An Investigation into the Use of the Education Management Information System (EMIS) in Secondary Schools in St. Lucia – The Case of One Secondary School

Esther Chitolie-Joseph

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Abbreviations

CARICOM	Caribbean Community
CDB	Caribbean Development Bank
CSEC	Caribbean Secondary Examinations Certificate
CSME	CARICOM Single Market and Economy
CXC	Caribbean Examinations Council
DFID	Department for International Development
ECERP	Eastern Caribbean Education Reform Project
EDPM	Electronic Document Preparation and Management
EMIS	Education Management Information System
EU	European Union
GTZ	Deutsche Gesellschaft fur Technische Zusammenarbeit
HFLE	Health and Family Life Education
ICT	Information and Communications Technology
IT	Information Technology
MIS	Management Information System
MOE	Ministry of Education
OECS	Organisation of Eastern Caribbean States
OEDP	OECS Education Development Programme
OERU	OECS Education Reform Unit
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
SBA	School Based Assessment
SBM	School-based Management
TAM	Technology Acceptance Model
WTO	World Trade Organisation

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Abstract

This thesis investigates the use of the Education Management Information System (EMIS) at the Bocage Secondary School in St. Lucia. I undertook this study by examining how the EMIS was being used and what was required to facilitate its use.

To support the findings of this research, I drew upon related literature on education reform in St. Lucia and school-based management, education management in the post colonial era, information and decision-making in the education system, information technology use and acceptance, managing change and education in small developing states. Since this investigation was not intended to test theory but to generate theory on the use of the EMIS, I used constructive grounded theory as my theoretical framework. This approach allowed me to accept the influence of my prior involvement with the EMIS on the research.

The ethnographic methodology which was used, allowed me to conduct detailed observations and interviews with administrative staff and teachers of the school. The analysis of the data was done using grounded theory which included coding and constant comparison of the data. The research findings suggest that the EMIS was underutilized and that technical, economic, training and personal, software and organizational factors contributed to the limited use of the system.

In conclusion, I present the possible implications of these findings to the future use of the EMIS in St. Lucia and the wider Caribbean. These implications include management, budgeting, recruitment, human resource development, EMIS selection and the formulation of policies that benefit developing countries.

Chapter 1 Framing the Research

1.1 Introduction

Increasingly, around the world, institutions and organisations are recognising the value of information in the management and decision-making processes. This has led to the development of various information systems from the bare manual, where mainly pen and paper are used to the computer-based where mainly computer hardware, software and internet are used. An information system is any organised combination of people, hardware, software, communications networks, and data resources that collects, transforms, and disseminates information in an organisation (O'Brien 2002). When an information system provides information for the management of educational development and for effective decision-making, monitoring and evaluation of education activities, it is called an Education Management Information System (EMIS). In St. Lucia, the term EMIS is used widely to refer solely to the software package. The EMIS used in this research is computer-based and was implemented in all secondary schools in St. Lucia in 2006-2007.

In this Chapter, I provide a history of EMIS initiatives in St. Lucia to serve as a basis for understanding and appreciating the need for this research. I then discuss the rationale for selecting this research topic. Subsequently, I outline the research questions and provide briefly the significance of this research. Consequently, I discuss issues of positionality in the field followed by ethical considerations during the conduct of my research work. Finally, I outline the structure of this thesis.

1.2 History of EMIS Initiatives in St. Lucia

The EMIS thrust in St. Lucia emerged from the initiatives of the Organisation of Eastern Caribbean States (OECS) which were aimed at reforming education in the sub-region. To support the reform initiative, one activity of the Eastern Caribbean Education Reform Project (ECERP) was to develop education management information systems to assist with the many challenges facing Education Planners and Policy Makers in developing countries. Some of these challenges as highlighted by the OECS (1998, p. 4) include: 'expanding school access, ensuring equity and maintaining and improving quality in a world of growing demands on the education

sector, in an environment of increasingly constrained resources'. The various EMIS initiatives implemented in the past are discussed below.

1.2.1 The ECERP/EU/GTZ EMIS Initiative

In 1994-96, the OECS through the assistance of the European Union (EU) and Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ), developed an education management information system involving three main parts: 1) a detailed questionnaire to be completed by each school for each level of education; 2) an associated computer-based database developed in Lotus 123 to be used only at the central office to store the data from the questionnaires and; 3) scannable forms to be completed by teachers of primary and secondary schools and an associated MS Access Teachers' database to store the data at the central office.

A review exercise conducted, indicated that this EMIS had not provided member states with the necessary tools to face the challenges earlier identified for two main reasons. Firstly, principals and administrators had not been able to complete and submit the questionnaire to the Ministry of Education (MOE) because they considered it too bulky and time consuming to complete. Secondly, there was a lack of inclusion of this data in education decision-making by the Ministries (OECS 1998). This latter point is what Moses (2000) speaks about when he explains that those who generate the data, the teachers and staff of schools, themselves may have little idea of whether their information reporting has been useful, has been retained, or in fact has reached those who need to know.

The failure of the EMIS led the OECS Education Reform Unit (OERU) and the various Ministries of Education in the region to rethink the type and nature of EMIS that should be implemented in the future. The main recommendation of the EMIS system review was to implement a 'Commercial off-the-shelf EMIS' software application in a pilot country before implementing in the rest of the region (OECS 1998, p. 2). The system review was the result of interviews conducted with various persons including District Education Officers, Planning Officers, Statisticians and persons from all school levels.

1.2.2 The OERU EMIS Initiative

As a result of the recommendations of the previous EMIS evaluation, the OERU invited Information Technology Officers and Statisticians to an EMIS workshop in Grenada in 1999 to select one of three short-listed EMIS software packages. This team, of which I was a member, had to rate each software using prescribed evaluation criteria after a series of demonstrations by the software vendors. The evaluation exercise resulted in the selection of the GPI software (Canadian based) which provided the following capabilities: 'data capture, processing and reporting of student enrolment, student participation, student registration and teacher information' (OERU 2000, p. 4). The main focus of this system was real-time access to school information at the central level.

The pilot country to host the EMIS was selected after the three countries, St. Lucia, Antigua and Barbuda and St. Kitts and Nevis made formal requests to the OERU to host the system. St. Lucia was eventually selected as the pilot country. In selecting the pilot country, various criteria were examined including, computer support staff and trained teachers at primary and secondary schools, number of computers at educational institutions, telephone connections, internet connections and type of connection (OERU 2006). According to the OERU EMIS pilot selection report (2006, p. 4) the key factor that gave St. Lucia the advantage in hosting the EMIS pilot was the 'presence of a dedicated 64 KB line; an absolute necessity for real time communication between the Ministry and educational institutions'.

The GPI software was installed in November 1999 in 24 pilot primary and secondary schools and training in the use of the software was given to principals, secretaries and MOE officials. A new management software meant changing or reforming the schools management processes and putting new structures in place to suit the new system. However, no training or orientation regarding change management was provided to schools to accommodate the new EMIS. Principals continued to manage their schools in much the same way. If schools were compared with businesses then according to O'Brien (2002, p. 260), 'moving to an e-business environment involves a major organizational change'. During the year and a half before the evaluation of the system, schools continuously complained bitterly about issues with the system. Some of these complaints included: problems with accessing the internet; inadequate or no

time by staff to update the EMIS; issues concern user friendliness of the software, including the difficulty to find the required tabs or titles and; the slowness of the internet. In addition, some principals were not computer savvy and assigned the task of using the system to a teacher who already had a full-time teaching load. The GPI EMIS was eventually abandoned by the schools.

In September 2001 an evaluation of the GPI EMIS was carried out in less than five days, through a series of site visits and interviews with MOE officials, teachers and principals of pilot schools. According to the evaluation report of the OECS (2002, p. 16-19), the EMIS was unsuccessful as a result of the following: 1) 'onscreen presentations were not user-friendly'; 2) several of its design structures were still incomplete; 3) the manual or user's guide to provide support was repeatedly found to be inadequate and difficult to comprehend since some terms were written in French; 4) the built-in 'help' facility was considered to be inadequate; 5) the pilot was too large in scope and coverage; 6) many schools reached as far as the one-time data entry and never proceeded and; 7) 'persistent internet connectivity problems prevented schools from logging on to the internet to access the system'.

1.2.3 The OEDP/World Bank/DFID EMIS Initiative

Under the OECS Education Development Programme (OEDP), funded by the World Bank and DFID, the countries of St. Lucia, Dominica and St. Kitts/Nevis included as part of their project, an EMIS component for secondary schools. Under this component the EMIS was meant to strengthen school-based management and increase efficiency in the education system (World Bank 2009). A feasibility study was commissioned by the funding agencies in order to determine the best solution for each country by examining software application requirements, toolsets, maintainability, reliability, compatibility, performance, support services, and related training. The focus of the study was only on the EMIS software with little or no consideration to the related social or organisational aspects of using the EMIS.

According to the report of the feasibility study,

> "...the proposed EMIS therefore should be a totally integrated
> Education and School Administration System that would support the
> need for efficient cross-functional decision-making about the

Education and School system. It would provide a permanent mechanism for managing National Education and Individual School information on: 1) Individual Students and Student Groups; 2) Parents/ Guardians; 3) Principals, Teachers, Education Officers, and auxiliary staff; 4) School Timetables and Schedules; 5) Teaching Methods and Curricula; 6) Student Learning Outcomes; 7) Textbooks, Instructional Equipment and Materials; 8) School and National Education Budgets; 9) School Sites and Buildings and; 10) Communities and School catchments areas". (World Bank 2002, p. 3)

The selection of this current EMIS was done differently, in that extensive market research was conducted including online demonstrations of the various systems. A total of five EMIS companies were invited to St. Lucia to conduct demonstrations of their EMIS for evaluation by MOE and school personnel including Planning Officers, Statisticians and representatives of Principals and Teachers. The evaluation exercise resulted in the selection of the Maplewood Software from Canada which is the EMIS being studied in this research. However, being part of the evaluation exercise made me realise that functionality was not the main criteria for the selection of the software. The main criterion was the cost of the software followed by the functionality. Although the World Bank and DFID were funding the EMIS, the amount was allocated based on the country's financial capacity to repay this loan.

Based on the lessons learnt from the GPI EMIS, the MOE agreed to assign EMIS Coordinators to all twenty four secondary schools. The main criteria used for their selection were: (1) a degree in a computer science related field; (2) experience in using various computer applications; (3) ability to do basic troubleshooting on computers and operating system in a networked environment and; (4) good management and leadership skills. The EMIS Coordinators would also be given a reduced teaching load; a maximum of 18 classes as compared to 32 per week (MOE 2006). Their job description included: ensuring that the system was updated regularly; working with the MOE on technical issues concerning the EMIS; customizing fields as far as was allowed by the suppliers; arranging at the school level the use of the system by teachers; providing training in the use of the system to new teaching and administrative staff and; ensuring that relevant reports required by administration and staff were available.

In 2006-2007, the EMIS was installed in all twenty four secondary schools on the island following the training of EMIS Coordinators and principals in its use. The timetabling module was not installed at the time because it did not meet the expectations of our schools. This module was customized and training was provided in July 2010 by Maplewood staff. The current EMIS has the following functionality: (1) maintains student records including biographies, attendance, achievement, discipline and accounts; (2) maintains staff records; (3) produces standard reports; (4) keeps school accounts; (5) prepares student report cards and transcripts; (6) tracks incidences and attendance and; (7) performs scheduling and timetabling. The EMIS accommodates different levels of users. Principals, Vice Principals and EMIS Coordinators were given administrative rights via a password, where they were given rights to enter, edit and see all information on teachers and students. On the other hand, Teachers, Secretaries and Bursars, were only given access to Classroom Manager, which contained only student management information.

Since its implementation, support had been provided by the Statistician of the Corporate Planning Unit and the Software Engineer of the IT unit of the MOE. Termly visits were made by these persons to all schools to provide on-the-job support and to assist with teething problems. The three EMIS Coordinators who were more knowledgeable of the system were used to assist during the school visits; one of these three persons was Mr. BT, the first EMIS Coordinator of the Bocage Secondary School. The MOE personnel occasionally liaised with the suppliers in Canada on issues which could not be solved at the country level. The MOE paid an annual license fee which covered this sort of after sales support.

Since its implementation in 2006-2007, the MOE had only been receiving attendance reports that were generated from the EMIS, from twenty-one percent (21%) of the schools. The central office at the MOE was still not able to access remotely, data from the schools and therefore, the manual statistics system was still the main provider of statistics data/information to the MOE for decision-making. The report of the last EMIS School Visits by the MOE (2010) team indicated that whilst the majority of the schools had entered most of the required data on students and teachers, only three of the twenty-four secondary schools (Bocage Secondary, St. Joseph's Convent and Vide Bouteille Secondary) were making good internal use of the EMIS. This use did not

include using the system for registration, processing exams results, preparing report books and transcripts and using the system to track incidents. The report also indicated that: some principals appeared uninterested and detached from the EMIS; the EMIS computers from eight schools went bad and were diagnosed as too costly to repair and; some EMIS Coordinators were given additional responsibilities by the principal which competed with their EMIS duties (MOE 2010).

1.3 Why This Research?

I have chosen this research study because of my professional experience in working with information systems, the passion that I have developed in working with such systems over the years, my desire to understand why many computer-based information systems have not worked in the Education Ministries of many Caribbean countries including St. Lucia and what is required to make a computer-based EMIS work. My involvement in working with information systems started in 1998, when I became Statistician with the Ministry of Education, a time when the then administration was undertaking crucial reform in education. The provision of timely and reliable data and information was fundamental to the success of the reform process but at the same time, there was a need to reform the statistics system at the MOE. The task of reforming the statistics system was made clear to me when I was awarded a World Bank scholarship under the Basic Education Reform Project in 1996 to study Statistics; a task which I had to fulfil upon my return.

During my first year as Statistician from 1998 to 1999, I had the task of reforming the way statistical data was collected, processed, analysed, reported and disseminated. That meant reforming the manual EMIS at the time. Whilst working closely with a foreign EMIS consultant I was able to drastically improve the manual EMIS. This improvement included obtaining years of outstanding statistical data from the education system; transforming the annual statistics questionnaires used by schools; creating a computer-based storage system for the data; preparing a Statistical Digest which was the first of its kind and considered by the World Bank as a best practice in the region. I was then offered to assist the Ministry of Education in Grenada in doing similar work, by the World Bank. Subsequently, I have worked with every OECS country through the OERU and many other Caribbean countries such as Guyana,

Belize and Cayman Islands, in assisting with their manual statistical systems and building capacity in the area of information management. My involvement in providing technical assistance to other countries led me to work full time with UNESCO as the Sub-Regional Statistics Project Officer with responsibility for capacity building in information management for a period of three months in 2004.

With the implementation of the first computer-based EMIS (GPI) in St. Lucia in 2001 and the second (Maplewood) in 2006, I served on the Steering, Technical and Evaluation Committees. After being promoted to Planning Officer in 2007 my role in relation to the EMIS was more of an advisory one but still the Corporate Planning Unit where I worked was and still is responsible for the successful implementation and upkeep of the EMIS. As a Statistician the EMIS was intended to facilitate my job. According to Wako (2003), the collection, processing, analyzing and reporting of education Statistics is the responsibility of the EMIS at the MOE. As an Education Planner, the EMIS was important to me because I relied heavily on education data/information to assist in the policy and decision-making process. Although an evaluation was done of the GPI EMIS, as previously mentioned, by conducting interviews with key personnel including myself, I was not at all satisfied with the results of the evaluation because of the method used. I was of the view that the real reason for the non-use of the system was unfounded.

Before the implementation of the Maplewood EMIS under the OEDP, I was part of a team which carried out extensive market research on available systems to suit St. Lucia's needs. We also conducted a study tour to a school in Jamaica where part of the system seemed to work fairly well. The idea of 'EMIS Coordinator' emerged as a result of that study tour. However, my close involvement with the EMIS ended when I proceeded to Paris to pursue studies in Education Planning and Management. I was absent for the most part of the implementation of the current EMIS. Whilst this EMIS was implemented in 2006-2007, schools have still not been able to fully utilise the system and I often wonder whether this will be another case of abandonment of the system.

This study will respond to the need of other developing countries especially those of the Caribbean who have undergone similar experiences with an EMIS or who are

expecting to implement one. During the pilot phase of St. Lucia's first electronic EMIS, many other Caribbean countries looked forward to its success so that they too could implement it. Barbados, British Virgin Islands and, St. Kitts and Nevis had tried School Information Management System (SIMS) but it did not work. The Cayman Islands implemented StarStudent but encountered difficulties. Jamaica implemented School Manager in some schools but only the registration and accounting modules worked in one Technical School, which I got the opportunity to visit. An EMIS was considered to have failed if about three or more years after implementation, the schools did not update or use the system. The countries would then abandon the system. This is what Ewusi-Mensah and Przasnyski (1991, p. 68) refer to as "system abandonment". Since the implementation of the Maplewood software in St. Lucia, a study tour visit had been conducted by the MOE of St. Vincent and the Grenadines in order to obtain information to assist them in implementing their own EMIS. However, to date, the country has not implemented an EMIS.

I have decided to capitalise on The Doctor of Education Programme with The University of Sheffield in order to undertake research to understand more about the use of the EMIS in schools. The Bocage Secondary School was used as the research site. Whilst the results of this research can be used to improve the use of the EMIS in St. Lucia, this research can also provide pertinent information to other Caribbean countries to assist in implementing or improving their EMIS systems.

1.4 Research Questions

The main question addressed by this research is; how is the EMIS being used at the school level and what is required to facilitate its use? However, to help address this question a number of other questions were used to guide this research. These are:

1. What type of information is required by management personnel for school management and decision-making and can it be facilitated by the EMIS?
2. Where and how do management personnel at the school obtain data/information for managing and decision-making?
3. Are there software, networking and hardware problems in using the EMIS?
4. How and when is the EMIS being used by school management personnel?
5. What is the EMIS being used for?
6. What is required to improve the use of the EMIS at the school?

1.5 Significance of the Research

The main purpose of this research is to make a contribution to the theory and practice of Education Management Information System in schools by better understanding its use by school personnel. This involves investigating what the EMIS was used for, how, why and when it was used or not used and by whom. During this research, understanding the use of the EMIS came about from carefully observing, over a period of time, school personnel in one secondary school, as they engaged in the information and management processes of the school and how they used the EMIS to assist in these processes.

Therefore, the significance of this research relates to the understanding of the use of an EMIS to facilitate the storing of and access to accurate, timely and reliable data/information for effective management and decision-making. This research can provide pertinent information to the MOE in St. Lucia, concerning the reasons why the EMIS was not utilised by the Bocage Secondary school according to the MOE's expectations. Such information can be useful to improve the use of the EMIS in other secondary schools with conditions similar to that of the research site. This research can also provide insight into the implementation of similar systems in primary schools in St. Lucia as well as schools in other Caribbean territories through the ongoing sharing of ideas among countries. Many Caribbean countries embark on similar education projects such as the EMIS and sometimes through similar funding agencies. Therefore, the spirit of collaboration and information sharing so as not to 're-invent the wheel' is often encouraged. Thus, in the long run this research can contribute towards the improvement of the supply of data/information to policy and decision-makers in the education system.

1.6 My Positionality

As previously indicated, I served on the EMIS Technical, Steering and Evaluation Committees of the MOE. My role was to assist with the selection and implementation of an appropriate EMIS package as well as to coordinate training for users of the system. The Corporate Planning Unit where I worked was responsible for ensuring the efficient use of the EMIS by all secondary schools. I strongly support the use of data/information for decision-making and I long for the full use of the EMIS by all

secondary schools so that the MOE can obtain the data/information from the system to facilitate the management and decision-making process. This shared occupation in education by schools and the MOE made me an insider to the school. According to Loxley and Seery (2008, p. 16) insider research is undertaken by 'members of the same group as that under study, who supposedly share one or a number of characteristics'. Insider research is worthwhile as it forces us, researchers, to ground our work in everyday issues as those involved experience them; it confronts us and others with our assumptions, perceptions and their consequences; it enables us to learn, reflect and act and; it insists that 'we engage with what and who we are curious about' (Smyth and Holian 2008, p. 34). As an insider, I gained knowledge of the school, the management processes at the school and the situation with the EMIS. As an insider, I was easily accepted by the management and staff of the school and they allowed me active participation in EMIS activities of the school. Like Le Gallais (2008, p. 146) my inside knowledge of the research location enabled me to 'short-cut much of the mutual familiarization phase usually necessary to seek out common ground' and establish a research relationship. I was also able to use this knowledge to my advantage to gain more intimate insights into my participants' opinions (AbuLughod 1988 and Hill-Collins 1990, cited in Mullings 1999, p. 340). However, I don't believe in using my authority or position to force information out of research participants. Hence, all my participants were given a choice to participate in this research and were not coerced.

In spite of being an insider, the school may not have seen me as a full insider as compared to a staff member of the school. Although I never got the impression that I was perceived as a spy, some of my informants may have perceived me as one who would report my dissatisfactions on school matters to the MOE. This made me feel like what Sikes (2008, p. 144) described as, 'an insider who is an outsider'. I sensed this when one of my participants during an informal interview said '...make sure you tell the Ministry I said so'. Hence even as an insider, I tried to gain the trust of all those involved in this research by constantly reminding them that this research was my private work, ensuring confidentiality where possible and respecting all participants. Whilst conducting fieldwork, Schultze (2000) considered building trust between the participants and the researcher as very important because this level of

trust, he claims, would allow him to repeatedly observe events over an extended period of time.

1.7 Ethical Considerations

There are ethical considerations for any piece of research. However, with qualitative research, the issue of ethical practice can be relatively more difficult as compared to quantitative research. For example, Bryman (2008) notes that the issue of confidentiality can be difficult with qualitative research since it is very difficult, if not impossible, to present field notes and interview transcripts in a way that will prevent people and places from being identified. It was difficult to make persons anonymous in the writing of this dissertation. Although I used designations and false names, there is just one Bocage Secondary School with one principal, secretary, bursar, and EMIS Coordinator. Anonymity can be difficult in small states since most persons are well known to each other (Crossley and Holmes 2001) whether by name or designation. Louisy (1998), who is an experienced Caribbean researcher has also pointed out that in small countries and close communities where she worked it was simply impossible to give any assurances that participants will not be identifiable. Therefore, I am aware that in small societies as St. Lucia, anonymity and confidentiality are almost impossible since most persons know each other and each other's business.

From research work conducted by Sikes (2013) on research ethics, which focused mainly on Caribbean students undertaking studies with the University of Sheffield, it can be seen that her participants shared similar views to that of Louisy as well as Crossley and Holmes. Her participants posited that being from small societies everyone basically knows each other either from growing up together or being part of the same group such as, attending the same school or church. Therefore, according to them, it is easy to reveal someone you are trying to conceal in your research. Hence, my participants from the Bocage Secondary School can easily be identified even though real names were not used. For some of Sikes participants, what was more important was that the research community/participants and the researcher set the rules concerning the ethical undertakings of the research rather than it being imposed on them. From the beginning of my research, participants on their consent forms, agreed not to have their real names written in this thesis or in the Ministry's report. They also indicated that they did not want personal and confidential information

shared with other persons. Therefore, in light of this, my report to the Ministry of Education did not indicate who said what, but instead provided general recommendations for the use of the EMIS. In addition, I did not use real names in this thesis. I tried to gain teachers' trust by ensuring that, as agreed to, personal information shared with me in confidence was not discussed with others, even when the principal and other teachers wanted to know their colleagues opinions. However, non-confidential information was shared when necessary in order to obtain confirmation or gather additional information. Sikes' (2013) research also revealed that in some instances research participants may not mind at all being exposed in the research. I experienced similar sentiments from one my participants when she openly said to me, "make sure you tell them I said so". In any case, none of my participants objected to their opinions being represented in this thesis.

According to Smyth and Holian (2008, p. 44) the researcher needs to be clear about how the 'purpose of the research, the information provided to participants, the methods of data collection and analysis as well as the proposed means of dissemination of findings are all based on ethical principles'. In that regard, ethical consideration was given in this research by (1) communicating the purpose of the research upfront to participants and explaining their role in the research (Portelli 2008), (2) obtaining consent from the MOE and participants from the school of study and providing all participants with information about the research before its commencement, (3) selecting methods of data collection and analysis which allowed the researcher to obtain detailed first hand and authentic information from the participants and (4) writing the findings so that they are representative of the participants' voices.

1.8 Thesis Structure

The remainder of this thesis is organised as follows: the next chapter discusses the literature related to the use of EMIS in schools in St. Lucia; following, I describe the theoretical framework which puts into perspective the theoretical tools for the collection and analysis of data for this research; the methodology and methods are then discussed which includes the research design, selecting the research site, data collection techniques and data analysis; subsequently, I discuss the findings and provide an analysis of the results; finally I present the concluding chapter.

Chapter 2 Review of Related Literature

2.1 Introduction

In this Chapter, I present an overview of the existing literature that informs this research. Six key areas that will provide relevant information for the research on the use of the EMIS in Secondary Schools in St. Lucia are presented below. The first is related to education reform in St. Lucia and school-based management. Under this section, the OECS education reform initiative which has been a key contributor to the conceptualisation of the EMIS in St. Lucia and the OECS in general is discussed. Secondly, literature on the effect of the plantation system on education management is examined to help understand how cultural heritage can affect the use of the EMIS. Thirdly, literature is presented on information and the decision-making process in the education system, which provides an overview of the different organisational levels and corresponding types of information required to make various decisions in the education sector. Since the EMIS is used to facilitate the decision-making process, this discussion will help understand the role of the EMIS in that regard. The literature pertaining to the use of information technologies is then examined followed by a discussion on managing change. The literature on managing change will also propose a model for IT-enabled change which can be applied to the EMIS. Finally, the review analyses the impact of the characteristics of small developing countries on educational activities. The review on small developing states provides the tools for understanding and interpreting my research findings within our St. Lucian context.

2.2 Education Reform in St. Lucia and School-based Management

St. Lucia is one of the nine member countries forming the Organisation of Eastern Caribbean States. The continued existence of the OECS depends largely upon functional sub-regional cooperation among the member countries (OECS 2000, p. 16). This is possible largely because of their social, political, economic and cultural similarities including their education systems. Therefore, education reform in St. Lucia is discussed mainly in the context of the OECS education reform process and strategy. School-based management (SBM) has been one of the key reform initiatives of the Ministries of Education around the world including the OECS and St. Lucia. Chen and Chang (2000) note that since the 1980s, SBM practices have been widely

implemented by many countries as a major means to enhance school effectiveness and ensure education quality. Hanson (1990, p. 523) also notes that as the 1990s began, 'SBM had emerged as a centrepiece in the movement to restructure public education in the United States'. An overview of what SBM involves is presented, followed by a discussion on the re-distribution of authority to schools as a result of SBM, the need for training and support for the success of SBM and finally adopting a multi-perspective approach to the implementation of SBM.

2.2.1 Education Reform in St. Lucia

Education reform, as indicated by Borman, Hewes, Overman and Brown (2003, p. 126), is generally aimed at 'reorganising and revitalising' the entire education system rather than implementing specialized and potentially uncoordinated education improvement initiatives. Education reform in the OECS region in the early nineties, was spurred by significant international and regional initiatives in education at the time, including the 'Caribbean Consultation and World Conference on Education for All, the CARICOM Colloquium on the Future of Education leading to the creation of CARICOM and the Study of Education in the Commonwealth Caribbean' (OECS 1992, p. 1). The reform process led to the development of a long-term OECS Education Reform Strategy and the creation of the OECS Education Reform Unit with the responsibility for spearheading the reform.

The OECS Education Reform Strategy document, 'Foundation for the Future', delineates nine categories of strategies for the following: harmonizing the education systems of the OECS; reforming Early Childhood Education; reforming Primary Education; reforming Secondary Education; reforming Tertiary, Continuing and Adult Education; reforming the terms and conditions of service of teachers; reforming the management and administration of the education system; reforming the financing of education and the reform process (OECS 1992, p. 9-21). These reform strategies had implications for the entire education system including changes in education policies, school curriculum, job descriptions, management and resources.

According to the OECS (1992, p. 1), one major outcome of the reform process, was 'an explosion in the demand for information'. This information according to Wako (2003) is the additional knowledge that the users desire about the functions under

their responsibilities that could allow them to enhance planning, programming, monitoring, evaluation, research for overall management and decision-making in educational development. New developments and challenges impacting on the education system led to the revision of the OECS Education Strategy document, 'Foundation for the Future', to the creation of the 'Pillars for Partnership and Progress' document which entails reform strategies up to 2010 in two additional areas: 1) reform strategies to address urgent societal imperatives and; 2) strategies for information and communications technology. The latter has as one of its foci, the improvement, modernization and efficiency of the management of schools and Ministries of Education through education management information systems that are networked and linked dynamically (OECS 2000, p. 19). This meant that the EMIS, whilst being a reform initiative in itself, was also used as a tool to facilitate the entire reform process. The implications of these key reform strategies for secondary school principals in St. Lucia regarding the management of education are further discussed.

2.2.1.1 Strategies for Reforming Secondary Education

The strategies for reforming secondary education in the region focused mainly on improving the quality of and access to secondary education in each OECS country. Some of these strategies have direct implications for school principals regarding the management of schools. As explained by Simkins (2000, p. 322-325), one of the consequences of education reform will be the 'changing roles of senior and middle school managers; principals, heads of departments and teachers'. Some of the reform strategies include: Strategy 33: Re-conceptualize the nature, form and content of secondary education; Strategy 35: Improve the quality of secondary education; Strategy 36: Strengthen and enhance the delivery of support services and; Strategy 38: Promote vacation programmes especially in the summer. In St. Lucia, these strategies were transformed into a number of reform initiatives including the establishment of universal secondary education in 2006, the provision of support services such as the Textbook Rental Programme and the Transport Subsidy Programme, the review of the lower secondary school curriculum, the establishment of the Minimum Standards Tests in Form 3 and the establishment of the in-service Teachers' Training Programme for secondary school teachers. These reform initiatives continue to demand of school principals the need to record and use information on teachers and students at the secondary school level including information on the qualification and

status of teachers, biographical and financial information on students, information on student achievement, subjects enrolled in and student discipline. Indeed, to accomplish this, according to Simkins (2000), great emphasis has to be placed on a tracking system for monitoring purposes. The EMIS can serve the function of that tracking system.

2.2.1.2 Strategies for Reforming the Management and Administration of the Education System

The reform strategies for the management and administration of education advocate for 'greater participation in goal setting, policy making, implementation and evaluation through the redesigning of the management and administrative structure of the educational system' (OECS 2000, p. 40). This meant that the job of secondary school principals had to be redefined as managers, thus, providing them with a greater say in the decision-making process in the education system. Principals have been given greater autonomy in staff recruitment, supervision of teachers, use of financial resources, the management of the school plant and school improvement planning. School principals are thereby made more accountable for their students' performance. This reform strategy has led to the increased decentralization of the education system in St. Lucia through the creation of eight District Education Offices and the gradual shift in the responsibility for school effectiveness and improvement from the Ministry to the school. With this changing landscape in education, 'Policy-makers no longer base their actions on their own opinions, values and commitments but rather on facts' (Postlethwaite 2004, p. 12); that is, available and reliable data/information. School principals by extension, need to provide the relevant information to policy-makers and other officials of the MOE who are responsible for facilitating, implementing and monitoring the reform process from the central level.

2.2.1.3 Strategies for Information and Communications Technology (ICT)

The reform agenda identifies also the need for ICT training and technical support for school managers and teachers (OECS 2000). With new demands on school managers, as they relate to contributing to the overall decision-making process, ICT training can contribute towards the enhancement of their management skills. The OECS (2000, p. 21) further notes that 'without training and technical support, teachers and managers will take a much longer time to achieve proficient and effective use of ICT and are

likely to maintain the old ways of operating'. The MOE, over the years, has provided some level of basic ICT training to its entire staff, principals and teachers. Over the past ten years, computer access has been given to all MOE staff, district offices and schools in an effort to reduce paper-based systems and increase efficiency in the workplace. Gamage and Sooksomchitra (2004, p. 290) reminds us that 'real reforms in education require extensive, consistent support, accompanied by in-service training and technical assistance for school leaders, enabling them to change management and planning skills, and helping them to deal with the school and classroom implications of reforms'. Wako (2003) notes that training is one of the essential components of the EMIS and in addition because the field of technology is changing fast and manpower turnover is high, training must be viewed as a continuous activity.

One of the objectives for the Strategies for ICT highlighted by the OECS (2000, p. 19) is 'to improve, modernise and make more efficient the management of schools and Ministries of Education through education management information systems that are networked and linked dynamically'. This objective provided support for the OERU EMIS initiative which was piloted in St. Lucia and for the current OEDP EMIS initiative.

2.2.2 School Based-Management (SBM)

Reform initiatives by the OECS and MOE in St. Lucia led to the decentralisation of education management and the gradual shift in the responsibility for school effectiveness and improvement from the Ministry to the school. This shift in responsibility or accountability required a shift in the decision-making power and management from the Ministry to the school and is known as 'school-based management' (De Grauwe 2005, p. 271) or 'school-based performance management' as referred to by the OERU (2001, p. 8). According to David (1989, cited in Hanson 1990, p. 524), school-based management places much greater emphasis on improving educational practice by 'creating conditions in schools that facilitate improvement, innovation, and continuous professional growth'. In addition, Gamage and Sooksomchitra (2004, p. 291, Gamage 1996, p. 21) note that SBM identifies the individual school as the primary unit of improvement by relying on the 'redistribution of decision-making authority to stimulate and sustain improvements in a school'. The MOE has given schools greater autonomy in: the hiring of school staff, conducting

on-the-job professional development for staff, creating programmes in schools to enhance student performance, the maintenance of the school compound and sourcing resources for their schools. Principals are also required to prepare and implement three-year school improvement plans, which had not been done in the past decade and an half. Wohlstetter, Smyer and Mohrman (1994, p. 269) see SBM as an 'overall approach to involving participants in the management of schools which includes, in addition to decision-making power, increased professional development to prepare participants for expanded roles in governance and in organisational operations'. Wohlstetter et al (1994) also note that among other things, information will be required if school-level actors are to have the capacity to make the changes required to implement the new directions. Information, for example, on student achievement, student movement, teacher qualifications, school resources and staff development is required to assist management in their new roles mandated by school-based management.

Hanson (1990, p. 525) explains that school-based management involves the redistribution of authority and that the amount of authority redistributed can roughly exist on a continuum involving the decision-making process, with specific points identified as 'deconcentration, participation, delegation and devolution'. The redistribution of authority in St. Lucia is done by the MOE to the District Education Offices and the Schools. However, how much authority is really distributed? Hanson (1990, p. 525) defines the various points on the continuum as follows: 'Deconcentration involves the transfer of tasks and work load but no genuine authority is redistributed'; Participation means that schools have greater input into the decision-making process but that the right to make decisions still resides with the MOE; 'Delegation is the actual transfer of decision-making authority from higher to lower hierarchical levels' and; Devolution involves the shifting of authority to an autonomous unit that can then act with independence. Based on that continuum, it appears that our schools in St. Lucia are only experiencing deconcentration and participation but not delegation or devolution. This is because no genuine power has been delegated from the MOE to the schools. Principals are more involved than in the past, in the decision-making processes of the MOE, such as making recommendations for, the hiring of new staff, staff training and school resources but they don't have the final say - the MOE or the Teaching Service Commission reserves the right to a final

say. Regardless of the point on the continuum, schools in St. Lucia are nonetheless required to collect all necessary information for use in decision-making either by themselves or the MOE.

Cheng and Chan (2000, p. 206) note that traditional school management practice relied on a 'central bureaucracy' that concerned itself with structural and political strategies to exert control over schools, and often hindered the effective use of human resources and the development of school culture to pursue education quality. Fullan and Watson (1999, p. 12) in a paper prepared for the World Bank, note that in many developing countries where there is a legacy of hierarchical or top-down models of education management from colonial days, 'SBM represents a radical change'. Administrators at the school level have to be willing and capable of operating in new ways to help them deal with the new forms of responsibilities with respect to accountability. Hence professional development is important as noted earlier. This is further supported by Hanson (1997, cited in Fullan and Watson 1999, p. 13) as they explain that 'decentralisation is not created by passing a law, but rather it must be built by overcoming a series of challenges', for example, changing long established behaviours and attitudes and developing new skills. In other words, they claim, that SBM is not just a structural change; it is a cultural change. It is a whole new way of doing things. In support of the OECS (2000), besides professional development to school administrators and teachers, external support from the District Office or MOE will be required to facilitate this radical change concerning the use of the EMIS.

Cheng and Chan (2000, p. 226), based on their work in Hong Kong, recommended a multi-perspective approach to the implementation of school-based management; 'structural, political, human resource and cultural perspectives'. Cheng and Chan (2000) note that from these different perspectives, the identification and interpretation of issues, problems, difficulties and obstacles to the implementation of SBM are different; so are the strategies to handle these issues. For example, they note that from a human resource perspective, some obstacles to SBM can be teacher dissatisfaction with school condition, lack of adequate training, skills and knowledge and lack of resources. From a political perspective, the obstacles might be lack of teacher empowerment and conflict. From a structural perspective, it might be the absence of clear accountability, roles and common goals whilst from a cultural perspective, it

might be resistance to change and lack of transformational leadership that can change school culture and transform staff's beliefs and values. This multi-perspective approach reinforces further the need for professional development and support to facilitate SBM.

2.3 Effects of Plantation System on Education Management in the Post Colonial Era

Whilst school-based management is supported by the MOE, the cultural heritage of MOE officials, principals and teachers can create long lasting barriers to this reformed mode of management. Our management styles are deeply rooted in the management styles of the plantation system of the colonial era, which I have described as plantation management. However, note that earlier I explained that the redistribution of authority experienced by the schools in St. Lucia is only deconcentration and participation and this helps one put into perspective the effects of the plantation system by understanding its cultural effects. Dirks (2006, p. 58) explains that 'what we, who were once colonised, recognise as culture was produced by the colonial encounter'. The plantation system can be described as the 'totality of institutional arrangements surrounding the production and marketing of plantation crops' (Beckford 1972, p. 8). Bristol (2008) in her doctoral dissertation shows the link between plantation pedagogy and education in Trinidad and Tobago. In her dissertation she constructs plantation pedagogy as a form of pedagogy which perpetuates the continuation of colonial assumptions through ideological positions that have become endemic to the culture of education in Trinidad and Tobago. In this section I present a similar argument between plantation management and education management in St. Lucia.

The Caribbean society, including that of St. Lucia, was the 'historical product of the new world slave plantation' (Levitt 2005, p. 37). Beckford (1972, p. 3) describes the plantation as an 'instrument of political colonisation' which brought among others things, capital, enterprise and management to create economic structures which have remained basically the same. In other words, these economic structures have continued in the post-colonial era even though the plantations in their colonial form have gone. Plantation economies as situated by Levitt (2005, p. 37) were 'colonies of exploitation' where both export and import sectors were owned and controlled by

foreign capital, overworking and underfeeding their stock of slaves. In order to maintain their superiority and power, strict hierarchies or classes existed on the plantations. Orser Jr. (1988, p. 741) identifies the two basic classes as owners (planters) and direct producers (slaves) with the plantation as the planter's power domain. He further adds that

> "The planters power included making decisions about plantation operations, empowering the overseers to act in their behalf, controlling the maintenance and use of material objects on the plantation. Assigning work to the plantation slave was a manifestation of the planter's power. He or she decided who would work, where they would work, and how long they would work. The overseers or drivers were responsible for the actual completion of the work on large plantations but the overall plan came from the planter. The quality and even the quantity of work, however was decided by the slaves." (Orser Jr. 1988, p. 741)

The slaves however, knew that they would be punished if they did not work as hard as the planters wanted them to (Orser Jr. 1988) but were also rewarded with 'money, gifts, dinners and dances for hard work' (Blassingame 1979, p. 292, cited in Orser Jr. 1988, p. 741). Further hierarchies existed among the white planter class such as the elite colonial officials; wealthy sugar planters; middling (in terms of wealth) coffee planters; plantation managers, merchants and artisans; plantation bookkeepers and soldiers. These hierarchies and mode of control were embedded and institutionalised in the plantation society. In the Barbados plantation society for example, the slaves had almost no choice in anything they did but the planters made choices for all aspects of the slaves' lives including, 'interference with slave marriages, forbidding them to sell things, forbidding missionaries from converting slaves, regulating singing, prohibiting magic, prohibiting sleeping in houses of non slave relatives and prohibiting the naming of children after their white fathers' (Stinchcombe 1994, p. 913). Beckford (1972, p. 3) sees the 'plantation' as the dominant economic, social and political institution in the colonial era which continues to manifest itself in the present and from all indications will continue to be influential in the future.

According to Levitt (2005), economic and social structures established in the era of the slave plantation persist. She further notes that the legacy of the plantation system was manifested in a number of ways including an authoritarian bureaucratic state.

Whilst democratic governments were eventually formed in the post colonial era many of the adopted management and leadership styles were of the authoritative bureaucratic type where centralised systems were formed and the division of labour was practiced. In the education system, this is represented by the centralised Ministry of Education playing the role of the planter or overseer, who oversees all policies and activities of schools. In addition, specialised roles also exist in the MOE such as that of education officers, heads of departments, curriculum officers and principals, in similar hierarchies to that of the planter class. Although efforts towards reforms in education management have been made, as previously discussed, the current management system still mimics the colonial order hence maintaining the plantation style ideology regarding those who manage and those who are being managed; superiors and subordinates. Beckford (1972, p. xxvii) explains that

> "The peoples of these Third World countries have inherited the plantation system and all the legacies which come with it. Although many of these countries have achieved constitutional independence, the plantation system (with all its inherent economic characteristics, internal social hierarchies and central authority, and dependence on the outside world) still dominates the lives of their people in fundamental ways." Beckford (1972, p. xxvii)

The system of management and control in the plantation era can thus be translated into the management of the centralised education system in St. Lucia. As described by Bristol (2008, p. 95) in her doctoral dissertation, 'like the overseer of the colonial system, within a postcolonial educational system the overseer operates structurally and ideologically as a figure or body which is given control over the individual or group labour of others'. The overseer can operate at two levels; at the MOE level and at the school level. The schools see the Ministry of Education with the Minister, Permanent Secretary, Chief Education Officer, Education Officers and Heads of Departments as the overseer, exercising much power and control over them as they decide on the policies and programmes of schools. Principals and teachers do not see themselves as part of the Ministry of Education but instead as subordinates, 'working for the master'. This ideology is a continuation of colonial assumptions and is embedded in the culture of our educators and hinders many school administrators from taking initiatives of their own in managing their schools even when the opportunities arise. They await directives from the MOE in order to act. At the school

level, the teachers see the principal as the overseer who controls and supervises what they do. They also see the principal as one who decides what subjects and classes they teach or what activities they get involved in.

Manifestations of the forms of resistance to the system of power and control which existed on the plantations are present in current times. Craton (1979, p. 121) explains that the slaves rebelled because they wanted to control the terms of their working arrangements on the plantations, 'an ideal that continued from emancipation to the present day'. Workers generally favour participatory approaches rather than authoritative approaches to decision-making, especially if the decisions will in some way affect them. People generally oppose being controlled and resist taking directives in their own individual ways. In St. Lucia, whilst some persons may be outright rebellious by expressing or exciting opposing views or actions, others may quietly sabotage plans or simply ignore directives from management or even absent themselves from work and other work related functions. Another popular means of resistance in St. Lucia, especially among teachers, is filing complaints with the Union. Additionally, there are workers who are afraid to resist for fear of being punished. These types of behaviour or resistance strategies adopted by workers against controlled management can be traced back to the plantation society. 'Active struggle against the slave system was an enduring and ever present feature of slave life' (Bush-Slimani 1993, p. 83) because the chief aspiration of these slaves was, naturally, 'to be free' (Craton 1979, p. 119). They felt that they were strong enough to dictate the terms of their involvement in the plantation system; 'free from bondage, with land of their own and working for wages if and when it suited them' (Craton 1979, p. 122). Craton (1979, p. 100) proposes four situations which were conducive to slave resistance on the plantation: 1) 'conditions of extreme repression'; 2) the presence of 'difficult to understand' elements; 3) the 'weakening of the forces of control' and; 4) the frustration of slave expectations. The various forms of resistance to the regime were every day or common occurrences including sabotage to machinery, tools and personal possessions, destruction of crops, feigning ignorance, clumsiness (Orser and Funari 2001, p. 62-63) or as Bush-Slimani (1993, p. 85) explains, from individual shirking and malingering to sabotage, arson and more collective 'discontents in the gang'. Similarly, when teachers, principals and other education staff feel that they

have not been part of management decisions or when they feel that they are being dominated or taken advantage of, they tend to show resistance.

2.4 Information and Decision-Making in the Education System

Decision-making is often identified with choice, that is, the selection of a specific course of action from among two or more alternatives in order to maximize the expected value of a decision (Rathwell and Burns 1985). According to Sutcliffe and Whitield (1976, p. 14) all human activity may be said to involve decision-making, and the decisions, whether implicit or explicit appear to fall into one or other of the following two categories: (1) reflective − non-immediate contemplative decisions concerning events in the future or; (2) immediate − decisions which occur as a result of forces perceived as affording no time for reflection. Whether reflective or immediate, information is very important to the decision-making process and Konopka and Korrapati (2006) note that modern society values knowledge and information as one of its most important assets. Choo (1996) notes that in order to make important decisions, organisations search for and evaluate information. Sack and Saidi (1997) note that in an ideal, rational world, decisions are made by well-trained people on the basis of a reliable and adequate amount of information that is communicated in a timely manner. However, in the real world, not only are some persons not well trained, but decisions are sometimes made in the absence of or with inadequate reliable and timely information. Choo (1996) supports this view by noting that in the real world, such demands on information gathering and processing are unrealistic. Information is only of value if there is a use for it, and so the value of information depends on the demand for it (Wako 2003).

With the education reform thrust, OERU (2001, p. 8) notes that 'school-based management places information and increased decision-making authority in the hands of those who have always been held accountable for educational outcomes: principals and teachers'. Smylie (1992) also notes that teacher participation in decision-making gives administration access to critical information closest to the source of many problems of schooling, and increased access to and use of this information are thought to improve the quality of decisions. This implies that when decision-making and planning are decentralized, decision support is required at all levels of the organization not just at the top (Rathwell and Burns 1985). However, according to the

OERU (2001) the challenge for those involved is to establish data collection and analysis processes that will generate the kind of information needed to facilitate problem identification, and to design and develop school improvement solutions.

Based on the amount of authority redistributed to schools and district education offices as previously noted, national ministries of education in the Caribbean region can generally be classified as centralized education systems. The FORUM (1993) and Prawda (1993) explain that by centralized, one means where decisions concerning a large number of important functions are taken in one organizational place, such as in the MOE (cited in Sack and Saidi 1997). In support of Sack and Saidi (1997, p. 53), such functions include, to varying degrees, 'budget preparations, resource allocation, personnel and payroll management, curriculum development, examinations, planning and statistics and teacher training'. According to Mintzberg (1979, cited in Power (1983, p. 13), organisational decision-making activities occur in a 'structure of managerial roles and responsibilities'. Anthony (1965, cited in Power 1983, p. 13) notes that this structure can be conceptualised as having three primary levels; 'strategic, managerial and operational'. In the education system in St. Lucia, decisions are generally made at these three different levels. Moses (2000) identifies three corresponding levels of information (policy and strategy, management and operational) which are needed to facilitate decisions at the three levels in the education system. Moses (2000) also notes that the design of an information system should accommodate the three levels of information. The three levels of decision-making and information are further discussed below.

2.4.1 Policy and Strategy Level

The Policy and Strategy Level is responsible for policy decisions which are taken by the policy-makers. In the Caribbean region policy-makers in the education system are namely, the Minister of Education and Permanent Secretary. Strategic and Policy decisions are generally made on the basis of available information from sources both outside and inside the education system. These decisions according to Sack and Saidi (1997) concern the long-term, such as, major investment choices related to quality and equity improvements and expansion (construction of schools, teacher-training, curricula reforms), levels of staff recruitment, reward structures (salary levels, promotion criteria), and norms and criteria for student selection into secondary

schools. Moses (2000) notes that the information at that level typically and often involves comparisons over multiple years and macro analysis. Some examples of required information include, the number of children of school age that are enrolled in school; demographic trends; student and financial projections; student/teacher ratios; school performance evaluations and teacher requirements.

2.4.2 Management Level

The Management Level typically involves decisions by heads of departments such as School Supervision, Examinations, Planning, Accounts, Curriculum, Information Technology and School Maintenance. However, there are various sub-levels of management within the Management Level; for example, whilst the Chief Education Officer (top management) heads the School Supervision department, there are other persons in managerial positions within that department such as the education officers, principals and head of curriculum (middle management). Moses (2000) notes that the type of questions that management relates to typically involves the inputs of the school system; the students, teachers, facilities and instructional materials. Management level information typically is week to week, month to month or annual and involves aggregates. Sack and Saidi (1997) identify some examples of annual decisions as those related to preparation of the recurrent budget, budget constraints, organization of the new school year, curricula changes, timetable changes, student performance, teacher performance and teacher recruitment. Some of these decisions have to be made in advance of the school year. Whilst many decisions are made by MOE staff, the principals or administrators of schools also contribute to the management level decision-making process. For example, principals are responsible for making certain decisions and reporting them to the District Education Office; their annual school budget, their annual teacher requirements, annual changes regarding resources, status of teachers regarding their monthly attendance or quarterly performance and student annual examination results. By enabling managers to obtain local information quickly and accurately, 'management information systems reduce ignorance and help the managers to make decisions that they, otherwise, may have been unwilling to make' (Blau, Falbe, McKinley, & Tracey, 1976; Child & Partridge, 1982; Dawson & McLoughlin, 1986, cited in Huber 1990, p. 56). However, in a study on the usefulness of computer-based information by managers, Kraemer, Danziger, Dunkle and King (1993) found that managers find computer-based information more

useful for controlling financial resources than for managing the operations of the organisation.

2.4.3 Operational Level

The Operational Level deals with the day to day operations of the schools, district education offices and the central ministry. Therefore, Operational Level decisions according to Sack and Saidi (1997) are decisions related to daily operations of these institutions. Decisions at that level, at the schools, are taken by the principal, teachers and other school administrative staff. This means that principals make both Management and Operational Level decisions. A teaching decision is a decision made during the execution of the professional responsibilities of the teacher (Sutcliffe and Whitield 1976). However, with school-based management the principals request the assistance of teachers to engage in school-level decisions that are not necessarily teaching decisions. This may be so because as stated by Conley (1991) teachers, as line professionals, are the only individuals who have direct and ongoing contact with the school system's primary clients; the students. From a study on teacher participation in school-decision making, Smylie (1992, p. 63) finds that 'teachers' willingness to participate in school decision-making is influenced primarily by their relationships with their principals'. Examples of operational decisions at the school level are related to student discipline, student and teacher daily attendance and punctuality, the purchase of school supplies and materials, in-class learning results and behaviours and staff leave. Therefore, some of the information required to make those decisions will include, incidences of student in-discipline, reasons for acts of indiscipline, background information on students, student lateness/absence and reasons, quantity of school supplies/materials needed, cost of supplies/materials, in-class behaviour and performance of students, and number of days teachers will be or are out on leave. Since the "business" of the education system is schooling, most of the information required to make management or policy decisions originate at the Operational Level, and that is mainly at the school level. Moses (2000, p. 48) notes that 'the school is the heart of an effective education information system'.

Whilst it is recognised that decisions have to be made at the various levels of the organisation, Feldman and March (1981) note that 'there are some perplexing behaviour patterns in organisations concerning the use of information in decision-

making; people gather information ostensibly for decisions but do not use it' (Feldman and March 1981, cited in Choo 1996, p. 336); people ask for reports but do not read them; individuals fight for the right to take part in decision processes, but then do not exercise that right. From my experiences working with principals in the Caribbean, these similar sentiments have been expressed by them concerning the MOE. Principals were of the view that the MOE requests data/information from them but they do not see what is being done with that information neither do they receive any feedback from the MOE concerning the use of the information. Similar findings were found by the OECS under the ECERP/EU/GTZ EMIS Initiative as previously mentioned in Chapter One. The OECS (1998) also notes that in response to these conditions many schools are reluctant to provide data to their Ministries.

2.5 Information Technology Use and Acceptance

In recent years, whether education systems are centralised or decentralised, democracy has encouraged more stakeholders to ask more questions about education (Moses 2000) and this has contributed to the increased demand for information and greater transparency in the decision-making process. Information technology has facilitated work processes and expanded the provision of information. According to Lewis, Agarwal and Sambamurthy (2003, p. 658) 'organizations increasingly depend on information technology for the execution of a variety of operational, tactical, and strategic processes'. Applegate et al (2003, cited in Reichgelt 2000, p. 126) defines information technology as 'the tools and techniques for gathering, manipulating, analysing and disseminating information'. Technology can indirectly increase the quality of managing the process of providing education, and positively influence the quality of education delivery (Konopka and Korrapati 2006). Lessen and Sorensen (2006) note that technology can help school administration by providing the tools for collecting and managing data, assessing learning, documenting activities, disseminating information and enhancing research productivity. However, it is not the single computer that enhances the educational service; it is the entire information sharing system with all elements of networking, software, hardware elements, and application used in the process that creates a common framework of operations (Konopka and Korrapati 2006). Liker, Haddad and Karlin (1999, p. 576) reminds us that 'whilst technology is ubiquitous, in many ways it makes our lives easier but in other ways it complicates our lives and simple tasks become complex'. For example,

the same computer that we use to store, process and analyse our important information, can cause us much grief if the computer file refuses to open. However, providing the technology does not guarantee the use of it. According to Orlikowski et al (1995, cited in Orlikowski 2000, p. 409), use of technology is strongly influenced by users' understandings of the properties and functionality of a technology, and these are strongly influenced by 'the images, descriptions, rhetoric, ideologies, and demonstrations presented by intermediaries such as vendors, champions, trainers, managers and power users'.

Venkatesh (2000) posits that, information technology acceptance and use is an issue that has received the attention of researchers and practitioners for over a decade. There are many factors which contribute to the use and acceptance of technologies in the workplace as identified by various researchers such as Lessen and Sorensen (2000), Zhao and Frank (2003), Lewis et al (2003), Lee, Kozar and Larsen (2003), Lederer, Maupin, Sena and Zhuang (2000), Venkatesh (2000), and Ma and Liu (2004). In this section I will discuss various factors which contribute to the use of technology in schools by first discussing the Technology Acceptance Model (TAM) followed by technology use and administration/management and finally the factors determining computer use by teachers.

2.5.1 Technology Acceptance Model (TAM)

According to Ma and Liu (2004) the Technology Acceptance Model (TAM) introduced by Davis (1986) is one of the most widely used models to explain user acceptance behaviour. Lederer et al (2000) note that Davis (1986) has shown that the TAM can explain the usage of information technology. "This model is grounded in social psychology theory in general and the Theory of Reasoned Action (TRA) in particular (Fishbein & Azje 1975). TRA asserts that, beliefs influence attitudes, which lead to intentions and therefore generate behaviour" (Ma and Liu 2004, p. 60). The TAM proposes that the two factors, perceived ease of use (PEOU) and perceived usefulness (PU) predict the acceptance and usage of information technology (Davis 1989, Lederer et al 2000, Ma and Liu 2004, Venkatesh 2000, Lee et al 2003). In other words, when users are presented with a new information system, these two specific factors influence their decisions in terms of how or when they will use the system. In their research, Lee et al (2003, p. 759) found that 74 studies on the TAM stated that

'PU is a strong determinant of Behaviour Intention', noting that users willingly use the system that has a critically useful functionality. In addition according to Davis et al (1992, cited in Lee et al 2003), PEOU was found to be a significant antecedent of PU, rather than a parallel, direct determinant of acceptance, and thus it can affect indirectly the acceptance through PU. This implies that the acceptance and use of the EMIS is dependent directly on its PU, however, the PU of the EMIS is dependent on its PEOU.

According to Venkatesh (2000, p. 344) 'perceived ease of use is the extent to which a person believes that using a technology will be free of effort'. 'Users may believe that a given application is useful, but they may, at the same time, believe that the technology is too hard to use and that the performance benefits of usage are outweighed by the effort of using the application' (Davis1989, p. 320). For example, if every time a user tries to log on the EMIS, the internet is down or if a user is unable to find certain menus or pages to enter specific information, then he/she will perceive the EMIS as not easy to use and may be discouraged from using it. Some examples of measurements for perceived ease of use include; 'easy to learn, clear and understandable, easy to become skilful, and flexible' (Davis 1989, Gefen and Straub 2000, cited in Ma and Liu 2004, p. 68).

Research by Lederer and Mendelow (1988, p. 529) on convincing top management of the strategic potential of information systems, notes that;

> "...many top managers lacked any involvement in MIS early in their careers because information technology was not widespread at that time and hence they had little or no contact with it when they worked at operating levels. Since information technology became widespread only after their promotions to positions of wide responsibility, many of these top managers do not realize the scope of the effect of information systems. They are simply not comfortable with computing and do not like this discomfort. Moreover, they are reluctant to gain the necessary knowledge. After all, they reached their current positions without it and they do not believe that it will further their careers." Lederer and Mendelow (1988, p. 529)

In other words, these top managers perceived the technology as not easy to use, and hence this affected their use of it.

Venkatesh (2000, p. 344) and Davis (1989, p. 320) define perceived usefulness as 'the extent to which a person believes that using a technology will enhance his/her productivity or performance'. Within an organizational context, people are generally reinforced for good performance by raises, promotions, bonuses, and other rewards (Pfeffer, 1982; Schein, 1980; Vroom, 1964, cited in Davis 1989, p. 320). Therefore, a system high in perceived usefulness, is one for which a user believes in the existence of a positive use-performance relationship. In other words, the user has a perception of how useful the technology is in performing his/her job, which if performed successfully can result in the receipt of rewards. Therefore, if the user perceives that the technology is not very useful, then he/she may be reluctant to use the technology or not use it at all. Davis (1989, p. 333) notes that 'although difficulty of use can discourage adoption of an otherwise useful system, no amount of ease of use can compensate for a system that does not perform a useful function'. Some examples of measurements for perceived usefulness include: 'work more quickly, improve job performance, increase productivity, makes job easier, and enhances effectiveness' (Davis 1989, cited in Ma and Liu 2004, p. 68). With the EMIS, the perceived usefulness for the users at the schools may not be the same for the users at the MOE. In addition, MOE officials cannot assume what principals or teachers perceive to be useful. Whilst the MOE may perceive the usefulness of the EMIS to include, decreasing the time to prepare attendance, exams and other reports, increasing the accuracy of information, providing easier retrieval of information and making quicker decisions, the school administration may not perceive these as useful to them.

2.5.2 Technology Use and Administration/Management

This section examines how management or administration can promote the use of technology. From their research on the sources of influence on beliefs about information technology, Lewis et al (2003, p. 669) note that 'top and local management commitment and support positively influences perceived usefulness of technology'. They explain that 'top management commitment and support shape individuals' beliefs that the technology is useful for work activities and that its use in the salient work activities will be normatively valued and instrumentally rewarded' (Purvis et al. 2001, cited in Lewis et al 2003, p. 661). Lewis et al (2003) also found a significant relationship between top and local management commitment and ease of

use of technology. They explain that the user believes that if management is committed to the use of technology, it can have a positive effect on the resource allocation which might help overcome obstacles in learning to use the technology through the availability of assistance which will pave the way for making technology easy to use.

Lessen and Sorensen (2000) share their experiences in ways in which an administrator can promote the integration of technology in schools, colleges and departments of education, whether for teaching and learning or for administration. Lessen and Sorensen (2006, p. 46) have identified four key actions that could be taken by the administrator namely: 'making the use of technology a priority; establishing a technological infrastructure; focusing on development and; creating training opportunities and support for students, faculty and staff'.

The principal or administrator is the school's leader and according to Lessen and Sorensen (2006, p. 46) 'it is the role of the leader to set the priorities for the staff, although these priorities may have been developed collaboratively with the staff'. These priorities should include the integration of technology in key aspects of the schools activities and life. They also note that the principal should be seen as not just a promoter but as a user of the technology and should set expectations for staff regarding the use of the technology, beginning with the hiring of new staff. However, the administrator or manager as a user of technology may not necessarily mean a hands-on user. According to Kraemer et al (1993, p. 142-143), from their research on the usefulness of computer-based information by managers, managers who are most satisfied with the usefulness of computer-based information are those who use support staff to mediate their computer-based information environment. That is, they use the expertise of their staff to use the technology to provide them with the analyses and information required. One possible explanation for this according to Kraemer et al (1993, p. 142-143) is that, 'direct hands-on use of computing requires time, expertise, and regular use but very few managers have the time, expertise, and motivation to develop and sustain this level of personal competency and involvement with computing'. School leaders may also endorse key staff members with some of the responsibilities of technology integration. Owen and Demb (2004, p. 644) refer to this as 'distributing leadership through champions'. Hilliard and Jackson (2011) note that

for the past decade many school leaders/administrators are using the distribution leadership model, which is a model which helps leaders/administrators of schools to encourage staff to share and coordinate activities at the school.

Secondly, Lessen and Sorensen (2006) explain that the administrator is responsible for creating an environment where the integration of technology is possible and that includes providing access to appropriate technological tools. For example, this means that for the EMIS, school staff should have access to the EMIS in their offices and staffrooms. Establishing a technological infrastructure also means providing adequate budgetary resources not just for technology acquisition but for maintenance (Lessen and Sorensen 2006). Whilst computers may be responsible for revolutionizing the way we do things, they can be very fragile and their maintenance is very expensive. According to the OECS (2000, p. 21), without proper maintenance of hardware and applications in order to ensure the reliability of the ICT systems, 'teachers and managers are unlikely to have confidence in the ICT infrastructure and, therefore, are unlikely to invest substantial time and talent in effecting the desired improvements and enhancements'. Lessen and Sorensen (2006) also note that creating an appropriate infrastructure means investing in adequate support personnel to coordinate all technology activity. This is the role of EMIS Coordinators in Secondary Schools who assist in the coordination of EMIS activities.

Thirdly, Lessen and Sorensen (2006, p. 48) note that administrators can focus on the development of their resource base by 'sourcing grants and resources, raising funds and developing partnerships with other schools or organisations, in order to support technological initiatives'. This is especially important for developing countries like St. Lucia where financial resources are scarce.

Finally, Lessen and Sorensen (2006) note that administration should ensure the provision of training and support in order to develop successful and effective users of technology. The training identified by them could be in the form of one-on-one sessions, small group workshops or peer training where, for example, one staff member who have received training can pass on similar training to colleagues. Lessen and Sorensen note that the strategies used in training are very important in conveying the message that technology is a tool, not a topic. This means that the learner should

be learning about how to use the technology to facilitate his/her work and not learning the technology itself.

2.5.3 Factors Determining the Degree of Computer Use by Teachers

This section draws from the research by Zhao and Frank (2003) on using an ecological perspective to explain the factors affecting technology uses by teachers in schools. The 'uses' comprise two categories; uses for students (teaching and learning) and uses for teachers (professional or personal uses) which include the use in performing administrative tasks. According to Zhao and Frank (2003) two factors ultimately determine the degree and types of computer use by teachers: (a) the nature of the uses, and (b) the result of the teacher's analysis of the uses, whilst all other factors contribute to these two. They claim that most factors do not directly influence technology uses in a linear fashion, but rather their influence is mediated by teachers' perceptions. For example, training and support is considered to indirectly influence technology use because the teacher will first perceive the training and support to be adequate or inadequate to facilitate ease of use before using or not using the technology. As a result, the factors chosen to conduct the research by Zhao and Frank (2003) were those that highlighted the practices that may affect teachers' perceptions. Zhao and Frank (2003) found four teacher-level factors that promote patterns of computer use in schools. These are further discussed below.

(1) Leveraging Change Through the Social Context

According to Dawkins (1989, cited in Zhao and Frank 2003, p. 814) 'successful ideas have three qualities; longevity, fecundity, and copy fidelity'. In terms of computer uses in schools, the longevity of a particular practice with the computer refers to how long the practice is sustained because uses that last longer have a better chance of being imitated by others (Zhao and Frank 2003). In order words, they claim that when a certain use is championed by one teacher over a long period of time or promoted through sustained professional development efforts, it is more likely to survive. With reference to the EMIS, if one or more teachers are successfully using the system over a long period of time or if sustained professional development is provided for the staff in its use, it is more likely to survive. Other teachers will have a positive perception of the EMIS and will be motivated to use it. On the other hand, if the EMIS is not used regularly there is a great chance of it being abandoned. The fecundity of computer

technology uses, refer to the capacity of some uses to spread more quickly than others and thus this can help understand which types of uses should be introduced to more teachers and which uses are more likely to endure (Zhao and Frank 2003). Understanding which uses are more likely to be used by teachers can also provide administration with valuable information in terms of what areas to focus training on, in order to encourage teachers to use other parts of the system. If most teachers use the attendance capability of the EMIS then chances are this use will most likely endure. Therefore, administration can focus on providing sustained training in the examination capability since it is also a requirement that teachers use this functionality. Zhao and Frank (2003) thus conclude that in schools where teachers have more opportunity to work together with computers, we may see computers used more often.

Zhao and Frank (2003) also note that by giving teachers opportunities to help one another and to interact, schools may be able to increase the overall level of technology use. This is similar to the peer training strategy identified by Lessen and Sorensen (2006). However, Zhao and Frank (2003) warns of the danger that if help is most important when coming from a colleague, it means that teachers with few computer-savvy colleagues may not be able to access the kind of help they need to make fuller use of computers. They further note that change agents should be highly aware of the social structures and the school cultures in which they operate and should deliberately address shortcomings and pitfalls.

(2) Providing Opportunities to Explore and Learn
At the secondary schools, the maximum number of periods per day is eight. From my experiences as a secondary school teacher, about 6 or 7 of those periods are teaching periods. This is in line with the MOE's policy on the daily or weekly teaching load of about 85%. As a result, a teacher would only remain one or two non-teaching periods to attend to other school related duties such as, correcting students' work, planning lessons and assisting students. The teacher is practically left with little or no time to explore and learn new technologies during school time. Zhao and Frank (2003, p. 832) therefore, advocate for change agents to provide opportunities for teachers to explore and learn about new technologies such as allowing teachers 'release time' to engage in technology.

(3) Training and Socialization

Whilst Zhao and Frank (2003) support the provision of training opportunities to teachers, they also note that training opportunities may have little effect on computer use by most teachers. Instead, they explain that it is more likely that teachers are socialized by other teachers to change their beliefs regarding the value of computer technology. Therefore, as earlier indicated, opportunities to socialize and learn new technologies in order to learn from each other should be given to teachers.

(4) Recruitment and Selection

During the recruitment or hiring of new staff, the principal and other persons responsible for the selection should determine and consider the adaptability of the applicant to computer technologies. Based on the results of their research, Zhao and Frank (2003) found that teacher job locations such as grade and subject, as well as the extent to which computers complement the teaching style were important predictors of computer usage. This means that in order to have a teacher or other employee on staff with these desired characteristics one should capitalise on the recruitment or hiring process. Not only should available positions be advertised with the desired characteristics but applicants should be able to convince interviewers of their capabilities in the use of computers. Therefore, Zhao and Frank (2003, p. 832) support the notion that a 'clear policy on the adaptability of the applicant to computer technologies' should be considered during the recruitment process.

2.6 Managing Change

Using the EMIS fully means a change from the manual system of managing information to an electronic one, which involves a total transformation in the way in which information is managed and used at the school. It also involves a transformation in the way in which information is collected from the schools by the MOE. According to Barnett & Carroll (1995, p. 219) 'organisational change involves a transformation of an organisation between two points in time'. In the case of the EMIS, this change or transformation would occur during the period before the EMIS was implemented and after the EMIS was implemented. Barnett & Carroll (1995) note that it is important to evaluate both the content (what was changed) and process (the way the transformation occurred) of change. To evaluate the content of change

regarding the EMIS one needs to consider changes such as, change in personnel, routine, resources and reports, whilst to evaluate the process of change one needs to consider the steps involved in changing the content.

However, for change to take place there must be a need for it. Staudenmayer, Tyre and Perlow (2002, p. 584) note that 'repeated performance of an organizational task leads to routine, efficiency, and eventually complacency but unexpected problems, however, reveal weaknesses in established strategies and processes, and thus provoke reevaluation, adaptation and change'. In other words, if no problems occur in the way information is managed at the school level, there will be no need or motivation for a change and the status quo will remain. Many times innovations at the school level are not put into practice and according to Dooley (1999) it's because teachers and administrators see minimal gains and much loss in the changes that are proposed and the result is that innovations will not be well received by teachers due to conflict with firmly entrenched traditions.

Dooley (1999, p. 39) posits that it is the role of the Principal to lead the change process and that 'administrators who share the vision, support venturesome methods and act as change agents will help facilitate change in traditions, beliefs and attitudes towards innovations'. However, Ahn, Adamson and Dornbusch (2004, p. 115) note that 'resistance to change is inevitable, whether overtly or covertly' and it is the role of the leader to manage this resistance. Benjamin and Levinson (1993) note that IT-enabled change processes are different from more general change processes and they create unique issues for managers, for example, managers must know how to integrate the technology, business processes and organization in order to achieve the goals they expect with the technology. This entails training and re-training of staff to possess the knowledge and skills required for the change process. Benjamin and Levinson (1993, p. 26) further identify eight principles that managers or administrators need to consider as they make IT-enabled changes: (1) develop a systematic process for change; (2) manage equilibrium and mutual adaptation of organization, technology and business process; (3) determine whether there is enough energy for change; (4) analyze the size of the change effort; (5) analyze and manage stakeholder commitment; (6) major change requires a champion; (7) prototype organizational response and; (8) build change reviews into management process. These eight

principles which are briefly discussed below can relate to the change from a manual system of managing information to an electronic system through the EMIS.

Develop a Systematic Process for Change

Benjamin and Levinson (1993, p. 24) support 'time-based process models' at each stage of the change process. According to them, these models describe the change process overtime from present state to a vision that energizes motion to the future because it appeals directly to the needs of people. They further note that managing the transition from present to future state requires planning, implementing and institutionalizing tasks. Therefore, if there is no vision, chances are there will be no future state.

Manage Equilibrium and Mutual Adaptation of Organization, Technology and Business Process

According to Benjamin and Levinson (1993) change managers need to understand how organizational elements will change and what actions and resources are required to bring them back into equilibrium. In other words, they note that the change process must focus on what must change, in the areas of technology, business process, and organization and culture. The use of the EMIS is characterized by a change in the way information is managed at the school. If there is a change to a fully electronic system of management, to restore equilibrium, the change in the work processes will have to be supported by corresponding new technology and organizational and cultural changes.

Determine Whether there is Enough Energy for Change

An important part of the planning process for change is determining whether the 'energy for change' can be mobilized (Benjamin and Levinson 1993, p. 29). In other words, this refers to how well the change manager can mobilize stakeholders in support of the change. To be successful, the change must be supported by a critical mass of stakeholders. If there is resistance, change managers must work to stop it.

Analyze the Size of the Change Effort

Analyzing the size of the change required will determine the amount of effort needed. The energy required for a paradigm change for example is substantially higher than

for an incremental change. If the change manager is aware of the size of the change effort he or she can lower the risk of large change efforts by pursuing it in several steps as this may be the only practical way to make the change (Benjamin and Levinson 1993).

Analyze and Manage Stakeholder Commitment

During the change process provisions should be made to analyze the commitment of stakeholders. In the EMIS project, there are a number of stakeholders including the MOE personnel, the internet service providers and staff of the school. According to Benjamin and Levinson (1993) stakeholder analysis provides useful information such as, determining whether the organization can develop the commitment necessary for change, identifying each critical change component and the key stakeholder groups involved, assessing potential resistance and developing plans to overcome it.

Major Change Requires a Champion

Benjamin and Levinson (1993) note that it is recognized by practitioners and academics that it is highly risky to attempt complex change without a champion. They further note that whilst there may be more than one champion, the role of the champion includes: providing funding and other key resources; provide advocacy for funding and other key resources in the organization's commitment processes and; influence critical stakeholder groups through direct accountability, acquired power or perceived authority.

Prototype Organizational Response

According to Benjamin and Levinson (1993, p. 32) 'organizational prototyping' is an important way to ensure that adaptations required for change are well understood. They further add that they are not designed to test the technical capability of the system but rather to test the organization's response to the process and technology being introduced.

Build Change Reviews into Management Process

Benjamin and Levinson (1993) note that any organization making a large IT-enabled change must periodically review the whole process and this review can take the form

of stakeholder analysis. Such reviews can be built into the organization's management process.

This model of the change process can be useful to adopt when changing from a manual to an electronic EMIS for two main reasons. Firstly, the model integrates the three critical components needed for the implementation of the EMIS; the technology, the work processes and the organization. It is clear that management and use of the EMIS does not only involve the technology but according to Wako (2003, p. 9) 'quality management and leadership of the EMIS involves the organizations work processes', the equipment, the people and the relationship between the EMIS as a centre of information and its users. Secondly the use of the EMIS involves wide stakeholder support and participation which is also supported by the model. The key stakeholders include policy makers and technical support staff at the Ministry of Education, principals and teachers of the schools, internet service providers, other secondary schools, the software vendor and support organizations.

2.7 Education in Small Developing States

Caribbean countries, including St. Lucia, are among the world's small states and developing countries. Small states are defined as countries with population sizes of less than 1.5 million people (Louisy 2001, Atchoarena 1993, Crossley & Holmes 2001, Bray 1989). According to Atchoarena (1993, p. 17) 'small size often ends up being associated with concepts of dependence, vulnerability, viability or even isolation' and this vulnerability is a result of their weak capacity to resist external influences whether they be cultural or economic. The Commonwealth Secretariat (1986, p. 5-6 cited in Bray and Hui 1989, p. 129-130) note that 'The style of educational development... is too frequently modelled on what is appropriate and fashionable in large states. Small countries are not simply a scaled-down version of large countries. They have an ecology of their own.'

One of the important achievements of most small states, including St. Lucia, is the provision of universal primary education (Atchoarena 1993). Although most Caribbean countries including, St. Lucia, have achieved universal secondary education, Ministries of Education have to deal with high unit costs, due to the curriculum options being provided including, science and technology as well as

technical and vocational education. In St. Lucia, although these curriculum options are limited, they do contribute significantly to the overall education expenditure. Lewin and Caillods (2001) are right by noting that the costs of providing expensive options in the curriculum of secondary schools have to be constrained to levels that allow higher rates of participation. However, small states run into the greatest difficulty at the level of post-secondary education since the number of potential students is often incompatible with the creation of a university and this encourages emigration by young people wanting to pursue studies (Atchoarena 1993).

Small states have many developmental challenges and vulnerabilities which affect the education sector including; extreme dependence on the outside world; the absence of economies of scale; the significance of emigration; the small labour market; vulnerability to natural disasters (Atchoarena 1993) and; limited manpower and institutional capacity (Louisy 2001). In addition, 'these countries face very stiff challenges of economic and social development and significant threats of greater marginalisation from the mainstream of global economic activity' (Louisy 2001, p. 429). These challenges, as they affect the education sector, are further discussed below.

Extreme Dependence on the Outside World

Developing countries, including those of the Caribbean such as St. Lucia, are very dependent on external aid because of their inability to meet all their financial needs. These states are heavily dependent on financial aid from regional and international agencies such as the European Union, Caribbean Development Bank (CDB) and the World Bank for their educational development. Their current dependence on external aid has its linkage in the past (colonial era) and has perpetuated itself over the years even after the independence of these countries, which is related to the past and present reliance on the export of agricultural products for their economic development (Chitolie-Joseph 2008). According to Watson (1994, p. 85) 'not only did colonial powers leave behind a legacy of government, administration and education', which in many cases has continued into one of dependency, but also Western thinking, especially from multilateral and bilateral aid agencies, has continued to influence educational thinking. St. Lucia, in the past, has taken huge loans from the CDB and World Bank for many of its critical education projects; for example, the realization of

Universal Secondary Education and the EMIS project were both funded mainly from a grant from DFID and a loan from The World Bank. The Ministry of Education is currently implementing the Basic Education Enhancement Project (BEEP) from a CDB loan. This project entails the rehabilitation of schools and improving the quality, efficiency and effectiveness of education. The MOE is also implementing an Information Communication Technology project from an EU grant. Whilst funds are borrowed for the implementation of these projects there is always a dearth of resources for monitoring, evaluation, sustainability and maintenance.

The extreme dependence on the outside world is linked to the openness and volatility of the economies of small states. St. Lucia, for example, depends mainly on the outside world for the export of goods and services for its economic development. Any negative changes in consumption patterns, policies or events in these outside countries can negatively impact the economy of St. Lucia. The European Union under the Lomé[1] Convention gave preferential treatment to the Caribbean islands for the export of their commodities which included bananas, sugar, rum and rice (Wiley 2008). However, with the establishment of the World Trade Organisation (WTO) in 1995 and new regulations regarding trade liberalisation, the Windward Islands lost their preferential trade arrangements for bananas, their 'engines of growth', in the early 2000s. This loss has negatively impacted St. Lucia's economy and created poverty among many farming communities. Similarly, the attack on the World Trade Centre in 2001 negatively impacted the tourism industry; one of the greatest revenue earners for St. Lucia.

But dependence is not measured only in terms of financial terms; it is also expressed through the capacities of small states to conduct research. The lack of a strong resource base for local research in St. Lucia causes educators to depend on research done by developed countries, the recommendations of which can be expensive to implement. According to Louisy (2001, p. 430) the 'small states of the Caribbean have limited institutional capacity at the national level to carry out the research needed in respect of issues Caribbean, hemispheric and global'. Crossley and Holmes

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[1] The Lomé Convention which came into effect in 1975 guaranteed African, Pacific and Caribbean countries (former colonies of Britain) preferential access to EU markets for selected exports (Wiley 2008, p. 148).

(2001) are right in noting that the case for small states to strengthen their research capacity and build research partnerships is therefore strong; but ways in which this might be achieved have yet to be fully and critically explored. Maybe our research need not only be what Holmes and Crossley (2004, p. 207) refer to as 'western orientated educational research' but according to them, can include more informal but nevertheless intellectual, activities such as the work of the Storyteller and the Calypsonian.

The Absence of Economies of Scale

In small states there is difficulty in securing economies of scale to provide specialist higher education (Commonwealth Secretariat 1986: 5-6, cited in Bray and Hui 1989). This is because of the small numbers of persons involved and the low demand for such skills by the small labour market. Atchoarena (1993, p. 38) further adds that the 'distribution of investment or fixed costs over a small enrolment inevitably leads to an increase in unit cost'. Professional structures are less well developed and the rate of utilization of very specialized skill is low (Atchoarena 1993). Most times it may be more economical to bring in manpower from other countries. The absence of trained persons in St. Lucia in the area of information systems development has led the Ministry of Education to purchase the EMIS software from a vendor in Canada.

The Significance of Emigration

The demography of small states is characterised by a high rate of emigration, the reasons for which include the attraction of higher income (Atchoarena 1993) and tertiary education opportunities. In St. Lucia, the professions with the greatest migration cases due to higher income have been trained teachers, nurses and policemen. As Atchoarena (1993, p. 39) points out, the relationship between international migration and development has been a net loss for the countries or a 'brain drain'. It then becomes very costly for the country to provide replacement training. Migration in St. Lucia also results from persons seeking to pursue tertiary level education due to the limited access to tertiary programmes in the country. Although distance education such as online learning is an option, many persons are still of the view that face-to-face programmes are better, and in addition, many programmes are not offered via online learning.

The establishment of the CARICOM Single Market and Economy (CSME) has legitimized the movement of persons within the CARICOM countries. Whilst some persons are of the view that such movement will continue to contribute to the brain drain, others believe that the free movement will create a balancing act, where immigration will balance out emigration.

The Small Labour Market, Limited Manpower and Institutional Capacity

As a result of the small labour market in small states, there is 'less differentiation of the economy, professional structures are less well developed and the rate of utilisation of very specialised skills is low' (Atchoarena 1993, p. 39). Bray and Hui (1989, p. 130) also note that in small states, there is a limited number of trained personnel and hence 'there is a need for educational administrators and other personnel to be more versatile than their counterparts in large countries'. For example, teachers of secondary schools are expected to be able to teach more than one subject. Likewise, it becomes a great added benefit to schools if teachers have additional general skills in information technology since these specialists are not only rare but expensive to employ in schools.

The World Bank (2002) notes that small states confront a unique set of challenges in their efforts to develop the skilled human resources needed to support their economic growth and social development: firstly, small states can rarely marshal sufficient resources to establish and sustain even one national university; secondly small economies cannot absorb many graduates, resulting in high graduate unemployment and significant brain drain and; thirdly, small states frequently lack suitably trained nationals who can teach the basic range of university disciplines and therefore, the expensive option of international recruitment must be considered.

Vulnerability to Natural Disasters

St. Lucia is located in the hurricane belt and is thus prone to hurricanes during the Atlantic Hurricane Season; June to November. In the past, hurricanes and storms, such as, Hurricane Allen in 1980, Tropical Storm Debby in 1994 and more recently Hurricane Tomas in 2010, have caused considerable damage to school buildings and equipment such as computers, as a result of strong winds, landslides and flooding. According to Atchoarena (1993, p. 42), 'education is a sector highly exposed to

natural disasters, since it operates a relatively dense network of buildings' which are also used as hurricane shelters. To equip small countries with school buildings protected against natural disasters means to make an additional financial effort (Atchoarena 1993) which these countries cannot make due to the lack of financial resources. The school buildings, equipment and furniture are not insured due to the lack of financial resources, and so the MOE cannot recover the cost of any damages or loss. Moreover, the MOE has difficulty in repairing or replacing damaged and destroyed buildings, equipment and furniture. For example, the Ministry of Education has estimated the damages due to Hurricane Tomas to be in excess of EC$7 million; an amount that the Government of St. Lucia has not been able to provide.

Threats of Greater Marginalisation from Globalisation

The term globalization refers to the 'intensification of global interconnectedness' (Schech and Haggis 2000, p. 58) as well as to 'innovations in technologies of communication and transportation which are reconfiguring social relationships in terms of space, time and speed' (McGrew 1992, Robins 1997 and Tomlinson 1997, cited in Schech and Haggis 2000, p. 58). The EMIS used in secondary schools in St. Lucia was developed in Canada and is being used in many schools in the United States and Canada. This is an example of what Taylor (2005, p. 1029) meant when he noted that 'the world is going through a swift process of globalisation and homogenisation' whereby states and corporations are converging in the direction of an eventual seamless world of related organisational patterns of 'best practices'. According to Ghosh (1987, p. 35) 'borrowing technology from the West is unavoidable', but it is also desirable if Third World countries are to take advantage of advances in science and technology for developmental needs. However, using an EMIS that was developed and being used by more developed countries begs the question of the suitability of such a system in meeting our local developing needs. Additionally, another question which may be asked is how sustainable is this EMIS when the MOE, with its limited resources, have to maintain the hardware, software and network involved, as well as provide continuous training to staff in its use.

Ghosh (1987, p. 35) notes that in spite of the attention given to the concept of development in the last three decades, the gap between 'North' and 'South' has been widening and the gap is more than economic; it is a knowledge and a power gap.

Weiss (1998, cited in Taylor 2005, p. 1030) may be right by arguing that 'rather than convergence, variance is occurring with different states possessing different capacities and capabilities to adapt'. This means that globalisation is creating a greater divide between developed and developing countries rather than erasing the boundaries. Hence, whilst globalisation may contribute to increasing the overall incomes of some countries, according to Levitt (2005, p. 327), it 'may put development in suspense if not in regression for developing countries'. She argues that developing countries are without an effective voice in the making and implementation of the rules governing the global economy. Hence, 'the opportunities and rewards of globalisation spread unequally and inequitably, concentrating power and wealth in a select group of people, nations and corporations, while marginalising the others' (Yang 2003, p. 272).

Chapter 3 Theoretical Framework

3.1 Introduction

In Chapter one, I discussed the experiences of the education system in St. Lucia with different EMIS systems. However, extensive use has never been made of any one system. In this research, my aim is to investigate how the Maplewood EMIS is being used at one secondary school and what is required to facilitate its use. A number of research questions have emerged from this goal which requires me to study the interactions, actions and engagements of EMIS users at the school. My aim in this research is not to test theory but instead to generate theory from my field work on the use of the EMIS in secondary schools. Thus, this research will be guided largely by the principles of grounded theory. This approach is supported by Creswell (1998, cited in Kezar 2005) as he notes that both case study and grounded theory are applied to the study of a phenomenon when it is important for the researcher to study people's interactions, actions and engagements in a process. In addition, according to Thomas and James (2007, p. 118) 'grounded theory methods are now among the most influential and widely used modes of carrying out qualitative research when generating theory is the researcher's principal aim'.

 In this Chapter, I explain the grounded theory approach which sets the framework for my data collection, analysis and theory generation in order to explain the use of the EMIS. In particular, I will explain what grounded theory is and discuss some of its procedures and principles that are used in this research. Specifically for this research, I will be using a constructivist grounded theory approach which according to Charmaz (2005, p. 509) 'adopts grounded theory guidelines as tools but does not subscribe to the objectivist assumptions in its earlier forms'. I have chosen this approach, since similar to Charmaz (2005) I maintain a view that one's knowledge, values and prior experience contribute to the research outcomes. Therefore, in the final section of this Chapter, I will explore the constructivist grounded theory approach which according to Charmaz (2005, p. 510) fosters 'integrating a subjective experience with social conditions in our analysis'.

3.2 Grounded Theory

Grounded theory methods which were first described by Glaser and Strauss (1967), have become by far the most widely used framework for analyzing qualitative data (Bryman 2008, Thomas and James 2006). According to Strauss and Corbin (1990 p. 5) 'grounded theory derives its theoretical underpinnings from Pragmatism (Dewey, 1925; Mead, 1934) and Symbolic Interactionism (Park and Burgess, 1921; Thomas and Znaniecki, 1918; Hughes, 1971; Blumer, 1969)' and though one need not subscribe to these philosophical and sociological orientations to use the method, two important principles drawn from them are built into grounded theory. Firstly, according to Strauss and Corbin (1990 p. 5), since phenomena are not conceived of as static but as continually changing in response to evolving conditions, an important component of the method is to 'build change, through process, into the method'. Secondly, they note that strict determinism is rejected, as is non-determinism; Actors are seen as having, though not always utilizing the means of controlling their destinies by their responses to conditions to make choices according to their perceptions, which are often accurate, about the options they encounter.

Strauss and Corbin (1998, p. 12) explains that grounded theory means

> "...theory that was derived from data, systematically gathered and analyzed through the research process...A researcher does not begin a project with a preconceived theory in mind (unless his or her purpose is to elaborate and extend existing theory). Rather, the researcher begins with an area of study and allows the theory to emerge from the data. Theory derived from data is more likely to resemble the 'reality' than is theory derived by putting together a series of concepts based on experience or solely through speculation (how one thinks things ought to work)." Strauss and Corbin (1998, p. 12)

Glaser (1978; 1992) and Strauss & Corbin (1998) explain that the uniqueness of the grounded theory approach lies in two elements: firstly, theory is based on patterns found in empirical data, not from inferences, prejudices or the association of ideas and; secondly, there is constant comparison between emergent theory and new data until the researcher feels that theoretical saturation (the point of diminishing returns from any new analysis) has been reached (cited in Gasson 2004). The latter is very important to my research as it will serve to guide my observations, interactions and

other data collection methods during my field visits as well as the data analysis process.

Essentially, grounded theory methods consists of 'systematic inductive guidelines for collecting and analysing data' (Bruce 2007, p. 58), in that issues of importance to participants emerge from the stories that they tell (Mills, Bonner and Francis 2006). Charmaz (2005, p. 507) sees grounded theory as 'a set of flexible analytic guidelines that enable researchers to focus their data collection and to build inductive theories through successive levels of data analysis and conceptual development'. In this research I try to allow theory to emerge from the data as I continuously analyse my data by developing themes. According to Patton (1980, p. 306 cited in Bowen 2006, p. 13) inductive analysis means that the 'patterns, themes, and categories of analysis come from the data; they emerge out of the data rather than being imposed on them prior to data collection and analysis'. These themes and categories are the results of data coding, one of the most central processes in grounded theory, (Bryman 2008) which is further discussed in the next section.

Charmaz (2005, p. 508) posits that a grounded theory approach encourages researchers to 'remain close to their studied worlds'. This closeness to the research site encourages the collection of empirical data through methods such as first hand observations. Donavan (1995, p. 710) further supports this view as he alludes to the close involvement and direct contact with the empirical world as necessary for the 'emergent of theory' when using grounded theory. Sitter et al (1997, cited in Leonard and McAdam 2001, p. 182) also support this direct contact or interaction with the real world by noting that 'grounded theory uses abstract concepts to describe and analyse a series of general phenomena', but is based on practical experience. This research, makes use of the concept of 'remaining close to the studied world' through regular visits to the research site. The grounded theory theoretical framework supports the ethnography methodology used for this research which is discussed in the next Chapter.

3.2.1 Procedures and Principles of Grounded Theory
Witz (2007, p. 249) notes that the critical characteristic of grounded theory-type research is that 'the researcher is faced with a large amount of relatively

uncategorised data and wants to discover aspects in these data that indicate structuring or organization or some kind of stable aspect that is inherent in the object studied'. According to Corbin and Strauss (1990), in conducting research using grounded theory, certain procedures and principles must be taken seriously, otherwise researchers may end up claiming to have used grounded theory approach when they have used some of its procedures or have used them incorrectly. However, whilst grounded theory has specific procedures for data collection and analysis, there is 'flexibility and latitude within limits' (Corbin and Strauss 1990, p. 6). In other words, a variant of grounded theory approach can be used as long as one does not stretch these limits too far. I have thus used a grounded theory approach but with some variations to the procedures and principles. I have categorised the procedures and principles used in this research under four main headings: data collection techniques, sampling, coding and data analysis. The discussion on the constructivist grounded theory will also show the variations in the grounded theory approach.

Data Collection Techniques – According to Corbin and Strauss (1990), as in other qualitative approaches, the data for a grounded theory can come from various sources including interviews and observations as well as such other sources as government documents, video tapes, newspapers, letters, and books - anything that may shed light on questions under study. Each of these sources can be coded in the same way as interviews or observations (Glaser and Strauss 1967). Intensive interviewing permits an 'in-depth exploration of a particular topic and goes beneath the surface of ordinary conversation' (Charmaz 2006, p. 25) in that, the participant is asked to describe and reflect upon his or her experiences in ways that seldom occur in everyday life. This implies that the researcher should be an avid listener and encourage the participant to express him/herself freely. In this research, I further tried to make the participants feel comfortable by not using formal words such as interview but using more local and cultural phrases such as "chat". This is what DeWalt and DeWalt (2002, p. 4) refer to when they posit that the key elements of the method of participant observation as used by anthropologists include, 'using everyday conversation' as an interview technique and learning and using local language and dialect.

According to Corbin and Strauss (1990, p. 6) 'data collection and analysis are interrelated processes' and that analysis begins as soon as the first bit of data is

collected. They continue by adding that the carrying out of procedures of data collection and analysis systematically and sequentially enables the research process to capture all potentially relevant aspects of the topic as soon as they are perceived. Hallberg (2006, pg. 144) notes that data collection continues until so called 'theoretical saturation' is reached which means that new data does not add new information.

Theoretical Sampling in Grounded Theory – The sampling referred to in grounded theory is explained by Corbin and Strauss (1990) in terms of concepts, their properties, dimensions and variations; for example, in carrying out my research on the EMIS I would not be sampling administrative staff but I would be sampling the incidents, events and happenings that denote the use of the EMIS. In that regard, the researcher would vary or contrast the conditions in which data is collected as methodically as possible in order to determine what has an impact on the phenomenon in question (Corbin and Strauss 1990). For this research, I chose to vary or contrast my visits based on the time of day (morning or afternoon), the period of the month (beginning or end) and an event at the school (for example during exams or attendance) in order to obtain varying uses of the EMIS. Glaser and Strauss (1967, p. 45) define theoretical sampling as 'the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyzes his/her data and decides what data to collect next and where to find them, in order to develop his theory as it emerges.' Hallberg (2006) supports this definition by noting that theoretical sampling means that the emerging results direct in which direction to go and what questions to ask in order to saturate each emerging category or concept. According to Corbin and Strauss (1990, p. 9), it is by theoretical sampling that representativeness and consistency are achieved and that 'representativeness of concepts, not of persons, is crucial'.

Coding in Grounded Theory – Corbin and Strauss (1990) posit that in grounded theory coding is the fundamental analytic process used by the researcher and identify three basic types of coding: open, axial and selective. Bryman (2008) notes that these three types of coding are different levels of coding and each relates to a different point in the elaboration of categories in grounded theory. The concept of coding was extremely useful to my study especially as I tried to analyse numerous pages of field

notes, line by line, whilst at the same time trying to determine what follow-up questions might be needed before theoretical saturation was reached.

In open coding, events/actions/interactions are compared with others for similarities and differences and are given labels so that conceptually similar events/actions and interactions are grouped together to form categories and subcategories (Corbin and Strauss 1990). According to Gasson (2004) coding starts with a vague understanding of the sorts of categories that might be relevant. Hallberg (2006) reminds us that every category must earn its way into the analysis; that is it must be grounded in the data rather than being generated from the researcher's own preconceptions. Glaser (1978, p. 57) provides three questions that can be used in generating open codes: (1) 'What is this data a study of?'; (2) 'What category does this incident indicate?' and (3) 'What is actually happening in the data?' 'Open coding stimulates generative and comparative questions to guide the researcher upon return to the field' (Corbin and Strauss 1990, p. 12).

Corbin and Strauss (1990, p. 13) posit that in axial coding, 'categories are related to their subcategories and the relationships between them tested against data' as well as further development of categories takes place and one continues to look for indications of them. Bryman (2008) notes that axial coding is done by linking codes to contexts, to consequences, to patterns of interaction, and to causes. This can be done by asking the questions 'who, when, where, why, how and with what consequences' (Strauss & Corbin 2008, p. 71) or using the six "C's"; causes, contexts, contingencies, consequences, co-variances and conditions (Glaser 1978, p. 74). Strauss and Corbin (2008, p. 69) see the asking of questions as a tool that is useful at every stage of analysis, from the beginning to the final writing, since it enables the researcher to probe, develop provisional answers, think 'outside the box' and become acquainted with the data. Gasson (2004, p. 83) notes that the use of 'theoretical memos' can be useful in axial coding. Glaser (1978, p. 83) describes theoretical memos as the 'theorizing write-up of ideas about codes and their relationships as they strike the researcher while coding'. Detailed memo-writing during the entire analysis process requires 'writing down ideas, assumed associations, and theoretical reflections related to each of the emerging categories' (Hallberg 2006, p. 144).

The third type of coding, selective coding, is described by Corbin and Strauss (1990, p. 14) as the 'process by which all categories are unified around a core category, and categories that need further explication are filled-in with descriptive detail'. They further add that the core category represents the central phenomenon of the study and is identified by asking questions such as: "What is the main analytic idea presented in this research? If my findings are to be conceptualized in a few sentences, what do I say? What does all the action/interaction seem to be about? How can I explain the variation that I see between and among the categories?" Goulding (2005) notes that the core category should have theoretical significance and should be traceable back through the data.

Data Analysis – The analysis of data in grounded theory uses the three types of coding earlier discussed. Corbin and Strauss (1990, p. 9) note that the 'concepts' are the basic units of analysis, from which categories are derived followed by arriving at core categories and then theory. Constant comparison is made during the analysis process. The researcher analyses data by constant comparison, initially of data with data, progressing to comparisons between their interpretations translated into codes and categories and more data (Mills et al 2006). According to Corbin and Strauss (1990, p. 13) if the researcher does not alternately collect and analyze data, there will be 'gaps in the theory', because analysis directs what one focuses on during interviews and observations. Charmaz (2005) explains that each piece of data, whether an interview, a field note, a case study, a personal account, or a document, can inform earlier data and should a researcher discover a lead through developing a code in one interview, he or she can go back through earlier interviews and take a fresh look as to whether this code sheds light on earlier data. Gasson (2004) explains that the researcher must continually ask whether the analysis of new data provides similar themes and categories to previous data or whether other patterns emerge. She continues by adding that as analysis proceeds, new themes and relationships emerge and the researcher will find himself/herself recoding earlier data and reconceptualising relationships between data elements.

In order for a theory to have explanatory power, each of its categories and subcategories must have conceptual density and if this is lacking the researcher must return to the field or to the field notes to obtain data that will allow gaps in the theory

to be filled (Corbin and Strauss 1990). Corbin and Strauss (1990) make clear that the analysis of a setting must not be restricted only to the conditions that bear immediately on the phenomenon of central interest but broader conditions affecting the phenomenon may include economic conditions, cultural values, political trends and social movements which should be integrated into the theory to show specific linkages between conditions, actions and consequences.

The analysis process continues until theoretical saturation is reached or as Gasson (2004) puts it grounded theory closure is guided by the concept of saturation; theoretical saturation is reached when diminishing returns from each new analysis mean that no new themes, categories or relationships are emerging and the new data confirm findings from previous data. The concept of saturation will thus guide the length of time I will spend in the field. Strauss and Corbin (1998, p. 212 cited in Bryman 2008 p. 416) highlights three indicators of theoretical saturation: "(a) no new or relevant data seem to be emerging regarding a category; (b) the category is well developed in terms of its properties and dimensions, demonstrating variation and; (c) the relationships among categories are well established and validated."

3.3 Constructivist Grounded Theory

For this research, I will specifically be using a constructivist grounded theory approach. Constructivism is a research paradigm that 'denies the existence of an objective reality, asserting instead that realities are social constructions of the mind' and that 'there exist as many such constructions as there are individuals, although many constructions will be shared' (Guba & Lincoln 1989, p. 43, cited in Mills et al 2006, p. 26). Mills et al (2006) also note that we do not quickly reach any sort of conclusion about our own view of the nature of truth and reality but we are all influenced by our history and cultural context, which in turn shape our view of the world, the forces of creation and meaning of truth. It is this relativist ontological position that I hold, which has led me to choose a constructivist grounded theory approach. According to Charmaz (2005) the two originators of grounded theory, Glaser and Strauss, advanced positivist and objectivist ideals to the method of grounded theory. That is, they emphasized methods of natural sciences such as logic, analytic procedures and unbiased observer. According to Hallberg (2006) Charmaz argues that objectivist grounded theory, represented by Glaser's classic mode of

grounded theory, starts out with the conception that data represent facts about the social reality and that meaning is inherent in data, and that the researcher's aim is to discover this meaning; this means that the research is characterized by positivistic ideals and that the neutral researcher can generate a true theory that explains this reality. However, it is worth noting that the original grounded theory approach came at a time when there was considerable hostility to any focus on subjective and qualitative approaches. Denzin & Lincoln (2005, p. 2) illustrate this when they explain that 'by the 1960s battle lines were drawn within the quantitative and qualitative camps where quantitative scholars relegated qualitative research to a subordinate status in the scientific arena'. However, Jones (2004) explains that in more recent times qualitative research has come into its own, especially in the sense of wider acceptance in the academic and policy arenas. 'Qualitative research is no longer the poor stepchild of quantitative inquiries' (Jones 2004, p. 95). Grounded theory can now be criticized for its objective ideals but it was a considerable advance in qualitative research. Bryman (2008, p. 549) demonstrates this as he notes that, 'indeed, nowadays it is rarely accepted that theory-neutral observation is feasible' in grounded research.

Researchers in more recent times have challenged the assumptions of objectivity and favour a grounded theory with a more 'interpretive frame of reference' (Charmaz 2005, p. 509). In a constructivist grounded theory, it is stressed that data is constructed through an ongoing interaction between researcher and participant and that the way interview questions are asked and how the interviewer looks, acts, and sounds affects how the participant perceives him or her and how the interaction continues (Hallberg 2006). So a constructivist grounded theory according to Charmaz (2005, p. 509) 'adopts grounded theory guidelines as tools but does not subscribe to the objectivist and positivist assumptions in its earlier forms'. Furthermore, in qualitative research one cannot be objective (as traditionally understood) since as noted by Zarlick (1992, p.120), in any qualitative research, 'the researcher basically acts as his/her own research instrument'. According to Schultze (2000), this means that the researcher is highly dependent on his/her own unique knowledge, experience and actions and so brings subjectivity to bear on the construction of information and knowledge. Bryman (2008, p. 549) also adds that it is generally agreed that what we 'see' when we conduct research is conditioned by many factors, one of which is what

we already know about the social world being studied. Therefore, as Charmaz (2005, p. 509) posits, in constructivist grounded theory 'what observers see and hear depends on prior interpretive frames, biographies, and interests as well as the research context, their relationships with research participants, concrete field experiences, and modes of generating and recording empirical materials'. In other words, I have worked with the EMIS for many years as a Statistician and have acquired a certain amount of knowledge, formed impressions and developed certain skills and attitudes, all of which will influence my observations in the field in one way or the other.

Another related factor which constructivist grounded theory emphasizes is the use of existing literature whilst in the field. According to Hallberg (2006), Glaser's warning against exploring the literature before entering the research field has been questioned by critics who propose that in constructivist grounded theory the literature and preconceptions can be used for comparison with emerging categories. Mills et al (2006) supports this by positing that the literature is able to stimulate the researchers thinking about properties or dimensions that can be used to examine the data in front of us. Furthermore, if the researcher already has knowledge of related literature before entering the field how does he/she isolate such knowledge from his mind?

Constructivist grounded theory stresses the importance of understanding the 'realities of the participants' (McCaslin & Scott 2003, cited in Scott 2004, p. 9) and the meanings they give those realities (Charmaz 2000). As McCaslin and Scott (2002, p. 4) put it, recognising and striving to convey the relationships and interactions of the informants within their ecologies is incumbent upon a responsible researcher and that 'data collected with poor connection to reality will yield theories of little or no relevance to that ecology'. According to Mills et al (2006, p. 31), Charmaz (2000; 2001) advocates a writing strategy in constructivist grounded theory that is more 'literary than scientific in intent'; that is, whilst the researcher is impelled to be analytical in his or her writing, the style of writing also needs to be evocative of the experiences of the participants. This will allow the participants' accounts 'to retain a degree of visibility in the text' so that readers can make the connections between analytical findings and the data from which they were derived (Fossey, Harvey, McDermott, & Davidson, 2002; Jones, 2002, cited in Mills et al 2006, p. 32). Kennedy (2009, p. 1417) explains from her experience in using grounded theory

research that she was struck by how removed the resulting theory seemed to be from the experiences of the individuals and felt that 'the voices and experiences of the individual participants demanded a new representation; that of poems'.

McFadzean, Ezingeard and Birchall (2007) explain that looking at data from an interpretive paradigm has several advantages. Firstly, it encourages researchers to 'look at the problem from a more holistic point of view rather than from a simple, one-dimensional position' (Dhillon and Backhouse, 2001 cited in McFadzean, Ezingeard and Birchall 2007, p. 625). Secondly, it 'permits human behaviour and interactions to be identified and understood' (Backhouse and Dhillon, 1996 cited in McFadzean, Ezingeard and Birchall 2007, p. 625). Thirdly, it allows the researchers to examine and 'evaluate the phenomenon through the subjects' eyes and from the subjects' perspective' (Charmaz 2000; Strauss and Corbin 1998 cited in McFadzean, Ezingeard and Birchall 2007, p. 625). Finally, it permits the integration of technical and human aspects of the use of the EMIS (McFadzean, Ezingeard and Birchall 2007). Thus constructivism fosters 'researchers' reflexivity' about their own interpretations as well as those of their research participants (Charmaz 2006 p. 131).

Hence, the overall aim of using constructivist grounded theory is to generate a descriptive and explanatory theory of the factors associated with the use of the EMIS, rooted in the experiences of administrative and teaching staff of the Bocage Secondary School.

3.4 Applicability of Grounded Theory for Electronic Systems Research

This research involves investigating the use of an electronic system in managing education information at the school level. According to Thomas and James (2006) grounded theory is highly regarded as a method of social analysis in fields such as education and health studies. They continue by adding that the approach is viewed as the most accessible and appropriate way of doing qualitative research in education because it offers a solution; a set of procedures, and a means of generating theory. In education, the use of grounded theory may involve 'talking in as naturalistic a fashion as possible', with students, teachers, and parents or it may involve taking part, watching and listening in schools (Thomas and James 2006, p. 768). Not only is the approach appropriate and used in education research but also in research involving

electronic systems. Tan (2010) identifies the use of a grounded theory approach in library and information science from the 1980s. Villiers (2005, p. 112) notes that information systems is a 'multi-perspective discipline with its domains incorporating many aspects including scientific, technological, managerial, human and societal'. Villiers argues that because of these various dimensions, research methods from the interpretivist paradigm have a definitive role to play when researching electronic systems. In addition, using an electronic system is a practical application involving human action and organisational processes, and investigating its use is best done on site.

Klein and Myers (1999, pg. 67) explain that interpretive research can help information systems researchers to understand human thought and action in social and organisational contexts; 'it has the potential to produce deep insights into information systems phenomena including the management of information systems and information systems development'. Therefore, the researcher is better placed in the natural surroundings, observing the activities taking place, which calls for a grounded theory approach. Orlikowski (1993) used a grounded theory approach to study two organisations' experiences with the adoption and use of computer-aided software engineering tools. She identified three characteristics of grounded theory that provided a better fit to her study; inductive, contextual and processual. One major premise of grounded theory is that to produce accurate and useful results, the complexities of the organisational context have to be incorporated into an understanding of the phenomenon (Pettigrew 1990). What people think, feel, and do must be analysed within their 'relevant social contexts' (Charmaz 2005, p. 524). Orlikowski (1993, p. 311) notes that 'organisational context is critical in shaping technology use in organisations'. Using grounded theory to investigate the use of the EMIS will facilitate the incorporation of the contextual characteristic of the Bocage Secondary school which will help understand the use of the EMIS. Grounded theory is also relevant to the study of electronic systems as the approach is responsive to the change process an organisation goes through in adopting and using an electronic system. The use of grounded theory adds specific content to the understanding of the central role played by individual actors, their institutional context and the processes they enact in adopting the electronic system (Orlikowski 1993).

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The theoretical framework outlined in this Chapter provides an overview of the approach I used to investigate the use of the EMIS at the Bocage Secondary School. The elements of this approach support the methodology and methods used in this research, which is discussed in the next Chapter.

Chapter 4 Research Methodology and Methods

4.1 Introduction

In this Chapter, I discuss my methodology and methods which are reflective of my theoretical framework which is described in the previous Chapter. The Research Methodology and Methods Chapter discusses the use of ethnography for this research, selecting and gaining access to the research site and justifies the research design used. In addition, I outline the data collection procedures or techniques used, the data analysis approach and finally the method of presentation of the research findings.

4.2 Methodology

Kirsch and Sullivan (1992, p. 2) define methodology as the 'underlying theory and analysis of how research does or should proceed'. The particular research methodology used in any research involves all the various steps adopted in solving the research problem and the reasons for their use (Kumar 2008), which begins from the conception of the research to the research methods, analysis and writing or presentation of the findings. Sikes (2004) notes that methodology is concerned with the description and analysis of research methods rather than with the actual, practical use of those methods. The methodology used to guide data collection, analysis and theory generation in this research belongs to the qualitative paradigm.

> "A qualitative approach to research aims to understand how individuals make meaning of their social world. The social world is not something independent of individual perceptions but is created through social interactions of individuals with the world around them. This approach is committed to multiple views of social reality whereby a researcher's respondent becomes 'the expert'; it is his or her view of reality that the researcher seeks to interpret." (Hesse-Biber 2010, p. 455)

Qualitative research is thus subjective and value-laden. Denzin and Lincoln (2005) note that qualitative research involves an interpretive, naturalistic approach to the world. In other words, according to Hammersley (2000), it requires that people's behavior be understood as making sense within the context in which it occurs, where that context includes how they see themselves and their environment. Hence

qualitative researchers attempt to get closer to the participant's perspective through detailed interviewing and observation (Denzin & Lincoln 2005).

4.2.1 Using Ethnography

Ethnography, which is derived from interpretivism (Eisenhart 1988), was used as the methodology for this research. Interpretivists argue that the social world cannot be understood in terms of simple causal relationships because human actions are based upon social or cultural meanings: that is, by intentions, motives, beliefs, rules, discourses and values (Atkinson and Hammersley 2007). Ethnography is the 'study of people's behaviour in naturally occurring, ongoing settings with a focus on the cultural interpretation of behaviour' (Watson-Gegeo 1988, p. 576). In grounded theory, this is what Charmaz (2005, p. 508) refers to as 'researchers remaining close to their studied worlds'. The ethnographer's task is to investigate some aspect of the lives of the people who are being studied, and this includes finding out how these people view the situations they face, how they regard one another, and also how they see themselves (Atkinson and Hammersley 2007). According to Agar (1986), Atkinson and Hammersley (1994) and Hammersley (1992, cited in Schultze 2000, p. 7), 'ethnography relies on first hand observations made by the researcher who is immersed over an extended period of time in the setting'. A one-time visit to the research site to interview participants or to complete a questionnaire would not allow me to understand the behaviour and culture of administrative staff and teachers in the use of the EMIS. Zaharlick (1992) supports this direct and prolonged contact with individuals as it is considered essential in order to learn the complex patterns of people's beliefs, attitudes, and behaviours. Furthermore, 'first hand observation allows people to diverge from the idealized model of behaviour' they may present through interviews and other data collection activities (Georges & Jones 1980, cited in Zaharlick 1992, p. 119).

In addition, Bryman (2008) notes that the researcher also listens to and engages in conversations, interviews informants, collects documents about the group, develops an understanding of the culture of the group and people's behaviour within the context of that culture and writes up a detailed account of that setting. Watson-Gegeo (1988, p. 582) explains that the product of a completed ethnography offers 'theory based in and derived from the data and arrived at, through a systematic process of

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induction'. The grounded theory approach, discussed earlier, supports the ethnography methodology since similar processes as used in theory generation are used in the grounded theory approach.

Ethnography was the best method to use in this research because according to Homan (1980), Humphreys (1970) and Gans (1999, cited in Li 2008, p. 101), ethnographic participant observation can supply detailed, authentic information unattainable by any other research method since it is the only field method that allows researchers to observe what people do in 'real life' contexts, not what they say they do. At the school level the principal, vice principal, bursar, secretary, teachers and counsellor contribute directly to the management processes of the school. Ethnography allows the researcher to focus on these individuals' behaviour in groups and on cultural patterns in that behaviour (Watson-Gegeo 1988) in order to provide an understanding of the extent to which the EMIS is being used in school management processes as well as the reasons for not using it. The nature of management processes at the school level lends itself to the use of ethnography. Different events occur at different times of the school year, For example: timetabling occurs before the start of the school year: student registration, at the beginning of the year; exams at the end of each term; whilst throughout the year there are student transfers, tracking of attendance and recording of acts of indiscipline. The ethnographer's method of being immersed in the school's setting and observing individuals in that setting over a period of time provided for the observation of a full range of activities involving school management and the use of the EMIS.

4.3 Selecting the Research Site and Gaining Access

The ethnographer's goal is to provide an 'interpretive account of what people do in one setting' (Watson-Gegeo 1988, p. 576). Whilst the EMIS is installed in all twenty four secondary schools in St. Lucia, this research is conducted in one selected secondary school, the Bocage Secondary School. Selecting a school site was not as easy as I anticipated. I made three attempts at selecting a school in which to conduct my research. The first school was selected because of its proximity to my home and because I was familiar with the principal and many members of staff. I was hoping that this familiarity would assist me in gaining access to the school. This is one of the things Bryman (2008, p. 409) notes that the ethnographer can do to 'smooth the path'

of ongoing access; that is, to play up your credentials or use your past work and experience. However, I could not continue with this research site since the principal was due for early retirement and there was no guarantee of a replacement who would agree to me conducting research in the school. My second attempt at a school site was unsuccessful due to issues I thought were unethical. The principal of the school agreed for me to conduct the research at his school, but did not allow me to provide first hand information on my research to the school staff. I felt that this was unethical as it was disrespectful to the staff to include them as research participants without their consent. Furthermore, it would create problems later on regarding the level of cooperation and validity of results I would receive from the staff (Sieber 1996). Upon selection of my third school, the Bocage Secondary School, I was very sceptical about gaining access. It was a school that had made considerable strides with the EMIS, according to the EMIS Coordinator at the MOE. This school was the only one to use the web portal capabilities of the software to access student data from any location. Thus my interest was aroused and I contacted the school's principal about conducting my research there. When the principal agreed to have me meet the staff at a staff meeting and indicated that the teachers were usually very cooperative, I felt more confident in obtaining access to school.

Similar to Schultze (2000), negotiating and gaining access to the Bocage Secondary School to conduct my research was much easier than I anticipated - especially as I received such overwhelming support from the staff. At the meeting, I explained the purpose of my research and what was required of the staff during my field visits. I gave everyone present a printed sheet with information on my research which included: the methodology to be used; potential risks; potential benefits; type of participation required and; how confidentiality would be protected. I was very vigilant in obtaining voluntary informed consent from informants as I strongly support Sieber (1996, p. 13) who notes that in most cases informants should be able to consent freely without threat or undue inducement and that they should be informed of and 'fully understand all that a reasonable person in that situation would want to know before giving consent'. During the meeting with the principal and staff of the school, I was able to obtain signed consent from the entire staff present, including the vice-principal and EMIS Coordinator. I believe that the underlying reasons for such a response include: (1) the staff felt respected and was aware of all information that was needed

about the research, (2) the principal discussed in advance with the staff my intensions and encouraged everyone to support and (3) my boastful but truthful words at the meeting highlighting the Bocage Secondary school as being the only school to use the web portal, and the most advanced regarding the EMIS. Being one of the lowest performing schools in CXC, I believe that the staff felt that this was an opportunity for the school to showcase to the MOE that it was the best or at the top of the list in something. My field visits started two days later. The participants involved in my research were, the principal, vice principal, teachers, EMIS Coordinator and administrative support staff such as the secretary and bursar.

4.4 Research Design

In ethnography the focus is usually on a few cases or perhaps a single setting or group of people and this is to facilitate an in-depth study (Hammersley and Atkinson 2007). In other words, the more research sites studied the less time can be spent in each. Moreover, having to maintain a full-time job, allowed for much less research time. Therefore, the research design used for this research is the Qualitative Case Study where the phenomenon to be studied was investigated in a single unit or school. Gerring (2004, p. 342) defines a case study as 'an intensive study of a single unit for the purpose of understanding a larger class of similar units'. Using only one school facilitated an in-depth study of the use of the EMIS. The selection of the particular case or school is not because I was particularly interested in the school but because I wanted to understand the use of the EMIS in one school. At the same time I also selected a case which I thought would offer me an opportunity to learn (Stake 2005). The case itself is of secondary interest to me. This is what Stake (2005, p. 445) refers to as 'instrumental case study'. Stake notes that with instrumental case study the case plays a supportive role and facilitates our understanding of something else but the case is still looked at in depth where its contexts are scrutinized and its ordinary activities are detailed all because this helps to pursue the external interest. Therefore, a brief overview of the Bocage Secondary school is discussed in the Presentation of Findings Chapter to help understand the use of the EMIS at the school.

A frequent question is, can one generalise from a single case? Stake's (1978, p. 7) response to this question is that 'the case study is seen to be a poor basis for

generalisation. Often, however, the situation is one in which there is need for generalisation about that particular case or generalisation to a similar case rather than generalisation to a population of cases'. In other words, most important is to understand a particular case very well or understand its uniqueness so that it can be used to compare with other cases. 'By studying the uniqueness of a particular case we come to understand the universal' (Simons 1996, cited in Shekedi 2005, p. 188). Whilst a single case cannot be replicated and generalized for the whole secondary school system, Stake (2005, p. 454) notes that we can learn from a single case 'depending on how the case is like or unlike other cases we know, mostly by comparison'. He adds further that researchers need to concentrate on describing the present case in sufficient detail so that good comparisons with other cases can be made by readers. Lee (1989) explains that whilst case studies cannot be replicated, independent researchers can apply the same theories as tested in the original case study to a different set of initial conditions. Therefore, this research can be used if the same theories or findings derived can be confirmed or disconfirmed by other researchers, using different initial conditions such as a different school.

4.5 Ethnographic Methods and My Role in the Field

Methods or procedures are the specific research techniques used in order to collect and then analyse data (Sikes 2004). My role in the field influenced to some extent the data which I collected, because as Bryman (2008) notes, each role carries its own advantages and risks. This section will discuss the data collection techniques used in the research along with my role in the field followed by the data analysis techniques employed and the approach used to present the findings.

I was in the field for a period of ten months, from July 2010 to April 2011. The ten month period for the data collection allowed me to follow through the school's regular routines, patterns of work, and special activities, thus allowing me sufficient time to observe a 'relatively full and representative range of behaviour and activities' (Zaharlick 1992, p. 119). Knowing when to stop was not easy or straightforward as indicated by Bryman (2008). I made a decision to stop when I realised that the situation with the EMIS at the school was not going to improve and when no new information was being collected. It is in a sense what I earlier referred to as theoretical

saturation. In addition, I was conducting field work for a doctoral dissertation which has a definite submission date. I thought stopping at the end of the second school term, April, would provide me with sufficient time thereafter to complete my thesis.

The frequency of visits to the school was not daily but depended on the particular foci and relevant events as the research developed. This is what Jeffrey and Troman (2004, p. 540) describe as the 'selective intermittent time mode'. As an insider, I was familiar with some of these relevant events which included: registration, end of term exams, timetabling, taking attendance and processing transfers. Short and intense field visits were undertaken for the events happening once a year such as student registration and timetabling whilst more sporadic visits were undertaken to observe other events which occur daily such as recording of attendance, student discipline and student movement. My field visits began in July 2010 because timetabling and student registration exercises occurred then. I spent a total of 26 days in the field with each regular school day commencing at 8:30 am and ending at 2:50 pm.

Eisenhart (1988, p. 105-106) identifies four methods of data collection commonly used by ethnographers to understand holistically the worlds of others and themselves: 'participant observation; ethnographic interviewing; search for artefacts and; researcher introspection'. These four techniques were used in this research, some more extensively than others, and are further discussed.

Participant observation was used in this research as it is a way to collect data in naturalistic settings by ethnographers who observe and/or take part in the activities of the people being studied, thereby, 'learning the explicit and tacit aspects of their life routines and culture' (DeWalt and DeWalt 2002, p. 2). Gold (1958, cited in Bryman 2008, p. 410) identifies four types of observation of which, 'participant-as-observer' and 'observer-as-participant' were used for this research. According to Bryman, with 'participant-as-observer' the researcher is a fully functioning member of the school setting and his/her status as researcher is known whilst with 'observer-as-participant' the researcher does mainly interviewing and observation but very little of it involves any participation. The main reason for selecting an overt identity is because I believe in most cases it is unethical to observe people without their informed consent.

As an observer-as-participant, my involvement in the daily activities of the school was more passive than active. I took my cue from the Principal and sometimes Vice Principal as to what activities I could and could not get involved in. I only participated in activities such as, one or two meetings with parents and students and assisted the secretary in attending to students, teachers and visitors. That role made me feel like an insider who was also an outsider. I spent a considerable amount of time observing and conducting informal interviews with teachers and administrative staff. However, my involvement in the EMIS activities of the school was more active than passive, as I assisted with data entry, report generation, was consulted when there were technical problems resulting in the down time of the EMIS and liaised with MOE personnel when support was needed. The Principal and Vice Principal gave me the 'green light' to participate fully and I felt like a true insider. This role made me more of a participant-as-observer and allowed me to get close to the staff (Gold 1958, cited in Bryman 2008).

The key determinant of the two types of roles assigned to me by the Principal was that I was an employee of the MOE; the entity responsible for the school's supervision and performance monitoring. Being a Ministry of Education employee meant that I could be a possible threat to the school's administration if I had access to certain information, especially that of mismanagement or reluctance to adhere to policies. As noted by Bryman (2008) people will worry that what they say or do may get back to bosses or to colleagues. However, being involved in the EMIS duties was less likely to pose any threat to the school. In fact, like Schultz (2000) I was useful to the school. I served as the link between the school and the MOE regarding the EMIS.

DeWalt and DeWalt (2002) identify six key elements of the method of participant observation as usually used by anthropologists. The applications of these key elements to my research are discussed below.

Living in the context for an extended period of time – Participant observation was developed in the 19th century as an ethnographic field method for the study of small homogeneous cultures where ethnographers were expected to live in a society for an

extended period of time, actively participate in the daily life of its members and carefully observe their joys and sufferings (Tedlock 2005). More recently participant observation has been modified and extended to study a wider spectrum of social issues where the researcher may not 'live' but is immersed in the social setting. I was immersed in my social setting through the regular visits to the school over a period of nine months and playing an active role in the EMIS duties at the school.

Learning and using local language and dialect – In St. Lucia, the local language is English and there is one dialect, Creole, which mostly all St. Lucians speak. However, the use of culturally relevant phrases or words was useful during my field visits as it made my presence less formal to my participants. For example, I never used the word interview unless I needed a semi-formal interview with the principal or EMIS Coordinator. Instead, I referred to it as having a 'chat' as we call it locally.

Actively participating in a wide range of daily, routine, and extraordinary activities with people who are full participants in that context – My research covered a wide range of school management processes and so I observed a wide range of daily, routine and extraordinary activities of my informants. Daily and routine activities included my encounters and conversations with the staff such as, routine conversations on the EMIS with the secretary, bursar, EMIS Coordinator and Vice Principal whilst some extraordinary activities included the meetings I attended with the parents and students and some of the incidences I witnessed involving student discipline. Getting involved in a wide range of EMIS activities enabled me to understand the local culture of my setting and provided answers to my research questions.

Using everyday conversation as an interview technique – During my informal interviews or conversations or chat with my informants, I tried to use everyday conversation as an interview technique to make my informants comfortable and relaxed. We sometimes spoke about everyday issues including crime, politics, health and well-being. This allowed my participants to build a certain level of trust in me and encouraged them to speak more openly to me as a researcher about the issues at hand.

Informally observing during leisure activities (hanging out) – Informally observing during leisure activities involves taking part in both usual and unusual activities or 'hanging out' and conversing, as opposed to interviewing, whilst consciously observing (DeWalt and DeWalt 2002, p. 4). During my visits to the school, I informally observed my participants during leisure activities which occurred mainly during, break time, lunch time, non-teaching periods and extra-curricular activities. I conducted many informal conversations with the Secretary, Bursar, Principal, Vice Principal, EMIS Coordinator and some teachers whilst consciously observing.

Recording observations in field notes (usually organised chronologically) and using both tacit and explicit information in analysis and writing - Since it was not possible to remember everything observed for recording later, the observations during my field work were recorded using different types of field notes. Similar to Schultze (2000) my research made use of four sets of field notes; short notes; expanded notes; record of problems and ideas to follow on (research diary) and; running record of analysis and interpretation in the form of themes. Short notes were made at the time of observations so that I would not forget any important points for my expanded notes later on. Expanded notes were made as soon as possible from the short notes. Whilst preparing the expanded notes, I would reflect on the events of the day and the issues coming out of the data and make separate notes in my research diary of problems or areas I needed to follow-up on. The research diary was very useful to me as it was through these writings that I first began to analyse my data. Additionally, areas that needed further investigation, clarification or confirmation were thought of then and recorded in the diary for subsequent visits in the field. The research diary also enabled me to record my experiences of the research situation in a systematic way (Nadin and Cassell 2006). Extracts from my research diary are attached in Appendix 5. According to DeWalt and DeWalt (2002, p. 8) one of the advantages of participant observation is that, 'it encourages the formulation of new research questions grounded in on-the-scene observation'. Finally, after preparing the expanded notes, I would analyse my field notes and prepare a list of themes emanating from the data. In writing my field notes, I tried to capture both tacit and implicit information. For example, participants' actions and behaviour provided much information that was not explicitly spoken. Samples of my expanded field notes are attached in Appendix 3.

The second data collection technique used was ethnographic interviewing. Dickson (2008, p. 119) notes that 'it is impossible to observe everything' and so in order to supplement his observational record in the field he interviewed a sample from the potential population of officers from the Local Education Authority. Likewise, for this research, interviews were conducted with teachers and administrative staff. Eisenhart (1988, p. 105) refers to interviews as the 'ethnographers' principal means of learning about participant's subjective views' and so ethnographic interviews are usually open-ended and cover a wide range of topics. Two types of ethnographic or qualitative interviews were conducted; unstructured and semi-structured. As discussed earlier, interviews form part of the data for a grounded theory (Corbin and Strauss 1990) and that the interviewer should encourage the informant to express himself or herself freely. In order to encourage this, Bryman (2008, p. 437) highlights a number of characteristics of qualitative interviewing which I used as techniques whilst conducting my interviews: 'encouraging rambling or going off on tangents to give insights into what the interviewee sees as relevant and important'; allowing myself to depart from the interview guide so as to ask new questions that follow up interviewees' replies and; being flexible and responsive to the direction in which interviewees take the interview. Bryman (2008) also notes that what is important is that the questioning allows interviewers to glean the ways in which the participants view their social world and that there is flexibility in the conduct of the interviews. This implies that, respondents' perceptions of their social realities or experiences should be reflected in the research, for the respondent is the expert on what is best for his/her use. This is what Hesse-biber (2010, p. 455) refers to as "listening with the goal of empowering and giving voice to respondents' experiences".

The questions asked using the semi-structured and unstructured interviews were of the semi-formal and informal type respectively. Semi-structured interviews as well as unstructured interviews were conducted with the Principal, EMIS Coordinator and some teachers. In addition, only unstructured interviews were conducted with the secretary, bursar, vice principal and some teachers. I tape recorded the semi-structured interviews so that I could allow the interview to flow without interruptions, to give close attention to the interviewees and to ask follow-up questions as probes (Charmaz 1991). Taping the interviews also provided me with the opportunity to replay them since I did not get around to writing everything that was said. Participants had to

consent before the tape recorders were used. Like Dickson (2008), throughout this research and observations, the more informal types of interaction gave interesting data and information. However, in order to obtain that information, interviewees had to gain a certain level of trust in the researcher. Portelli (2008, p. 87) notes that whilst conducting research in a secondary school, he had to gain the trust of the students by being informal, casual and understanding and could not wear the 'hat' of teacher. Similarly, I had to act informal and casual with my informants. However, I could not separate the two roles which I represented; that of a researcher and the other, a MOE employee. It was important to my informants that I kept the role of MOE employee as it was beneficial to them regarding addressing EMIS issues.

The unstructured and semi-structured interviews involved the use of an aide-memoire and interview guide respectively to ask questions of the interviewee, who was given a great deal of leeway in how to reply (Bryman 2008). Whilst I used a set of written questions as a guide for the semi-formal interviews, I asked other questions to probe for answers. Open-ended questions were favoured to close-ended to allow the participants the freedom to express themselves. According to Briggs (2007, p. 554) 'anti-formalist perspectives favouring open-ended, in-depth interviewing suggest that authentic, true voices emerge only when they are minimally constrained by formal procedures and attempts to control interviewees'. During the interviews I made a conscious effort to word my questions appropriately so as not to have my respondents question whose side I was on, theirs or the MOE, especially if there were participants who were not supportive of the EMIS. Charmaz (1991) notes that to be effective, the interviewer must try to see the issues discussed and the immediate interaction from the respondent's perspective, that is, to adopt the respondent's role and look at the situation from his or her perspective instead of the interviewer's. I also had to remind interviewees, especially those with whom I conducted the semi-formal interviews, to be open and express their viewpoint rather than to give me the answer that they thought I wanted to hear. The unstructured interviews that I used were more of a conversational nature which DeWalt and DeWalt (2002) identify as an interview technique. Because of the nature of these interviews most participants did not realise that this was an actual interview but instead saw it as casually assisting with information. Fontana and Frey (2005) note that unstructured interviews and

participant observation go hand in hand, as much of the data gathered in participant observation comes from unstructured interviewing in the field.

I began most of my interviews by asking and discussing other unrelated questions to allow the participants to feel relaxed and comfortable. This is what Fontana and Frey (2005, p. 713) refer to as 'breaking the ice'. Once my informants were relaxed, my questions were consistent with my research questions. However, as noted by Bryman (2008) the questioning must cover the areas that you need but from the perspective of your interviewees.

During both semi-structured and unstructured interviews different types of questions were used in order to obtain a wide range of information from the informants. Kvale (1996, cited in Bryman 2008, p. 445-446) identifies nine different kinds of questions all of which were used as follows:

(1) Introducing questions – These questions were asked upfront since the answers to them determined what questions would follow, for example, H*ave you ever used the EMIS before?*

(2) Follow-up questions – These questions allowed the interviewee to elaborate on his/her answers to previous questions. For example, the interviewee explained from a previous question that the problem for him in using the EMIS was breaking away from the norm. My next question to him was; *what do you mean by the norm?*

(3) Probing questions – These questions allowed the interviewee to provide further information on previous questions, for example, *You said that you were not part of the EMIS selection process, but would you have wanted to be part of it and why?*

(4) Specifying questions – Specific questions were asked based on answers to previous questions, for example, *Did that* (the loss of attendance registers by teachers) *encourage the respective teachers to use the system to do student attendance?*

(5) Direct questions – For example, *Were you happy with the way the EMIS was implemented at your school?*

(6) Indirect questions – For example, *Do you use the CXC online system to enter students' grades? Followed by; if you use the CXC online system in the lab then why can't you use the EMIS in the lab too?*

(7) Structuring questions – These are questions that allow the interviewer to maintain structure or order to the interview for example, *My next set of questions concern the staff. With the teachers current work load do you think......?*

(8) Silence – Pauses were allowed where I thought necessary to allow the interviewee to expound an answer.

(9) Interpreting questions – These questions allowed the interviewer to interpret previous information given by the interviewee for example, *Are you saying that one of the reasons that the teachers do not use the system is because of their attitude towards the Ministry of Education?*

The following table shows the total number of participants in the research and the types of interaction they were engaged in. A more detailed account of the types of interaction held with the participants can be found in Appendix 2.

Type of Interaction	Number of Participants
Formal face to face interviews	3
Formal Meetings	46 (held once)
Semi-formal face to face interviews	6
Informal face to face interviews	17
Informal telephone interviews	4
Observations	48
Total number of participants in research site - 48	

The third data collection method utilised was the search for artefacts or qualitative document reviews. According to Bryman (2008, p. 529) qualitative analysis of documents comprise a 'searching-out of underlying themes in the materials being analysed'. All relevant documents involved in the management processes of the school as well as the EMIS software itself were reviewed. Some of the documents reviewed include, EMIS notes, job description of EMIS Coordinator, student and teacher attendance registers, student log book, annual census questionnaires from the MOE, student report books and various forms issued to students for their parents. In

addition to the documents, the EMIS software was reviewed in light of the work processes involved at the school level and data requirements.

Researcher introspection was the final data collection procedure used. The ethnographer regularly records the kinds of things that are happening to her/him in the research situation and tries to account for sources of 'emergent interpretations, insights, feelings, and the reactive effects that occur as the work proceeds' (Eisenhart 1988, p. 106). Whilst recording my field notes I also tried to capture the things that were happening to me in terms of my experiences with the participants and the research process as a whole. Despite the other data collection methods used, according to Zaharlick (1992, p. 120), 'the ethnographer's entire person is used as the primary instrument of research because information is registered on the ethnographer through the five senses and via the modality of an individual personality'. During my field work, I was greatly influenced by what I saw, heard and felt. I also understood that the way I conceived that information would vary from one researcher to another.

4.6 Data Analysis

"Basically, ethnographic analysis consists of text-based procedures for assuring that the views of participant and researcher remains distinct and that all aspects of the material are taken into account. Generally, the procedures involve defining "meaningful" units of the material (meaningful to participant or researcher) and comparing units to other units. Like units are grouped together into categories. Categories are compared to all other categories and relationships between them posited." Eisenhart (1988, p. 107)

This method of analysing data is grounded theory, which was earlier discussed. Grounded theory uses an inductive approach to the analysis of data (Bryman 2008). The data collected from this research was analysed using grounded theory strategy. This strategy involves a 'repetitive interplay' between the collection and analysis of data (Bryman 2008, p. 539). Some of the tools of grounded theory utilised in analysing the data included, coding and constant comparison. During the analysis process the field notes were read over and over again in order to categorize events and to inductively construct themes (Schultze 2000). Like Schultze (2000) this was done throughout the fieldwork and not only after leaving the field. The data comparisons assisted me in deciding what questions to ask upon my next field visit, which

determined what data I collected. This demonstrated how constant comparison goes hand in hand with theoretical sampling (Boeije 2002). The three basic types of coding earlier identified were used. This generally involved comparing data with data, data with categories and category with category (Charmaz 2005) until a 'theoretical elaboration' of that category began to emerge (Bryman 2008, p. 542).

At the start of my field visits, comparisons were made with the field notes of my observations from the previous day. The field notes were studied line by line to determine exactly what was being said and then coded using open coding or themes; for example:

Line by interviewee: "Training was straight forward since I already had a background in working with computers".

Open Coding: Competence; Easy to Learn;

Line by interviewee: "He also showed us the benefits of using the system but I will still need help in using it".

Open Coding: need to become skilful; lack of confidence

Different lines giving the same information were given the same code. According to Bryman (2008, p. 542) coding is a key process in grounded theory whereby 'data are broken down into component parts that appear to be of potential theoretical significance' and are given names. After every subsequent observation or interview, I compared the data from the field notes to that of previous field notes. The number of codes increased. The codes were then compared to new data and to each other. Patterns emerged from them which were classified into categories using axial coding. This comparison continued until no new category was formed. All categories were then compared to one another to arrive at a central theme or core category using selective coding.

4.7 Presentation and Discussion of Findings

The writing style or method of presentation used for this research reflects the research paradigm and methodology used. Since I wanted to represent the voices of my participants, I presented the findings of this research in the form of a narrative or

story. According to Bruner (1991) we organise our experience and our memory of human happenings mainly in the form of narrative – stories, excuses, myths, reasons for doing and not doing and so on. He also notes that a narrative is an account of events occurring over time. Franzosi (1998, p. 520) asserts that 'it is the story, the chronological succession of events, that provides the basic building blocks of narrative; for without a story, there is no narrative'. Gubrium and Holstein (1998, p. 166) see storytelling as the 'coherent reporting of experience'. The findings of this research are therefore presented as a coherent sequence of events. This coherence was achieved, by combining the events or happenings of my field visits so that the storyline or plot emerged. A narrative also communicates the narrator's point of view and so besides describing what happened, narratives also express emotions, thoughts, and interpretations (Chase 2005).

Further, Bryman (2008, p. 684) notes that ethnographic text must not simply present a set of findings but it must also 'provide an authoritative account of the group or culture being studied'. In presenting and discussing the findings, field work accounts were discussed using first person narratives to establish with authority that I, the researcher was there. According to Hess (1989) first-person narratives have always played a part in establishing ethnographic authority. Golden-Biddle and Locke (1993, p. 599) further support this view by noting that the text or writing in ethnographic work should make appeals of authenticity to readers by 'providing assurance that the researcher was there'.

I adopted the style that Schultz (2000, p. 31) refers to as 'self revealing writing' which not only requires the use of personal pronouns to consistently highlight that the point of view being represented is that of the field worker, but also the construction of the researcher as a reasonable yet fallible individual with whom the audience can identify. In my writing, I tried as much as possible to include the participants' 'voices' using actual quotations from their stories.

Chapter 5 Presentation of Findings

5.1 Introduction

The main objective of this research was to investigate how the EMIS was being used at the school level and what was required to facilitate its use. In this research, I observed school administrative staff, EMIS Coordinators as well as teachers as they utilised an electronic management information system in their natural settings, the school, over a period of time. I also interacted with them to find out what was required to facilitate the use of the EMIS. This meant that, respondents' perspectives regarding their social realities or experiences needed to be reflected in this research, for the respondent is the expert on what is best for his/her use. This is what Hesse-biber (2010, p. 455) refers to as 'listening with the goal of empowering and giving voice to respondents' experiences'. The findings of this research are therefore grounded in the respondents' experiences.

As indicated earlier, what people think, feel, and do must be analysed within their relevant social contexts (Charmaz 2005). Therefore, the findings of this research are presented by first providing a brief overview of the Bocage Secondary School to help the reader put the results of this research into context. An outline of the duties and selection criteria for EMIS Coordinators, as outlined by the MOE is also given. Comparing these to the actual selection criteria and duties will provide an idea of their usefulness. The management processes at the Bocage Secondary School are then presented. Finally, my observations and interactions with participants which were in the form of informal and semi-formal interviews are narrated. Participants' 'voices' using actual quotations from their stories are used.

5.2 Overview of The Bocage Secondary School

The Bocage Secondary School was established in 1996 to help satisfy the demand for secondary school places in St. Lucia. The school was located in the community of Bocage because of the great demand for secondary school places there, which also eased the financial burden on families who would otherwise have sent their children great distances to school. The school is part of the Education District Three and is supervised along with eleven other schools by an Education Officer. The current staff

of the Bocage Secondary School is made up of administrative, teaching, support and ancillary personnel. The administrative personnel comprise one Principal, one Vice Principal, one Secretary and one Bursar. The teaching personnel comprise 40 teachers which includes the EMIS Coordinator. Like most of the other schools in St. Lucia, the majority of teachers at Bocage Secondary are females (29). Twenty one (21) of the teachers are trained (successfully completed a certified teachers' training programme in teaching methods and practice) and twenty three (23) are graduates (hold at least a Bachelors Degree). The support staff of the school consist of, one Lab Technician, one Guidance Counsellor and one Learning Resource Centre Coordinator. The ancillary staff of the school consist of, one Caretaker, one Cleaner and one Watchman.

Since secondary schools in St. Lucia are not zoned, students from Grade 6 are assigned to schools based on their choice of school, their scores on the Common Entrance Examinations and the availability of secondary school spaces. Because of this mode of assigning school places to students, the Bocage Secondary School normally gets students who score below 50% in the Common Entrance Examinations. For the past five years the scores ranged between 24.67% and 38% (Common Entrance Examinations Report 2006-2010). These low entrance marks were reflected in the terminal examination results in Form 5, the Caribbean Secondary Examinations Certificate (CSEC). The school's total percentage pass rate over the past five years in CSEC fluctuated between 34% and 53% (Caribbean Secondary Examinations Certificate Report 2006-2010). Generally, the Bocage Secondary School is considered to be a low performing school by the MOE and other persons from the public. During the period of my research with the school, there was a student enrolment of 657.

The school follows a mixed curriculum and offers a total of nineteen subjects including a combination of both general and technical. The general subjects include Mathematics, English Language, French, Social Studies, Principals of Accounts, Biology, Integrated Science and Principles of Business whilst the technical subjects include Information Technology, Electronic Document Preparation & Management (EDPM), Food and Nutrition, Building technology and Agriculture. The results of the 2010 CSEC examinations showed that the students performed poorly in the academic subjects such as Mathematics and English Language but extremely well in many of

the technical subjects including Food and Nutrition, Technical Drawing, Information technology and EDPM. In order to obtain an entry level job in the public or private sector or to gain acceptance into a post secondary education institution in St. Lucia, a student must succeed at least five CSEC subjects including Mathematics and English. Over the past five years the percentage of students graduating from the Bocage Secondary School with this minimum qualification has been less than 5% (Caribbean Secondary Examinations Certificate Report).

5.3 EMIS Coordinators at Bocage and Their Roles and Responsibilities

Since the post of EMIS Coordinator is not an approved or paid post in the Teaching Service, a teacher was assigned by the Ministry of Education, to undertake the duties of the EMIS. EMIS Coordinators are thus paid as regular teachers. The Ministry of Education does not select EMIS Coordinators but instead, provides Principals with the criteria for selection and allows the Principals to select their own EMIS Coordinators from among their existing staff or from elsewhere. The Criteria for Selection as submitted by the Ministry of Education is as follows:

1. Degree in Computer Science or related field
2. Experience in using various computer applications (Office Suite)
3. Ability to do basic troubleshooting on computers and operating system in a networked environment (Certification in Computer Maintenance and Networking will be an asset)
4. Time management skills and ability to multi-task
5. Good communication and Interpersonal skills
6. Demonstrate leadership qualities
7. Demonstrate commitment to success of school projects
8. Understand and appreciate the use of data in the decision making process

(Ministry of Education and Culture: School EMIS Coordinators – Criteria for Selection)

The Ministry of Education has recommended that EMIS Coordinators be assigned a maximum of eighteen (18) teaching periods per cycle so as to accommodate EMIS related duties. The EMIS duties of all EMIS Coordinators at secondary schools were prepared by the Ministry of Education and made available to the Coordinators and their Principals. However, during my field visits neither the EMIS Coordinator nor the

Principal of the Bocage Secondary School had a copy on hand to show me. I obtained a copy of those duties from the Ministry of Education EMIS Supervisor, who is responsible for overseeing the EMIS in schools. The EMIS duties are:

1. Liaise with EMIS Supervisor at the Ministry of Education concerning new developments in EMIS project
2. Oversee the collection and entry of data by school secretary or other assigned person
3. Responsible for verification of data entered in the system
4. Responsible for performing regularly scheduled backup of data at the school and submitting a copy to the Ministry of Education
5. Ensure that data is updated regularly by school secretary or other assigned person
6. Assist in defining and printing various reports
7. Organize computer literacy training for teachers through school administration in collaboration with the ministry
8. Provide EMIS training for new users of the system
9. Provide technical support to users
10. Provide assistance to users in general system use
11. Develop schedules for maximum use of computers by teachers
12. Make appropriate recommendations to the Principal and Ministry concerning improvements to ensure success of EMIS Project at the school

(Ministry of Education and Culture: School EMIS Coordinators − Essential Functions)

I was very fortunate in that I had the opportunity to conduct my fieldwork with two EMIS Coordinators at the Bocage Secondary School; Mr. BT[2], for a very brief period and Ms. RC who replaced Mr. BT. This allowed me to make comparisons between the two Coordinators and the events of the two periods during which they served in the position. When I started my fieldwork, Mr. BT was the EMIS Coordinator in July 2010 but was released by the Ministry of Education on the closing day of school in July 2010 because he was said to have violated Ministry's policies concerning professional development; any unqualified non-graduate teacher who spends over five

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[2] Mr. BT is used to replace the real name of the first EMIS Coordinator everywhere in this thesis. Likewise, Ms. RC is used to replace the real name of the second EMIS Coordinator.

years teaching without qualifying or upgrading him/herself will be released from the service. During my fieldwork for the period July to September 2010, I observed and interviewed Mr. BT on a number of occasions: firstly, in July 2010 when the EMIS suppliers conducted training in Timetabling; secondly, during the registration of Bocage students at the school and; thirdly, in my office at the Ministry of Education. I also held informal interviews with him at the school whilst Ms. RC was the EMIS Coordinator. Because of his IT skills and knowledge of the EMIS and of the school's computer network, the Bocage Secondary School's Principal and officials from the Ministry, on more than one occasion sought his assistance for the EMIS and computer network.

During his tenure as EMIS Coordinator, from 2007 to 2010, Mr. BT also taught Information Technology to students of Forms 1 to 5. He had a total of 18 periods per week and served as an assistant homeroom teacher. His teaching duties also involved all the planning, preparation, assessing and remediation that accompanied the teaching of students. Homeroom responsibilities involved, going to the assigned classroom in the morning and after the lunch break to take the students' attendance, being responsible for student disciplinary issues as far as could be managed, preparing report books for the students on a termly basis and serving as the contact teacher for the students on school matters that needed addressing. Mr. BT was also a Sports House Master. In addition to these official duties, he unofficially served as the schools IT Technician and Network Administrator.

Ms. RC became the EMIS Coordinator of the Bocage Secondary School in September 2010. She had a total of twenty-five teaching periods per week and also shared the responsibilities of a homeroom with another teacher. She taught Information Technology and Mathematics to students of Forms two, three and four.

During my fieldwork, through the observations of and interviews with the EMIS Coordinators, Principal and Vice Principal, I became aware of the actual EMIS duties of the Coordinators as opposed to what was specified by the Ministry of Education. I was also able to determine the extent to which the criteria for selection specified by the Ministry were met and useful. These will be discussed later as they have implications for the use of the EMIS.

5.4 Management Processes at the Bocage Secondary School

In St. Lucia the school year commences in September and ends in July and is divided into three terms: term 1 - September to December; term 2 - January to March or April and; term 3 – April to July. The key management processes at the Bocage Secondary School were not very different from those of other secondary schools and involved management of the timetable, students, human resource, financial and other duties. These are further highlighted below.

Timetabling

Timetabling at secondary schools involves the scheduling of subject teachers to classes and the efficient use of classrooms and special rooms. One of the greatest challenges of timetabling to Principals is making maximum use of all teachers and learning spaces whilst avoiding clashes (one class scheduled for two subjects or one teacher for two classes at the same time). Timetabling for every new school year is usually done in July or August; before the new school year begins. From my interactions with school administration at the Bocage Secondary School, Mr. BT, along with the Vice Principal prepared the school's timetable each year using the aSc Timetabling software which was downloaded free from the internet. For the first time in July 2010, the timetabling module of the EMIS Maplewood software was presented to the secondary schools in St. Lucia and training was given in the use of this module. I conducted observations on the day that the Bocage Secondary school received their training, the results of which I have subsequently documented. Despite the provision of training for that module, the Bocage School still used the aSc Timetabling software to do their timetable for the new academic year.

Student Management

Student management processes at the Bocage Secondary School meant dealing with: student registration and admission once a year; daily routines throughout the school term such as attendance, disciplinary issues, transfers, suspensions, dropouts and managing continuous assessment; student performance at the end of every term and; student graduation at the end of every school year. The management and processing of student information at the Bocage Secondary School is a cyclical process which repeats itself on a yearly cycle. During my fieldwork, it began with student

registration in July and August where background information, such as name, date of birth, address, parents' educational level and parents' occupation, was collected on new students. In addition, new students were also assigned sports houses and homerooms. Exam scores and information on the payment of school facilities fees were recorded for continuing students whilst subject choices were recorded for students entering Form 4. Subsequent to student registration, the timetable was created by revising the existing one using the aSc software. When school re-opened in September, student admission was done where students were assigned to homerooms and given their individual timetables. The EMIS has the capability to create student identification (ID) cards; however, ID cards were not issued since student photos were never downloaded from the camera into the EMIS to create the cards. This task was done by Mr. BT over the past two years. Throughout the school year further information on student management was recorded, including transfer requests, dropouts, repeaters, absenteeism, lateness, achievement and discipline. During the period of my fieldwork the information that was recorded most frequently, on a daily basis, was student attendance and student discipline. At the end of the school year information on student graduates and results of terminal exams are usually recorded.

Management of Human Resources

At the secondary level Principals are expected to effectively manage both teaching and non-teaching staff at their schools. This entails the management of teacher workloads, attendance and punctuality, disciplinary issues, teacher performance, transfers to other schools, replacements and requests for leave such as maternity and study. Since the Teaching Service Commission is responsible for the hiring, transferring and firing of teachers, the Principal's role is to keep up-to-date records, facilitate staff requests and make recommendations to the MOE. Principals are also expected to keep up-to-date records of teachers' attendance, punctuality, qualifications, training received, requested or needed and reasons for lateness or absence. The academic and training information allows the Principal to effectively utilize the skills of the staff. At the beginning of the school year, the Principal is assigned new staff by the Ministry of Education to replace teachers who left. The week before the re-opening of school, the Principal of the Bocage School provided every teacher with his/her timetable for the new school year. The Principal also kept manual files with basic information on the teaching staff. After the re-opening of

school an attendance register was placed at the Secretary's desk which teachers were required to sign upon arrival at the school. During the school year the Principal and Vice Principal did appraisals for teachers by observing them while teaching their classes.

Financial Management

Every secondary school through the assistance of their Bursar is responsible for the management of their finances as far as is allowed by the MOE. Such finances include student fees, fund raising monies and annual financial allocations by the MOE for minor repairs. The Bursars are also responsible for all expenditures made directly by the school, such as purchasing of student sports uniforms and school supplies. During the student registration exercise at the Bocage Secondary School, the Bursar coordinated the payment of students' fees upon which receipts were issued. Students who were unable to pay the full $200 at registration paid the balance at a later date. The MOE required the Bursar from every secondary school to submit a financial report at the end of the academic year. However, according to the Accounts department of the MOE, very few schools submit that report. The Bursars are also required to collect on behalf of the MOE, the textbook rental and transportation subsidy fees from the students. These are to be recorded and transferred to the MOE account.

The Bursars of every secondary school are also responsible for preparing and updating an inventory of their school's furniture, equipment and supplies. It is their responsibility to inform the Principal and MOE through their principal, of any replacement needs.

Other Administrative Duties Including School Planning and Research

Every school in St. Lucia is expected to have a three-year school development plan outlining deficiencies at the school level and plans for improvement. The preparation of the plan requires research on all aspects of the school life in order to ascertain what area(s) should be given priority for the plan period. To undertake such research, valid, reliable and up-to-date information is required at the time of the research. The last plan developed by the Bocage Secondary School was for 2007 to 2010. The main focus of the plan was to improve student discipline and academic performance.

In addition to the above management functions, schools are also expected to perform other administrative duties such as conduct parents meetings, plan professional development training for staff, work in collaboration with other schools on certain projects or activities and ensure a safe and secure school plant in collaboration with the MOE.

The EMIS was purchased by the MOE to serve as a tool to facilitate these management processes. The extent to which this tool was used, how it was used and the reasons for the extent of its use are presented below through the thoughts and actions of the staff of the Bocage Secondary School.

5.5 Documenting the Thoughts and Actions of Administrative Staff

During the first two months of my fieldwork, July to August, the IT infrastructure and EMIS worked very well at the school. The EMIS was hosted on one of the servers in the server room which was located in the IT lab. The school had a wireless network, through which the EMIS was made available on ten computers in the IT lab, on the computers of the Principal, Vice Principal, Bursar, Secretary and HFLE room. There was also one network point in the staffroom, so that teachers who chose to use their computers there, could also access the EMIS. Mr. BT had also created a web portal to allow administration and teachers to access their part of the EMIS (Classroom Manager) from any location via the internet. In July, during one of my first field observations, the registration of new students was conducted using the EMIS on the computers in the IT lab. There were four teachers conducting the exercise whilst Mr. BT supervised and responded to software issues. He had provided them with training and a manual developed by him, to conduct the registration exercise. The Principal and Vice Principal were in their offices to provide administrative support. The exercise was conducted very smoothly. When I asked participants their opinion on the process these are some of the responses I received.

Principal:

 "In the past, lines were so long when we did this manually; parents were choopsing and sweating; now it goes so fast"

Teacher1:

> "Parents comment that this is so easy. I had no training with this system. I did not use it last year but using the manual prepared by Mr. BT has allowed me to use the system yesterday and today to do the registration without problems"

Teacher2:

> "I used the system last year and all I needed to do was a little refresher to remember the fields. But basically I remembered everything to do to register the students. For registration, you must know what fields apply now and what fields you will use later."

Mr. BT had discussed with school administration extensive plans for using the EMIS in the new school year commencing September 2010. These included having teachers: use the system to do student attendance and to enter students' grades; print report cards and transcripts using the EMIS; record and monitor student discipline using the EMIS and; track school income and expenditures, for example, record payment of school fees. However, all these plans were put on hold, when Mr. BT received a dismissal letter from the MOE.

The administrative staff at the Bocage Secondary school were very disheartened when Mr. BT left. They felt that the MOE had done an injustice to him. They attributed the advancement of the EMIS at the school to him. To them, not only was he the EMIS champion, but also, they felt that he had saved the MOE much money by keeping all computers in the school in a workable condition by maintaining them regularly. In the words of the Vice Principal, 'Mr. BT is irreplaceable'. The Principal indicated that, 'the EMIS is at the stage it is because of him'. According to the Vice Principal, "Had it not been for him, these 10 year old computers would have all gone bad." The Principal also lamented that, "Mr. BT stays in the school at very odd hours such as 11:00 in the night to work on the EMIS and the computers in the lab." To them, the MOE should have taken these things into consideration before dismissing him. It was very glaring that no one in administration took or gave credit to each other on the success of the EMIS but rather, attributed that to Mr. BT. This led me to believe that whilst they supported the EMIS in theory, full responsibility including providing EMIS leadership was given to Mr. BT. But then again, the MOE had never articulated to Principals the role of administration concerning the EMIS. After hearing Mr. BT's story from the school's administration, I too became emotionally involved by putting in a good word for him at the MOE. I felt like an insider and the Principal and Vice

Principal saw me as one, concerning the situation with Mr. BT. Sikes (2008, p. 146) was right when she noted that this emotional connection can be considered a form of 'insiderness'.

The absence of Mr. BT was indeed felt throughout the school and administration reminded me very often of that. Every time a computer did not work or server failed or network was down or the EMIS did not work, the popular saying around was, "if Mr. BT was there, he would have fixed this already" or "if Mr. BT was there, this would have never happened" or "if Mr. BT was there we would have been further with the EMIS". The school experienced technical problems with the computers, servers, network and EMIS from the time he left. When the servers and network failed and the MOE technician took such a long time to solve the problem, the Principal commented that, "if Mr. BT was there, the server and the network would have been working already since he knew what to do. Mr. BT was way ahead of the MOE technicians themselves". During registration for continuing students the school did not use the EMIS to conduct the exercise because Mr. BT had left by then having already received his official dismissal letter from the MOE. The Bursar's intention was to use the EMIS to enter students' registration fees and keep records of the school's expenditure. He explained to me on many occasions that he and Mr. BT had planned to start in the new school year. However, he was never able to do that, since according to him, "if Mr. BT was there he would have assisted me. This new EMIS Coordinator does not know much".

From September 2010, the school's IT infrastructure experienced lots of technical problems which could not be fixed by existing staff; neither could the MOE technicians solve the problem in a reasonable time frame. In September, I was informed that the school was burglarized the previous term and a number of computers were stolen including the secretary's computer, the Principal's computer, the EMIS laptop and four others from the IT lab. The Bursar was asked to give up his computer to the IT lab so that students could sit their CXC IT exams. The school bought a new computer for the secretary because of the importance of her job regarding administrative support but according to her, "since Mr BT is not there anymore there is no one to install the EMIS on it for me". The Principal was also given a temporary used computer. However, the Bursar had to bring in his personal

laptop for use and according to him, "someone needs to transfer my computer from the IT lab back to my office. But since Mr. BT is no longer there I don't know who will do it". He also indicated that he was waiting on the new EMIS Coordinator to put his computer on the network so he could access the EMIS since he had a lot of entries to do. As a result of the theft there was no EMIS laptop available for use by the EMIS Coordinator. The school wrote to the MOE for replacement but was told that due to budget constrains they were unable to replace the computers at the moment.

In October, during my field visits some of the computers and IT infrastructure at the school got damaged by lightning and that included the Principal's used computer, the main server and the network. The EMIS stopped working altogether and no member of staff could fix the problems. The school tried to get the MOE technicians for almost two weeks to visit the school to fix the problem but was not successful. I subsequently intervened. The MOE complained of having too few technicians and that, they also had to attend to the flooding on the east coast of the island where three schools were affected by the floods. When the Technicians eventually visited the Bocage Secondary School, they had to re-boot the web server to allow the EMIS to work. However, they were unable to fix the main server and the network. The MOE's technician recommended the use of a voltage regulator for future use but neither the MOE nor the school could afford to purchase one. The Principal and Vice Principal had to call in Mr. BT to assist. Before he could solve the problem, St. Lucia was hit by a Hurricane which caused major damage to buildings, roads and the island's infrastructure. Luckily the Bocage School did not receive major damage to its IT infrastructure. However, the majority of the other primary and secondary schools received damage to physical infrastructure, furniture and equipment. This meant that the country's scarce resources had to be stretched even further to accommodate hurricane recovery efforts. In late November when I visited the school, the IT technician had finally fixed and returned the main server but the web server had failed and no one at the school could fix it. Eventually the MOE's technician fixed the problem but the network was still not working and so the EMIS was still accessible only on the computer in the server room. The Principal, Vice Principal, Bursar and Secretary were all requesting for the EMIS to work on their machines.

The Bursar indicated that he had already discussed with four teachers who were willing to assist him in entering his financial information in the EMIS. According to him, "*Now all this is gone down the drain*". The Principal complained to the IT Manager at the MOE who eventually sent Mr. BT in January to sort out the network problem. Mr. BT spent two days at the school after which he fixed the problem. Everyone was back on the system again. The Vice Principal very loudly said to me, "tell me something, Mr. BT has been here only yesterday and today and the EMIS is up and running on everyone's computer. Whereas, the MOE people come all the time but cannot fix the problem; and you tell me they let Mr. BT go". Well the saga was nowhere near ending. By the end of the month the network was down again. Mr. BT came to sort it out but recommended that the school change the modem. The school called in the internet service provider, LIME (Landline, Internet, Mobile, Entertainment), to change the modem. It worked for only one day and the next day the network was down again. Mr. BT returned and this time around he run a line from the modem in the Learning Resource Room located on the ground floor to the server upstairs and then used that line to connect all offices. That seemed to work pretty well. Everyone was back on the network and could access the EMIS except the Bursar. The network point in the staffroom also needed some attention but throughout the month of March, the Secretary, Principal and Vice Principal could access in their offices. In a semi-formal interview with the Principal she spoke strongly against the lack of resources and support from the Ministry of Education.

Interviewer:

> "What are some of the critical things that have prevented you from using the EMIS as you would have wanted to?"

Principal:

> "First thing is that my computer was stolen; Second is the fluctuation in electricity especially in my office; thirdly, technical problems with the servers; Fourth is that technicians are not readily available to fix problems. Fifth is time because of my heavy workload. If all these things were OK then I would need extra training."

Interviewer:

> "What support would you need from the MOE to have the EMIS working?"

Principal:

> "Qualified persons from the MOE to check on the system every time or mid-term to ensure everything runs effectively. Because persons in the school are not technical and cannot even see if something will go wrong. We do not want the MOE to give us a system that will fail."

Interviewer:

> "If you were to complete the sentence with five different answers: The EMIS is not working fully at my school because............, what would you say?

Principal:

> "(1) Lack of training of staff (2) Technical problems (3) Inadequate resources to maintain it (4) Lack of funds for example some time ago we needed the power regulator and we could not purchase it. The MOE should put aside a special fund to keep the system going. (5) Security is a factor because one time my computer and others got stolen."

Among the four members of the administrative team, all but the Principal seemed to have the competence and confidence in using computers. During my visits, the Secretary, Bursar and Vice Principal very frequently used their computers. The Secretary used it to type exams and letters and to perform other administrative duties for the Principal. The Vice Principal used it for scheduling purposes, to enter information on the students' School Based Assessment (SBA) and for using the EMIS. The Bursar used it to surf the internet. On the other hand, the Principal's computer was always off. There was one critical incident that led me to believe that the Principal was not computer savvy. One day whilst in the Vice Principal's office the Principal called him on the phone asking for the password on her computer because she had forgotten it. After giving her the password he laughed and said, "I mean, tell me, how can you forget your password? She is just not using the computer. I have told her she must use it more often". This lack of confidence in using the computer had affected the use of the EMIS by the Principal. According to the Technology Acceptance Model, the user's perceived ease of use of the technology affects their use of the technology (Ma and Liu, 2004). I also recall an occasion when the principal sent a student and a parent to the Vice Principal instead of dealing with them because according to her she did not have the child's performance information on the EMIS and thought that the Vice Principal might be able to find it faster. The Principal did not act like the EMIS was a priority and thought it easier to continue using her manual system of management. This was not only reflected in the lack of

EMIS leadership or structure provided by her but was revealed in her response to a question I asked.

Researcher:

"Do you think that the EMIS was an absolute necessity for the running of your school or a priority?"

Principal:

"Miss I don't think it is a priority. It is very, very important especially with all that is going on with the technological age but not a priority. Now with all what is going on, when the system is down you have no way of accessing your information and submitting it to the MOE. You then have a problem. When we use to do the questionnaires manually it was more accurate. For example, with the way that attendance is done, everyone is absent by default and then you change to present if the person is there. If you just forget to change one person then you have wrong attendance for that person; whereas, if you were doing a manual count of attendance, it would be easier."

The Principal and Vice Principal spent a large percentage of their time dealing with student disciplinary issues. In fact, the Principal usually felt guilty having always to be dealing with student cases when I was around. She often apologised and made statements such as these to me;

"Miss, you must be saying that every time you are here something happens. You and I just cannot get a chance to talk without those sorts of interruptions."

"Miss I am sorry that I cannot even talk to you or invite you to these meetings in here. From morning I am dealing with some cases. I was supposed to start the supervision of my teachers today and up to now I cannot do it. See, it's almost lunchtime (pointing to her watch) and I am tied with this case. Everyday it's the same thing." (Principal)

She barely had time to attend to her other administrative duties because she was occupied most of her time, dealing with student discipline. The only way she would use the EMIS was to use the system to help her document, report and monitor the student's disciplinary problems. However she rarely used it. When there was EMIS access in the administrative block, she asked the secretary off and on to search for students' telephone numbers or addresses or Form. This was the main purpose for which the Principal used the EMIS. On the other hand, the Vice Principal wanted to

use the EMIS to record student discipline problems. During the month of September he started entering the problems right away in the EMIS instead of the Log Book but along the way he complained of many challenges and resorted to writing in his Log Book. His first complaint was that the screen to enter student disciplinary problems was not user-friendly and it was easier and quicker for him to write the information in his Log Book. On a particular day that I visited, he explained that he needed to enter information on four sets of fights among students but since the screen was so unfriendly, he used the Log Book instead but would transfer the information in the EMIS at a later date. His second complaint, which was similar to the secretary's complaint, was that since the system was a single user licence, every time the EMIS Coordinator was logged on, he did not have access to the EMIS. In these instances he simply used his Log Book to record the cases.

The Vice Principal explained that he had some students to suspend and needed to enter the reason for suspension, date and length of suspension but he was unable to log on. He tried calling Mr. BT to find out whether he was accessing the wrong screen because Classroom Manager should allow more than one person at any one time to have access. The Vice Principal was very disappointed with the progress of the EMIS and to some extent felt responsible for this. During one of my field visits in March and April he explained that before he became Vice Principal he used to be involved in much of the IT activities of the school. He added further that he is an IT person but he does not have the time anymore. He informed me that next term he will play a greater role in the EMIS and IT duties of the school like he used to, so that he could assist with the IT and EMIS problems. However, he will have to get up-to-date with the new technologies since much has changed now. The Vice Principal also commented that the IT teachers at the school and EMIS Coordinator are not technical persons. He also expressed his dissatisfaction with the EMIS Coordinator by what he said and maybe by what he did not say; He laughed and said, "As for Ms RC; anyway, let me not say more".

The full-time Secretary was on leave at the beginning of the school term and was replaced temporarily by another Secretary. Both the temporary and full-time secretary had used the EMIS. The temporary secretary had done late registration of students in August. From my interactions with her, I got the impression that she did not seem too

perturbed by the EMIS but would use it if she had to. When her computer was replaced after being stolen she made no requests to have the EMIS installed on the computer. When I inquired whether the EMIS had been installed on her computer she replied that she did not know. On a subsequent visit she did indicate that the EMIS had been installed and she had used it to retrieve information on students' parents. The full-time secretary seemed a lot more enthusiastic about the EMIS. She explained that in the past she had used the EMIS to enter teachers' attendance, information on the students and done student registration. She had also used it to generate class lists for the Principal and teachers. According to her, she received one-on-one training from Mr. BT but still there were some things she did not know. Based on the EMIS duties outlined by the MOE, it was the secretary who was supposed to do the bulk of the data entry anyway. However, Ms. RC did not allow the Secretary to enter data nor print reports from the EMIS. From all indications, the secretary wanted to play a greater role in the EMIS but the EMIS Coordinator would not allow her to.

Ms. RC did not take lightly to the Secretary correcting her about EMIS matters either. The secretary once brought to her attention an error in the way she entered the data on the reasons that teachers were late or absent. It was not done according to MOE's specifications. Ms. RC was very annoyed and it took the Principal to stop the argument between them. The Secretary enjoyed talking about the EMIS. She often asked whether she is allowed to make corrections to students' biographic information. She indicated a few times to me that there were some errors and didn't mind correcting them but she was afraid to do that without permission. On one of my visits in February, the secretary said that she needed to see Mr. BT to pick his brains about the EMIS. She then asked me whether she is allowed to generate reports because she really wants to do them. According to her, "when Mr. BT was there he would allow me to do the attendance and do reports. But am I supposed to do that or is that the role of Ms. RC?" I suggested that she discuss this issue with the Principal and the EMIS Coordinator. So she simple used the EMIS when the Principal or Vice Principal or Bursar or teacher asked her to search for information on students. Both the temporary and full-time Secretary typed all letters for the Principal. Some of these letters were standard letters that could have been added to the EMIS and printed when needed.

The Bursar on the other hand indicated that from 1999 he had been using Microsoft Excel to record his income and expenditures information. However, he stopped in 2009, because he was so focused on using the EMIS instead, especially with the support of Mr. BT. This was not his only purpose for wanting to use the EMIS. According to him, "many times organisations call to find out about students who are in need of financial assistance or who are currently receiving financial help and I want to be able to pull up all such students from the system". Over the months during my fieldwork, the Bursar became very disappointed with the EMIS and the EMIS Coordinator. In his own words,

> "This EMIS has a blight. Everything is going wrong to prevent us from using the EMIS. I just can't understand it. What next could possibly go wrong? When Mr. BT is there he fixes everything. The system is never down. But the other persons here don't know how to do these things. Mr. BT knows the purpose of every single wire in the server room. Now that he is not there we cannot depend on the Ministry, and their technicians can't fix the things". (Bursar)

The Bursar always requested the EMIS to enter his income and expenditure information but when he got access there was always an excuse for not using it. He used excuses such as, he did not want to start using the EMIS and then the network stopped working again or he will start entering student registration fees tomorrow or later in the week. On one occasion I suggested that he use the IT lab or the Resource room but he said that it was not convenient because classes were being held there. However, he also made it very clear that he does not remember what he learnt two years ago in the half hour EMIS training session with Mr. BT and that he needed more training or to play around with the software to get familiar with it before using it. According to him, "I need to fiddle with the system to learn what it can do. This new EMIS Coordinator does not know much". He once explained that he does not want to enter financial data and then make an error "because you cannot delete; if you make an error then you have to do a reverse entry and I don't know how to do that yet". He often called Mr. BT to come in and help which he did on few occasions. For example, there was an incident where he requested a report on students by class and sports house from Ms. RC, who was unable to do it for him. After connecting him to the server, Mr. BT showed him how to do the report.

It occurred to me that the use of the EMIS by administrative staff was very fragmented and uncoordinated. Each person was interested only in their use for the system.

During my fieldwork, one thing which was made very clear to me by both the Principal and Vice Principal was their dissatisfaction with the way the EMIS was implemented at the school. They felt that the MOE was too authoritarian in their behaviour and that the school did not have enough say in the manner in which the implementation was done. These were the words of the Vice Principal when I asked him about his expectations for the EMIS.

> "All I know is that we are supposed to use the EMIS. The Ministry has never provided any guidelines as to what is expected of us from the EMIS. I did not even know what the EMIS Coordinator is supposed to do. The Ministry just called us here at the school one day and said that they have reduced Mr. BT's teaching classes and assigned him to work with the EMIS as the EMIS Coordinator. I guess they would have told him what to do. But as for administration, there are no clear guidelines from the Ministry to us. So I guess each school is pleased to do as they wish or as they can. But the Ministry should have involved us more in the implementation of that software. Maybe the schools that were in the pilot would have gotten more information. Because usually they give them the details and when the programme is rolled out to other schools they assume these schools know what to do." (Vice Principal)

In an interview with the Principal, she expressed similar sentiments to that of the Vice Principal.

Interviewer:

> "Were you involved in the selection process of this EMIS?"

Principal:

> "No. I was not involved".

Interviewer:

> "But would you have wanted to be part of the process?"

Principal:

> "Yes I would have liked to be part of that because the school Principal should be aware of what is happening or what is being brought into the school. It is true that the MOE is the one forming the policies but the schools should be part of it so we can make a contribution and so that we can be aware of what is happening. So it will not be a surprise when we get the software at the school. Even then the MOE should

have provided some form of training to the Principal because it's not all Principals that will want to work with the EMIS person. So the MOE should have prepared some training for the Principals to make the EMIS more meaningful for the Principal and school."

Interviewer:

"Were you happy with the way the EMIS was implemented at your school?"

Principal:

"The EMIS is a very good initiative on the part of the MOE but I must say I am not satisfied with the manner in which it was implemented. There should have been more collaboration with Principals and teachers. They should have been working along with the MOE. Because, what has happened now is that, the person who was trained is no longer there and we have a lot of problems now. Now with a new person, she must learn the system but if everyone was involved it would have been better. Now it is creating a problem because we were not sufficiently trained for this kind of programme."

Interviewer:

"Would it have helped if you had received guidelines and instructions for using the EMIS."

Principal:

"The EMIS would have been more effective if it were a whole school approach. If so the teachers would have been able to go in the server room and put in their information. Right now they are very sceptical in going in the room. They are not comfortable in going in the room to put in their information. But if it were a whole school approach, they would be more comfortable. They would not worry if they make a mistake. So I think it is the training that is lacking."

5.6 Documenting the Thoughts and Actions of EMIS Coordinators

It was clear from my observations and interactions with school administration, teachers, EMIS Coordinators and MOE officials that Mr. BT had championed the EMIS cause. He possessed all the criteria for selection prepared by the MOE with the exception of having a Degree in Computer Science or a related field. He also performed all the related EMIS functions specified by the MOE. This was an indication that the duties and qualities of the EMIS Coordinator specified by the MOE were adequate for the job. Mr. BT was very proficient in troubleshooting and had excellent knowledge of IT network and of the EMIS software. His IT knowledge contributed to the reason why during his tenure as EMIS Coordinator the school rarely experienced technical or network problems. This stable environment allowed

him to advance the work of the EMIS. According to him, "Training was straight forward since I already had a background in working with computers." He provided training to all staff at the Bocage Secondary School, which they often spoke of. He was also well respected by the staff and they all looked up to him for guidance in using the EMIS. Even after he was dismissed by the MOE, he returned to provide help free of charge to the school. He also volunteered his services in helping other secondary schools with the EMIS. This explained his commitment and great passion for his work. It's no wonder that when I asked the Principal what were some of the qualities necessary for an EMIS Coordinator she listed qualities similar to those of Mr. BT such as confidentiality, approachable, peoples-person, dedicated, patient, knowledgeable of developments in technology and technical know-how. Mr. BT thought that the person replacing him should possess the following qualities;

> "He or she must be a people person – that is someone even if he/she gets resistance must not give up, must still go at it even through all the resistance. At the end of the day he/she will be dealing with people and changing people's perception is not easy especially when they have the habit of doing something one way. He/she must have that go-for-it attitude.
>
> He/she must be someone who does not take things personally. Because persons at the school may make comments and so he/she should not feel that they are being personally attacked.
>
> He/she must be knowledgeable of IT. He/she must also have a love for computer and IT systems. Because if you have that kind of love, you will want to see the EMIS go forward.
>
> He/she should be one who is not afraid to experiment and trying new things or looking for new ways to do the same thing. Many times that is what kept me going; by looking for new ways to do things.
>
> He/she must also be willing to learn; ask questions and do research and not settle for someone just giving the answer.
>
> However, the main thing is the right attitude. Attitude dictates everything. For example, I could be just like a lot of the teachers at Bocage but I chose to be different because I have a different attitude. I cannot just sit there and see the system not being used. I like to be involved."

He noted further, "I think that a lot of the schools that are lagging behind, the Coordinators are not that enthusiastic about the EMIS."

However, at the time of the interview with Mr. BT in August 2010 he expressed concern about the progress of the EMIS at the Bocage Secondary School when he leaves. When I asked him how he felt about the person who will be replacing him, this was his response.

> "My personal feeling is that when I leave Bocage, the EMIS will stay exactly as it is at Bocage. Because I don't see any teacher on staff right now who is going to have that kind of commitment to it as I had. That is the fear I have for the EMIS right now; I can see it dying when I leave. I might be wrong but I don't see it going forward. I don't even see the full implementation in September 2010. I can see the teachers staying with their report books as before and their registers as before the EMIS. I don't see any of the teachers there with the go-get-it attitude for the EMIS. They may have it for other things but not the EMIS". (Mr. BT)

Mr. BT pointed out many barriers during his tenure which prevented the teachers from using the EMIS. During this period, all offices had access to the EMIS as well as the IT lab, resource room and staffroom if a personal laptop was used. In addition, Mr. BT saw the EMIS as a suitable system for the school and was there to provide support to the teachers. The first barrier had to do with the issue of technology and change. According to Mr. BT,

> "It will be difficult to move fully into the EMIS because some teachers still do things paper-base and some do electronic. Since teachers are accustomed to doing things paper-base and then we ask them to do things electronic, bridging that gap puts more pressure on them".

The second barrier that Mr. BT noted was the absence of work structures at the school level. He noted,

> "The structures for them to do the work on time on the system are not in place. The system can generate report cards and also design your own report. So the school should just be entering the information one time on the system and generate a report card for the students and get rid of the report book system". (Mr. BT)

The third barrier identified by Mr. BT was teachers' attitudes towards the MOE. In a sense this was like a silent retaliation against the MOE on the part of the teachers for

"dumping" an EMIS on them without consultations. Mr. BT's comments on this barrier was,

> "I think also a lot of teachers at my school have the attitude that the MOE with all their 'bright ideas' that this EMIS will fall by the way side anyway, so why use it. It is like, why should we bother with this anyway as it will be just another one of those failures. It's like many things the MOE has tried; it is there for a month or so then dies after". (Mr. BT)

A fourth barrier identified by Mr. BT was the absence of computers in the staff room for EMIS use. He noted that he requested one computer in the staffroom, dedicated to the use of the EMIS so that the teachers could have easy access to it. According to him, "Many teachers don't feel comfortable going to the IT lab to use the system". However, Mr. BT also noted that he encouraged the staff to use the computers in the IT lab or those with personal laptops to bring them for use in the staffroom.

Whilst he thought that the teachers were not on board, he had a different experience with the Secretary, Vice Principal, Principal and Bursar. Here are his thoughts on the matter;

> "One of the persons who make very good use of the system that I am very proud of is the Secretary. She uses the system for everything she needs and she loves it. That is why she is strictly responsible for doing teacher attendance on it. The EMIS makes it so much easier for her in terms of the reports it has. Going back a few months, for example, is a simple process for her, so she likes that." (Mr. BT)

I also observed similar enthusiasm for the EMIS by the Secretary as I have noted earlier.

According to Mr. BT,

> "The Vice Principal is just coming on board with the use of the EMIS. He is now using the discipline aspect of the system. He is now seeing the benefits of using it in terms of keeping track of the major discipline issues with students i.e. who have committed major offences. Without washing our dirty linen in public, our record keeping is really poor. You know that a student has done x, y, z but there is no documentation that the student has done that. So you have no case against the student

if you have to take it further because the school has nothing to show or no records of the incident. But with the system the Vice Principal is realising that, he can actually track the student's disciplinary record. Even when a parent comes, I can pull up the student and see everything about the child including his/her attendance, discipline records etc. So as a result of that the Vice Principal has begun using the system.

In terms of the registration of students, administration is now realising how efficient it is, using the system. So in terms of that, they are with it.

It took the bursar a while to come on board, but he too as of this year has seen the benefits. Yesterday he came to me and requested my assistance to put the system on all the machines in the IT Lab so that all the teachers can assist in putting the backlog of student payments on the system. This year was the first year we started tracking the registration fees from the students. Just that alone made him realise the benefits. He asked why he wasn't doing that from the inception of the system." (Mr. BT)

Administrative staff saw the usefulness of the system and hence were willing to use it, but with the support of the EMIS Coordinator. This perceived usefulness was also shown to some extent by some teachers. Mr. BT recalled his experiences as follows;

"....For example when it came to the register, I started putting the attendance on the system all by myself. I would stand at the gate on mornings and record everyone who was coming in late or absent then enter in the system. It happen that when some teachers lost their attendance register, they would then come to me asking about whether their students were present or absent on certain days. I then went on the system and just printed their attendances. All the calculations (mean, mode etc) were done for them; the teachers did not have to calculate anything." (Mr. BT)

When I asked him whether that encouraged the respective teachers to use the system, his response was;

"It did but some of them still look at the negatives; that is the perceived barriers rather than the positives. They will not say let us go with it and if we meet barriers we will cross it. They are like 'but' or 'what if'; for example, 'what if they take the electricity'. I find these are petty things to worry about. When was the last time we had a black out? Everyone is trying to stay in their comfort zone.' (Mr. BT)

Mr. BT thought that one solution to having the teachers at Bocage to use the EMIS was to "put a policy in place to say that the EMIS is the way to do things. That is, they will have no choice but to use the EMIS". He also noted that, "The EMIS is still in the baby phase and we need someone to push things along and to motivate the Principal, Vice Principal and teachers to use it. That is because it is not a mandatory system". This was a similar view to that of many teachers at the school which will be expounded in the next section.

Ms. RC was quite the opposite of Mr. BT in that among the criteria for selection prepared by the MOE, she only possessed one; she had a Degree in a Computer Science related field. Among the essential EMIS functions specified by the MOE, she only performed three; Nos. 3, 4 and 6 highlighted in the EMIS Responsibilities section. In addition, she did all the data entry herself. Ms. RC never taught before and was coming almost fresh from University where she pursued a degree in Management Information Systems and worked in one of the Banks in St. Lucia for a short while. She made it very clear on the first day we met, that she would not fix computers or do any technical work on computers because that was not her area of expertise. She explained that she was not good at those things and so the IT persons from the MOE would have to come and do their job. She was right about not being a technician because when the servers or network failed, she had no clue as to what to do. She also made it very clear that she was no Mr. BT and did not want to be compared to him. However, she indicated that she was eager to learn and wanted a good appraisal from the Principal. She seemed very enthusiastic about working with the EMIS, a quality which won her the job as indicated by the Principal during one of my September visits. Apparently, that was not sufficient for doing the job as the EMIS situation got worse during her tenure.

I first met Ms. RC at the Ministry of Education during an impromptu meeting with the MOE EMIS Supervisor. The purpose of her meeting was to gain deeper understanding of how to produce reports from the EMIS. At that meeting the EMIS Supervisor informed me that he had been to the school two days ago to provide one-on-one EMIS training to her. Apparently, that training was not sufficient or else she would not be here so soon. She complained a lot about receiving insufficient training and often compared her EMIS job with her last job at the bank where she received

extensive training in the use of the banks electronic systems. Because of this lack of training there were some functions of the system that she was unable to deal with such as: how to set the status of teachers who have left the school to 'deleted'; how to get a screen with only current teachers on (the screen shows both current and deleted); how to record students who have been suspended; how to enter information on student grades and; how the system calculated dropouts. Ms. RC also had difficulty in generating reports from the system. On one of my visits, the Bursar indicated that he requested a class list by form, homeroom and sports house from Ms. RC so that he could visit the students in their homerooms to get their T-shirt sizes. Ms. RC tried to generate the report and then informed the Bursar that the system could not do it. Instead she gave him a list of all students in the school and their sports houses. The Bursar complained that he had to visit all the classes to manually write the students names, their form, homeroom, sports houses and their T-shirt sizes. Soon after, he called Mr. BT who showed him how to generate the report which was done in just a few seconds. On another occasion Ms. RC refused to accept correction from the secretary concerning the way she entered the reasons for teachers' lateness and absence. Instead, she blamed the software and the MOE for getting the schools such a system without proper customization.

Like Mr. BT, Ms. RC was not given any clear directions from her Principal, Vice Principal or MOE as to how to go about managing her duties at the school. She had to use her discretion as to how best to achieve this and seemed to do things haphazardly. She was not even clear on her duties as an EMIS Coordinator. During one of my visits in September, she explained that she asked the Principal, Vice Principal and EMIS Supervisor what was it they expected of her regarding her EMIS duties and they could not give her any clear directions. During a semi-formal interview with Ms. RC, when I asked her whether she was clear on her role as EMIS Coordinator she responded,

> "No I was not clear on the role. When I came in September, I was told
> I had to teach and enter information in the EMIS. I had to link the
> information and teachers attendance to the Ministry. .... So at that time
> I was definitely not clear on my role. I was just moving on trial and
> error." (Ms. RC)

Unlike Mr. BT, Ms. RC had an authoritarian style of managing the EMIS. She wanted to dictate who should use the EMIS and how. Whilst the EMIS duties specified by the MOE indicated that the bulk of the data entry should be done by the secretary or other internal person, Ms. RC insisted that she was the one to do it because the information in there was too sensitive. From the first month she insisted that she would update the system her way. She prepared a letter for signature by the Principal which was sent to every teacher asking them to update their attendance registers. Later in the month she prepared another letter, signed by the Vice Principal to all teachers requesting that they collect certain information on their homerooms so that she could correct what was in the system. The letter also requested that the teachers submit information on themselves so that she could update the EMIS. She could have simply printed the information that was already in the system on each teacher, and asked them to make changes if any. There seemed to be some silent protest by some teachers since they never completed the information sheet. Others protested outright by expressing their dissatisfaction to the Principal and Vice Principal with the manner in which this issue was dealt with. They thought that Ms. RC was too "bossy". Ms. RC complained that the teachers were lazy and uncooperative.

Ms. RC seemed to lack the leadership qualities highlighted in the duties specified by the MOE. When I asked her about her plans to assist administration and teachers to use the system, she replied that they would not listen to her. She further noted that when the temporary Secretary leaves she would have no problems working with the full time secretary because she was her friend. On the contrary, when the full-time Secretary returned, Ms. RC had problems with her doing any data entry in the system. Ms. RC only approved of two activities for the Secretary; the first was to print standard reports such class lists but only when asked to and; secondly to search for basic information such as students telephone numbers and addresses.

Ms. RC did not have a good perception of the Principal regarding the use of IT nor the EMIS. During one of my visits in September, when I indicated to Ms. RC that I wanted to observe the Principal and Vice Principal she noted; "Don't bother, you will get nowhere, because the Principal does not use the system. She never got training. I don't know what it is but the Principal is afraid of the system. I don't even think she has a computer on her desk" After indicating to her that the Principal had a computer

on her desk, she replied, "well if that is so she does not use it at all but asked us for everything she wants". Well of course, I knew she was right in that the Principal rarely used her computer, but in my position as a researcher, I could not support her. By October during my visits, Ms. RC was getting very frustrated with the EMIS. One day she commented, "If one day you come to the school and I am not there, there will be no use coming because there will be nothing to observe regarding the EMIS. I am the only person using the EMIS". She suggested on a number of occasions that if she gets another job, she will take it instead because this one is just too much stress for her.

Ms. RC very often got frustrated about the support she was receiving at the school level and from the MOE. She complained that "these people in the school just don't care about the EMIS". She continued that they (referring to school administration) do not assist her with anything nor do they support her in doing the EMIS work. I sensed that she was seeking EMIS leadership from the Principal or Vice Principal to make her work easier - support which was just absent. During an interview with her, this was her views on the level of support from the MOE.

Interviewer:

"When you were hired as EMIS Coordinator what kind of support did you expect from the MOE and did you receive it?"

Ms. RC:

"Honestly when I first came to the school I was elated because I was thinking, oh my God, something I learn at school, manipulating of data... However, the support from the Ministry was very poor.... Well in fact you need to have dedicated people moving around every time to just find out what is going on with the machine, servicing them, ensuring everything is up to date. It cannot be every time you have to be behind the Ministry and they don't have time or they busy or whatever..... There are times you keep calling and calling the Ministry and then you get frustrated and just settle for what you have and not necessarily for what you want. And I think it has become so at this school."

Ms. RC did not think that she was receiving the support she needed for the EMIS from the teachers. However, she did not blame them because according to her, "the system is not running properly". She also thought that teachers didn't have the time

because of their teaching load. She believed that the school had nothing to contribute to making the EMIS work but to wait for the Ministry of Education. This is because teachers have already put a lot of their resources into the classes that they teach. According to Ms. RC,

> "I don't think this has anything to do with the teachers. Because, if the administration head, who is the Principal tell them, they have to stay for training then they have to stay. So I am saying it is the Ministry; you put a system in place, and then have the proper support and resources so we can do the work; the hardware, software, data communication." (Ms. RC)

She supported making the use of the system mandatory by all staff members but the MOE has to get the EMIS working efficiently first and provide teachers with proper computers to access the EMIS.

Ms. RC tried to do all data entry by herself. This was quite a task. She had to make corrections to the data already in the system, enter the students' and teachers' attendance because she had to submit monthly attendance reports to the MOE, enter student discipline information from the Log Book and assist the Bursar in entering student registration fees. Because of the absence of a structured process in using the EMIS she performed EMIS duties by trial and error. She began using the EMIS in the server room but soon requested a laptop so she could access it from the staffroom. She complained that the EMIS laptop was stolen and that the MOE never replaced it; however she indicated that she would get her own because she had written to many private businesses requesting donations of computers to replace the stolen ones. Ms. RC felt that she did not want to compete with other teachers in the staffroom for the network point so she requested that the web portal be repaired so she could have access to the EMIS at home. Due to technical problems in giving her online access to the EMIS, she then requested that the EMIS be put on the donated laptop as a standalone so that she could do data entry of attendances at home. That way, she noted, even if the server or network was down it would not affect her doing data entry anywhere she chose to.

She was very concerned that she had not submitted any attendance reports to the Ministry for the past five months (September 2010 to January 2011) neither had she

completed the Annual Statistics Questionnaire whose deadline for submission was October 30, 2010. Both of these were standard reports generated by the system after the data entry. Ms. RC however, began entering the teachers' attendance data in Microsoft Excel. She was able to complete the attendance for the months of September to December in Excel and submitted that to the Ministry. The private businesses made a donation of one laptop and one desktop. The laptop was assigned to Ms. RC for the sole purpose of using the EMIS and the desktop was assigned to the Principal to replace hers which was stolen. The IT teacher at the school installed the EMIS as a standalone on the EMIS laptop. She then began entering the remaining teachers' attendance data for the months January to April on the standalone. She indicated that during the Easter vacation she would enter all the students' attendance from September 2010 to April 2011. Ms. RC noted that her focus was on two pressing things, as was instructed by the Vice Principal, the attendance reports and the disciplinary information on students.

Unlike Mr. BT, Ms. RC did not have much confidence in the EMIS software neither in the data which had been entered as she often referred to them as "crap". When she printed the Statistics Questionnaire, she recognised errors, for example, there was a Form 3 student who was only eleven years old, which was impossible since the entry age to Form 1 at secondary schools is eleven or ten years for the youngest. Another error which Ms. RC identified in the data was that the EMIS promoted everyone at the end of the school year to the next Form and to a corresponding homeroom. However, all students don't go to the same homeroom especially Form 3 students who have chosen their subject streams for the next school year. Ms. RC had to correct the homerooms one by one, which is how the system operates. Ms. RC also noted that the number of students reported on the EMIS did not match the numbers on the manual attendance register. Another error identified was that all teachers were CARICOM nationals and none were St. Lucian nationals, when this was not the case. Ms. RC also thought that Mr. BT should not have done registration using the EMIS since the school had not assigned the Form One students to homerooms at the time; as a result she had to change almost every child from the homeroom they were originally assigned to and put them in the right homerooms. I assisted her in making some of the changes.

During an interview with Ms. RC, when I asked her what qualities an EMIS Coordinator should possess, this was her response:

> "That person must have some general knowledge of the computer, how to manoeuvre the interface, networking skills. However, a technician should be there to support in terms of networking and hardware; because you will not get an EMIS person who can do all these things. The person should also be strong in data warehousing. You really need someone who can enter data, manipulate data and write reports. You need a person who is organised, a person who shows transparency, a person who is focused and head on for example if they need something for the EMIS they will be constantly behind that person who has to provide it and not be laid back and complain. That person has to be able to make decisions on his/her own. Because once the hardware and software is working properly the technical person will only have to come when something dramatically happens." (Ms. RC)

On the last day of my visit, Ms. RC was elated that she received very high marks, 100% and 98% from the EMIS team that went around supervising what was happening with the EMIS. The MOE EMIS Supervisor explained that they were grading the EMIS Coordinators only on the amount of data that was entered on the student records (biographic, enrolment, family info and emergency info) and staff records (biographic, employment, teaching). After four years of having the EMIS in secondary schools, it was disappointing to know that this was all that they were being graded on, whilst they were expected to be using the system fully. However, in the absence of existing EMIS policies, the MOE EMIS Supervisor makes those decisions on his own, without proper guidance from the decision makers.

5.7 Documenting the Thoughts and Actions of Teachers

The teachers at the Bocage Secondary School rarely used the EMIS, although they admitted that they thought it was useful. Every teacher I interacted with admitted to receiving EMIS training from Mr. BT as well as demonstrations on the benefits of the system to their jobs. The only time I saw teachers use the system was in July, 2010 during the registration of new students. Whilst observing them I noticed that they used it quite proficiently and they did indicate that the system was user-friendly. When the system was up and running during the tenure of Mr. BT and during the months of September and October 2010, most teachers did not use it for attendance, nor grades, nor for disciplinary issues. During the tenure of Ms. RC, only a few teachers

requested class lists or students' telephone numbers or addresses every now and then. Some teachers really did not see the importance of the EMIS as one teacher referred to the time assigned to EMIS duties as '*free periods*' for Ms. RC. Apart from doing registration, only one teacher had used the EMIS; she was the Health and Family Life (HFLE) teacher. In a conversation with her, she indicated that she used the EMIS a lot last school term, since Mr. BT had installed it on her personal laptop. However, she added that this new term commencing September 2010, she had not used the EMIS because it was not working properly. She accessed the EMIS from her personal laptop in the HFLE room. When I asked her what she used the EMIS for, this was her response;

> "I used it to do class attendance. I am not a homeroom teacher, but I like to record the attendance of every student that I teach. So during class I record the attendance right here on my laptop. Mr. BT had installed Classroom Manager on my laptop and I could access it from my room. I also used it to record my students' marks in whatever exam or course work that they do. In HFLE we don't give a term exam. We do continuous assessment and the total marks for all these assessments are what constitute the term grade. Therefore, I record every ones marks for every assessment on the system. It has that capability. I also used it a lot to retrieve telephone numbers of students so I could contact their parents. I am a Dean and most times I assist the teachers whose classes I am responsible for. I have to call in parents of students who do not submit assignments or do not attend school regularly." (HFLE teacher)

She also noted that during the time she used the EMIS, it made her work easier. She left the school in January to pursue studies overseas.

My observations and interactions with the teachers of the school revealed seven main reasons for not using the EMIS: firstly, teachers did not see the need for the EMIS since they were basically comfortable and satisfied with doing things the manual way; secondly, they did not have easy access to the EMIS; thirdly, teachers saw the use of the EMIS as a new way of operating and that change process was difficult; fourthly, computer phobia; fifthly, teachers thought that the EMIS was not a priority for administration; sixthly, teachers did like to be 'bossed' around and; finally, teachers had no time to use the EMIS. Some of the actual comments made by teachers when asked why they don't use the EMIS are:

"I don't know but I don't really have the need to use it."

"I don't have a problem entering my grades or attendance manually and so the EMIS makes no difference to me"

"I would like to use it for entering students' attendance and grades but access is an issue. We need at least one computer in the staffroom."

"The EMIS is not accessible in the staffroom and it is not timetabled. Something like that should be timetabled, so as to allow us time to use it. When you have a booked time-table, there is no time to do these things. If there were computers in the staffroom or in a private place just for us teachers, I would use it."

"When you are used to doing something one way, it's hard to change. Change is not always easy."

"You see everything that is new will take time getting use to. Change is always difficult."

"....putting in grades or attendance has never been reinforced by administration."

"If administration was pushing it and it was made mandatory, then we would use it."

..."Although I used the computer with students to teach maths and Mr. BT gave the training in the EMIS, I still have a phobia for computers.....Because I was introduced to it as an adult and had to use it to pass an exam, so it left a fear in me."

"You see, I don't find time to use it anymore"

"... I think I never found the time"

"You see during school you have no time for EMIS and after school you have commitments."

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At the same time, teachers were silently retaliating against Ms. RC's 'bossy' attitude which was clearly seen when they did not submit information for the EMIS and reported her to Administration.

From conversing with the teachers, it seemed that during the tenure of Mr. BT, they were slowly beginning to buy into the EMIS and would have probably been using it for the school year commencing September 2010, if Mr. BT was around. This is mainly because he provided EMIS support and leadership to them. This was reflected in the following thoughts from teachers;

Teacher 1:

"Since you are now doing research on the EMIS, the MOE should see how important Mr. BT was in making it work".

Researcher:

Can you access the EMIS remotely from home?

Teacher 2:

"Yes, I can. I have only tried it once since Mr. BT installed it. He wanted us to try it at home and so I did. Since then I have never used it. But I can use it there."

Researcher:

Have you used the EMIS?

Teacher 3:

"Last year the Ministry sent a form requesting Minimum Standard Registration information on the Form threes. They wanted information on the students' names, date of birth, form and class. In the past I had to get the names of all three classes of Form three students and then put the names in alphabetical order. I had to do that manually which used to be quite tedious. However, last year I was elated when Mr. BT showed me that I could use the EMIS to get the information. So I went on and was able to retrieve a list of all the students already in alphabetical order. But I could not have done it without Mr. BT. He was there to assist me. Now I also remember using it to generate my class list. See here (showing me list), this is my list for last year. I went on and printed my list. However, this year I have not done it."

Researcher:

Do you use the CXC online system to enter students' grades?

Teacher 4:

> "Yes. I did that here on the computer lab and at home. We need a similar thing for student grades here. Mr. BT did a similar thing and gave us passwords to use it. I actually tried it from my home. The system is still there but I have forgotten my password. (I had to inform him that the online system set up by Mr. BT no longer worked.) This is a great loss you know, Mr. BT. (I shook my head in agreement)."

Researcher:

> Have you used the EMIS before?

Teacher 5:

> "Well I did the training with Mr. BT and he showed us how to do student registration. I was one of the teachers who did registration this year. When Mr. BT just showed us how to use it, I started entering the students who were on suspension from my homeroom. Mr. BT also assisted me in doing the student attendance."

Most teachers that I interacted with were of the view that if the EMIS was made mandatory, they would use it. Currently, Form Five teachers who mark School Based Assessments for the subjects that they teach must enter the grades online for CSEC. Teachers noted that they usually use the computers in the IT lab or at their homes to do it.

When they were asked why use the CXC online system but not the EMIS, they unanimously responded that it was because it was made mandatory by CXC to use the online system. However, teachers felt that whilst they would use the system if it was made mandatory, they would still need to be given access from the staffroom. Some of their views are expressed below.

Researcher:

> Have you used the EMIS before?

Teacher 1:

> "Not in this school. I held on for one month at the St. Josephs' Convent and we use the EMIS to enter the students' grades. It was mandatory to use it since they don't use report sheets like we do here. The grades were entered in the EMIS and then we printed a report sheet which was used to do the students' individual report books."

Researcher:

> Are you suggesting that you only used it because it was mandatory?

Teacher 1:

"Yes, that is the only way people will use it, if it is mandatory. Here we have report sheets, then report cards and then report books. All that manual entering will not encourage teachers to use the EMIS since they have no problems doing the manual entering. I don't have a problem entering my grades or attendance manually and so the EMIS makes no difference to me. But if it is mandatory, I will use it. Maybe then if everyone is using it then we can see the benefit."

Researcher:

So then, why do you use this system (CXC) but not the EMIS?

Teacher 1:

"Well again it's because it is mandatory that we enter the grades in the system. Times before we had to submit it manually, now you can't do that. CXC does not accept that anymore. If it was a must that we use the EMIS for these things then I don't have a problem using it. But at the same time we need computers in the staffroom. It makes it easier to use, since the Computer lab is booked all day now."

Researcher:

Have you entered students SBA grades using the CXC online system?

Teacher 2:

"Oh yes. We all have a password and it is compulsory to use the system to enter the grades."

Researcher:

So then why not use the EMIS?

Teacher 2:

"You see that's different. We must enter the grades. CXC do not accept manual grades anymore. So maybe we need to get rid of the report books and make the EMIS mandatory to allow teachers like myself to use the EMIS. There will be no duplication of effort in that way."

Researcher:

How do you currently enter your students' grades?

Teacher 3:

"Well I do my report sheet in Excel and then transfer the grades to the students report books after.....To use the EMIS you must change the mind set and attitude of administration. They must make the EMIS mandatory."

Researcher:

If you use the CXC online system in the lab, then why can't you use the EMIS in the lab too?

Teacher 3:

"The same way that it is mandatory to use the record and scheme books for planning lessons, then it should be mandatory to use the EMIS. Now this should come from the PS of the MOE and down to Administration at the school. Only then will teachers here use it."

Researcher:

Have you used the CXC online system to enter grades?

Teacher 4:

"Oh yes. I am not a Form 5 teacher this year, but last year I used to be one. I used it then."

Researcher:

Did you have problems in using it?

Teacher 4:

"No problems. We had passwords and could access it anywhere. But you see it was mandatory and online. That is why it was being done. That is better. If the EMIS was mandatory then we would all use it. Only the EMIS Coordinator uses the EMIS here because it is part of her job description. It is mandatory that she does it, since she is being appraised on it."

In addition, according to the teachers, if the EMIS is made mandatory then the manual exam report sheet and report books should not be used. I interpreted this as teachers speaking indirectly to putting polices and structures in place to encourage the use of the EMIS.

From my observations, it was very interesting to note that rarely did teachers mention technical problems as the reason for their non-use of the system. I think this is because they know that they have experienced the system both with and without technical problems and yet they did not use it. Therefore, their real problem for not using the system was not the technical problems that were experienced with the system. It could also mean that since they were not using the system anyway, technical problems would not have affected them.

5.8 The Ministry of Education Perspective

Because of my past connection with the EMIS, I was able to have open conversations with the MOE EMIS Supervisor. The Policy and Administration Unit of the MOE did not play an active role in the EMIS except to ensure on an annual basis that each school had an EMIS Coordinator. This was usually done around the month of April of every year during staffing exercises for the new academic year. They also ensured that monies were set aside to pay the annual licence fee to the EMIS Suppliers. The two departments with the responsibilities for the EMIS were the Information Technology Department which was responsible for paying annual licence fees for the EMIS and attending to technical problems and the Corporate Planning Unit which was responsible for ensuring that the system was updated and being used as intended. There were no clear policies from the MOE indicating how, when or by whom the EMIS should be used. There were no targets either to determine what parts of the EMIS should be in use at a particular point in time. In the absence of such guidelines and policies, the MOE EMIS Supervisor, who is also the Statistician, from the Corporate Planning Unit allowed schools to proceed as they saw necessary and provided assistance when requested according to his work schedules. He used two or three EMIS Coordinators from other schools who were thought to have good knowledge of the EMIS, to assist him in going around to the schools once a year to evaluate the use of the EMIS.

This evaluation involved the use of a checklist to indicate, the status of the network, where the EMIS was installed, access points, whether certain basic information was entered, accuracy of the entries and what the EMIS was used for. The entries were then graded based on this checklist. After grading the entries for Bocage Secondary, the MOE EMIS Supervisor indicated that Ms. RC felt very relieved when she received 100% for students' records and 98% for teachers' records. He commented, "That's what she was waiting for all this time, to know how she performed." Whilst he was disappointed with the way the EMIS was being used, he was of the opinion that given more time, schools will use it more. He also thought that the loss of Mr. BT impeded the success of the EMIS not only at the Bocage Secondary School but for St. Lucia as a whole. He did not seem to have much confidence or trust in Ms. RC regarding the work of the EMIS. He did not trust her with full access to the EMIS from her home and thought that she was too bossy and pushy for information from the

staff and did not request it in a respectful way. Similar feelings were shared by the Principal, Vice Principal and most teachers of the school.

From my interactions with the IT unit, the staff generally felt that the EMIS was a failure. They felt that they were paying annual licence fees for a system that was not being used. The Ministry as a whole did not seem to give any priority to the EMIS.

In this section, I have presented, from my perspective, my findings on the use of the EMIS at the Bocage Secondary School. I have done this by presenting the thoughts and actions of the staff of the Bocage Secondary School and the MOE, regarding the use of the EMIS. In order to present my findings, I divided the staff of the Bocage Secondary School into three groups, administrative staff, EMIS Coordinators and teachers because the nature of EMIS use for each group differed. In the next Chapter, my findings are analysed and presented in an effort to address the research questions outlined in the first Chapter.

Chapter 6 Analysis of Results

6.1 Introduction

My observations and interactions with the Principal, Vice Principal, Secretary, Bursar, EMIS Coordinators and teachers of the Bocage Secondary School, my review of EMIS related documentation and software as well as my interactions with MOE Officials provided the information that I used to analyze the use of the EMIS at the Bocage Secondary School. In the previous Chapter, I presented my observations of and interactions with participants from my perspective. In particular, I used participants 'voices' to support my claims on the use of the EMIS. In this Chapter, I have used grounded theory to analyze the data by coding the information recorded into themes then categories and then core categories. These categories are presented below in order to address my research questions.

6.2 Interrogating the Data – Addressing my Research Questions

The data was analyzed with the research questions in mind. The main research question was; how is the EMIS being used at the school level and what is required to facilitate its use? In an attempt to address the two parts of my research question, I used the following six guiding questions as outlined in the first Chapter;

1. What type of information is required by management personnel for school management and decision-making and can it be facilitated by the EMIS?
2. Where and how do management personnel at the school obtain data/information for managing and decision-making?
3. Are there software, networking and hardware problems in using the EMIS?
4. How and when is the EMIS being used by school management personnel?
5. What is the EMIS being used for?
6. What is required to improve the use of the EMIS at the school?

The responses to my main research question, based on my findings are presented below.

6.3 How was the EMIS Used?

In order to understand how the EMIS was used at the Bocage Secondary School, one must first understand the management processes at the school and the information

required for decision-making. In the previous Chapter, I have provided insight into the management processes and the type of information required by school management personnel for decision-making. Upon examination of the EMIS which included reading the training material provided by the Suppliers, using the EMIS with the EMIS Coordinator and reviewing the various components of the system, I observed that the EMIS had the functionality to provide the staff of the school with most of the information required for the management processes. One of the key management functions that the system did not facilitate was the timetabling of replacement teachers for teachers who were absent. Another function that it did not facilitate was facilities management.

In addition, in an attempt to address the question of how the EMIS was used, I will provide insight into the school's sources of information, the components of the EMIS used and what they were used for and finally, when and by whom the EMIS was used. The responses to these questions have been categorized under one main heading, under-utilization of the EMIS for management purposes. It is also interesting to note that the use of the EMIS was not a job requirement of administrative staff or teachers. Therefore, to administrative staff and teachers, using the EMIS was voluntary. On the contrary, using the EMIS was a job requirement of the EMIS Coordinator, who was being appraised on its use.

Underutilization of the EMIS is discussed from two standpoints; firstly, the non-use of some components of the system and secondly, the limited use of the components that were used. As previously discussed, the EMIS comprised the following components, biographical data on students, student attendance, student discipline, student movement (transfers, dropouts, graduation and repetition), student grades, student report cards, student transcripts, biographical data on teachers and principal, teacher attendance, timetabling, school finances, resources and community/school catchment areas. The only components used by the staff of the Bocage Secondary School were biographical data on students, student attendance, biographical data on teachers and teacher attendance. Based on the school's management processes, the operational level decisions to be made and the new thrust towards school-based management earlier identified, meant that there was a need for the use of the other components of the EMIS. For example, student movement, discipline and

performance had to be managed, yet these components were not used. The school experienced serious problems with student indiscipline, and the EMIS would have been useful in monitoring student discipline. According to Wohlstetter et al (1994), information will be required if school-level actors are to have the capacity to make the changes required to implement the new directions towards school-based management. The EMIS was thus grossly underutilized by the school. The non-use of the components of the EMIS was due to a number of reasons, which are discussed in the next section.

Whilst the school used the components of the EMIS on student and teacher biographical data and attendance, limited use was made of them. The biographical data on students were entered in the system during registration of students and updated during the school year. Student and teacher attendance information were entered during the school year by the EMIS Coordinator but were not completed. The only use made of the information from the system was to retrieve information on students' addresses, parents' telephone numbers and class lists. Information was used from the EMIS mainly when administration dealt with student disciplinary cases. The addresses and telephone numbers were often used to call in these students' parents/guardians for meetings. Class lists were requested from the secretary to assist the principal in locating students when needed, to verify class enrolments by teachers and to purchase sports uniforms by the Bursar. Only one teacher used the EMIS to manage continuous assessment and attendance of students in her class. On the other hand, the incomplete student and teacher attendance information entered in the system were hardly ever used by school administration for management purposes.

Whilst the school's staff did not utilize most of the components of the EMIS and made limited use of some components, they still needed the information that would have been in the EMIS for school management processes as identified in the previous Chapter. In addition, the components such as student and teacher attendance that were scarcely used were also needed. The school recorded most of its needed information manually, in separate notebooks and registers as follows: student discipline was recorded in a student log book; information on student movement in a notebook; student grades were recorded on student report cards and mark sheets; student attendance in student registers; teacher attendance in an attendance notebook and;

biographical data on teachers were recorded on each teachers individual file. Retrieving much of that information usually proved difficult and time consuming. In order to prepare the monthly Teacher Attendance Reports for the Ministry of Education, Microsoft Excel was used to enter the information from the teachers' attendance notebook. The students' monthly attendance report was not completed by the school.

Could the level of information use be related to the actual level of authority given to our schools in the decision-making process? From Hanson's (1990) continuum on the amount of authority redistributed to schools, the Bocage Secondary School was indeed at the Participation and Deconcentration points which meant that no real authority was redistributed from the MOE to the school and the right to make major school decisions still resided with the MOE. Although operational decisions had to be made by school administration, the demand for the use of the EMIS to obtain that information was not high, since the same information was obtained the manual way. According to Wako (2003, p. 13) 'information is only of value if there is use for it' and so the value of information depends on the demand for it. There seemed to be demand for information for the day to day running of the school but it was partly facilitated the manual way.

6.4 What was Required to Facilitate the Use of the EMIS?

In discussing what was required to facilitate the use of the EMIS, I will also discuss what contributed to its limited use. Since the EMIS was used sparingly, the greater part of my findings involved why the EMIS was not used more frequently or what was required to facilitate its use. In an attempt to address this part of my main research question, I have provided insight into the presence of software, networking and hardware problems in using the EMIS as well as what is felt by staff to be required to improve the use of the EMIS at the school. The themes developed were grouped into over fifteen categories which were further grouped into five core categories. Some of these categories were identified across the various groups of participants; administrative staff, EMIS Coordinators and teachers whilst others were identified across administrative staff and teachers. From the analysis of the results, the five main factors which were found to contribute to the non-use or limited use of the EMIS were, technical, economic, training and personal, software and finally

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organizational. These factors which are further explained below did not exist in isolation of each other but were dependent on each other for the use of the EMIS.

Technical Factors

One of the reasons for the non-use of the EMIS by school staff was the problems experienced with the servers, network and internet. Whilst the exact cause of these problems could not always be determined, natural disasters such as lightening, was one of the causes. These problems created an unstable IT environment for the use of the EMIS which resulted in the lack of confidence in the EMIS by school staff. Effective and timely maintenance of the IT infrastructure is therefore paramount to the success of the EMIS. As referenced in the literature review, according to the OECS (2000), without proper maintenance of hardware and applications in order to ensure the reliability of the ICT systems, teachers and managers are unlikely to have confidence in the ICT infrastructure and are unlikely to spend time and talent with the system. However, the maintenance of IT infrastructure was not only expensive but required personnel with the technical know-how. These were both challenges faced by the Bocage Secondary School and the Ministry of Education. Having a multi-skilled EMIS Coordinator who had the technical know-how to maintain the servers, network and internet worked very well for the school, by creating a stable IT environment for the use of the EMIS. It also reduced the IT expenses of the school because of continuous maintenance of the IT infrastructure. In small developing states like St. Lucia, there are limited trained IT personnel and hence there is a need for educational personnel to be more versatile than their counterparts in larger countries (Bray and Hui 1989). However, whilst it is the ideal to be knowledgeable in IT maintenance as an IT teacher and EMIS Coordinator, such individuals are rare and the second EMIS Coordinator did not possess the technical know-how to maintain the IT hardware and infrastructure. In addition, neither the IT teachers nor the other members of staff were knowledgeable in IT maintenance. Recruitment is therefore very important which is further discussed under the Organizational Factors. In addition, the MOE technicians did not provide timely and effective maintenance support. Therefore, the EMIS could not be accessed for several months on many of the computers. If the MOE wants to create appropriate IT infrastructure it needs to invest in adequate support personnel to coordinate all technological activity (Lessen and Sorensen 2006). This is the kind of support that administrative staff referred to when they often commented, "If Mr. BT

was there, he would have fixed this already." Lessen and Sorensen (2006) also note that an adequate budget should be provided for maintenance. Because of the limited financial resources faced by small developing states such as St. Lucia, such a budget was non-existent in the school and insufficient at the MOE. The economic factors discussed below will provide more insight into this issue.

Economic factors

In the Literature Review, the developmental challenges and vulnerabilities faced by small Caribbean states such as St. Lucia, was discussed. These challenges were evident during my field work as they impacted on the use of the EMIS. One of the main challenges was the lack of financial resources to maintain the IT infrastructure for the EMIS. The Education system of St. Lucia is operating on limited financial resources and depends heavily on loans and grants from donor agencies. This view is supported by Atchoarena (1993, p. 41) who notes that the 'financing of education in small states does not escape the predominance of external aid'. Hence, whilst projects such as the EMIS are implemented from loans, there are limited financial resources to sustain them. According to Louisy (2001), St. Lucia's vulnerability to external and economic shocks has negatively impacted its financial capabilities. She further notes that in this changed global community, small states face very stiff challenges of economic and social development.

As indicated earlier, during my research, the servers, network and internet at the school constantly failed. Replacing, the servers was not possible since the finances were unavailable. The school and MOE were unable to replace the stolen computers and to purchase voltage regulators for the computers and servers. The MOE had three IT Technicians serving the entire education system; the central office, satellite offices, district offices and schools. The MOE lacked the financial resources to hire more IT Technicians to service the schools. It is no wonder that Ghosh (1987) questions whether third world countries can afford high technology in education, in terms of capital and human resource.

Another challenge facing small Caribbean states, which has major financial implications for the education sector including the use of the EMIS, is the vulnerability of these islands to natural disasters. When natural disasters strike, all

funds and human efforts are diverted to the recovery process. The education sector is highly exposed to natural disasters, since it operates a relatively dense network of buildings (Atchoarena 1993). As noted earlier, St. Lucia experiences on an annual basis, six months (June to November) of the hurricane season. During the period of my research, a bad weather system caused above-normal lightning and thunderstorms in some parts of the island, including the community of Bocage. In addition, serious flooding was caused in the village of Dennery. The lightning damaged the server at the Bocage Secondary School which affected access to the EMIS by administrative staff. The flooding at Dennery seriously affected four schools which were given priority by the MOE in terms of rehabilitation. Because of the limited number of technicians, they were all deployed to the Dennery schools whilst putting Bocage Secondary on hold. The problem of natural disasters worsened when the island was struck by Hurricane Tomas in late October, 2010. The entire island experienced damage and destruction to its buildings including schools and infrastructure such as roads, water supply and electricity. All schools received damage in one form or another including leaking roofs, flooding, destruction of furniture, equipment and instructional materials. The insufficient emergency funds that the country had were spent on hurricane recovery efforts. This meant that there were no funds to provide any attention to the EMIS. St. Lucia had to resort to financial and other assistance from overseas countries to further assist in the hurricane recovery effort. The vulnerabilities and challenges faced by St. Lucia as a result of natural disasters increased its dependence on foreign aid.

Whilst globalization may be bringing the developed and developing worlds closer together through information technologies such as the EMIS, it is also creating greater marginalization of small developing states like St. Lucia who face economic challenges and increased dependence on foreign aid. The economic, knowledge and power gap is therefore widening between developed and developing countries (Ghosh 1987). In other words, rather than reducing the gap, a greater divide is occurring with different states possessing different capacities and capabilities to adapt (Weiss 1998, cited in Taylor 2005).

Training and Personal factors

The personal factors which affected the use of the EMIS were the ease of use of the system and the perceived usefulness of the system. However, these were both affected by the level of training provided in using the EMIS software and the frequency of practice thereafter.

Training in the use of the EMIS along with practice in using the EMIS was found to be a key factor for the successful use of the EMIS at the Bocage Secondary School. Mumtaz (2000) notes that there is a need for adequate and careful training so that teachers become aware of the range of uses and possible benefits of ICT. All administrative staff, EMIS Coordinators and teachers received training in the use of the EMIS. However, these persons were at different levels regarding their prior knowledge of ICT or use of computers. Hence, because of the varying levels of computer ability, different persons required different levels of training. These different training needs were not considered. The first EMIS Coordinator noted that he had a solid background in the use of computers and so the one-week EMIS training was straight forward. He was also able to practice using the system right after his training to become more familiar and gained confidence in using the system. His perceived ease of use and usefulness of the system were very high. However, other members of staff who were less computer-savvy received less EMIS training and in addition did not practice using the system to gain familiarity and confidence. According to Jamieson-Proctor, Burnett, Finger and Watson (2006) teacher confidence is directly affected by levels of personal access to ICT, levels of technical support and quality of training available. The Principal, who was the least computer savvy among the members of staff, could not use the system after her training. According to her, she needed more training in the use of the system. The Vice Principal, who was one of the most computer savvy members of staff, only used certain parts of the system; those which he practiced using after the training. The secretary who received training and practiced using the system with Mr. BT was able to use those parts of the system. The Bursar, who received training but never practiced using the system after, was unable to use the EMIS. The HFLE teacher who received training and used the Classroom Manager was able to use that part of the EMIS. The teachers who received training and practice in the registration part of the EMIS were able to use that part of the system. The second EMIS Coordinator who received very

little training and practiced only a few components of the EMIS was able to use just those parts of the EMIS but with difficulties. The remaining teachers, who received training but never practiced after, were not able to use the system. Hence training along with practice was necessary for the successful use of the system. Competence and confidence in using the system is therefore of paramount importance to successful implementation of ICT (Law, Yuen, Ki, Li, Lee and Chow 2000)

Whilst all members of staff perceived that the EMIS was easy to use, not all actually used the system. The EMIS Coordinators, the secretary, the Vice Principal, the teachers who conducted registration and the HFLE teacher, whom all used the system, found the EMIS easy to use. The Bursar and Principal who could not use the system also felt that it was easy to use but they needed more training. According to the Bursar, he needs to 'fiddle' or in other words practice so he can use the system. The remaining teachers, who never practiced after the training, never used the system but also felt that the system was not difficult to use. According to Davis' (1989) Technology Acceptance Model, perceived ease of use refers to the degree to which a person believes that using a particular system would be free of effort. The fact that everyone perceived the EMIS to be easy to use, augured well for the use of the EMIS, although in actuality the use was limited. However, the teaching staff of the school also complained of not finding the required time to practice using the EMIS due to their heavy teaching loads. School administration should therefore create opportunities for themselves as well as for the teachers to explore, practice and learn about the technology, for example, allowing teachers release time to engage in technology (Zhao and Frank 2003).

The perceived usefulness of the EMIS also played a key role in the level of use of the system. According to Davis (1989), people tend to use or not use an application to the extent they believe it will help them perform their job better. This was demonstrated strongly by the first EMIS Coordinator as he strongly believed that the EMIS could make management processes at the school much easier. He demonstrated how useful the system was in the registration process, in the attendance process, in recording and monitoring of student disciplinary issues and in maintaining proper financial records. His perceived usefulness was also influenced by his ease of use of the system. By being able to use the system in its entirety and confidently, he was able to appreciate

the uses of the system. Whilst other members of administrative staff were unable to use the EMIS as efficiently as the EMIS Coordinator, the demonstrations of the use of the system made by him convinced administrative staff of its usefulness. According to Zhao and Frank (2003) it is this socialization among staff that contributes to changing their beliefs regarding the value of computer technology. The Principal allowed its use in the registration process, the Vice Principal requested it for recording and monitoring student discipline and the Bursar constantly requested assistance in using it for keeping financial records. The HFLE teacher, who used Classroom Manager confidently, felt that the EMIS was very useful to her. By using the system she discovered how useful it was for recording and managing student grades and class attendances. Therefore, the perceived usefulness of the system by school staff contributed to its direct use and to the use of information from it.

On the other hand, many teachers who did not use the system did not see the usefulness of the system as they felt that they did not have any problems in managing their students' grades, attendance and disciplinary records the manual way. To them, the EMIS made no difference to their jobs. According to the popular saying; "*why fix it if it isn't broken*". Although teachers did not use the system and many perceived it as not useful to their jobs, the provision of opportunities for teachers to explore and learn could have made a difference. At the same time, many teachers who did not use the system indicated that it could be useful to them but still, made no effort to use the system. Some of the reasons for this were linked to organizational factors which are discussed in a subsequent section.

Software Factors

Whilst most members of the Bocage staff felt that the EMIS was user-friendly, the second EMIS Coordinator who used the system felt that the EMIS software was a bit clumsy and a 'turnoff'. This affected her attitude towards the software as she complained frequently when she used the EMIS. I believed at the time that if the EMIS was not part of her job or if it was not mandatory that she used it, she would do like most of the other teachers and not use the EMIS. She felt that the suppliers did not do a good job customizing the software and that locally developed software would have been more culturally relevant and user-friendly. Adapting the software to the user's needs is always easier in the construction phase. As noted by Orlikowski

(1992), where technology developers consult with or involve future users in the construction and trial stages of a technology there is an increased likelihood that it will be interpreted and used more flexibly. Indeed, having gone through the software with the EMIS Coordinator in conducting various activities, I too, felt that the software was user-friendly but certain parts of it could be improved. The Ministry of Education in the past tried locally developed software which was indeed cheaper, but it contained many bugs because it was not sufficiently tested. In addition, since there were only a few persons in St. Lucia qualified to develop software, when the developers migrated to another country, the software was never completed. Again, this takes us back to the issue of the challenges faced by small developing states; they have small labour markets and limited manpower (Atchoarena 1993). Due to the absence of local tertiary education providers, such as a university, it is expensive for locals to pursue studies overseas and hence the number of persons with specialized skills is small. In addition, the number of local IT companies offering those services is very limited. Therefore, according to Atchoarena (1993), most times, it might be more economical to bring in manpower from other countries.

Organizational factors

Organizational related factors were the most widespread reasons for the limited use of the EMIS. These factors are, access to the EMIS, EMIS leadership, recruitment, managing the change process-from manual to electronic, and the management style of those in authority or with leadership roles. These factors are further discussed below.

Access to the EMIS

The absence of easy access to the EMIS was one of the main reasons why the staff of the Bocage Secondary school did not use the system. To the staff, easy access meant that the EMIS should be available when required in their offices, in the staffroom or in a private dedicated place. The staff felt that they should not have to search for a computer or take turns with students to use computers in the IT lab, in order to access the EMIS. Many teachers when asked why they were not using the EMIS made statements such as, "I would like to use it but access is an issue", "If there were computers in the staffroom or in a private place just for us teachers, I would use it". Most of the teachers were also of the view that they would not bring their personal computers to use in the staffroom. Indeed that seemed true, since during my field

visits I only once encountered a teacher with her personal laptop in the staffroom although she was doing her private work. However, the Bursar and Vice Principal were of a different opinion as they frequently used their personal laptops in their offices. The Health and Family Life teacher was one of the few to consistently use her laptop for school chores.

According to Lessen and Sorensen (2006) it is the role of the administrator to create an environment where the integration of technology is possible and that includes providing access to appropriate technological tools such as computers and internet access. While that may be so, there were many reasons which prevented the staff from having easy access to the EMIS. One of the factors was the lack of financial resources of both the Ministry of Education and the school to purchase computers for the staffroom. The second factor concerned the internet and network problems experienced at the school. Lessen and Sorensen (2006) also note that administrators can source grants and resources and raise funds to support technological initiatives. The Bocage Secondary school sought assistance from corporate citizens and received two computers; one of which was dedicated to the use of the EMIS by the EMIS Coordinator and the other was given to the principal. The school should continue to seek assistance in order to furnish the staffroom with at least one computer for the use of the EMIS by the teachers. The school may also wish to seek partnership with cooperate citizens to help with the network and internet issues. However, because St. Lucia is a small state, the number of corporate citizens and businesses are also small, and they get approached by almost everyone seeking donations and assistance. Therefore, only a limited number will be successful. On the other hand, very few schools seek international partnerships; an avenue which certainly can be explored.

EMIS Leadership

According to Kotter (1990; 1996, cited in Ahn et al 2004) leadership defines what the future should look like, aligns the organization with a common vision and provides inspiration to achieve transformational goals. Providing leadership to EMIS users was seen as a very important factor in the successful use of the EMIS. One of the criteria highlighted by the Ministry of Education for selecting EMIS Coordinators was that the individual should demonstrate leadership qualities although no indication was given as to what these qualities were. Anderson and Dexter (2005 cited in Richardson

and McLeod 2011) assert that a school's technology efforts are seriously threatened unless key administrators become active technology leaders. School administrators may also choose to distribute leadership through key staff members.

The first EMIS Coordinator provided the sort of leadership that the staff of the Bocage secondary school respected which encouraged them to want to use the EMIS. The EMIS Coordinator was a senior teacher at the school who was respected, who had very good knowledge of the EMIS and of information technology, who assisted the principal and staff in using the EMIS and who showed them the benefits of the system to their jobs. He was committed to the EMIS and provided the technical and training support needed for its use. He also shared with the staff future plans to eliminate much of the manual management processes and replace them with the use of the EMIS. This vision was endorsed by administration and well accepted by other staff members. Whilst Mr. BT was not the school's leader, the principal channelled the EMIS leadership needed by the staff through him. This is what Owen and Demb (2004, p. 644) refer to as 'distributing leadership through champions'. The distribution leadership model helped the school's principal to encourage staff to share and coordinate school EMIS activities (Hilliard and Jackson 2011). According to Lewis et al (2003) management commitment and support shapes individuals' beliefs that the technology is useful for their work activities and this influences perceived usefulness of the technology. They also explain that users, who believe that management is committed to the use of technology, also believe that resources will be allocated to the use of the technology which might help overcome obstacles in learning to use it. Mr. BT did provide excellent support for the IT infrastructure and also had close ties with the IT department of the Ministry of Education. Every member of staff commented on the stability of the EMIS during his tenure.

These leadership qualities did not reside with the second EMIS Coordinator for a large number of reasons. Firstly, she was a new and junior staff member who did not have the knowledge of IT maintenance nor of the EMIS. She was given very little training in the use of the EMIS and could not provide the support needed by other members of staff. The IT infrastructure failed very often and she could not fix the problems, resulting in a very unstable IT environment for the EMIS. Secondly, she appeared to have no clear vision for the EMIS at the school. Her commitment was

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mainly for her to use the EMIS. Thirdly, she often gave directives to the staff through the principal because she indicated that they would not listen to her. The staff did not respond very well to the directives and lost confidence in the EMIS. It was clear that Ms RC was not an EMIS Champion and the principal did not endorse her with the leadership of the EMIS. Instead, she was expecting to receive EMIS leadership from the Principal, Vice Principal and Ministry of Education. She felt that the MOE and school administration were not committed to the EMIS.

According to Lessen and Sorensen (2006) it is the role of the leader to set the priorities for the staff, although these priorities may have been developed collaboratively with them. The principal as the school leader should also set expectations for the organization regarding the use of the EMIS. After Mr. BT left, another EMIS Champion did not emerge and so administration had no one to channel EMIS leadership through. From all indications and from feedback from the staff, administration did not take on the role to provide EMIS Leadership either. Three main reasons were apparent for this. Firstly, the EMIS was not a priority for school administration as was clearly noted and demonstrated by the principal. A second factor which contributed to the lack of EMIS Leadership by the principal was that she was not computer savvy. The third factor which prevented the principal from providing that sort of EMIS Leadership was insufficient time to use the EMIS. During my field work, the Principal spend a large percentage of her time dealing with student discipline which could have been spent otherwise in doing other administrative duties. However, the administrator as an EMIS Leader does not necessarily mean being a consistent 'hands-on-user'. According to Kraemer et al (1993, p. 142-143) 'direct hands-on use requires time, expertise and regular use but very few managers have that time, expertise and motivation to develop and sustain this level of personal competency and involvement with computing'. This was demonstrated by the Vice Principal during my fieldwork. Whilst he was one of the most computer savvy persons in administration, he frequently asked Mr. BT to perform various EMIS tasks for him because of his busy schedules. Therefore, according to Kraemer et al, managers can make use of the expertise of their staff to use the technology to provide them with the analyses and information required. However, this should not take away completely their role as EMIS leaders. The Principal should continue to promote and use the technology. This is implied by Lessen and Sorensen (2006) as they note that

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the principal should not be seen as just a promoter but as a user of the technology. In my Literature Review Chapter, I noted the following four key actions identified by Lessen and Sorensen (2000) that could be taken by the school leader to promote the integration of technology in schools: (1) making the use of technology a priority; (2) establishing a technological infrastructure; (3) focusing on development and; (4) creating training opportunities and support for staff. Unfortunately, none of these were practiced after the departure of Mr. BT.

Recruitment

During recruitment or hiring of new staff, school administration needs to make the right judgment regarding the qualifications and qualities of the applicant to be selected for the job. Zhao and Frank (2003) note that in selecting teachers for teaching, the extent to which computers complement the teaching style were important indicators of computer usage. In addition, they note that there should be clear policies on the adaptability of the applicant to computer technologies during the recruitment process. The Ministry of Education, being cognizant of the responsibilities of an EMIS Coordinator provided schools with selection criteria which included qualifications such as, a degree in a Computer Science related field, experience in using various computer applications and ability to do basic troubleshooting on computers and operating system in a networked environment. The list of criteria also included personal qualities such as time management skills, ability to multi-task, good communication and interpersonal skills and leadership qualities. During one of my informal interviews with the Principal she noted that one of the main reasons she recommended the second EMIS Coordinator for the job was because of her enthusiasm during the interview. I also found out that the Principal did not have the criteria set out by the Ministry of Education for hiring of EMIS Coordinators. Therefore, the recruitment process may not have considered all the main qualities and qualifications required for the job, as laid out by the Ministry. This resulted in an EMIS Coordinator who did not possess the necessary technical and personal skills. The repercussions of the recruitment process grossly affected the use of the EMIS by the school.

<u>Managing the Change Process – From Manual to Electronic</u>

"Breaking away from the norm is difficult". "When you are used to doing something one way, it's hard to change". "Change is not always easy".

These were some of the feelings expressed by both administrative staff and teachers at the School concerning the use of the EMIS. According to McDonald (1995, p. 558) 'enthusiasm for change is more evident among others proposing it than those requiring to apply it'. Additionally, he notes that only in the most desperate or favourable of circumstances do those who are required to apply change welcome it. For the staff of the Bocage Secondary School, changing from a manual system of managing information to an electronic system was difficult. They did not welcome it. Resistance to this change process was not portrayed as much with antipathy as it was with apathy. Although McDonald (1995, p. 558) further notes that 'apathy is every bit as much the enemy of change as antipathy'. The staff of the Bocage Secondary School continued to manage information using their manual system in spite of the implementation of the EMIS. In other words, the management processes which occurred before the implementation of the EMIS remained more or less the same as after the implementation of the EMIS. The only change which occurred was the way in which registration of new students was done; new students were registered electronically. What was also obvious during my field work was that there was no clear direction or structure or focus of activities to facilitate change, with the exception of the employment of an EMIS Coordinator. Instead, attempts at the change process (Barnett & Carroll 1995) were done more on an ad hoc basis. As explained by Benjamin and Levinson (1993) with IT-enabled change processes managers must know how to integrate the technology, business processes and organization in order to achieve the goals they expect with the technology.

During the short tenure of Mr. BT whilst conducting my field work, he attempted to spear head this change process and had certain plans in place to transform the way in which information was managed and used by administration and teachers. Some of the eight principles for IT-enabled change identified by Benjamin and Levinson (1993) and discussed in the literature review, were evident in the work of Mr. BT. He had developed a systematic process for change (Benjamin and Levinson 1993). He began with the registration process and had plans to continue with attendance, student

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examinations, student discipline and school fees. He had already made his analysis of the stakeholders involved in the change process and realized that there was not enough 'energy' for the change process. He was slowly gaining the support of the staff by showing them the benefits of the system and by providing one-on-one support to them. However, with the new EMIS Coordinator this was not the case. During her tenure, no one led the change process at the school level and so decisions were taken and activities were done in an ad hoc fashion.

According to Padaki (2002, p. 324) there exists in every organization an established culture; 'the culture includes values that determine orientations, norms of conduct, and ways of relating with others'. The participants had an established culture with respect to how they managed and used information. Generally, they were satisfied and comfortable with the way they managed information at the school and did not see the urgent need to change to the EMIS. This is what Staudenmayer et al (2002, p. 584) refer to when they note that 'repeated performance of an organizational task leads to routine, efficiency, and eventually complacency'. However, as many staff members noted, if the manual system was gotten rid of like the manual reporting of CXC SBA grades, and proper structures were put in place to make the EMIS mandatory, then they would use it. Something drastic needed to happen with the current manual system of information management to really cause the staff to identify its weaknesses and to re-evaluate and change to the EMIS (Staudenmayer et al 2002).

According to Gamage and Sooksomchitra (2004, p. 290) 'real reforms in education require extensive, consistent support, accompanied by in-service training and technical assistance for school leaders'. The Ministry of Education needed to play its part in providing the schools with the necessary support to assist them in managing the change process. The administration of the school also had to play its part in making school-level decisions to facilitate the change process. Gamage and Sooksomchitra (2004) reminds us that consistent support will enable Principals to change management and planning skills and will help them deal with school implications of reforms. The staff was in support of policies and structures to be put in place by administration of the MOE and school for the use of the EMIS. Some of the structures the staff referred to included the provision of continuous training for all, timely technical support, resources necessary such as easy access to computers,

adequate time set apart for the use of the EMIS, policies for the use of the EMIS in schools such as making it mandatory and the gradual elimination of the manual system.

Authoritarian Management versus Use of Participatory Approach

The perceived management style of persons in authority or with leadership roles at both the Ministry of Education and Bocage School was one of the factors which affected the use of the EMIS. National Ministries of Education in the English speaking Caribbean region, including St. Lucia, can generally be classified as centralized education systems. Schools in St. Lucia, including the Bocage Secondary School, view the system of management of the Ministry of Education in St. Lucia as authoritative. During my fieldwork, Principals and Teachers were of the view that the Ministry likes to impose policies on them and make decisions without involving them. This authoritarian management style is rooted in the management style of the plantation system of the colonial era. St. Lucia inherited the plantation system and all its legacies, which still dominates the lives of the people in fundamental ways (Beckford 1972). According to Levitt (2005, p. 54) 'the legacy of the plantation system was manifested in a number of ways including an authoritarian bureaucratic state'.

During my fieldwork at the Bocage Secondary School, the Principal made it clear that she was not involved in the EMIS selection and implementation process, and that whilst the MOE is responsible for forming policies, the school should have been part of the EMIS process so that she and her staff could have made a contribution. The principal clearly identified the need for more collaboration between the Ministry of Education and her school and thought the EMIS would have been more effective if it were a 'whole school approach' rather than a 'Ministry approach'. Whilst it did not appear that the Principal was retaliating to this type of authoritarian approach used by the Ministry, she did not embrace it, neither was she encouraged by it.

Some teachers shared similar views as well, where they thought that the Ministry always imposed things on them. These teachers actually retaliated by not using the EMIS as they indicated that the Ministry has added more work to their packed teaching schedule. This type of retaliation was also visible when the second EMIS

Coordinator requested through the Principal that all teachers provide her with updated information on themselves and their students so that she could update the EMIS. Some teachers interpreted this request as a directive and retaliated by not providing the information, whilst others openly expressed their dissatisfaction with her "bossy" approach, by reporting her to the Principal and Vice Principal. It is in a similar way that the slaves rebelled because they wanted to control the terms of their working arrangements on the plantations; an ideal that continued from emancipation to present times (Craton 1979). At the same time, there were some teachers who were not happy with the directive, but still provided the information for fear of being victimized in one way or another.

The staff of the Bocage School responded better to the first EMIS Coordinator who used a more participatory approach. He tried to bring all staff members on board by first showing them the benefits of the system and then getting them involved voluntarily. The Vice Principal was of the view that the only way the staff would use the EMIS was if it was made mandatory. This feeling was shared by the majority of staff members at the school including the second EMIS Coordinator. They all thought that making the EMIS mandatory should be a decision of the Ministry and not the school. Whilst many staff members proposed this as a solution to the use of the EMIS, they actually transferred different meanings through it. For the Vice Principal who used the system from a management standpoint, 'making the EMIS mandatory' meant imposing a rule on teachers so that they would have no choice but to use the EMIS. He was suggesting an authoritative style of managing the EMIS. On the other hand when teachers said that the only way to use the EMIS is to make it mandatory, they were referring to putting a structure or system in place to make the EMIS the only system to use. In other words, they meant to eliminate the manual system, in a similar manner that CXC eliminated the manual reporting of SBA grades, and put in place all the structures needed for them to use the EMIS. According to the EMIS Coordinator, "The Ministry should make it mandatory that it should be used but with restrictions per user and on condition that the resources are provided. The ministry has to get the EMIS working efficiently and then they can make it mandatory that everyone uses it."

Principals in St. Lucia are generally afraid of making school decisions on their own for fear of making a wrong decision and then getting reprimanded or blamed for it.

They await directives from the Ministry of Education for almost every main school decision that is to be taken. This reflects the type of management style that the schools have been cultured to. Dirks (2006, p. 58) explains that 'what we, who were once colonized recognize as culture was produced by the colonial encounter'. Therefore, decentralization is not simply created by passing a law but by a cultural change. Decisions on how to use the EMIS were school decisions. The Principal and Vice Principal could have set up school structures in collaboration with the staff and then agree on how, when and by whom the EMIS should be used but instead they awaited these decisions from the Ministry of Education.

In this Chapter I have discussed how the EMIS was used as well as what was required to facilitate its use. The EMIS was generally under-utilized by the school. I have also discussed the five main reasons for the limited or non-use of the EMIS as derived from the data. These reasons were technical, economic, training and personal, software and organizational. The factors relating to the organization were the most widespread and included access to the EMIS, EMIS leadership, recruitment, managing the change process and the type of management style utilized by the MOE and the school.

Chapter 7 Conclusion

7.1 Introduction

In this final Chapter, I revisit my research questions and provide a summary of the findings in relation to the literature reviewed. I also revisit the research process and reflect on the approach, methodology and strategies used. The possible implications of my findings for the future use of the EMIS in St. Lucia and the wider Caribbean are then discussed. Finally, I discuss the prospects for future research as impelled by my research findings, followed by some final thoughts.

7.2 Revisiting my Research Questions, Findings and Research Process

The main aim of this research was to make a contribution to the theory and practice of the Education Management Information System in schools by better understanding its use by school personnel. It set out to do this by investigating the use of the EMIS in one particular case. During my research, I sought to answer one main question, which was, how the EMIS was being used at the school level and what was required to facilitate its use. A number of guiding questions were used in relation to investigating the use of the EMIS: I wanted to understand the type of information required by management personnel for school management and decision-making and how the EMIS could facilitate this; In addition, I sought answers to how and when the EMIS was being used; Finally I wanted to understand whether there were software, networking and hardware problems in using the EMIS and what was required to improve the use of the system.

The EMIS initiative emanated from the education reform process in the OECS region and had its main objective to assist Education Planners and Policy Makers to make effective and informed decisions by providing them with timely, reliable and up to date information on the education system (OECS 1998). The reform process also aimed at the decentralisation of education by establishing school-based management initiatives which called for increased use of school-based information by school administrators in making operational level decisions. The findings of this research generally showed that the EMIS was grossly under-utilized by school personnel. Whilst there was a need for information to make the necessary decisions at the school

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level, the staff continued to depend on the unreliable manual system since the EMIS did not contain the required information. Only a few components of the EMIS contained information but they were incomplete. These were the registration of new students' and attendance components.

The greater part of my findings addressed the reasons for the limited use of the EMIS or what was required to facilitate its use. The reasons covered a broad range of topics which were categorized into five areas, technical, economic, software, training and personal, and organisational factors. Although they were identified as separate factors they were all interconnected; for example, the findings showed that the economic situation of the school, MOE and country in general had implications for the other four factors. Similarly, the technical, software, training and economic factors affected the organisational factors.

In the literature review I established the basis for my findings for the limited use of the EMIS in the school. One of the key bases was the peculiarities of St. Lucia as a small developing country. I have established that due to the challenges faced by St. Lucia in terms of its economic situation, limited human resource capacity and vulnerabilities to natural disasters, it was unable to find the necessary financial, physical and human resources to utilise the EMIS fully. Louisy (2001) supports this view as she notes that among the challenges and vulnerabilities facing small developing nations are remoteness and isolation, the greater degree of openness to their economy and greater exposure to global events over which they have little influence, their susceptibility to natural disasters and environmental damage, their limited scope for diversification, their limited manpower and institutional capacity, their income volatility and their limited access to external capital. The research findings suggested that the absence of easy access to computers was one of the key reasons why the EMIS was not utilised. The financial resources were not available to provide the computers nor was there sufficient technical support to maintain the existing ones. The findings also revealed that there were frequent technical, training and support related problems which resulted from the lack of economic and human resources.

The option of using a local software developer to develop a more culturally relevant EMIS was suggested by the participants. Whilst this option is possible it is very risky because these software companies are not well established in St. Lucia and the risk of closing down after being hired is high. Finding a reliable software developer is an issue because of the limited number of qualified persons or businesses offering those specialized services. In addition, Caribbean societies are migration societies (Atchoarena 1993) and sooner than later, the local software developer may migrate leaving the assigned work unfinished. The MOE had such an experience a few years ago when the key personnel developing a Human Resource Management Information System migrated. The system remained unfinished and unused.

The research findings suggested that these challenges and vulnerabilities were impediments to globalisation for developing countries. Whilst we may unavoidably borrow these technologies from the developed world (Ghosh 1987) to help reduce the boundaries between developed and developing countries, these same technologies serve to create a greater divide between the two groups of nations. Louisy (2001, p. 429) adds that 'in this changing global community, developing countries face very stiff challenges of economic and social development and significant threats of being greater marginalized from the mainstream of global economic activity'.

The findings also revealed that the MOE had not distributed the level of authority or power required by school administrators to make the decisions required by the school-based management thrust. Schools were still operating at what Hanson (1990) describes as the deconcentration and participation levels of authority and therefore did not have great input into the decision-making process. This was reflected in their minimal need for information from the EMIS and its limited use at the school level. The amount of authority given to schools was also reflected in the management style used by the education system in St. Lucia. The management style employed by the education system was authoritarian; a management style which was adopted as a result of the colonial experience. This view is supported by Levitt (2005, p. 54) as she notes that 'an authoritarian bureaucratic state was one of the manifestations of the legacy of the plantation system'. This authoritarian management style in the Education system could be another such manifestation of the plantation system. Beckford (1999, p. 3) sees the 'plantation' as the dominant economic, social and

political institution in the colonial era which continues to manifest itself in the present and from all indications will continue to do so in the future. According to Beckford (1999, p. 5) 'the plantation will continue to persist because it has become deeply rooted in the environment of many underdeveloped countries and to shake it may well threaten the entire economic and social order'. This style of management displayed by persons in administration or persons with EMIS responsibilities caused others to retaliate to the form of management, which negatively affected the use of the EMIS. 'Given the tendency in the modern world for people to prefer democratic, collaborative and participative management approaches and as more and more persons within and outside the various ministries of education become better trained and qualified, strategies that tend to restrict participation are likely to be counter-productive' (OECS 2000, p. 40).

The findings also suggested that personal factors, such as the way participant's perceived the technology affected their attitudes towards the use of it. Two personal factors were identified; firstly, participant's perceived ease of use of the technology and secondly their perceived usefulness of the technology. Davis' (1986) Technology Acceptance Model (TAM) was used to support these findings. According to the TAM, perceived ease of use is the extent to which a person believes that using a technology will be free of effort and perceived usefulness is the extent to which a person believes that using a technology will enhance his/her productivity or performance (Venkatesh 2000). When Mr. BT explained and demonstrated the use of the various components of the EMIS to the staff of the Bocage Secondary School, they slowly began to accept it and wanted to use it in their jobs. They realised that the EMIS could improve the storage of information and make access to information easier, quicker and timely. Most staff members of the school also believed that the EMIS was easy to use; however, they requested additional training. Since Mr. BT was available to provide the training and was also able to maintain the system, staff members perceived the system in a positive light. After Mr. BT's departure, numerous problems were experienced with the EMIS and most staff members lost confidence in the system. They then perceived the EMIS as problematic.

The findings of this research showed that there was need for an EMIS leader to spearhead and provide the vision and direction for the use of the EMIS. When the first

EMIS Coordinator assumed the role of EMIS leader, which was endorsed by the school administrator, the staff began using the system and requested further support to use it. On the other hand, that was not the case with the second EMIS Coordinator who did not possess the qualities of a leader. The importance of the recruitment process was thus recognised. During her tenure as EMIS Coordinator, the other staff members did not get the leadership support from her. In fact, the staff, including the second EMIS Coordinator, sought EMIS leadership from the Principal and MOE. The Principal was unable to provide that leadership for the staff. As discussed in the literature review, it is the role of the leader to set priorities for the staff, although a collaborative approach may have been used to develop those priorities (Lessen and Sorensen 2006). The staff of the school was seeking support regarding easy access to the EMIS, maintenance of the EMIS, training, scheduled time to use the EMIS and putting the necessary structures in place for the use of the EMIS, all of which was lacking under the second Coordinator.

One of the biggest challenges to using the EMIS was the difficulty to change the way information was managed. This was voiced by the participants as they indicated clearly, "change is not easy". Managing information at the school was plagued by 'attitudes of routine and complacency' (Staudenmayer et al 2002, p. 584) as administrative staff and teachers maintained the status quo by using the manual EMIS. A drastic change similar to what was implemented by CXC to enter SBA grades was needed to cause them to re-evaluate their ways and change to the electronic system. CXC implemented a policy to stop the manual submission of student SBA grades and replaced it with a mandatory electronic processing system. Schools did not want their students to be disadvantaged by the loss of SBA marks and so had to resort to using the electronic system. The majority of teachers and administrative staff thought that if the EMIS was made mandatory, like the processing of SBA grades, they would use it. However, the literature has shown that it is the role of the leader to manage this change process including the resistance to change. In the literature review chapter, I discussed a change model by Benjamin and Levinson (1993) which can be adopted to facilitate the change from a manual EMIS to an electronic one. This model integrates the technology, work processes and organisation to facilitate the change process. It also follows a participatory approach as it proposes the involvement of all stakeholders of the EMIS.

As I reflect on the research process which started over three years ago, I feel more and more satisfied with the research topic selected and the approach that I used. As I indicated in the first Chapter, I chose this research study because of my professional experience in working with information systems and the passion that I have developed for working with such systems over the years. I feel satisfied that the burning desire to understand how the EMIS was being used and what was required to facilitate its use has finally been addressed. What is more satisfying for me is that my research questions were addressed from the perspective of the users of the EMIS. As an insider researcher I was able to short-cut much of the mutual familiarization phase usually necessary to establish a research relationship (Le Gallais 2008) and move swiftly into my fieldwork.

For my research approach, I used constructivist grounded theory. Using a constructivist approach allowed me to accept the influence of my prior involvement with the EMIS on the research. This approach fosters researchers' reflexivity about their own interpretations as well as those of their research participants (Charmaz 2006). The grounded theory approach was used because I wanted to generate theory from my fieldwork, not test theory. I wanted to derive theory from data that was systematically gathered and analysed through the research process (Strauss and Corbin 1998). As I proceeded with my fieldwork I felt overwhelmed sometimes by the amount of data that I had to record, code, and analyse. I sooner than later learnt that the technique was to record, code and analyse the data immediately after the field visit, whilst the information was fresh. This method of analysing the data allowed me to verify and confirm my understandings of my participants' rendering of what was happening in the field. The data was analysed by constant comparison, initially of data with data, then progressing to comparisons between their interpretations translated into codes and categories and more data (Mills et al 2006). What was very important to me was that at the end of my field work, I was able to present a set of findings that is grounded in my participants' understandings and beliefs on the use of the EMIS.

In selecting the methodology, my main focus was on providing as best as I could an account of the practices and beliefs of my participants on the use of the EMIS. I felt

that if I could experience what they were experiencing, only then would I be able to represent them properly. This led me to select ethnography as my methodology as described in the Research Methodology and Methods Chapter. The methodology used, allowed me to conduct first hand observations at the school over a period of two school terms, during which time I also conducted informal interviews with staff members. This prolonged interaction with the participants allowed me to understand the beliefs, attitudes, behaviour and culture of my participants regarding the use of the EMIS (Zaharlick 1992). Initially, the main challenge for me as a researcher was finding the time to carry out my fieldwork. I had to juggle fieldwork time with office time. However, what worked well for me was a change in my position within the MOE which allowed me more freedom to carry out my fieldwork. Although I had some difficulties selecting a research site, upon reflection, I believe that the school where I eventually carried out my research offered me rich data to work with. The staff of the school was very accommodating and seemed very open to participating in research projects. During my field work, I had the opportunity to work with two EMIS Coordinators of very different character. It allowed me the opportunity to make comparisons concerning the use of the EMIS during their tenure.

7.3 Possible Implications of my Findings to the use of the EMIS in St. Lucia and the Wider Caribbean

Given the importance of information to the management and decision-making processes, the need to improve and develop information systems will continue to grow. According to Lederer and Mendelow (1988) traditionally, information systems exclusively facilitated operational and management functions but more recently, organizations have begun to create information systems that can provide a strategic impact. The Ministry of Education in St. Lucia and other Caribbean territories will continue to seek improvements in the way information is collected, stored, processed, analysed and used especially since these countries rely heavily on external aid to finance many of their projects. Funding agencies require accurate, reliable and timely information in support of the justifications for funding. The EMIS is one such project which was funded by the World Bank and DFID. The challenges faced by secondary schools in St. Lucia as they attempt to use the EMIS are numerous. Other countries in the OECS and wider Caribbean region such as St. Vincent and the Grenadines,

Dominica, St. Kitts and Barbados are also exploring and trying education management information systems. These countries have often monitored the EMIS initiatives in St. Lucia in an effort to learn from the experiences to implement their own. I therefore ask the question; what are the implications of the findings of this research for the continued use of the EMIS in St. Lucia and the wider Caribbean? One must bear in mind that these findings are the results of a case study; the results of which cannot be generalised (Stake 1978). However, according to Stake (2005, p. 454), 'we can learn from a single case depending on how the case is like or unlike other cases we know'. With the many similarities among the secondary schools in St. Lucia, in terms of management styles, administrative duties, work processes, financial and human resource challenges, this thesis can provide some general directions to those schools on the continued implementation and use of the EMIS. In general, the results of this thesis have implications for management, for budgeting, recruitment, human resource development, EMIS selection and the development of policies that benefit developing countries.

The opportunity to be part of the decision-making process concerning projects and initiatives like the EMIS should be given to principals and teachers. Management meetings are often held with senior management staff and heads of departments of the Ministry of Education without the input or participation of the principals; the very people whom we are planning for. If a participatory approach to management is used, principals and teachers will be more motivated to participate in education activities. According to the OECS (2000) strategy document, the Ministries of Education in the region need to re-design the procedures and practices used in the supervision of schools to include greater involvement and participation of principals and teachers. Griffin (1995) found that when teachers were invited to become part of the deliberation and decision mechanisms whereby school wide policies and procedures were promulgated, teachers reported their enthusiasm for this change from being the recipients of others' expectations to taking more direct control over their own workplaces and working conditions. Based on the evidence of my research, I would argue that other OECS or English-Speaking Caribbean countries wishing to implement an EMIS should involve the principals and teachers from the inception. In addition, the Ministry of Education should distribute more authority to Principals to make decisions. School-based management should be an overall approach to

involving participants in the management of schools that includes, in addition to decision-making power, increased professional development to prepare participants for expanded roles in governance and in organizational operations (Wohlstetter, Smyer and Mohrman 1994). School administrators likewise should use a collaborative approach in the decision-making process. If teachers are involved in the decisions concerning the EMIS there will be less resistance to and more ownership of the system.

But management implications does not only involve how much participation is allowed by administration or teachers in the decision-making process, it also involves reviewing the management structures at the schools to assist in managing the EMIS and making the change from a manual to an electronic system. The ideal situation would be to plan the change process from the beginning of implementation. However, for the current EMIS it may not be too late; schools can explore the IT-enabled change model proposed by Benjamin and Levinson (1993). This model advocates the integration of the technology, business processes and organization in order to achieve the goals managers expect with the technology. In addition, the necessary structures requested by the staff should be installed after which, management should ensure that the EMIS is made mandatory as suggested by the findings of this thesis.

From my knowledge and experience of the challenges and vulnerabilities of small developing countries and from the literature review it would appear that if any other OECS or Caribbean country was to implement an EMIS, difficulties with financial, physical and human resources would come to the fore. Even for existing secondary schools in St. Lucia with the EMIS, continued maintenance of the system brings along financial challenges. Lessen and Sorensen (2006) warn that establishing a technology infrastructure also means providing adequate budgetary resources not just for technology acquisition but for maintenance. The implications for yearly budgeting and identification of source of funds are therefore serious. This is what the Bocage Principal referred to when she indicated that the MOE should put aside a special fund to get the system going. During the Ministry's annual budgeting exercise monies have never been allocated for EMIS maintenance with the exception of the payment of license fees to the suppliers. It begs the question, isn't the EMIS important enough to carry a portion of the MOE's budget? If the country has limited financial resources

then maybe better choices should have been made of the type of EMIS employed or of the after-sales support arrangements made with the suppliers. The monies spent for paying annual license fees could be used for maintenance.

Given the limited financial and human resource capacity of small developing countries like St. Lucia, one should think carefully about the nature of (manual, electronic or combination of two) EMIS recommended or employed. The electronic systems are expensive to purchase, to maintain, to use and to pay annual licence fees to suppliers. In addition, from my experience with working with two electronic systems and my knowledge of what existed in other Caribbean countries, they have a high failure or abandonment rate. On the other hand there are challenges with hiring local software developers, as mentioned earlier. What then are the options? The results of this thesis therefore have serious implications for the selection of an appropriate EMIS. However, this issue warrants further research.

The findings of this research have also revealed that principals and teachers in this technological era must be computer savvy. Managing a school cannot be "business as usual" where almost everything depends on paper trails. The evidence from this thesis revealed that Principals should also possess EMIS leadership qualities in order to motivate their staff to use the EMIS. In addition, the EMIS requires EMIS Coordinators to have certain qualities and qualifications for the performance of the job. Consequently, there are implications for the recruitment and continued professional development of principals and EMIS Coordinators as well as teachers and administrative staff. The criteria for recruiting the various officers must be made clear and must be available to recruiters or employers so that suitably qualified persons can be hired. On the other hand, Lederer and Mendelow (1988) note that many top managers lacked any involvement in EMIS early in their careers because information technology was not widespread at that time when they worked at lower management levels; in some instances it simply wasn't available. This is the case for many of our secondary school Principals who have 'moved up the ladder' from being Teachers to Principals. If it is difficult to recruit personnel with the right qualifications or if current Principals are without the necessary qualifications, continuous professional development should be given to acquire the required proficiency for managing and using the EMIS effectively. Nonetheless, training in the use of the

EMIS must be given to whoever is responsible for managing and using the system. This point reiterates the need for a budget to undertake these tasks.

To underpin all the above implications is the development of policies that benefit developing countries. Too often initiatives and policies are borrowed wholesale from developed countries and implemented in developing countries. The EMIS itself is one such initiative. According to the Commonwealth Secretariat (1986, p. 5-6, cited in Bray and Hui 1989, p. 129-130) 'small countries are not simply scaled-down versions of large countries; they have an ecology of their own'. I would then argue that small countries can conduct their own research to endorse what is locally and culturally relevant to their needs. Our research need not only be what Holmes and Crossley (2004, p. 207) refer to as 'western orientated educational research' but according to them can include more informal but nevertheless intellectual, activities such as the work of the Storyteller and the Calypsonian. Calypso singing is a cultural art form in St. Lucia which carries powerful social commentary or concerns which represents the voice of the masses and usually leads to public discourse; hence its power. Much of the research done by the Calypsonian is from observations of, and informal discourse with persons in the community and country as a whole. However, the results of research are not always used to develop policies. According to Crossley and Holmes (2001, p. 397) attempts to analyze the relationship between educational research and the policy process have shown that 'this is not straightforward, solely rational or direct in nature'. In St. Lucia and other Caribbean countries the findings of research often get marginalized in the policy process especially if they do not agree with the political agenda or with the views of powerful decision-makers. In addition, despite the increased legitimacy of more participatory research methodologies, much academic and policy research still has a strong western and positivistic orientation (Holmes and Crossley 2004). Therefore, education reform initiatives by regional bodies such as OECS and CARICOM should enforce policies that benefit developing countries, from which they can trickle down to individual Education Ministries.

7.4 Prospects for Further Research

Like any other research, this research has created many opportunities for further research. Whilst these other research options were beyond the scope of this thesis, I

would like to mention some of them since they too would create further understanding of the use of the EMIS.

One research option could be an investigation into the selection of an appropriate EMIS for developing countries like St. Lucia. In this thesis I discussed the economic, physical and human resource challenges encountered with an electronic off-the-shelf EMIS as well as with a locally developed EMIS. These challenges are specific to our peculiarities as small developing countries. Therefore, conducting research into an appropriate EMIS to suit our particular needs would be valuable since it would address issues of limited financial and human resource capacities both of which negatively impacted the use of the EMIS.

Another area for further research is how different management styles influence the use of the EMIS. In this thesis I discussed the use of a participatory approach to the management of the EMIS as opposed to an authoritarian approach. Teachers at the school retaliated against what they called the 'bossy' attitude of the EMIS Coordinator. The Principal also spoke of supporting a 'whole school' approach to the EMIS rather than a Ministry approach. It would therefore be worth researching what types of management styles influence the use of the EMIS at secondary schools.

Additionally, since the research conducted for this thesis is a case study, its results cannot be generalised. Therefore new research can be conducted in other secondary schools in St. Lucia and the Caribbean to determine whether the same results of this thesis would obtain under similar conditions in other schools. Such research would be useful as it could allow one to generalize about the use of the EMIS.

Finally, conducting similar research in developed countries would make for interesting comparison to the findings of this research. Whether the EMIS referred to in this research is successfully used or not in schools in developed countries, the reasons can contribute to the further understanding of the use of the EMIS in secondary schools in St. Lucia.

7.5 Contribution to New Knowledge

As previously indicated, the purpose of this research is to make a contribution to the theory and practice of EMIS in schools. This research has definitely contributed to knowledge by confirming existing theory as well as by generating new theory. The results of this research have confirmed Davis' (1989) Technology Acceptance Model; that users perceived ease of use and perceived usefulness of technology affect their use of it. The results of this research have also shown that factors such as technical, software, training and support, EMIS leadership and EMIS access, all affected the use of the EMIS. These factors confirm existing theory by Lessen and Sorensen (2006) which states that administrators can promote the use of technology in schools by establishing the following: making the use of technology a priority; establishing a technological infrastructure; focusing on development and; creating training opportunities and support for staff. Existing theory on factors which determine the degree of computer use by teachers, by Zhao and Frank (2003) was also confirmed by this research. Some of the main factors confirmed were recruitment, training and socialization and providing opportunities to learn.

New theory was also generated from this research from both the findings and the approach used. Two main areas of new theory were generated from the findings. Firstly, the results revealed that the peculiarities of St. Lucia as a small developing state in terms of its dependence on the outside world, absence of economies of scale, emigration issues, small labour market and vulnerability to natural disasters affected the use of the EMIS. Secondly, St. Lucia's colonial past as it relates to the plantation system has affected the way education is managed in the country and thus affected the use of the EMIS. This research has demonstrated that variations, within limits, to the procedures and principles of the grounded theory approach can be used successfully without jeopardizing the main elements of the approach. I have also used ethnography as the research methodology, which was used for the first time to conduct such research on the EMIS in St. Lucia. Hence both my approach and methodology have contributed to bringing out a Caribbean perspective to this research.

7.6 Final Thoughts

"If I knew then, what I know now". These were my first thoughts as I completed the Data Analysis Chapter of this thesis. As a past member of both EMIS Technical and

Selection Committees I sometimes feel partly responsible for the limited use of the EMIS in secondary schools. This is especially so, now that I have carried out this investigation into the use of the EMIS. The results have shown that neither the MOE nor school administration have addressed what is required to facilitate the use of the EMIS at the school level. The MOE's focus was on providing initial training, whereas, the findings have revealed a wide spectrum of interconnected factors responsible for the successful use of the EMIS and that includes technical, economic, software, training and personal, and organisational factors. I have realised that using the EMIS at the school level was not as easy and straight forward as we, officials from the MOE thought. My wish then is to make available to the MOE the findings of this thesis along with recommendations for improving the use of the current EMIS. Writing this thesis has indeed been very interesting and informative.

References

Ahn, M. J., et al., 2004. From Leaders to Leadership: Managing Change. *The Journal of Leadership and Organizational Studies* [online], 10(4). Available at: <URL:http://scholar.google.com/scholar/> [Accessed 26 June 2011].

Atchoarena, D., 1993. *Educational strategies for small island states*. Paris: UNESCO International Institute for Educational Planning.

Atkinson, P., and Hammersley, M., 2007. *Ethnography: Principles in Practice* [online]. Taylor and Francis e-Library. Available at: <URL:http://books.google.com/books> [Accessed 3 February 2011].

Barnett, W. P., and Carroll, G. R., 1995. Modelling Internal Organisational Change. *Annual Review of Sociology* [online], 21, 217-236. Available from: JSTOR [Accessed 26 July 2011].

Beckford, G. L., 1999. *Persistent Poverty: Underdevelopment in Plantation Economies of the Third World* [online]. Jamaica: Oxford University Press. Available at: <URL:http://books.google.com/books> [Accessed 30 January 2011].

Benjamin, R. I., and Levinson, E., 1993. A Framework for Managing IT-Enabled Change. *Sloan Management Review* [online], 34(4). Available at: <URL:http://scholar.google.com/scholar/> [Accessed 26 June 2011].

Boeije, H., 2002. A Purposeful Approach to the Constant Comparative Method in the Analysis of Qualitative Interviews. *Quality and Quantity* [online], 36. Available at: <URL:http://scholar.google.com/scholar> [Accessed 22 March 2011].

Borman, G. D., et al., 2003. Comprehensive School Reform and Achievement: A Meta-Analysis. *American Educational Research Association* [online], 73(2), 125-230. Available from: JSTOR [Accessed 3 September 2010].

Bowen, G. A., 2006. Grounded Theory and Sensitizing Concepts. *International Journal of Qualitative Methods* [online], 5(3), 12-23. Available from: JSTOR [Accessed 20 November 2010].

Bray, M., and Hui, P., 1989. The Implications of size for Educational Development in Small Territories: The case of Macau. *International Review of Education* [online], 35(2), 129-143. Available from: JSTOR [Accessed 23 November 2008].

Briggs, C. L., 2007. Anthropology, Interviewing, and Communicability in Contemporary Society. *Current Anthropology* [online], 48(4), 551-580. Available from: JSTOR [Accessed 22 March 2011].

Bristol, L. M. S., 2008. Mouth Open Tory Jump Out Subverting the Colonial Legacy of Plantation Pedagogy in Trinidad and Tobago. Ph.D. thesis, University of Sheffield.

Bruce, C., 2007. Questions Arising About Emergence, Data Collection, and Its Interaction with Analysis in a Grounded Theory Study. *International Journal of Qualitative Methods* [online], 6(1), 51-68. Available from: JSTOR [Accessed 16 January 2011].

Bruner, J., 1991. The Narrative Construction of Reality. *Critical Inquiry* [online], 18(1), 1-21. Available from: JSTOR [Accessed 15 April 2011].

Bryman, A., 2008. *Social Research Methods*. 3rd ed. New York, USA: Oxford University Press.

Bush-Slimani, B., 1993. Hard Labour: Women, Childbirth and Resistance in British Caribbean Slave Societies. *History Workshop* [online], 36, 83-99. Available from: JSTOR [Accessed 6 February 2011].

Charmaz, K., 2006. *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. 1st ed. London, California, New Delhi, Singapore: Sage Publications Ltd.

Charmaz, K., 2000. Looking Backward, Moving Forward: Expanding Sociological Horizons in the Twenty-First Century: 2000 Presidential Address to the Pacific Sociological Association. *Sociological Perspectives* [online], 43(4), 529-547. Available from: JSTOR [Accessed 16 January 2011].

Charmaz, K., 2005. Grounded Theory in the 21st Century: Applications for Advancing Social Justice Studies. *In*: N. K. Denzin, and Y. S. Lincoln, ed. *The Sage Handbook of Qualitative Research.* Thousand Oaks, London and New Delhi: Sage Publications, 2005, pp. 507-535.

Charmaz, K., 1991. Translating Graduate Methods into Undergraduate Teaching: Intensive Interviewing as a Case Example. *Teaching Sociology* [online], 19(3), 384-395. Available from: JSTOR [Accessed 22 March 2011].

Chase, S. E., 2005. Narrative Inquiry: Multiple Lenses, Approaches, Voices. *In*: N. K. Denzin, and Y. S. Lincoln, ed. *The Sage Handbook of Qualitative Research*. Thousand Oaks, London and New Delhi: Sage Publications, 2005, pp. 651-679.

Cheng, Y. C., and Chan, M. T., 2000. Implementation of School-Based Management: A Multi-Perspective Analysis of the Case of Hong Kong. *International Review of Education* [online], 46(3/4), 205-232. Available from: JSTOR [Accessed 9 October 2009].

Chitolie-Joseph, E., 2008. *Education and Development in St. Lucia in Light of Dependency on External Aid to Education*. EdD. Assignment Three, University of Sheffield.

Choo, C. W., 1996. The Knowing Organization: How Organizations Use Information to Construct Meaning, Create Knowledge and Make Decisions. *International Journal of Information Management* [online], 16(5). Available at: <URL:http://scholar.google.com/scholar/> [Accessed 11 October 2010].

Cohen, L., Manion, L., and Morrison, K., 2000. *Research Methods in Education*. 5th ed. London: Routledge.

Conley, S., 1991. Review of Research on Teacher Participation in School Decision Making. *Review of Research in Education* [online], 17, 225-266. Available from: JSTOR [Accessed 15 February 2010].

Corbin, J., and Strauss, A., 1990. Grounded Theory Research: Procedures, Canons, and Evaluative Criteria. *Qualitative Sociology* [online], 13(1). Available at: <URL:http://scholar.google.com/scholar> [Accessed 20 November 2010].

Craton, M., 1979. Proto-Peasant Revolts? The Late Slave Rebellions in the British West Indies 1816-1832. *Past & Present* [online], 85, 99-125. Available from: JSTOR [Accessed 6 February 2011].

Crossley, M., and Holmes, K., 2001. Challenges for Educational Research: International Development, Partnerships and Capacity Building in Small States. *Oxford Review of Education* [online], 27(3), 395-409. Available from: JSTOR [Accessed 23 November 2008].

Davis, D. D., 1989. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly* [online], 13(3), 319-340. Available from: JSTOR [Accessed 19 October 2010].

De Grauwe, A., 2005. Improving the Quality of Education Through School-Based Management: Learning From International Experiences. *International Review of Education* [online], 51(4), 269-287. Available from: JSTOR [Accessed 09 October 2009].

Denzin, N. K., & Lincoln, Y. S., 2005. Introduction: The Discipline and Practice of Qualitative Research. *In:* N. K. Denzin and Y. S. Lincoln, ed. *The Sage Handbook of Qualitative Research*. Thousand Oaks, London and New Delhi: Sage Publications 2005, pp. 1-32.

De Villiers, M. R., 2005. Three Approaches as Pillars for Interpretive Information Systems Research: Development Research, Action Research and Grounded Theory. *Proceedings of SAICSIT* [online], Available at: <URL:http://scholar.google.com/scholar> [Accessed 24 January 2011].

DeWalt, K. M., and DeWalt, B. R., 2002. *Participant Observation: A Guide for Fieldworkers* [online]. UK: AltaMira Press. Available at: <http://books.google.com/books> [Accessed 15 February 2011].

Dickson, P., 2008. Researching educational governance and control LEA and OFSTED. *In*: P. Sikes and A. Potts, ed. *Researching Education from the Inside:*

Investigations from within. London and New York: Routledge 2008, pp. 111-124.

Dirks, N. B. 2006. Colonialism and Culture. In: B. Ashcroft, G. Griffiths and H. Tiffin, ed. *The Post-Colonial Studies Reader.* London and New York: Routledge 2006, pp. 57-76.

Donavan, J., 1995. The Process of Analysis During a Grounded Theory Study of Men During Their Partners' Pregnancies. *Journal of Advanced Nursing* [online], 21. Available at: <URL:http://scholar.google.com/scholar> [Accessed 20 November 2010].

Dooley, K. E., 1999. Towards a Holistic Model for the Diffusion of Educational Technologies: An Integrative Review of Educational Innovation Studies. *Educational Technology and Society* [online], 2(4). Available at: <URL:http://scholar.google.com/scholar/> [Accessed 26 June 2011].

Eisenhart, M. A., 1988. The Ethnographic Research Tradition and Mathematics Education Research. *Journal for Research in Mathematics Education* [online], 19(2), 99-114. Available from: JSTOR [Accessed 13 April 2008].

Ewusi-Mensah, K., and Przasnyski, Z. H., 1991. On Information Systems Project Abandonment: An Exploratory Study of Organizational Practices. *MIS Quarterly* [online], 15(1), 67-86. Available from: JSTOR [Accessed 17 July 2009].

Fontana, A., And Frey, J. H., 2005. The Interview: From Neutral Stance to Political Involvement. *In*: N. K. Denzin and Y. S. Lincoln, ed. *The Sage Handbook of Qualitative Research*. Thousand Oaks, London and New Delhi: Sage Publications, 2005, pp. 695-727.

Franzosi, R., 1998. Narrative Analysis-Or Why (And How) Sociologists Should be Interested in Narrative. *Annual Review of Sociology* [online], 24, 517-554. Available from: JSTOR [Accessed 17 April 2011].

Fullan, M., and Watson, N., 1999. *School-Based Management: Reconceptualizing to Improve Learning Outcomes – Improving Learning Outcomes in the Caribbean* [online]. OECS. Available at: <URL:http://www.oecs.org> [Accessed 10 February 2010].

Gamage, D. T., and Sooksomchitra, P., 2004. Decentralisation and School-Based Management in Thailand. *International Review of Education* [online], 50(3/4), 289-305. Available from: JSTOR [Accessed 10 February 2010].

Gasson, S., 2004. *Rigor in Grounded Theory Research: An Interpretive Perspective on Generating Theory From Qualitative Field Studies* [online]. College of Information Science and Technology, Drexel University. Available at: <URL:http://scholar.google.com/scholar> [Accessed 20 November 2010].

Gerring, J., 2004. What is a Case Study and What is it Good for?. *The American Political Science Review* [online], 98(2), 341-354. Available from: JSTOR [Accessed 22 February 2011].

Ghosh, R., 1987. New Educational Technologies: Their Impact on Relationships of Dependence and Interdependence for Third World Countries. *International Review of Education* [online], 33(1), 33-50. Available from: JSTOR [Accessed 11 February 2010].

Glaser, B. G., 1978. *Advances in the Methodology of Grounded Theory*. Mill Valley, CA: Sociology Press.

Glaser, B. G., And Strauss, A. L., 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. USA and London: Aldine Transaction.

Golden-Biddle, K., and Locke, K., 1993. Appealing Work: An Investigation of How Ethnographic Texts Convince. *Organization Science* [online], 4(4), 595-616. Available from: JSTOR [Accessed 14 September 2009].

Goulding, C., 2005. Grounded Theory, Ethnography and Phenomenology: A comparative analysis of three qualitative strategies for marketing research. *European Journal of Marketing* [online], 39(3/4), 294-308. Available from: JSTOR [Accessed 20 November 2010].

Griffin, G. A., 1995. Influences of Shared Decision Making on School and Classroom Activity: Conversations with Five Teachers. *The Elementary School Journal* [online], 96(1), 29-45. Available from: JSTOR [Accessed 15 February 2010].

Gubrium, J. F., And Holstein, J. A., 1998. Narrative Practice and the Coherence of Personal Stories. *The Sociological Quarterly* [online], 39(1), 163-187. Available from: JSTOR [Accessed 15 April 2011].

Hallberg, L. R-M., 2006. The Core Category of Grounded Theory: Making Constant Comparisons. *International Journal of Qualitative Studies on Health and Well-being* [online], 1, 141-148. Available from: JSTOR [Accessed 20 November 2010].

Hammersley, M., 2000. The Relevance of Qualitative Research. *Oxford Review of Education* [online], 26(3/4), 393-405. Available from: JSTOR [Accessed 6 September 2008].

Hanson, E. M., 1990. School-Based Management and Educational Reform in the United States and Spain. *Comparative Education Review* [online], 34(4), 523-537. Available from: JSTOR [Accessed 10 February 2010].

Hess, D. J., 1989. Teaching Ethnographic Writing: A Review Essay. *Anthropology and Education Quarterly* [online], 20(3), 163-176. Available from: JSTOR [Accessed 14 September 2009].

Hesse-Biber, S., 2010. Qualitative Approaches to Mixed Methods Practice. *Qualitative Inquiry* [online], 16(6), 455-468. Available from: Sage [Accessed 15 February 2011].

Hines, A., 2008. Global Trends in Culture, Infrastructure and Values. *The Futurist* [online], September-October. Available at: <URL:http://www.wfs.org/> [Accessed 29 August 2008]

Hilliard, A., and Jackson, B. T., 2011. Current Trends in Educational Leadership For Student Success Plus Facilities Planning and Designing. *Contemporary Issues in Education Research* [online], 4(1), 1-8. Available from: ProQuest [Accessed 26 June 2011].

Holmes, K., and Crossley, M., 2004. Whose knowledge, whose values? The contribution of local knowledge to education policy processes: a case study of research development initiatives in the small state of Saint Lucia. *British Association for International and Comparative Education* [online], 34(2), 197-215. Available from: JSTOR [Accessed 23 November 2008].

Howe, K. R., 1992. Getting Over the Quantitative-Qualitative Debate. *American Journal of Education* [online], 100(2), 236-256. Available from: JSTOR [Accessed 14 March 2011].

Huber, G. P., 1990. A Theory of the Effects of Advanced Information Technologies on Organizational Design, Intelligence, and Decision Making. *The Academy of Management Review* [online], 15(1), 47-71. Available from: JSTOR [Accessed 19 October 2010].

Jamieson-Proctor, R. M., 2006. ICT Integration and Teachers' Confidence in Using ICT for Teaching and Learning in Queensland State Schools. *Australasian Journal of Education Technology* [online], 22(4). Available at: <URL:http://scholar.google.com/scholar/> [Accessed 31 May 2011].

Jeffrey, B., and Troman, G., 2004. Time for Ethnography. *British Educational Research Journal* [online], 30(4), 535-548. Available from: JSTOR [Accessed 14 September 2009].

Jones, K., 2004. Mission Drift in Qualitative Research, or Moving Toward a Systematic Review of Qualitative Studies, Moving Back to a More Systematic Narrative Review. *The Qualitative Report* [online], 9(1). Available at: <URL:http://www.nova.edu/ssss/QR/QR9-1/jones.pdf> [Accessed 2 February 2011].

Kennedy, B. L., 2009. Infusing Participants' Voices Into Grounded Theory Research: A Poetic Anthology. *Qualitative Inquiry* [online], 15(8), 1416-1433. Available from: Sage [Accessed 15 January 2011].

Kezar, A., 2005. Consequences of Radical Change in Governance: A Grounded Theory Approach. *The Journal of Higher Education* [online], 76(6), 634-668. Available from: JSTOR [Accessed 20 November 2010].

Kirsch, G., and Sullivan, P. A., 1992. *Introduction: Methods and Methodology in Composition Research* [online]. USA: Southern Illinois University. Available at: <URL:http://books.google.com/books> [Accessed 20 February 2011].

Klein, H. K., And Myers, M. D., 1999. A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems. *MIS Quarterly* [online], 23(1), 67-93. Available from: JSTOR [Accessed 24 January 2011].

Konopka, R., and Korrapati, R., 2006. Properties of Shared Knowledge – Application of Highly Integrated Information Sharing Systems in Public Education. *Proceedings of the Academy of Information and Management Sciences* [online], 10(2). Available at: <URL:http://scholar.google.com/scholar/> [Accessed 23 October 2010].

Kraemer, K. L., et al., 1993. The Usefulness of Computer-Based Information to Public Managers. *MIS Quarterly* [online], 17(2), 129-148. Available from: JSTOR [Accessed 19 October 2010].

Kumar, C. R., 2008. *Research Methodology* [online]. New Delhi: APH Publishing Corporation. Available at: <URL:http://books.google.com/books> [Accessed 24 February 2011].

Law, N., et al., 2000. *Changing Classrooms and Changing Schools: A Study of Good Practices in Using ICT in Hong Kong Schools*. Hong Kong: CITE Faculty of Education.

Le Gallais, T., 2008. Wherever I go there I am: Reflections on Reflexivity and the Research Stance. *Reflective Practice* [online], 9(2). Available at: <URL:http://dx.doi.org/10.1080/14623940802005475> [Accessed 1 May 2008].

Lederer, A. L., et al., 2000. The Technology Acceptance Model and the World Wide Web. *Decision Support Systems* [online], 29. Available at: <URL:http://scholar.google.com/scholar/> [Accessed 23 October 2010].

Lederer, A. L., and Mendelow, A. L., 1988. Convincing Top Management of the Strategic Potential of Information Systems. *MIS Quarterly* [online], 12(4), 525-534. Available from: JSTOR [Accessed 28 September 2010].

Lee, Y., et al., 2003. The Technology Acceptance Model: Past, Present, and Future. *Communications of the Association for Information Systems* [online], 12(50). Available at: <URL:http://scholar.google.com/scholar/> [Accessed 23 October 2010].

Lee, A. S., 1989. A Scientific Methodology for MIS Case Studies. *MIS Quarterly* [online], 13(1), 33-50. Available from: JSTOR [Accessed 20 February 2010].

Leonard, D., and McAdam, R., 2001. Grounded Theory Methodology and Practitioner Reflexivity in TQM Research. *International Journal of Quality & Reliability*

Management [online], 18(2). Available at: <URL:http://scholar.google.com/scholar> [Accessed 20 November 2010].

Lessen, E., and Sorensen, C., 2006. INTEGRATING Technology in Schools, Colleges, and Departments of Education. *Change* [online], 38(2). Available from: JSTOR [Accessed 15 February 2010].

Levitt, K., 2005. *Reclaiming Development: Independent Thought and Caribbean Community – The right to development: The W.A. Lewis legacy*. Jamaica: Ian Randle Publishers.

Levitt, K., 2005. *Reclaiming Development: Independent Thought and Caribbean Community – The Plantation Economy Models: My Collaboration with Lloyd Best*. Jamaica: Ian Randle Publishers.

Lewin, K., and Caillods F., 2001. *Financing Secondary Education in Developing Countries: Strategies for sustainable growth*. Paris: UNESCO International Institute for Educational Planning.

Lewis, W., et al., 2003. Sources of Influence on Beliefs about Information Technology Use: An Empirical Study of Knowledge Workers. *MIS Quarterly* [online], 27(4), 657-678. Available from: JSTOR [Accessed 19 October 2010].

Li, J., 2008. Ethical Challenges in Participant Observation: A Reflection on Ethnographic Fieldwork. *The Qualitative Report* [online], 13(1), 100-115. Available from: ERIC [Accessed 18 September 2009].

Liker, J. K., et al., 1999. Perspectives on Technology and Work Organization. *Annual Review of Sociology* [online], 14, 575-596. Available from: JSTOR [Accessed 10 February 2010].

Louisy, P., 2001. Globalisation and Comparative Education: A Caribbean Perspective. *Comparative Education* [online], 37(4), 425-438. Available from: JSTOR [Accessed 3 October 2008].

Louisy, P., 1998. Dilemmas of Insider Research in a Small Country Setting. *In*: M. Crossley & G. Vulliamy, ed. *Qualitative Educational Research in Developing Countries: Current Perspectives*. NY, Garland

Loxely, A., and Seery, A., 2008. Some philosophical and other related issues of insider research. *In*: P. Sikes and A. Potts, ed. *Researching Education from the Inside: Investigations from within*. London and New York: Routledge, 2008, pp. 15-32.

Ma, Q., and Liu, L., 2004. The Technology Acceptance Model: A Meta-Analysis of Empirical Findings. *Journal of Organizational and End User Computing* [online], 16(1). Available at: <URL:http://scholar.google.com/scholar/> [Accessed 23 October 2010].

McCaslin, M. L., and Scott, K. W., 2002. *Method for Studying a Human Ecology: An Adaptation of the Grounded Theory Tradition*. [online]. US Department of Education: ERIC. Available at: <URL:http://scholar.google.com/scholar/> [Accessed 23 October 2010].

McDonald, S., 1995. Learning to Change: An Information Perspective on Learning in the Organization. *Organization Science* [online], 6(5), 557-568. Available from: JSTOR [Accessed 26 June 2011].

McFadzean, E., et al., 2007. Perception of Risk and the Strategic Impact of Existing IT on Information Security Strategy at Board Level. *Online Information Review* [online], 31(5), 622-660. Available from: ProQuest [Accessed 20 December 2010].

Mills, J., et al., 2006. The Development of Constructivist Grounded Theory. *International Journal of Qualitative Methods* [online], 5(1), 25-35. Available from: JSTOR [Accessed 20 November 2010].

Moses, K., 2000. *Planning for Technologies – Information Systems for Education Management* [online]. Knowledge Enterprise Inc. Available at: <URL:http://www.techknowlogia.com> [Accessed 10 February 2010].

Mullings, B., 1999. Insider or Outsider, both or Neither: Some dilemmas of Interviewing in a Cross-Cultural Setting. Elsevier Science Ltd. [CD-ROM], Available from: Elsevier Science Ltd. on CD-ROM [Accessed 19 March 2011].

Mumtaz, S., 2000. Factors Affecting Teachers' Use of Information and Communications Technology: A Review of the Literature. *Information Technology for Teacher Education* [online], 9(3). Available at: <URL:http://scholar.google.com/scholar/> [Accessed 31 May 2011].

Nadin, S., And Cassell, C., 2006. The use of a research diary as tool for reflexive practice – Some reflections from management research. *Qualitative Research in Accounting and Management* [online], 3(3). Available at: <URL:http://scholar.google.com/scholar/> [Accessed 31 May 2011].

O'Brien, J. A., 2002. *Management Information Systems – Managing Information Technology in the E-Business Enterprise*. 5th ed. New York: McGraw-Hill.

OECS. OECS Education Reform Unit, November 1998. Eastern Caribbean Education Reform Project: Education Management Information System (EMIS) System Review. OECS: Education Reform Unit

OECS. OECS Education Reform Unit, 2002. *Establishing a Sub-Regional Education Management Information System (EMIS) – Report on the OECS EMIS Project 1998-2002*. OECS: Education Reform Unit

OECS. OECS Education Reform Unit, 2006. *OECS Education Reform Strategy, Eastern Caribbean Education Reform Project: Education Management*

Information System (EMIS) - Report on Selection of the EMIS Pilot Country. OECS: Education Reform Unit

OECS. OECS Education Reform Unit, 2000. *OECS Education Reform Strategy, Eastern Caribbean Education Reform Project: Establishing a Sub-Regional Education Management Information System (EMIS) – MOE Seminar on the Implementation of the EMIS Pilot in St. Lucia.* OECS: Education Reform Unit

OECS. OECS Education Reform Unit, 2001. *Final Report on Extended EMIS for the OECS.* OECS: Education Reform Unit

OECS Education Reform Unit, 1992. *Foundations for the Future: OECS Education Reform Strategy* [online]. OECS Education Reform Unit. Available at: <URL:http:// www.oeru.org> [Accessed 10 February 2010].

OECS Education Reform Unit, 2000. *Pillars for Partnership and Progress – The OECS Education Reform Strategy: 2010* [online]. OECS Education Reform Unit. Available at: <URL:http:// www.oeru.org> [Accessed 10 February 2010].

OECS. OECS Education Reform Unit, 2001. *Performance Management Handbook for Schools.* OECS: Education Reform Unit

Orlikowski, W. J., 2000. Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations. *Organization Science* [online], 11(4), 404-428. Available from: JSTOR [Accessed 19 October 2010].

Orlikowski, W. J., 1993. CASE Tools as Organizational Change: Investigating Incremental and Radical Changes in Systems Development. *MIS Quarterly* [online], 17(3), 309-340. Available from: JSTOR [Accessed 24 January 2011].

Orlikowski, W. J., 1992. The Duality of Technology: Rethinking the Concept of Technology in Organizations. *Organization Science* [online], 3(3), 398-427. Available from: JSTOR [Accessed 19 October 2010].

Orser, C. E. Jr., 1988. The Archaeological Analysis of Plantation Society: Replacing Status and Caste with Economics and Power. *American Antiquity* [online], 53(4), 735-751. Available from: JSTOR [Accessed 30 January 2011].

Orser, C. E. Jr., And Funari, P. P. A., 1988. Archaeology and Slave Resistance and Rebellion. *World Archaeology* [online], 33(1), 61-72. Available from: JSTOR [Accessed 5 February 2011].

Owen, P. S., and Demb, A., 2004. Change Dynamics and Leadership in Technology Implementation. *The Journal of Higher Education* [online], 75(6), 636-666. Available from: JSTOR [Accessed 26 June 2011].

Padaki, V., 2002. Making the Organisation Learn: Demystification and Management Action. *Development in Practice* [online], 13(3/4). Available at: <URL:http://scholar.google.com/scholar/> [Accessed 26 June 2011].

Pettigrew, A. M., 1990. Longitudinal Field Research on Change: Theory and Practice. *Organization Science* [online], 1(3), 267-292. Available from: JSTOR [Accessed 2 February 2011].

Portelli, J., 2008. Researching a Secondary School in Malta. *In*: P. Sikes and A. Potts, ed. *Researching Education from the Inside: Investigations from within.* London and New York: Routledge, 2008, pp. 80-94.

Postlethwaite, T. N., 2004. *Fundamentals of Educational Planning – Monitoring educational achievement.* Paris: UNESCO International Institute for Educational Planning.

Power, D. J., 1983. The Impact of Information Management on the Organization: Two Scenarios. *MIS Quarterly* [online], 7(3), 13-20. Available from: JSTOR [Accessed 17 July 2009].

Rathwell, M. A., and Burns, A., 1985. Information Systems Support for Group Planning and Decision-Making Activities. *MIS Quarterly* [online], 9(3), 255-271. Available from: JSTOR [Accessed 15 February 2010].

Reichgelt, H., 2000. Information Technology and Sustainable Development in the Caribbean. *In*: K. Hall & D. Benn, ed. *Contending With Destiny: The Caribbean in the 21st Century.* Kingston, Jamaica: Ian Randle Publishers, 2000, pp. 125-153.

Richardson, J. W., and McLeod, S., 2011. Technology Leadership in Native American Schools. *Journal or Research in Rural Education* [online], 26(7). Available at: <URL:http://scholar.google.com/scholar/> [Accessed 26 June 2011].

Sack, S., and Saidi, M., 1997. *Fundamentals of Educational Planning – Functional Analyss (management audits) of the organization of ministries of education.* Paris: UNESCO International Institute for Educational Planning.

Schech, S., and Haggis, J., 2000. *Culture and Development: A Critical Introduction.* United Kingdom: Blackwell Publishing.

Schultze, U., 2000. A Confessional Account of an Ethnography about Knowledge Work. *MIS Quarterly* [online], 24(1), 3-41. Available from: JSTOR [Accessed 14 September 2009].

Scott, K. W., 2004. Congruous Autonomy: The Pull of Personal Commitment to Extraordinary involvement in a Pursuit. *Journal of Adult Education* [online], 33(1). Available from: ERIC [Accessed 1 January 2011].

Shekedi, A., 2005. *Multiple Case Narrative: A Qualitative Approach to Studying Multiple Populations* [online]. Amsterdam and USA: John Benjamins Publishing Company. Available at: <URL:http://books.google.com/books> [Accessed 3 February 2011].

Sieber, J. E., 1996. *Ethics: A Psychological Approach – Introduction: Empirical Study of Ethical Issues in Psychological Research* [online]. USA: University of Nebraska Press. Available at: <URL:http://books.google.com/books> [Accessed 3 February 2011].

Sikes, P., 2008. Researching Research Cultures, The Case of New Universities. *In*: P. Sikes & A. Potts, ed. *Researching Education from the Inside: Investigations from within*. London and New York: Routledge, 2008, pp. 144-158.

Sikes, P., 2004. *Methodology, Procedures and Ethical Concerns* [CD-ROM]. London: Sage.

Sikes, P., (in press for publication in 2013). 'Working Together For Critical Research Ethics' *Compare*.

Simkins, T., 2000. Education reform and managerialism: comparing the experiences of schools and colleges. *Education Policy* [online], 15(3), 317-332. Available from: JSTOR [Accessed 3 September 2010].

Smylie, M. A., 1992. Teacher Participation in School Decision Making: Assessing Willingness to Participate. *Educational Evaluation and Policy Analysis* [online], 14(1), 53-67. Available from: JSTOR [Accessed 15 February 2010].

Smyth, A., and Holian, R., 2008. Credibility issues in research from within organisations. *In*: P. Sikes & A. Potts, ed. *Researching Education from the Inside: Investigations from within*. London and New York: Routledge, 2008, pp. 33-47.

St. Lucia. Ministry of Education and Culture, March 2006. *Report on EMIS Study Tour, Jamaica*. St. Lucia: Ministry of Education

St. Lucia. Ministry of Education and Culture, 2006. *Report on 2006 Common Entrance Examinations*. St. Lucia: Ministry of Education

St. Lucia. Ministry of Education and Culture, 2007. *Report on 2007 Common Entrance Examinations*. St. Lucia: Ministry of Education

St. Lucia. Ministry of Education and Culture, 2008. *Report on 2008 Common Entrance Examinations*. St. Lucia: Ministry of Education

St. Lucia. Ministry of Education and Culture, 2009. *Report on 2009 Common Entrance Examinations*. St. Lucia: Ministry of Education

St. Lucia. Ministry of Education and Culture, 2010. *Report on 2010 Common Entrance Examinations*. St. Lucia: Ministry of Education

St. Lucia. Ministry of Education and Culture, 2006. *CSEC Examination Results*. St. Lucia: Ministry of Education

St. Lucia. Ministry of Education and Culture, 2007. *CSEC Examination Results*. St. Lucia: Ministry of Education

St. Lucia. Ministry of Education and Culture, 2008. *CSEC Examination Results*. St. Lucia: Ministry of Education

St. Lucia. Ministry of Education and Culture, 2009. *CSEC Examination Results*. St. Lucia: Ministry of Education

St. Lucia. Ministry of Education and Culture, 2010. *CSEC Examination Results*. St. Lucia: Ministry of Education

St. Lucia. Ministry of Education and Culture, 2006. *School EMIS Coordinators – Criteria for Selection*. St. Lucia: Ministry of Education

St. Lucia. Ministry of Education and Culture, 2006. *School EMIS Coordinators – Essential Functions*. St. Lucia: Ministry of Education

St. Lucia. Ministry of Education and Culture, March 2010. *Report on EMIS School Visits*. St. Lucia: Ministry of Education

St. Lucia. Ministry of Education and Culture, 2009. *Implementation Completion and Results Report on a Loan to St. Lucia for a OECS Education Development Program*. St. Lucia: Ministry of Education

Stake, R. E., 2005. Qualitative Case Studies. In: N. K. Denzin and Y. S. Lincoln, ed. *The Sage Handbook of Qualitative Research*. Thousand Oaks, London and New Delhi: Sage Publications, 2005, pp. 443-466.

Staudenmayer, N., et al., 2002. Time to Change: Temporal Shifts as Enablers of Organizational Change. *Organization Science* [online], 13(5), 583-597. Available from: JSTOR [Accessed 26 July 2011].

Stinchcombe, A. L., 1994. Freedom and Oppression of Slaves in the Eighteenth-Century Caribbean. *American Sociological Review* [online], 59(6), 911-929. Available from: JSTOR [Accessed 30 January 2011].

Strauss, A., and Corbin, J., 1990. Grounded Theory Research: Procedures, Canons and Evaluative Criteria. *Qualitative Sociology* [online], 13(1), 3-21. Available from: EBSCO [Accessed 20 November 2010].

Strauss, A., And Corbin, J., 1998. *Basics of Qualitative Research: techniques and procedures for developing grounded theory* [online]. USA: Sage. Available at: <URL:http://scholar.google.com/scholar> [Accessed 20 November 2010].

Strauss, A., And Corbin, J., 2008. *Basics of Qualitative Research: techniques and procedures for developing grounded theory* [online]. USA: Sage. Available at: <URL:http://books.google.com/books> [Accessed 10 January 2011].

Sutcliffe, J., and Whitfield, R., 1976. Decision Making in the Classroom: An Initial Report. *Research Intelligence* [online], 2(1), 14-19. Available from: JSTOR [Accessed 15 February 2010].

Tan, J., 2010. Grounded Theory in Practice: Issues and Discussion for New Qualitative Researchers. *Journal of Documentation* [online], 66(1). Available at: <URL:http://scholar.google.com/scholar> [Accessed 24 January 2011].

Taylor, I., 2005. Globalisation Studies and the Developing World: Making International Political Economy Truly Global. *Third World Quarterly* [online], 26(7), 1025-1042. Available from: JSTOR [Accessed 20 February 2010].

Tedlock, B., 2005. The Observation of Participation and the Emergence of Public Ethnography. *In*: N. K. Denzin and Y. S. Lincoln, ed. *The Sage Handbook of Qualitative Research*. Thousand Oaks, London and New Delhi: Sage Publications, 2005, pp. 467-481.

The World Bank., 2002. *Constructing Knowledge Societies: New Challenges for Tertiary Education.* Washington DC: The World Bank.

Thomas, G., and James, D., 2006. Reinventing Grounded Theory: Some Questions about Theory, Grounded and Discovery. *British Educational Research Journal* [online], 32(6), 767-795. Available from: JSTOR [Accessed 20 November 2010].

Venkatesh, V., 2000. Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model. *Information Systems Research* [online], 11(4). Available at: <URL:http://scholar.google.com/scholar/> [Accessed 23 October 2010].

Wako, T. N., 2003. *Education Management Information System - An overview* [online]. Harare, Zimbabwe: Fontline Electronic Publishing. Available at: <URL:http://portal.unesco.org/education/> [Accessed 6 October 2009].

Watson, K., 1994. Technical and Vocational Education in Developing Countries: Western Paradigms and Comparative Methodology. *Comparative Education* [online], 30(2), 85-97. Available from: JSTOR [Accessed 23 November 2008].

Watson-Gegeo, A., 1988. Ethnography in ESL: Defining the Essentials. *TESOL Quarterly* [online], 22(4), 575-592. Available from: JSTOR [Accessed 14 September 2009].

Wiley, J., 2008. *The Banana: Empires, Trade Wars, and Globalization* [online]. University of Nebraska Press. Available at: < URL:http://books.google.com/books> [Accessed 26 April 2009].

Witz, K. G., 2007. Awakening to an Aspect in the Other: On Developing Insights and Concepts in Qualitative Research. *Qualitative Inquiry* [online], 13(2), 235-258. Available from: University of Sheffield [Accessed 15 January 2011].

Wohlstetter, P., et al., 1994. New Boundaries for School-Based Management: The High Involvement Model. *Educational Evaluation and Policy Analysis* [online], 16(3), 268-286. Available from: JSTOR [Accessed 9 October 2009].

Yang, R., 2003. Globalisation and Higher Education Development: A Critical Analysis. *International Review of Education* [online], 49(3/4), 269-291. Available from: JSTOR [Accessed 12 November 2008].

Zaharlick, A., 1992. Ethnography in Anthropology and Its Value for Education. *Theory into Practice* [online], 31(2), 116-125. Available from: JSTOR [Accessed 17 September 2009].

Zhao, Y., and Frank, F. A., 2003. Factors Affecting Technology Uses in Schools: An Ecological Perspective. *American Educational Research Journal* [online], 40(4), 807-840. Available from: JSTOR [Accessed 19 October 2010].

Appendix 1 – Ethical Clearance Documents

Participant Information Sheet

Name of Researcher: Esther Chitolie-Joseph

Information on Researcher: I am a St. Lucian student enrolled at the University of Sheffield, in England, pursuing an Education Doctorate via distance learning. I currently work with the Ministry of Education in St. Lucia as an Education Planner. This research is being undertaken privately by me towards an Education Doctorate and is funded solely by me.

Title of Research: An Investigation into the Use of the Education Management Information System (EMIS) in Secondary Schools in St. Lucia – The Case of One Secondary School

What are the objectives of the research?
The main purpose of this research is to make a contribution to the theory and practice of Education Management Information System in schools by better understanding its use by school personnel. The key objectives of the research are to investigate:

1. how schools are using the EMIS
2. what is required to facilitate the use of the EMIS at secondary schools

What methodology will be used to conduct the research?
The proposed methodology to be employed for this research is ethnography. This involves careful observation over a period of time of school personnel at the secondary school, as they engage in the information and management processes at the school and how they use the EMIS to assist in these processes. The data collection methods to be employed during the research period will focus on participant observation, interviews (formal and informal), and document reviews. One academic year will be used as the length of time in the field since it will allow me the time to collect information on a range of events. However, the frequency of visits to the school will not be daily but will be short and intense at times, and sporadic at other times depending on the event or activity taking place at the school.

Are there any potential risks or inconveniences associated with the research?

There are no potential risks involved in the research. The only anticipated inconvenience may occur if participants have to leave their class or other duties to participate in an interview or other data collection activity. I will ensure as much as possible to avoid or minimize this.

What are the potential benefits that may result from this research?
This research can provide pertinent information to the Bocage Secondary School, concerning the use of EMIS in the school. Such information can be useful to the Ministry of Education in improving the use of the EMIS in secondary schools with conditions similar to that of the research site. This research can also provide insight into the implementation of similar systems in primary schools in St. Lucia as well as other schools in other Caribbean territories.

Why have I selected this school?
The Bocage Secondary School was selected because I became very intrigued by the progress made by the school in the use of the EMIS. So far this is the only secondary school using the web portal capabilities of the system which allows access to teachers and parents from any location.

What type of participation will the research require?
This research will comprise a high level of observation by the researcher as participants engage in the management processes at the school. However, it will also require participants to take part in formal and informal interviews as it relates to the use of the EMIS. Since documents will also be reviewed, some time will be required of participants to provide the documents and if needs be to answer any related questions or queries.

How will confidentiality be protected?
All confidential information provided will be protected. All personal data (personal confidential information about the person) will be kept secured so that no other person gets access neither will give out personal data to anyone. When the report is written, names will not be used.

Consent Form

You are being invited to participate in a research study on the use of the EMIS at your school. The details of the research are provided in the attached Participant Information Sheet given to you. Please read it carefully before deciding whether you would like to participate or not.

Your participation in this study is voluntary. If you choose to participate, you are free to withdraw your participation anytime you wish. If you choose to participate, please sign this consent form. I will be at the school next week, every day during your lunch break to collect the consent forms.

If you have any questions or concerns about this study, you may contact me at 468 3219 or 712 7869 or at estacy32@yahoo.com.

I understand the details described. **I agree to participate in this study**.

_____
Printed Name of Participant

_____   _____
Signature of Participant   Date

I understand the details described. However, **I do not agree to participate in this study**.

_____
Printed Name of Participant

_____   _____
Signature of Participant   Date

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Complete this form if you are planning to carry out research in the School of Education which will <u>not</u> involve the NHS but which will involve people participating in research either directly (e.g. interviews, questionnaires) and/or indirectly (e.g. people permitting access to data).

Documents to enclose with this form, where appropriate:
This form should be accompanied, where appropriate, by an Information Sheet/Covering Letter/Written Script which informs the prospective participants about the a proposed research, and/or by a Consent Form.

Guidance on how to complete this form is at:
http://www.sheffield.ac.uk/content/1/c6/07/21/24/appguide.doc

Once you have completed this research ethics application form in full, and other documents where appropriate email it to the:

<u>Either</u>

Ethics Administrator if you are a member of staff.

<u>Or</u>

Secretary for your programme/course if you are a student.

<u>NOTE</u>
- Staff and Post Graduate Research (EdDII/PhD) requires 3 reviewers
- Undergraduate and Taught Post Graduate requires 1 reviewer – **low risk**
- Undergraduate and Taught Post Graduate requires 2 reviewers – **high risk**

I am a member of staff and consider this research to be (according to University

definitions)   :   **low risk**   ☐

                                                                    high risk   ☐

I am a student and consider this research to be (according to University definitions):

                                                                    low risk   √

                                                                    high risk   ☐

*Note: For the purposes of Ethical Review the University Research Ethics Committee considers all research with 'vulnerable people' to be 'high risk' (eg children under 18 years of age).

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COVER SHEET

I confirm that in my judgment, due to the project's nature, the use of a method to inform prospective participants about the project (eg 'Information Sheet'/'Covering Letter'/'Pre-Written Script'?:	
Is relevant	**Is not relevant**
Is relevant (if relevant then this should be enclosed)	

I confirm that in my judgment, due to the project's nature, the use of a 'Consent Form':	
Is relevant	**Is not relevant**
Is relevant (if relevant then this should be enclosed)	

Is this a 'generic "en bloc" application (ie does it cover more than one project that is sufficiently similar)	
Yes	**No**
	No

I am a member of staff	☐
I am a PhD/EdD student	√
I am a Master's student	☐
I am an Undergraduate student	☐
I am a PGCE student	☐
The submission of this ethics application has been agreed by my supervisor	√
I have enclosed a signed copy of Part B	√

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PART A

A1.   Title of Research Project

An Investigation into the Use of the Education Management Information

System (EMIS) in Secondary Schools in St. Lucia – The Case of One

Secondary School

A2.   Applicant (normally the Principal Investigator, in the case of staff-led research projects, or the student in the case of supervised research projects):

Title: First Name/Initials: Esther   Last Name: Chitolie-Joseph

Post: Education Planner   Department: Education

Email: edp07ec@sheffield.ac.uk   Telephone: 1 758 454 3795

A.2.1. Is this a student project?

Yes

A2.2. Other key investigators/co-applicants (within/outside University), where applicable:

Please list all (add more rows if necessary)

Title	Full Name	Post	Responsibility in project	Organisation	Department
NA	NA	NA	NA	NA	NA

A3.   Proposed Project Duration:

Start date: July 2010   End date: July 2011

A4.   Mark 'X' in one or more of the following boxes if your research:

	Involves children or young people aged under 18 years
	Involves only identifiable personal data with no direct contact with participants
	Involves only anonymised or aggregated data
	Involves prisoners or others in custodial care (eg young offenders)
	Involves adults with mental incapacity or mental illness
X	Has the primary aim of being educational (eg student research, a project necessary for a postgraduate degree or diploma, MA, PhD or EdD)

A5.   Briefly summarise the project's aims, objectives and methodology?

The main purpose of this research is to make a contribution to the theory and practice of Education Management Information System in schools by better understanding its use by school personnel. The key objectives of the research are to investigate:

3. how schools are using the EMIS

4. what is required to facilitate the use of the EMIS at secondary schools

The proposed methodology to be employed for this research is ethnography. This involves careful observation over a period of time of school personnel in one secondary school, as they engage in the information and management processes at the school and how they use the EMIS to assist in these processes. The data collection methods to be employed during the research period will focus on participant observation, interviews (formal and informal), and document reviews. One academic year will be used as the length of time in the field since it will allow me the time to collect information on a range of events. However, the frequency of visits to the school will not be daily but will be short and intense at times, and sporadic at other times depending on the event or activity taking place at the school.

A6.   What is the potential for physical and/or psychological harm / distress to participants?

There is no potential physical and/or psychological harm to participants.

A7.   Does your research raise any issues of personal safety for you or other researchers involved in the project and, if yes, explain how these issues will be managed? (Especially if taking place outside working hours or off University premises.)

The research does not raise any issues of personal safety to me or any of the participants.

A8.   How will the potential participants in the project be (i) identified, (ii) approached and (iii) recruited?

The participants will be identified based on their management and decision-making role at the school. In this regard the principal and other administrative staff as well as subject teachers will be identified. The principal will be approached first at a meeting to discuss the details of the research and to answer any questions he might have. In addition, an information sheet will be provided to the principal. After obtaining the principal's consent, I will request the principal's permission to be present at a staff meeting at the school to explain my research and provide a participant information sheet and

consent form to all legible participants and to answer any questions that they may have. Thus far I have only sounded the principal out by indicating that I would be interested in conducting research at his school. He did not seem to have any objections.

A9. **Will informed consent be obtained from the participants?**

Yes √

No

If informed consent is not to be obtained please explain why. Further guidance is at
http://www.shef.ac.uk/content/1/c6/07/21/15/Ethics_Consent.doc
Only under exceptional circumstances are studies without informed consent permitted. Students should consult their tutors.

A.9.1 **How do you plan to obtain informed consent? (i.e. the proposed process?):**

Informed consent will be obtained in writing from all participants. Informed consent will be obtained from the principal by first meeting with him and discussing the details of my research. I will provide him with an information sheet and consent form. I will allow the principal to read the information sheet to get a better understanding of what is involved. The principal will be given sufficient time to determine whether or not to participate. I will agree on a date by which to call him to communicate the answer. When the principal gives his consent, only then will I obtain consent from the staff. The staff will be given sufficient time to decide whether or not they want to participate after having met with them and distributed the information sheet. My contact information will be made available for any further questions. I will then re-visit the school to collect their consent forms.

A.10 **How will you ensure appropriate protection and well-being of participants?**

Participants will be assured that all information will be kept confidential. All data collected from them will be stored in a secure place where other persons will not have access to it. Participants will be free to withdraw their participation anytime if they feel for some reason that they should not participate in the research anymore. Participants working hours will be respected and any disturbances to participate in the research will be kept minimal. Participants will not be forced at any time to provide information for the research.

A.11 **What measures will be put in place to ensure confidentiality of personal data, where appropriate?**

All personal data will be kept secured so that no other person gets access neither will I give out personal data to anyone. When writing my reports, names of participants will not be used.

A.12   Will financial / in kind payments (other than reasonable expenses and compensation for time) be offered to participants? (Indicate how much and on what basis this has been decided.)

Yes

No   √

A.13   Will the research involve the production of recorded or photographic media such as audio and/or video recordings or photographs?

Yes

No   √

A.13.1 This question is only applicable if you are planning to produce recorded or visual media:
How will you ensure that there is a clear agreement with participants as to how these recorded media or photographs may be stored, used and (if appropriate) destroyed?

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PART B - <u>THE SIGNED DECLARATION</u>

Title of Research Project: An Investigation into the Use of the Education Management Information System (EMIS) in Secondary Schools in St. Lucia – The Case of One Secondary School

Name of Applicant: Esther Chitolie-Joseph

I confirm my responsibility to deliver the research project in accordance with the University of Sheffield's policies and procedures, which include the University's *'Financial Regulations', 'Good research Practice Standards'* and the *'Ethics Policy for Research Involving Human Participants, Data and Tissue'* (Ethics Policy) and, where externally funded, with the terms and conditions of the research funder.

In signing this research ethics application I am confirming that:

1. The above-named project will abide by the University's Ethics Policy for Research Involving Human Participants, Data and Tissue':
   http://www.shef.ac.uk/content/1/c6/07/21/15/Tissue.doc

2. The above-named project will abide by the University's 'Good Research Practice Standards': www.shef.ac.uk/content/1/c6/03/25/82/collatedGRP.pdf

3. The research ethics application form for the above-named project is accurate to the best of my knowledge and belief.

4. There is no potential material interest that may, or may appear to, impair the independence and objectivity of researchers conducting this project.

5. Subject to the research being approved, I undertake to adhere to the project protocol without unagreed deviation and to comply with any conditions set out in the letter from the University ethics reviewers notifying me of this.

6. I undertake to inform the ethics reviewers of significant changes to the protocol (by contacting my supervisor or the Ethics Administrator as appropriate

7. I am aware of my responsibility to be up to date and comply with the requirements of the law and relevant guidelines relating to security and confidentiality of personal data, including the need to register when necessary with the appropriate Data Protection Officer (within the University the Data Protection Officer is based in CICS).

8.   I understand that the project, including research records and data, may be subject to inspection for audit purposes, if required in future.

9.   I understand that personal data about me as a researcher in this form will be held by those involved in the ethics review procedure (eg the Ethics Administrator and/or ethics reviewers/supervisors) and that this will be managed according to Data Protection Act principles.

10.   If this is an application for a 'generic'/'en block' project all the individual projects that fit under the generic project are compatible with this application.

11.   I will inform the Chair of Ethics Review Panel if prospective participants make a complaint about the above-named project.

<u>Name</u> of the Principal Investigator (or the name of the Supervisor if this is a student project:

Professor Pat Sikes

If this is a student project insert the student's name here:

Esther Chitolie-Joseph

<u>Signature</u> of Principal Investigator (or the Supervisor):

<u>Signature</u> of student:

<u>Date:</u>

Email the completed application form and provide a signed, hard copy of 'Part B' to the course/programme secretary

For staff projects contact the Ethics Secretary, Colleen Woodward Email: c.woodward@sheffield.ac.uk for details of how to submit

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ETHICS REVIEWER'S COMMENTS FORM

This form is for use by members of academic staff in the School of Education when reviewing a research ethics application.

Note to reviewers and applicants:

The ethical review process in the School of Education is designed to provide critical response on ethical issues identified in research proposals. For this reason, reviewers' comments are not anonymous*. The comments given here are intended to help applicants (and where appropriate their academic supervisors) to revise their research plans where necessary to ensure that their research is conducted to high ethical standards.

The contents of this form remain internal to the University, and should not be used for wider dissemination without written permission from the Ethics Reviewer named here and the Chair of the Ethics Review Panel.

1. **Name of Ethics Reviewer*:** Reviewers who wish to make anonymous responses should contact the Chair of the Ethics Review Panel before completing the review.	Dr Jennifer Lavia

2. **Research Project Title:**	An Investigation into the Use of the Education Management Information System (EMIS) in Secondary Schools in St. Lucia – The Case of One Secondary School
3.**Principal Investigator (and name of Tutor/Supervisor in the case of student applications):**	Esther Joseph
4.**Academic Department / School:**	Education Department

5.<mark>**I confirm that I do not have a conflict of interest with the project application**</mark>   **Or**   **The following details may be considered as a conflict of interest.** (If a possible conflict of interest is declared, the Chair of the Ethical Review Panel will take this into account)

6. I confirm that, in my judgment, the application should:					
Be approved:	**Be approved with** *suggested* **amendments in '7' below:**	and/o	**Be approved providing** *requirements* **specified in '8' below are met:**	**NOT be approved for the reason(s) given in '9' below:**
✓				

7. Approved with the following suggested, optional amendments (i.e. it is left to the discretion of the applicant whether or not to accept the amendments and, if accepted, the ethics reviewers do not need to see the amendments):

8. Approved providing the following, compulsory requirements are met (i.e. the ethics reviewers need to see the required changes):

9. Not approved for the following reason(s):

10. Date of Ethics Review: 27/04/2010

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2. **Name of Ethics Reviewer*:** Reviewers who wish to make anonymous responses should contact the Chair of the Ethics Review Panel before completing the review.	Dr Jason Sparks

2. **Research Project Title:**	An Investigation into the Use of the Education Management Information System (EMIS) in Secondary Schools in St. Lucia – The Case of One Secondary School
3.Principal Investigator (and name of Tutor/Supervisor in the case of student applications):	Esther Joseph
4.Academic Department / School:	Education Department

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9. Not approved for the following reason(s):

10. Date of Ethics Review: 27/04/2010

ETHICS REVIEWER'S COMMENTS FORM

This form is for use when ethically reviewing a research ethics application form.

1. Name of Ethics Reviewer:	Pat Sikes

2. Research Project Title:	An Investigation into the Use of the Education Management Information System (EMIS) in Secondary Schools in St. Lucia – The Case of One Secondary School
3. Principal Investigator (or Supervisor):	Esther Chitole-Joseph
4. Academic Department / School:	Education

5. I confirm that I do not have a conflict of interest with the project application

6. I confirm that, in my judgment, the application should:

Be approved:	Be approved with *suggested* amendments in '7' below:	and/o	Be approved providing *requirements* specified in '8' below are met:	NOT be approved for the reason(s) given in '9' below:
X				

7. Approved with the following suggested, optional amendments (i.e. it is left to the discretion of the applicant whether or not to accept the amendments and, if accepted, the ethics reviewers do not need to see the amendments):

8. Approved providing the following, compulsory requirements are met (i.e. the ethics reviewers need to see the required changes):

9. Not approved for the following reason(s):
10. Date of Ethics Review: 29/4/10

Appendix 2 – Schedule of Participants Interviewed and Observed

Date	Participants (Designation)	Observations and Type of Interaction
June 25, 2010	Principal	Meeting to request permission to use Bocage Secondary as research site
July 9, 2010	Principal and Staff	Meeting to explain research to staff and to obtain consent
July 12, 2010	First EMIS Coordinator and Vice Principal	To observe whilst EMIS Vendors conduct training in use of time-tabling module
July 15, 2010	First EMIS Coordinator, Teachers, Principal, Vice Principal	To observe the use of EMIS in doing registration of new students
July 27, 2010	First EMIS Coordinator, Teachers, Principal, Vice Principal	To observe the use of EMIS in doing registration of continuing students
August 4, 2010	First EMIS Coordinator	Formal interview
August 27, 2010	First EMIS Coordinator	Informal telephone interview
August 31, 2010	Vice Principal	Informal telephone interview
September 9, 2010	Principal, Vice Principal, Bursar, Secretary	Informal interviews and observations
September 15, 2010	MOE Statistician/MOE EMIS Coordinator, Second EMIS Coordinator,	Informal interviews and observations
September 27, 2010	Principal, Vice Principal, Second EMIS Coordinator, Secretary, Male Teacher	Informal interviews and observations
September 27, 2010	Teachers in staffroom	Observations
October 5, 2010	Secretary, Second EMIS Coordinator, Mathematics Teacher, Bursar, Principal, Vice Principal	Informal interviews and observations
October 5, 2010	Teachers in staffroom	Observations
October 15, 2010	Principal, Vice Principal, Bursar, Secretary, MOE IT technician	Informal interviews and observations
October 15, 2010	Teachers and Administrative Staff	Observations
October 20, 2010	MOE IT Technicians, Principal, Vice Principal, Second EMIS Coordinator	Informal interviews and observations
October 20, 2010	Teachers in staffroom	Observations
October 21, 2010	Health and Family Life Teacher, Integrated Science Teacher	Semi-formal interviews and observations

Date	Participants (Designation)	Observations and Type of Interaction
October 21, 2010	Secretary, Principal, Bursar	Informal interviews and observations
October 21, 2010	Teachers	Observations
October 27, 2010	Secretary, Principal, Second EMIS Coordinator, Bursar	Informal interviews and observations
October 27, 2010	Teachers	Observations
October 28, 2010	Second EMIS Coordinator	Informal telephone interview
November 23, 2010	Second EMIS Coordinator	Informal interviews
November 26, 2010	Second EMIS Coordinator	Informal interviews
November 30, 2010	Second EMIS Coordinator, Bursar, Secretary, MOE Statistician (MOE EMIS Coordinator)	Informal interviews and observations
November 30, 2010	Teachers	Observations
December 14, 2010	Secretary, Second EMIS Coordinator, Principal, Vice Principal, Bursar, Learning Resource Room teacher	Informal interviews and observations
December 14, 2010	Teachers	Observations
January 5, 2011	Secretary, Principal, Vice Principal, Second EMIS Coordinator	Informal interviews and observations
January 5, 2011	Home Management Teacher, IT teacher (Head of Department), Technical Drawing Teacher, Second IT Teacher	Semi-formal interviews and observations
January 5, 2011	Teachers in staffroom and on school compound	Observations
January 7, 2011	MOE Statistician, Principal, First EMIS Coordinator, Second EMIS Coordinator, Vice Principal, Bursar, Special Needs Teacher	Informal interviews and observations
January 17, 2011	Mathematics & IT Teacher, Principal, Maths Teacher, Secretary, Vice Principal, Special Needs Teacher, Home Management Teacher	Informal interviews and observations
January 17,	Teachers in staffroom and on	Observations

Date	Participants (Designation)	Observations and Type of Interaction
2011	school compound	
January 21, 2011	Second EMIS Coordinator, Principal, MOE Statistician	Informal interviews
January 21, 2011	Teachers in staffroom and on school compound	Observations
January 24, 2011	Second EMIS Coordinator	Informal interviews
January 25, 2011	Secretary	Informal interviews and observations
January 25, 2011	Teachers in staffroom and on school compound	Observations
February 4, 2011	Second EMIS Coordinator, MOE Statistician	Informal Interview
February 7, 2011	Bursar, Second EMIS Coordinator, Principal, First EMIS Coordinator, Secretary, Special Needs Teacher, MOE Statistician	Informal interviews and observations
March 8, 2011	Principal	Formal Interview
March 8, 2011	Bursar, Vice Principal	Informal interviews and observations
March 8, 2011	Teachers in staffroom	Observations
March 29, 2011	Secretary, Second EMIS Coordinator	Informal telephone interview
March 31, 2011	Sports Teacher, Bursar, Secretary	Informal interviews and observations
March 31, 2011	Second EMIS Coordinator	Formal Interview
March 31, 2011	Teachers in staffroom	Observations
April 13, 2011	MOE Statistician, Principal, Vice Principal, Second EMIS Coordinator, Lab Technician, Secretary	Informal interviews and observations
April 13, 2011	Teachers in staffroom	Observations

Appendix 3 – Sample of Field Notes

An Investigation into the Use of the Education Management Information System (EMIS) in Secondary Schools in St. Lucia – The Case of One Secondary School

Field Notes – September 2010

Date: Thursday, September 9th, 2010 – School Visit at Bocage Secondary School

Time: 12:50 pm – 3:30 pm

Purpose – To obtain information on the use of the EMIS at the Bocage Secondary School

Today was my first visit to the Bocage Secondary School for the school year 2010-2011. Upon arrival, I met the principal just entering the school yard from a meeting with the District Education Officer. The meeting was for all schools in District three, to discuss the performance of students at the CXC O'Level Examinations and the Ministry's position on the way forward. I walked with her to the administration block but instead of going to her office, I visited the secretary's office. During our short conversation, the principal indicated to me that the school had identified someone else to serve as EMIS Coordinator and that the MOE will be sending her in a week's time. On my previous visits, I had met the secretary but she was not aware of the purpose of my visits. I explained the purpose of my visit to her. She indicated that she was new and was simply holding on for the full-time secretary who was in turn holding on for the secretary at the District Education Office. She began work at the Bocage Secondary School in July 2010 and was expected to leave at the beginning of October 2010. The Secretary indicated that she used the EMIS in August 2010, to do late registration of students; that is, students who missed the scheduled registration days in August. She also indicated that Mr. BT had showed her how to use the system. Unfortunately she had not used the system since the re-opening of school because the computer in her office along with four others in the computer lab had been stolen. She was given a new computer but the EMIS was not installed on it as yet. She indicated that since Mr. BT was not there anymore, there was no one to install it for her; however, she will ask the Vice-Principal to find someone to do it. I suggested that the school contact the MOE EMIS person to do the installation. During that half hour that I spent with her, she basically attended to students who came to ask for the toilet key or who were sent by the class teacher for various reasons. She also attended to a teacher who came to ask for new class registers. There was no incident where the secretary needed to use the EMIS or mentioned the need for the EMIS.

I went over to the Bursar's office which was two doors down the corridor. I also had to introduce myself since I had not formerly met him. He indicated that the Vice-Principal explained to him my purpose for visiting the school and that he had no problems with it. He first informed me that the lap top he was using was his personal computer because he had to give-up his work computer to the IT lab for students sitting O' Level IT exams. Since the robbery, neither the MOE nor the school was able to replace the computers in the lab, and therefore, the number of computers was insufficient for students doing the exams. However, now that exams are over, someone will have to transfer the computer from the IT lab back to his office. According to him, now that Mr. BT is no longer there, he does not know who will do it. He indicated that he had not entered the information on students' registration fees in the system and was waiting on the new Coordinator to network his computer with the secretary's own or with those in the IT Lab, to enable more than one person to enter the registration fees information, since it was a lot. I enquired about using a computer in the lab or the resource room in the mean time but he said it was not convenient because classes were being held there. I asked him about the use of the EMIS in the past and he informed me that he recently started using the EMIS. Whilst it was in the school for about two years, they had not utilised the financial part of it and now that he has discovered the use it can be put to, he wants to use it. However, he still does not know how to use many of the things there. He received training two years ago for half an hour and although he understood it then, he has forgotten. However, he indicated that it will not be a problem to use the system once someone teaches him. He indicate that many times organisations call to find out about students who are in need of financial assistance or persons who are currently receiving financial help and he wants to be able to pull up all such students from the system. During the 30 minutes time I spent in his office, no one came to him for any assistance or information.

From there I went over to the Vice Principals Office, but he was in a meeting with a student and her mother, so I decided to go to the principal's office. She informed me that she had just sent the student and her mother to the VP's office since she did not have the information they needed to assist them. She explained that the mother came to the school to find out about her daughter's performance. However, she did not have the child's performance information on the EMIS and had to send her to the VP who might be able to get it faster. It then occurred to me, that what she meant is that, she did not know if that information was on the system and if it was, she would not have been able to find that information quickly enough on the EMIS to explain to the parent. Shortly, the VP came over to her office and joined us in the discussion. However, he was more interested in what transpired at the District meeting. The principal then began explaining the gist of the meeting and even blamed the MOE for not providing the necessary resources to the school, but being quick to blame the school for low performance. She indicated that among the District secondary schools her school usually receives students with the lowest grades from the primary schools and hence her school will perform at the lowest at CXC exams. Although I started feeling uncomfortable at first, I soon realised that this could be a good sign. In other words, they were feeling comfortable with being around me and trusted me in discussing these issues. Well I did join in the discussion and gave my point of view in the whole matter. During our discussion, a teacher came in to report three Form Five students from the science class who disrupted the class with a ringing cell phone. The principal asked her to bring in the boys. When they came in her office, she dealt with

the case in my presence and lamented on the fact that these three boys had been giving problems throughout their five years at school. However, she did not go on the system to pull up their records and reveal all those incidences. This would have been good to do, to support what she was saying to them. She then asked the VP to get her a Discipline Form for each of their parents. The decision was that they do not return to school the next day and they report to the District office with their parents. The form was completed and signed by the principal. She principal did not enter the incident in the EMIS. After the boys were handed their letters, they left the office. The principal then continued discussing the problems she has had with the boys and the various incidences that she could remember.

The principal then left for a meeting and the VP and I went to his office. I asked him about the Discipline Form and said that it was done in MS Word and is not on the EMIS. However, he indicated that the EMIS can generate these forms and letters. He informed me that these are the sort of things that he wants to be done with the EMIS, but without Mr. BT he does not know how it will be done. He then pulled up the record of one of the boys on the EMIS from his lap top. He went to the discipline tab, but only incidences for 2009 and 2010 had been entered. However, he showed me the Log book, and it contained lots and lots more. He indicated that he needed someone to enter these incidences in the system so that he will be able to pull up that record for any student for any school year/s. The VP explained to me that since the re-opening of school he had not used the EMIS much; He used it to pull up class lists, to perform two late registrations and to perform one transfer. The student transfer, he said was just like registering a new student except that instead of indicating that the student is coming from primary school you indicate that the student is coming in on transfer from another school. If Mr. BT was there, he said, more would have been done. Not even the student photos are taken as yet, he lamented. The phone then rang and after answering it, the VP explained to me that it was the secretary complaining that she could not access and print the student attendance reports from the EMIS. I explained to him that it was because the EMIS icon was there but the system was not installed and so she would not have the full functionality of it. The VP then remembered that he had to call a student's parent. He went on the EMIS, pulled up the student record and retrieved the parent's number. A parent then came to the office to request a transcript for her daughter who left to live in the United States. The parent indicated that her daughter was to be enrolled in a school but the school needed the transcript to know which grade to place her. The parent gave the name of the child and the Form she left (Form 2). The VP then went on the EMIS and pulled up the child's record. She had no grades or marks in the achievement tab. He informed the parent that the grades will have to be entered first before the transcript can be prepared. The VP then informed me that he is not too familiar with the EMIS transcript functionality and so he would use the transcript template that they had in MS Word. He called for the student's report book and called the secretary to type in the grades along with the other information and print out the transcript for the parent. At that point I could read the VP's expression – How he wish he could have a fully functional EMIS. He made a statement to me which also made me realise this; he said 'with Mr. BT gone, my hands are literally tied'.

He explained also that he needed to transfer the timetable from the ASE software to the EMIS but needed help to do it. He indicated that some teachers will be leaving soon and he would need to do some revision to the time-table. I asked him whether he

needed me to help in anyway and he responded that it's up to me to help in whatever area I felt. So I volunteered to help in entering the students grades/marks and acts of indiscipline from the log book. We agreed that during my next visit I would assist in entering some data.

Upon leaving the school the VP informed me that Mr. BT discussed with him the possibility of doing some part-time work with the IT department of the MOE. The IT Manager had approached Mr. BT and he was willing. The Statistician was hoping to capitalise on that opportunity and ask Mr. BT to assist the schools with the EMIS. The VP wanted me to follow-up on this development with Mr. BT and to do what I can to help him get through. I gave the VP my word that I will try what I can. The VP saw that as another avenue, through which he can get Mr. BT to assist with the EMIS at his school.

Themes

1. Training – adequate training is needed to be able to utilise all parts of system (case of VP and Bursar)
   - adequate training helps build confidence in using the system (case of the principal)
2. Lack of Management structures to support EMIS – most of what is done using the EMIS is via trial and error; there is no plan or structure to indicate how the system will be used for the various processes. Implementation of the EMIS is more than just installing the software on a computer. Need to map out the management processes currently being done manually with how it can be done using the EMIS. This aspect is absent from the OECS draft document on EMIS Selection Policy
3. Resources – replacing computers are costly; MOE and school lacks necessary financial resources to replace computers after an incident of theft;
4. Sustainability and capacity building – With the departure of Mr. BT no one has the expertise or will or enthusiasm to continue work with the EMIS. There is no continuity.

Date: Wednesday, September 15th, 2010 – Informal and Unscheduled Meeting with new EMIS Coordinator of Bocage Secondary at the Corporate Planning Unit, MOE

Time: 3:30 – 4:30 pm

Purpose – Not a scheduled meeting (used the opportunity to get a feel for the new EMIS Coordinator for Bocage Secondary)

I was standing in the Corporate Planning Unit discussing some work issues with another colleague when the Statistician, Mr. BTodra, who is also the EMIS MOE contact person, called me to introduce me to Ms. RC. He explained that she was the new EMIS Coordinator for Bocage Secondary and that he had been to the Bocage school 2 days ago to provide some one-on-one training to her on the EMIS. The Statistician is aware of my research work at the Bocage Secondary School and has agreed to assist me in whatever way he can. He has taken over my role as Statistician and is ever so grateful for my assistance in making his transition a smooth one. The purpose of Ms. RC impromptu visit he explained was to get more understanding on how to produce reports from the EMIS. He also explained to her that I was doing some research on the use of the EMIS at the Bocage Secondary School. At that point I began explaining the research to her. She was very happy and right away indicated that 'Good, well, I will be able to get Mr. BTodra when I need him to help me with the EMIS. Oh but by the way, you could also help me with my writing since I want to do a Masters and my weakness is my writing'. I tried to answer in a diplomatic way by saying, 'well we'll see about that.'

I tried to get some information about her, through some quick questions. She indicated that she had never taught before. She was almost fresh from University (in Trinidad) where she pursued a degree in Management Information Systems and worked in one of the Banks for a short while. She indicated that she was very eager to learn about the EMIS and wanted to get a good appraisal from the principal. She also explained that the VP compares her a lot with Mr. BT and that she is not Mr. BT. She made it very clear that her job is to teach a few classes and see about the EMIS. She will not fix computers or do any technical work on computers because that is not her area. She is not good at those things and so the IT persons from the MOE will have to come and do their job. However, she did express how happy she was to be in a job that is related so closely to what she studied.

I explained to her that I will be coming to the school to conduct my field work and she wanted to know whether I was doing a survey. I explained my methods of data collection to her and she was quick to inform me that when I come she may not always be attending to EMIS duties but she could be in a class and will not be able to attend to me. I had to explain to her that it did not matter; I will be observing the use of the EMIS by management and that included the principal, vice principal, other administrative staff and teachers. She seemed very enthusiastic about the EMIS and wanted to make a good impression.

I then allowed her to continue her meeting with the Statistician but asked whether I could join in the lesson. They agreed, so I sat with them whilst Mr. BTodra

demonstrated how a sample report can be prepared on the EMIS. She requested to do one of her own. She had learned quickly and at the same time was making some notes on her note pad. I asked her whether she was aware that she had to prepare monthly attendance reports from the EMIS. She answered that Mr. BTodra had mentioned that to her, but would like a demonstration. Mr. BTodra explained that the attendance reports were pre-defined and that all she needed to do was to ensure that the data is entered correctly and is up-to-date. The next step was to print a copy for the principal to verify and sign and submit. She asked about submitting electronically and was told that it can be done but she needed to ensure that it was checked by the principal before submitting. After a few trials at reports and questions to clarify other issues with the EMIS the meeting was ended.

I indicated to her that I will be seeing her the following week.

Date: Monday, September 27th, 2010 – School Visit at Bocage Secondary School

Time: 10:00am – 1:00 pm

Purpose – To obtain information on the use of the EMIS at the Bocage Secondary School

I have been so busy at work for the past month that I have not been able to take casual leave nor request time off work to visit the Bocage Secondary School. I did anticipate that as one of my challenges. Today, I thought, would be a good day to visit since my work schedule did not seem that heavy. However, I dread the road to the Bocage Secondary School. It is really a turn-off; the condition of the road is poor with many potholes, very steep and in addition very narrow for two vehicles to manoeuvre properly. In addition when the weather is inclement the road can be very dangerous. I did not anticipate that to be one of my challenges but unfortunately, it is something I will have to deal with.

Upon arrival at the school, I greeted the secretary since her office is the first point of contact in the administrative block. She was in a meeting with the bursar. I informed them that I was around doing field work, since sometimes I do visit as a MOE official. I asked the secretary whether the EMIS had been re-installed properly on her computer. She replied that she did not know. I asked her whether she had used in since my last visit and she replied no. She did not seem too interested about the EMIS based on her answer and expression. I proceeded to the principal's office but she was dealing with a case with some students. We greeted each other and she said to me approvingly, 'I know you are around'. I walked over to the Vice Principal's office, where the Vice Principal was busy trying to fix his lap top. I informed him that I was here and reminded him of our last discussion that I would assist with the EMIS on this visit. He informed me that Ms RC now handles everything and she will be happy to work with me. I chatted with him a while before proceeding to Ms. RC. He indicated that he was preparing a teaching substitute schedule when his computer crashed. I enquired about the schedule. He said that he had been so busy this morning dealing with students and other issues that he did not have the time to prepare it. He indicated that normally when many teachers are absent, he prepares a substitute schedule so that during their free periods, other teachers can take the classes of those absent teachers. He was doing that in Microsoft Excel and using the printed time-table built in ASE to inform him. I asked him whether he had a substitute time-table built into the existing time-table since I knew of one secondary school that had this. He said no. He indicated that a new one is done every time the need arises.

At that time I saw Ms. RC walking the corridor and caught her attention. She took me over to the server room; small room set aside in the computer lab. Well, what makes it a room is that it is separated partly by a piece of ply wood. The last time I visited this room with Mr. BT, it was in a mess with all sorts of things; used books, computer parts, wire etc. This time around it was cleaned out, with only the server computers and the computer dedicated to the EMIS. We sat and Ms. RC began explaining right away that she has to check the classes of every single Form 1 student on the EMIS and correct them. She complained that Mr. BT should not have done registration on the EMIS because the school had not assigned the children to classes yet. Since the re-

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opening of school, the Form 1 students were re-grouped and now it will be time consuming changing the classes one by one on the EMIS. I volunteered to assist her. Ms. RC logged on using her administrator password and in about one hour and a half, I checked and changed the classes of the students in Form 1 Room 1 and Form 1 Room 3. About 60% of the students were assigned to the wrong Room. Ms. RC indicated that she would do the last class, Form 1 Room 2. Only the EMIS Coordinator has rights to make those changes on the system, since only she was given the password. Since this software is a single user licence (meaning only one EMIS administrator) we could only use one machine since only one person can log on as administrator. However, to register students and enter attendances and grades, more than one person can do that. Whilst I was making the changes to the students' classes, Ms. RC was preparing some work for her classes since she also teaches Literacy, IT and Maths. She also prepared her work schedule for the week for her EMIS duties. She printed the EMIS duties list on paper with a thick marker and stuck it on the wall of the server room. This list was as follows:

1. Prepare Attendance reports for Student and Teacher
2. Place Students into houses (sports)
3. Add Form ones that are missing to the EMIS
4. Install EMIS on Bursar's PC
5. Update student and teacher information in EMIS
6. Place photos of students into the EMIS after photos are snapped
7. Offence book – enter information in EMIS
8. Find out whether students attendances were entered for the last school year
9. If not enter last year's attendance information from the register to the EMIS (student and teacher)
10. Bursar needs information about students who have not paid fees.

She indicated to me that these are urgent things that she has to do; they will take more than a week but at least the list is a reminder that she has to do them. Whilst making the changes to the Form One classes we discussed the use of the EMIS by the teachers. Ms. RC indicated to me that the teachers are lazy and do not want to use the system. She said that she also understands that they have a lot of work to do and it may be difficult to enter grades after every exam. I indicated to her that they can enter for termly and yearly exams since during that time they don't have to prepare lessons nor teach. She agreed.

 She also explained to me that she has prepared a letter which was signed by the principal and sent to every teacher asking them to update their attendance registers so that she can enter the attendances. She had to prepare the monthly attendance report to send to the MOE. She complained that if she were to tell the teachers herself, they may think "Who do you think you are". Because she is new, they may not want to listen to her. Ms. RC complained that the teachers had to enter their attendances themselves. She explained that the status of students are set to present in the EMIS and so teachers only have to change it to absent or late only for a handful of students daily. Now if she has to do this for all teachers it becomes time consuming for her. She said that they can do that in the computer lab. I asked about the web portal, that Mr. BT had set up and can't they do it from their homes. She said that she does not know much about that. She has not had time to explore that yet. While we were working, a teacher came to look for her attendance register to update. She had read

the principal's letter and thought we were entering in the attendances. We had to re-direct her to the secretary's office for the register.

Ms. RC also indicated to me that she has written a letter to the Vice Principal requesting that a letter be sent to all teachers to submit information on themselves so that she can update the EMIS. She showed me the form she prepared so that teachers could fill in their names, qualifications, contact number and address. She said that after the teachers complete that, she will update the EMIS. I suggested that maybe she could print out a report on each teacher from the EMIS and have them just make the necessary changes. She explained that she did not have access to a printer and if she had to do it in the Learning Resource Center (LRC), the LRC manager would charge her 10 cents a page. The letter to the VP also requested that Home room teachers collect updated information on their students; name, address, telephone, parents information. She said that she was missing information on many students and wanted to update the system. She is still waiting for the VP to send out that letter. I asked her about her plans to assist administration and teachers to use the system. She said that they will not listen to her. However, when this current secretary goes, the other one who will be returning is her friend and she will have no problem working with her. However, this current one is ready to leave and she is not too interested in the EMIS anyway. Ms. RC indicated to me that she did install the EMIS back on the secretary's computer. I did not tell her that the secretary said she did not know when I asked her. I did not want to create problems. Ms. RC also said that since the teachers will not listen to her, she will go through the principal or VP to get them to do what they are supposed to do.

I indicated to her that I would be leaving her soon, since I wanted to observe the principal and VP. She said to me, "*don't bother, you will get no where, because the principal does not use the system. She never got training. If you want to see the use of the EMIS at this school, check me, the bursar, the secretary when she comes and the vice principal. I don't know what it is but the principal is afraid of the system. I don't even think she has a computer on her desk*". I corrected her that yes, she has one because I have seen it and just saw it when I passed. I also told Ms. RC that all principals were invited for training and maybe she did not attend like she did not attend the timetabling training. Ms. RC then said "*well if that is so she does not use it at all but asked us for every thing she wants*". Although I too had observed that the principal does not use her computer, far less the system, I did not want to be making judgements too soon.

Generally, I observed that the EMIS Coordinator was enthusiastic about her work, but not receiving much direction from administration nor the MOE EMIS person as to how to manage her EMIS responsibilities. She also told me that she asked the principal, VP and MOE EMIS person what is it they expected of her regarding her EMIS duties and they could not give her any clear directions. They just knew she had to update the EMIS and get out the reports that administration wanted from it. As to how to go about doing that in a structured way, I noticed that she was given no direction and had to figure it out herself. She also complained a lot about receiving insufficient training. She often compared her last job with this one and said that she got 3 whole months of training for her last job as compared to one (1) day training with Mr. BTodra and one with Mr. BT in this job as EMIS Coordinator. Upon leaving, Ms. RC wanted to know whether I could give Mr. BTodra a message for her.

She demonstrated to me using the EMIS, that when she click on the Student Attendance tab, the drop down menus are greyed out. She is not able to select any of the menus and does not know what the problem is. So she wants Mr. BTodra to assist. We then exchanged telephone numbers.

During the time I spent in the server room no teacher came to the computer lab or the server room to update their attendance registers. It is a challenge for me to monitor or observe every thing that happens at once since the use of the EMIS can take place at various points/rooms that are away from each other. However, if teachers are to update their attendance, they would use the computer lab or the server computer and not the principal, vice principal, secretary or bursar's office. However, I need to observe for this or ask about whether it is happening.

I left the server room and proceeded to the VP's office. I met a male teacher in the veranda watching the students play outside. I greeted him and he asked me how my studies were going. I said that I was thankful for their support and that it was going well. I said to him that I had not seen him or any other teacher using the EMIS on any of the computers in the school and wanted to find out why. He smiled a guilty smile and then replied that he should have and will try to make an effort this school year to use the EMIS to enter his attendance and grades. He did indicate that by right they are supposed to do that and if all teachers do it, then it will make the work of the EMIS Coordinator a lot easier. I asked him whether the problem was access to the computer. He said no. He said that Mr. BT had given them remote access and he has a computer at home. So he can easily do it at home. I asked him then why haven't he done it in the past. He said, he knows that he is guilty but it's just that he never got around to doing it. He then answered, *'when you are used to doing something one way, its hard to change. Change is not always easy'*. I then passed by the staffroom and greeted everyone. I noticed clearly that there was not one computer in the staffroom nor was there any teacher using his/her personal laptop. So I was wondering about easy and comfortable access to the EMIS.

I proceeded to the VP's office where he was still trying to sort out the computer problem. He indicated to me that he had left for some engagement and was back trying to sort out the problem. He indicated that he had not used the EMIS in a while except for entering incidences of infractions on students. Instead of entering it in the log book he was entering it in the system right away. He inquired about my studies and wanted to know whether all was going well. I said all was well, and thanked him for his cooperation. He indicated that he wanted to pursue a Masters Degree and wanted to know whether I knew of any scholarships that the MOE was offering. I explained to him that since the Human Resource Department is no longer with the MOE, I would not know right away. However, he can inquire through that department. I indicated that if I knew of anything, I will try to pass on the information to him. The impression I am now getting of the VP is as the saying goes, 'one good turn deserves another'; he is facilitating my field work and in return he will take advantage of my position to get favours. Well in a sense I don't mind assisting him regarding favours by the MOE as long as I as I do not compromise my position nor do anything illegal.

I proceeded to the Principal's office. She was having lunch. I did not want to interrupt her lunch so I only spent a few minutes with her. I told her that I spend most of my

morning with the EMIS Coordinator. She said to me that she is very pleased that she hired Ms. RC. The principal explained that she had many applicants but was impressed with Ms. RC's enthusiasm at the interview. The principal commented that she realised that Ms. RC was a little 'Mr. BT' in her own right. Right away I realised that she was looking for the qualities of Mr. BT in the person she recommended for the job. I said to her that I will spend more time observing other administration staff on my next visit.

Nothing really happened at the school during the lunch hour but 'lunch'. Teachers were in the staff room eating and chatting, students were outside playing or hanging out in the classrooms. There was nothing organised happening with administration, teachers or students. The principal indicated that it is the time for everyone to take a refresher. Well I too was extremely hungry and went back to office for lunch. On the way back, I realised that I had not written down anything on my notepad except for the list of EMIS duties that Ms. RC prepared. Part of the reason is that I did not want anyone to shy or scare away anyone from me by walking around with a notepad taking notes of everything. I try to make it less apparent when I write down my notes. Anyway, I could remember everything at the end of the morning, and was hoping to start typing as soon as I got back to the office.

On my return to the MOE I did pass on the message to Mr. BTodra who informed me that he called her about the problem and will have to visit her the next day to help her solve the problem. Mr. BTodra commented that Ms. RC seemed to be letting the EMIS get to her and that she should be ready to trouble-shoot the system if she wants to learn. I began typing my notes right away while munching of some lunch.

Themes

1. Inadequate Training and on-the-job support from MOE
2. Lack of proper work structures in place to facilitate EMIS use
3. Inability to manage Change
4. Unclear job description
5. Lack of resources
6. Delegation of authority at the school level
7. Use of ICT in Management (fear of technology)

Appendix 4 – Sample Interview

An Investigation into the Use of the Education Management Information System (EMIS) in Secondary Schools in St. Lucia – The Case of One Secondary School

Field Notes – August 2010

Date: August 4th, 2010 – Interview with Mr. BT, EMIS Coordinator from Bocage Secondary School

Time: 2:10 pm – 3:00 pm

Venue: My Office, Ministry of Education and Culture

Purpose – To obtain information on the use of the EMIS at the Bocage Secondary School

Since I was not sure whether Mr. BT would return to the Bocage Secondary School in September 2010, I arranged an informal interview with him to discuss the use of the EMIS at the Bocage Secondary School. He agreed to the interview and to the use of a tape recorder at the interview. At the beginning of the interview I explained to him that whatever information is recorded or said, will be used for the purpose of my dissertation and that confidentiality will be kept at all times. The interview was more or less in the form of an informal discussion between Mr. BT and I.

The Table below summarises the interview between Mr. BT and I. Only the main questions asked of the Interviewee are recorded below. During the interview/discussion other questions were asked to serve as prompts or to guide the discussion. The responses from the interviewee are paraphrased below except in few cases where italics are used to show direct speech.

Interviewer	Interviewee
When did you start working with the EMIS?	During the second phase of implementation, in 2007
How was the training given to you?	Training was straight forward since I already had a background in working with computers. Although it was a new programme, I had no problems and found the programme to be straight forward.
How did you find the software? Did you find the software suitable to our local	Yes, the software is suitable. Basically the software does what it was intended to do and the company is willing to work with St. Lucia. In other words, the company realises that if it can

Interviewer	Interviewee
context?	work with St. Lucia then they can work with other Caribbean Islands (a way of making business with other islands). The software tracks a lot of information that we take for granted. For example many students interact with the outside world such as universities and other schools which ask for information about the students. Information that we here in St. Lucia take for granted. We no longer have to provide information for our local institutions and businesses but international institutions. The software can give all that information.
What is your role as the EMIS Coordinator at the school?	Maintain the programme, perform updates and keeping it running, verifying the data entered, ensure that the data is up-to-date, collecting data manually (since we are still in the implementation phase) and then entering in the system. Now that all backlog data is in, I am now responsible for maintaining it. Also responsible for testing the attendance (both student and teacher) fields and student grades fields. I took it on my own to try out the web interface of the software. They never showed us how to do this part. I basically discover everything on my own and then communicating back and forth with them (Maplewood). We never got training in this area but I liaise directly with Maplewood on this part. MOE did not show us either how to do the Web Interface. Basically most things are trial and error.
Do you think that Maplewood should do Web Portal training with the schools?	At this time I don't think it is necessary. If the training is done now, by the time the schools are ready for the Web Portal use, they would have forgotten the training. So first get the schools ready for the Web Portal use and then provide the training. There is no big difference between the web portal management and normal management. The only difference is that web portal is accessed through the internet. The set-up is technical and so the average person maintaining the system does not need to know how to set it up because any technician can come in and set it up.
What do you think has attributed to Bocage's advance in the EMIS as compared to other schools?	Well I do not want to boast but its Mr. BT; maybe my attitude towards it. I like the system and I like the challenge of finding out new things, playing with it and pushing it to the limit to see what it is capable of. Sometimes, I would ask myself whether it is possible to do a certain task and then go on the system and try to do it. One of the contributing factors to the success of the EMIS is the attitude of the EMIS Coordinator. Whoever is responsible for the EMIS must have that right attitude. I think that a lot of the schools that are lagging behind, the Coordinators are not that enthusiastic about the EMIS. Then they would make lots of excuses such as they don't have the time, they have so much work load; but in all honesty I have a lot of things doing at my school as well but I have the willingness and wanting to see it go forward. My school was part of the second phase when it comes to implementation but

Interviewer	Interviewee
	we have way surpassed schools that were in the first phase.
Talk about the amount of time you devote to the EMIS?	I devote a lot of time to the EMIS because I like it and also because I sometimes troubleshoot for other schools. Some of the problems that schools inform me of, I have not encountered them, so I go and create them on the system and then try to solve them. I don't think the average Coordinator has to spend that much time on it. However, the tedious and time consuming part is actually getting the data. Once all the data is in, and if everyone is playing their part, maintaining the data is rather simple. It will take you a whole day, unless there's a major issue. For example if teachers put in their grades and attendance, then you don't have to put in grades and attendance. All it is, is replacing the pen and paper; instead of writing the attendance in the register, they enter it in the system.
Have the teachers at your school come on board fully in using the system?	The teachers are slowly coming along. I wish they would be coming along faster. Technology and change takes time and is slow for people to accept. Administration needs to put a policy in place to say that the EMIS is the way to do things in order to have the teachers move into it. That is, they will have no choice but to use the EMIS. It will be difficult to move fully to the EMIS because some teachers still do things paper-base and some do electronic. Since teachers are accustomed to doing things paper-base and then we ask them to do things electronic, bridging that gap puts more pressure on them. Duplication causes them to shy away, because they do the paper work and then enter it in the system, where as they could simple do the electronic work one time. The school still have a report book in place and so teachers are still doing report books manually and then they still have to enter the information in the system. The structures for them to do the work one time on the system are not in place. The system can generate report cards and also design your own report. So the school should just be entering the information one time on the system and then generate a report card for the students and get rid of the report book system. I was really hoping that this coming school year, we would have been able to get rid of the report book system and use the one generated by the system but since I will not be there, I don't know who will do this for the school. It can also generate letters; forms etc. and give you the option to design them as you want based on the situation and just print them out. You may personalize them as you wish. However, I am still experimenting with this feature and I was hoping that this September, 2010, we would be making full use of it.

The EMIS is still in the 'baby' phase and we need someone to push things along and to motivate the principal, vice principal and teachers to use it. That is because it is not a mandatory |

Interviewer	Interviewee
	system. What I mean is that, if you came into a school and found things being done using the EMIS, then we would have no choice but to go along and learn to do things that way. It is easier to fall in line. But when you have been doing things one way, ie manually, it is more difficult to change. Therefore you need someone who can motivate the staff so they can make that change from manual to electronic. The teachers need someone whom they can call upon anytime and say, 'Hey I need some help with this. Someone that will always be there to help them'.
I know that training was given in the use of the EMIS system, but was any training or guidance given to the school in the change process; i.e. changing the way management do things at the school level to accommodate the EMIS?	No training or guidance was given in the change process and that's the problem. I also remember that the teachers at Leon Hess Comprehensive Secondary called me to assist them in using the system, and after I showed them so many things that the system can do to make their work easier, they appreciated it. The principal, vice principal and teachers were all excited. They were all asking me to come back and help them. I think the problem too is that the system was not 'sold out' to the schools, to make them want to use it. I think that is why there is a lot of resistance in many schools in using the EMIS. I think also too a lot of teachers at my school have the attitude that the MOE with all their 'bright ideas' that this EMIS will fall by the way side anyway, so why use it. It is like, why should we bother with this anyway as it will be just another one of those failures. It's like many things the MOE has tried; it is there for a month or so and then dies after.
Are you saying that one of the reasons that the teachers do not use the system is because of their attitude towards the MOE?	Yes, I think it is the teachers' attitude towards the MOE too. First comment they were making concerning the EMIS is 'Will the MOE put computers in the staff room for us'. But as I told them, it is a system that you can use anywhere. You can use it at home on your computers if you have one. I have said to them that even if the MOE do not provide computers in the staff room think about you using your computers to access the EMIS. The bottom line is that it will make your life easier. It will make your classroom management easier. Think of a business moving from a typewriter to using a computer; that is how I see the EMIS. A lot of people too are still behind in using the technology. There is email. The MOE still wastes a lot of paper sending us MEMOs on paper whereas they could use the technology. Sometimes the paper memos never reach us on time. Instead the MOE could just send an email.

Interviewer	Interviewee
	It will take time for the EMIS to catch on the school. There are times I feel like 'what am I doing this for'? Sometimes I stay in the school about 11:00 pm, just trying to get some things in the EMIS to work. And then I think, 'I wonder whether the teachers will even use this or appreciate the effort I am putting in this for them'. Sometimes I think about the resistance I may get from the teachers or I think that they will not be half as excited as I am in working with the EMIS and this can be de-motivating for me.

For example when it came to the register, I started putting the attendance on the system all by myself. I would stand at the gate on mornings and record everyone who was coming in late or absent then enter in the system. It happen that when some teachers lost their attendance register, they would then come to me asking about whether their students were present or absent on certain days. I then went on the system and just printed their attendances. All the calculations (mean, mode etc) were done for them; the teachers did not have to calculate anything. |
| Did that encourage the respective teachers to use the system to do student attendance? | It did but some of them still look at the negatives; that is the perceived barriers rather than the positives. They will not say let us go with it and if we meet barriers we will cross it. They are like 'but' or 'what if'; for example, 'what if they take the electricity'. I find these are petty things to worry about. When was the last time we had a black out? 'Everyone is trying to stay in their comfort zone.' |
| Tell me about the use of the system by the principal, vice principal, secretary, bursar. | One of the persons who make very good use of the system that I am very proud of is the secretary. She uses the system for everything she needs and she loves it. That is why she is strictly responsible for doing teacher attendance on it. The EMIS makes it so much easier for her in terms of the reports it has. Going back a few months, for example, is a simple process for her, so she likes that. The vice principal is just coming on board with the use of the EMIS. He is now using the discipline aspect of the system. He is now seeing the benefits of using it in terms of keeping track of the major discipline issues with students i.e. who have committed major offences. 'Without washing our dirty linen in public, our record keeping is really poor'. You know that a student has done x, y, z but there is no documentation that the student has done that. So you have no case against the student if you have to take it further because the school has nothing to show or no records of the incident. But with the system the vice principal is realising that, he can actually track the student's disciplinary record. Even when a parent comes, I can pull up the student and see everything about the child including his/her attendance, discipline records etc. So as a result of that the vice principal has began using the system. In terms of the registration of students, administration is now realising how |

Interviewer	Interviewee
	efficient it is using the system. So in terms of that, they are with it.
	It took the bursar a while to come on board, but he too as of this year has seen the benefits. Yesterday he came to me and requested my assistance to put the system on all the machines in the IT Lab so that all the teachers can assist in putting the backlog of student payments on the system. This year was the first year we started tracking the registration fees from the students. Just that alone made him realise the benefits. He asked why he wasn't doing that from the inception of the system.
	What I do to encourage everyone to use the system is that, anytime anyone comes to me about any report or needing any bit of information, I reply 'EMIS, log on'.
Where do teachers use or access the EMIS at the school?	Teachers access the EMIS in the computer lab for now and those with laptops I encourage them to use it. Since we have the web interface they can access the EMIS from homes. They should start using the web interface from September 2010. The Principal access it from the computer in her office, so does the secretary and bursar. Initially whatever information the staff wanted, I would go out and get it for them. Now I ask them to go get it themselves. They can access it in the Computer lab. If I continue to get it for them, they will never use the system.
Don't you think that the location of the computers is not encouraging them to go and use the system?	Well one of the draw backs is that there are no computers in the staffroom to access the EMIS. I have requested of the principal and vice principal for one computer in the staffroom dedicated to the use of the EMIS so that the teachers can have easy access to it. Many teachers don't feel comfortable going to the IT lab to use the system. In going around to assist other schools, I realise that many schools have one computer in the staffroom for the teachers to use. Well a lot of the teachers have personal laptops and we have wireless in the staffroom, so with the web interface, they can use the laptops to access the system from the wireless in the staffroom. I was hoping for us to do a lot in September, but now that I will not be there I don't know if the other person will continue.
Tell me about your involvement in helping out other schools	I help other schools a lot. My principal may have told you that I am always out assisting other schools in using the EMIS. That assistance is separate from the assistance I give on behalf of the MOE. Other EMIS Coordinators call and I go to their schools or they come over to my school for help.
Has the assistance you've given to other schools been successful?	Yes it has. In fact if I have to suggest something to the MOE regarding the EMIS. I would recommend that there needs to be someone separate from the MOE EMIS personnel, dedicated to going around to schools to support EMIS Coordinators in their work. The main MOE EMIS person is also the Statistician and he has his work cut out for him. So he does not

Interviewer	Interviewee
	have the time to go around often enough and concentrate on the EMIS. That person I am talking about should have the freedom to go around as he/she wishes to support the schools. If that happens then the EMIS Coordinators will realise that something is happening from the MOE end and that will rub off on the staff of the schools. They will realise that the EMIS is alive. That person can even assist with the technical things that a lot of the Coordinators don't have the expertise to handle. They usually have to rely on the IT department of the MOE, who are already overburdened with work. If the MOE is spending so much money in the EMIS, licence fees, maintenance, plus the EMIS Coordinator, then the MOE should ensure that the system is being used. The use of the system should justify the purchase cost plus the cost being put into it annually. In many schools the programme is like a 'white elephant'. After three years of implementation, the MOE should be seeing more benefits of the system.
Is your school printing any reports to send to the MOE	Only reports on student and teacher attendance. That to me is the most basic of what the system can do. After three years we are not having the basic parts of the system fully utilised. So this is money not well spent by the MOE. That is the result of not hiring dedicated MOE person to see about the EMIS. The responsible persons at the MOE need to look at the money that is being spent on the EMIS and make the system work to justify the money. For example the MOE may not want to spend EC$24000.00 a year to pay a dedicated person for the EMIS, but in return they are wasting EC$100000.00, because people are not using the EMIS. My opinion too is that after the initial data entry phase when all the back log of data has been entered, you many not need that extra person at the school as a Coordinator. That is because there is not much maintenance required from the system. The 18 teaching periods for the EMIS Coordinators are justified in the beginning when starting off fresh, but once data is in and cleaned, the 18 teaching periods can be increased. That person can then be responsible for the EMIS with help from the dedicated EMIS person from the MOE. That is how I see it from me working with the EMIS. If the EMIS is being used properly, such as what we do at the school by doing registration using the system, then on a day to day basis you do not need an EMIS Coordinator with so few teaching periods. To be honest, from my experience, initially you need a lot more time than is given now. But once all the data is in and cleaned, you don't need all that time. Even the bursar can do that task after. But that is providing the system is being used properly. For example, if registration is done on paper first, then you will definitely need someone to enter in the system. That is why the Coordinators are still needed. And

Interviewer	Interviewee
	then again, what you need now is a data entry clerk, not a Coordinator. The way the EMIS is being used at the school ie the structures in place to facilitate the use of the system has to be policy and should not be left to individual schools to do as they wish. Because the system is tied seamlessly to work from the MOE to schools. It should not be left to one or two schools to do it if they wish, because it puts a strain on the entire system if a few do not use the system. For example, at the Central Level, if all schools are not using the system, then the Statistician still cannot get the national data he requires. With the EMIS, the whole way we use to do things at the school level has to change. That is why I keep saying that these changes should be dictated at the policy level, i.e. at the MOE level; for example, all schools have to do electronic registration, all schools have to take electronic attendance. But by leaving it to individual schools, you have not made the management system at the schools more efficient.
From your personal point of view and based on your experience at the school how can the use of the EMIS be improved at your school?	Firstly, generally, the MOE needs to get all schools on board to using the system. 'We are no longer this close little St. Lucia' but our students travel the world to school and work. The EMIS has made the availability of information easier and quicker to retrieve. This is the type of information these overseas schools and workplaces require of us on our students. The system puts us in line with what is available internationally. At my school, records on students were always a sore point. It was always hard to get information on students. The EMIS has made organising and finding information on students a lot easier. I remember when we had to do transcripts for students. We had to find out each class that the student attended. We had to go through each of the class's records manually to find that student and then to look for the grades. It was a tedious process. Sometimes a teacher would retrieve a record and not return it in the right place, and then it would take a long time to search for that child's record. Even keeping track of how many times a student was late or absent for the five years at school was a headache. Sometimes I think that a lot of the manually collected statistics we send to the MOE are wrong because they may not have been what is obtained on the ground, but figures that are just put together. The schools may not know that the figure is wrong either, because they may just put together what is available on paper and send to the MOE. But with the EMIS you know that whatever is in there is close to accurate. With the EMIS, more informed decisions can be made; for example, decisions on dropouts cannot be exaggerated anymore since you will know exactly from the EMIS how many students

Interviewer	Interviewee
	dropped out over a period of time instead of making blank statements based on feelings that the school has many students dropping out. Sometimes we often say that a particular child is never at school based on feeling. Now the EMIS can tell exactly how many times for the term or year that any particular student was absent or late. When I was helping the Hess school I realised that they too have the very same problem. I was thinking that since Leon Hess Comprehensive is one of the top schools that it would not have these problems but I realise that they are just like us in that regard. I think the same problem exists in all the schools but on different scales. The EMIS, if used properly will help to standardize the way we do things at the schools across the island and we will have the same type of data across schools. For example I remember that a school in the US asked for grade point average of a student. We don't use that here in St. Lucia but the system can calculate it. So any school in St. Lucia will be able to submit that kind of information to schools overseas if our students move.
Is there anything else you would wish to tell me about the EMIS?	In addition to what I have already said, I am very impressed with the EMIS, I like it.
How do you feel about the person who will be replacing you, regarding the EMIS?	My personal feeling is that when I leave Bocage, the EMIS will stay exactly as it is at Bocage. Because I don't see any teacher on staff right now who is going to have that kind of commitment to it as I had. That is the fear I have for the EMIS right now; I can see it dying when I leave. I might be wrong but I don't see it going forward. I don't even see the full implementation in September 2010. I can see the teachers staying with their report books as before and their registers as before the EMIS. I don't see any of the teachers there with the go-get-it attitude for the EMIS. They may have it for other things but not the EMIS.
Can someone from outside the school come in to continue the work of the EMIS? Maybe someone with similar characteristics as you.	'Well the person does not have to be like me. The person must have that zeal and interest in the system to get it done'.
What are some of the things you will look for in the EMIS Coordinator who will replace you?	He or she must be a people person – that is someone even if he/she gets resistance must not give up, must still go at it even through all the resistance. At the end of the day he/she will be dealing with people and changing people's perception is not easy especially when they have the habit of doing something one way. He/she must have that go-for-it attitude. He/she must be someone who does not take things personally. Because persons at the school may make comments and so he/she should not feel that they are being personally attacked.

Interviewer	Interviewee
	He/she must be knowledgeable of IT. He/she must also have a love for computer and IT systems. Because if you have that kind of love, you will want to see the EMIS go forward.
	He/she should be one who is not afraid to experiment and trying new things or looking for new ways to do the same thing. Many times that is what kept me going; by looking for new ways to do things.
	He/she must also be willing to learn; ask questions and do research and not settle for someone just giving the answer.
	However, the main thing is the right attitude. Attitude dictates everything. For example, I could be just like a lot of the teachers at Bocage but I chose to be different because I have a different attitude. I cannot just sit there and see the system not being used. I like to be involved.
End of Interview	

Appendix 5 – Extract From Research Diary (1)

This extract was written on my last field visit during the first school term in December.

Over the past few months, I have noted a number of emerging themes from my field notes. So far I can confirm some. However, there are others that I will need to investigate further in the new term to confirm them.

Perceived Ease of Use and Usefulness of the EMIS
All persons interviewed so far thought that the EMIS was useful to their jobs. They also thought that it was easy to use although many requested more training. From all my reading this seems to fit nicely with the Technology Acceptance Model. But do they really perceive the EMIS as easy to use since many are asking for more training? Or could the more training be related to the fact that the training was done so long ago and without practice they have forgotten what was taught. I need to confirm this.

Leadership and Management Styles
I could not help but compare the characteristics of the two EMIS Coordinators. One of them seemed to know all about the EMIS and have gained the respect of the entire staff whilst the other is really the opposite. There seems to be more than just one theme there. In addition persons seem to have an attitude towards the way the Ministry of Education implemented the EMIS. This looks like leadership skills and type of management styles. I need to investigate further next term.

Making the EMIS Mandatory
Indeed, it is true that all Form five teachers have to enter students' CXC SBA grades online. I have never heard anyone complain using it. Yet they complain about using the EMIS. Can it be true that if the EMIS were made mandatory they would use? I can't take the word of the Vice Principal for all teachers. I need to follow up on this issue with the teachers as soon as school reopens in the second term.

Extract From Research Diary (2)

This extract was written in January after a field visit where I conducted informal interviews with four staff members.

Today was very productive. I conducted informal interviews with four different teachers who were all very cooperative. My main aim during these informal interviews was to get the opinion of the staff on making the EMIS mandatory. I did not even have to ask them the question. By simply asking them about the CXC online system, they quickly made the comparison to the EMIS and indicated that if the EMIS was made mandatory they would use it.

I can identify very well with the teachers. During my studies in Paris, I did not learn to speak French since it was not compulsory that I did. I had interpreters for all my classes and so I did not see the need to learn the language.

On my next visit I want to get the views of some more teachers. In addition, I will interview some teachers who never taught CXC classes and who have not used the CXC online system. I want to find out whether they will feel the same way as those who have used the CXC online system.

Extract From Research Diary (3)

This extract was written in January after a 'not too good' day in the field.

There are good days and there are bad days in the field. Today I had to be professional rather than be myself. I am happy that I chose to be professional. Else, I would certainly loose the trust and confidence of one of my key participants.

It seems that someone used my name to say some things to the EMIS Coordinator, which she believed. She confronted me with the 'gossip'. According to her, the person said that I said that she is not entering any information in the EMIS. I got very upset but tried very hard not to show it. I then understood why she had been acting strangely with me during the month of January. Had I raised my voice in return or got upset, this could have impacted negatively on my research.

Whilst I am certain that I did not make that statement to anyone, in future, I must be very careful what I say to people. Although I did not make such a statement, I had to do some damage control. I had to ensure the EMIS Coordinator that I have kept everything we have discussed thus far in confidence and I intend on keeping it that way.