maloy et.al(2011), in their studies they found with ICT integration, students' learning is shifting from teacher-centered lessons to more open-ended and student-centered. Students are motivated to learn and acquire basic skills and concepts with ICT integration.

Negative effects: It can be said that the eCAL program at the school is enhancing learning to an extent from the findings. Nevertheless, most teachers at the school explained that the eCAL program is negatively affecting students' learning and that there is yet no marks improvement. Findings from this study show that the program has negative impact on students' learning because of the many distractions that come with it such as students' playing games and engaging in non-educational activities with their laptops. The form one and two students due to their ages are not matured enough to use their laptops effectively. Likewise, Hall (2011) stated that ICT integration comes with a lot of distraction that hinders learning. Leacock (2012) opined that the form ones are easily distracted from learning because they play games with their eCAL laptops. Also, Amshad(2012),Allaham(2011), Kwaku et.al(2010),Chong(2011), Dunleavy et.al, Leacock(2012),Maloy(2001),Oppenheimer(2003), Maloy et.al (2001) stated that with 1:1 laptop ICT integration students' learning are negatively affected, some students view inappropriate materials such pornography and play games at such times they are suppose to engage in meaningful study.

Barriers to effective learning: Dunleavy et.al in a study found that there are Management and Hardware issues such as inadequate technology resources, non proper care for laptops and damaged laptops that are posing barriers to effective integration of ICT for improvement of students' learning. In like manner, some of the participants indicated that inadequate infrastructures like internet, storage facilities are negatively affecting proper integration of the eCAL program for the enhancement of teaching and learning.

Recommendations

Proper ICT Training: The participants in the study indicated that they did not get proper training on how to integrate the eCAL program. Therefore, the research recommends that all secondary school teachers should be properly trained on how to integrate the program and use the various educational software to enhance teaching and learning. Holcomb (2009) opined that ICT training helps teachers to successfully integrate ICT. The ICT training should be on-going, continuous training to update teachers with new information and skills on ICT integration.

Implementation in Stages: The researcher recommends that the eCAL program should be implemented first by providing all secondary schools with the needed infrastructures and facilities such as internet, computer laboratory, educational software and storage facilities to enable successful implementation of the program. The first stage of implementation should be the provision of adequate infrastructures and facilities needed for the program's successful implementation for all secondary schools in the country. The second stage should be the proper

training of teachers and then other things can follow. Implementing the program in stages will give room for feedbacks from implementers and change will be made where necessary.

Supervision: The administrators at the ministry of education and schools should devise measures to monitor activities the students engage with their laptops; and strict penalties given to students who misuse the technology. Parents should supervise their children at home and ensure that the technology is being used for what it is meant for.

Deployment of IT Technicians: The investigator also recommends that at least two IT technicians be deployed to all secondary schools in the country to assist in repairing and fixing the technology problems like damaged laptops and internet problems.

Future Research

1. This study was done at a Boys' Secondary School; it will be good to conduct a similar study at Girls' Secondary Schools. Findings from these new studies may help to compare and contrast the findings from this study, showing similarities or differences.
2. The investigator also suggests that a comparative study on the eCAL program be conducted between schools in rural area and urban areas in Trinidad and Tobago. This may help to shed light on other factors that may be facilitating or militating against the program's proper integration for enhancement of teaching and learning.

3. This study looked at teachers' perceptions; it will be interesting if studies on parents' and students' perceptions of the eCAL program for enhancement of teaching and learning are carried out. This can help to ascertain the views and opinions of other stakeholders on the research issue.
4. Finally, the researcher suggests an evaluative study on the eCAL program as a whole to ascertain whether all the goals and objectives of the program are being achieved.

Conclusion

This study explored teachers' perceptions of the eCAL program for enhancement of teaching and learning at a selected Boys' Secondary School from St. George East School District in Trinidad and Tobago. The researcher interviewed seven teachers and observed some teachings sessions and artifacts at school.

The participants answered the interview questions based on their prior knowledge, experiences and information about the program at the school as discussed under the theories of perceptions in chapter two of this study. At the end, some of the participants indicated that the eCAL program is enhancing teaching and learning while some have contrary views. Findings from this study also show that there are barriers to the successful integration of the program for teaching and learning enhancement. The investigator is of the opinion that if all the necessary facilities and infrastructures are provided for all the secondary schools in Trinidad and Tobago, then the goals of the eCAL program can be achieved.

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APPENDIX A

INTERVIEW QUESTIONS FOR TEACHERS ON THEIR PERCEPTIONS OF THE ECONNECT AND LEARN PROGRAM FOR THE ENHANCEMENT OF TEACHING AND LEARNING

Guiding questions:

1. How long have you been teaching?
2. What form and subject do you teach?
3. Do you know about the eCAL program and how?
4. How did you know about the program?
5. What do you did you know about the program?
6. Do you integrate the eCAL program in your lessons?
7. How would you describe your experience with the eCAL program?
8. How would you appraise the eCAL program as it relates to teaching?
9. How would you critic the eCAL program as it regards to learning?
10. Are there documents like reports, artefacts in relation to the eCAL program?
11. Do you have any comments or suggestions to make as it regards to the eCAL program?
12. Do you have other things to say?

Thank you.

APPENDIX B

Observational Checklist

1. Is the eCAL program present at the school?
2. Do teachers at the school integrate the ecal program?
3. How often is the program integrated?
4. How is the eCAL program used at the school?
5. Are students involved in the lessons?
6. What are students doing?
7. Does the program have any effects on teaching and learning?
8. What type of ICT tool is used?
9. How do students use their laptops?
10. How essential is the eCAL program to the teaching and learning activities?

OBSERVATIONAL NOTES

The researcher observed and noted the following:

The selected school is a technology school and emphasizes that teachers integrate technology into their teaching practices. The school also integrates the eCAL program to an extent. Not all the teachers integrate the program but all teachers at the school make use of the school's ICT programs. The researcher asked one teacher why he was not integrating the eCAL program, he responded that he came to school about two years ago after the program has been introduced; nobody has introduced him to program or told him about its implementation and integration. The school has a well-equipped computer with wireless internet. Every teacher has a desktop computer and every classroom has a projector. The researcher also observed that at a point the school's internet system crashed, and all internet related activities came to a stop. During break time and lunch, it was observed that some students played games with their laptops.

It was observed that the eCAL program was mostly integrated at lower forms of one and two. In the classroom, some teachers projected images, videos and power point presentations, while some students also have these images, power point presentations on their eCAL laptops in front of them. In a form two class, about half of the students do not have their laptops with them.

Furthermore, the researcher observed that teachers were able to move around in the class and the numbers of times they went to write on chalk-board was limited. They were able to move around the class while teaching and at the same time monitoring students' activities. It was also observed that some students got carried away by the video showed and did not quite get the essence of the video clip. Their responses to the teacher's questions based on the video revealed that they were not paying attention the major details in the video.

In addition, in another class, students were asked to go a website and do activities based on the topic of that day's lesson. The website also corrected students' work. Students were excited to use their eCAL laptops for the class activity. In one class, students played educational games within lesson period; these educational games were related to the lessons taught by the teacher. Also in a class, students were referred to a website where they were able to read a translated and summarized versions of a Shakespearian play.

In conclusion, the researcher observed that some teachers at the school integrate the eCAL program as well as make use of the school's ICT facilities. The program helps teachers to deliver their lessons better and students are able to do some internet educational related activities because they have their government provided laptops.

APPENDIX C

CODES AND CATAGORIES FORMED FOR RESEARCH QUESTION ONE

CODES	CATEGORIES
Download lesson notes Do power point and video presentations Modern tool for teaching	Modern method of teaching
Share information through the internet Use web Ad Tutorials Use word document Use for research	Uses of the program
Faster way of teaching Presents teaching to students in different ways. Handy tool for teachers	Positive impact on teaching
Uses it more in lower classes Limited use in higher classes Laptops function at the early stage	Limitation of usage
External examination factor More work load Wastes a lot of time	Examination factor
Reduces paperwork Breaks the monotony of chalkboard-talk class activity.	Usefulness of the program
Keeps the classroom activity active and interesting. Presents lessons in different ways	Teaching benefits
Used for problem-based learning	Problem-based learning

CODES	CATEGORIES
Limited resources No time to incorporate the technology Technical problems Damaged laptops Stolen laptops	Management and maintenance issues
Limited amount of internet service Inadequate infrastructure Narrow band width	Internet inaccessibility
Proper training On-going training Revision of the curriculum Literature on the program Provision of resources	The way forward

CODES AND CATEGORIES FORMED FOR RESEARCH QUESTION TWO:

CODES	**CATEGORIES**
Used for research	
Do assignments on their own	Problem-based learning
Do mathematical operations	
Use different websites	
Problem-solving skills	
Do animations	
Use power points	
Find answers to given problems	
For individual class and homework	Individual and group work
Autonomy and ownership of work	
Used for individual and group projects	
Access d internet to search for information	
Tool for learning	
Equal opportunity for internet access	
Acquires computer skills	
Develops problem-solving skills	
Becomes creative and innovative	The 21st Century Skills
Higher order thinking skills	
Collaborates among students	
Exposure to technology use	
Develops critical thinking skills	
Student-centred approach	
New learning experiences	Different learning experiences
Students take active role	
Present work with power point	
Interact with technology	
Inspires boys to learn	
Visual tool for learning	
Hands-on tool for boys	Motivational tool for boys
Boosts confidence	
Provides new learning experiences	
Equipped computer laboratory	
Designed and paid websites	School factor

CODES	CATEGORIES
Play games Wastes time on non educational activities Use you tube, face book unnecessarily No marks improvement Cyber bullying Watch videos and films	Distractions
Access restricted sites Watch pornography	Inappropriate sites
Misuse by students View inappropriate sites and materials	Inappropriate sites
Exposure to risk Theft issues	Safety issues
Laptops given to younger students Age factor	Age inappropriate
No internet at homes No storage facilities Limited internet Inadequate facilities Repair problems Lack of proper monitoring Damaged laptops	Management and Maintenance issues
Supervision and monitoring by the Ministry Parents should monitor their kids Care for the laptops Strict penalties Laptops given to older students	Improvements

APPENDIX D

THEMES FORMED FROM CATEGORIES

RESEARCH QUESTION ONE:

CATEGORIES	**THEMES**
Limited information Internet access Parental involvement	Clarity and uses of the program
Damaged laptops Examination factor Limited use	Level of use and integration
Positive effects Negative effects	Effects of the program
Non functional laptops Internet inaccessibility The way forward	Hindrances to effective integration

RESEARCH QUESTION TWO:

CATEGORIES	**THEMES**
Problem-based learning Individual and group work	Uses of the program
The 21st Century Skills Different learning experiences Motivational tool for boys School factor	Usefulness of the program
Distractions Inappropriate sites Safety issues Age inappropriate Management and maintenance issues	Negative effects
Improvements	Barriers to effective learning

APPENDIX E

CONSISTENCY OF RESPONSES BY THE PARTICIPANTS FOR RESEARCH QUESTION ONE

- ❖ The variables ticked represent how the participants responded.

	ALI	JANE	ANNE	AHMED	ASHA	TONY	ADAMS
CATEGORIES							
Internet use		✓	✓	✓	✓		✓
Parental involvement		✓	✓	✓			
Limited information	✓	✓	✓	✓		✓	
Damaged laptop		✓			✓		✓
Examination factor		✓					
Positive effects		✓	✓	✓		✓	✓
Negative effects	✓		✓				
Non functional laptops	✓	✓	✓	✓	✓		✓
Internet inaccessibility		✓					✓
The way forward	✓	✓	✓	✓	✓	✓	✓

CONSISTENCY OF RESPONSES BY PARTICIPANTS FOR RESEARCH QUESTION TWO

❖ The variables ticked represent how the participant responded.

	ALI	JANE	ANNE	AHMED	ASHA	TONY	ADAMS
CATEGORIES							
Problem-based learning		✓					✓
Individual and group work	✓	✓	✓	✓	✓	✓	✓
The 21st Century Skills		✓		✓			✓
Different learning experiences		✓			✓		✓
Motivational tool for boys		✓			✓		✓
School factor	✓	✓	✓	✓	✓	✓	✓
Distractions	✓		✓	✓	✓	✓	
Inappropriate sites	✓			✓		✓	
Safety issues		✓			✓		
Age inappropriate	✓		✓	✓			
Management and maintenance issues	✓	✓	✓	✓	✓	✓	✓
Improvements	✓	✓	✓	✓	✓	✓	✓

APPENDIX F

Consent

Chinyere Onuoha

School of Education,

University of the West Indies,

St. Augustine,

Trinidad and Tobago.

Dear Mr/Ms.....

I am a student at the University of the West Indies. I am conducting a research on "Teachers' Perceptions of the eConnect and Learn Programme for enhancement of teaching and learning". The research project is in partial fulfilment for award of Masters of Education in Curriculum. I am kindly requesting you to participate in this study.

Your participation entails that you answer some interview questions for about 25 minutes. The interview will be tape-recorded. I want to explore your perceptions on the eConnect and Learn Programme for enhancement of teaching and learning.

Your identity will not be disclosure; I will use pseudonyms in this study and any future presentation or publication. You may be quoted directly but your name will not be mentioned in any part of the report. Please understand that you have the right to withdraw from the study at anytime.

I sincerely appreciate your time, effort and willingness given for this study. If you have any questions, please feel free to contact me at this email address.....

Thank you,

Chinyere Onuoha.

I have read the above and I agree to participate.

..... Signature.

.... Date.

Chinyere Adaku Onuoha

University of the West Indies,

School of Education,

Trinidad & Tobago.

11th March, 2014.

The Principal,

Trinidad.

Sir,

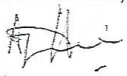
PERMISSION TO CONDUCT RESEARCH

I hereby kindly request for your permission to conduct M.Ed. research at your school. The research is on "Teachers' Perceptions of eConnect and Learn Programme for enhancing Teaching and Learning".

To regard, I will need to interview some teachers at your school, observe some teaching sessions, and look at artifacts and documents in relation to eConnect and Learn Programme.

Thanks for your cooperation.

Yours faithfully,



Chinyere Adaku Onuoha.

Email:

March 20, 2014

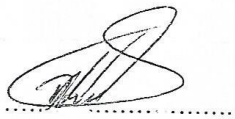
Chinyere Adaku Onuoha
University of the West Indies
School of Education
St Augustine

Dear Mrs.Onuoha

I am pleased to advise that permission has been granted for conduct of research on "Teachers Perceptions of eConnect and Learn Programme" at Trinity College East.

I trust that your interactions with staff will be beneficial to your research and I wish you every success in your endeavors.

Respectfully



.....

Principal