

LB/DON/05/09

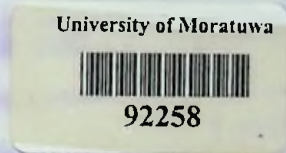
DCB 06/77 (78)

PERCEIVED IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGIES ON LEARNING AND TEACHING

LIBRARY
UNIVERSITY OF MORATUWA, SRI LANKA
MORATUWA

By

R.T.A.L Panangalage



The Dissertation was submitted to the Department of Computer Science and Engineering of the University of Moratuwa in partial fulfillment of the requirement for the Degree of Masters of Business Administration.

CD - Rom Included

Department of Computer Science and Engineering
University of Moratuwa
December 2007

92258

92258

004 "07"

004:65(043)

TH

LB/DON/05/09

DCS 06/77

78

PERCEIVED IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGIES ON LEARNING AND TEACHING

LIBRARY
UNIVERSITY OF MORATUWA, SRI LANKA
MORATUWA

By

R.T.A.L Panangalage

University of Moratuwa



92258

The Dissertation was submitted to the Department of Computer Science and Engineering of the University of Moratuwa in partial fulfillment of the requirement for the Degree of Masters of Business Administration.

CD - Rom Included

Department of Computer Science and Engineering

University of Moratuwa

December 2007

92258

004 "07"

004:65(043)

92258

TH

ABSTRACT

The use of ICT in education sector is an important topic in most developing countries today as it is playing a central role in socio-economic development. There are many ICT initiatives in Sri Lankan education system over the past decade. This is the best time to evaluate those efforts for their effectiveness.

Objectives of this research is to assess the impact of ICT on learning and teaching in secondary schools in Sri Lanka, to assess the current ICT usage in schools, to identify the drivers and barriers for achieving a greater impact of ICT on learning and teaching and to derive a set of recommendations, that would help future policy making.

The chosen methodology is to ask questions from the key stakeholders of the school about how they perceive the impact of ICT on learning and teaching. Data collection in the study is based on three questionnaires. Respondents are the head of the school, teachers and students in grade 10 to 12 classes. The study covered 80 schools among the Secondary Education Modernization Project funded schools.

The research study found that there is no direct relationship between the computer usage of students and their perceived impact of ICT on learning. Both students and teachers attitude toward use of ICT for learning and teaching purposes are statistically significant and positively related to their perceived impact of ICT on learning and teaching. However, the relationship between ICT skills and their perceived impact of ICT on learning and teaching found only for students but not for teachers and principals. The government intervention and training are not related to both teachers and principal's perceived impact of ICT on learning and teaching. Furthermore, research found that mere presence of ICT infrastructure in schools has not contributed students' learning.

Key Words

ICT, Impact on Learning, Impact on Teaching



ACKNOWLEDGMENT

I would like to extend sincere thank to my research supervisor, Dr Ajith Pasqual, whose guidance and instructions were immensely helpful to successfully complete my research.

I would also like to thank the staff of Secondary Education Modernization Project of the Ministry of Education. Specially Mr Karunasiri, the Benefit Monitoring and Evaluation officer, Mr Nihal Herath, Advisor to SEMP, Mr Anura de Silva Provincial Project Director Uva province, Mr S Yapa Provincial Project Director North Western Province, Mr N.J Karunadasa Director Education, Southern province for giving me immense help through out the project. I would also like to thank the staff of Department of Computer Science and Engineering and the coordinator of MBA/IT 2005/07 batch, Mrs Vishaka Nanayakkara for giving me correct guidance to successfully complete my research.

My sincere thank to my employer Virtusa Corporation for releasing me from office work during the difficult time without hesitation.

Finally I would like to thank the principals, teachers and students of all the schools who took part in the survey for being kind enough to post completed questionnaires to me within a short period of time without which my objectives would not have been fulfilled.

R.T.A.L Pananagalge

DECLARATION

"I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university to the best of my knowledge and belief it does not contain any material previously published, written or orally communicated by another person or myself except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and summary to be made available to outside organizations"

RPancaylase

.....
Signature of the Candidate

13/02/08

.....
Date

To the best of my knowledge, the above particulars are correct.

UOM Verified Signature

Supervisor *13/02/2008*

Dr Ajith Pasqual

TABLE OF CONTENTS

1. INTRODUCTION	1
1.1 Background for Research.....	1
1.2 Research Problem	8
1.3 Research Objectives.....	8
1.4 Research Design.....	8
2. LITERATURE REVIEW	10
2.1 Use of ICT.....	10
2.2 Skill Level.....	11
2.3 Experience.....	12
2.4 Student's Attitudes.....	12
2.5 Impact on Learning.....	13
2.6 Teaching Process	15
2.7 Professional Training.....	15
2.8 Teachers' Experience and Confidence.....	18
2.9 Teachers' ICT Skill Level.....	18
2.10 The impact of ICT on Teaching.....	19
2.11 Barriers for effective use of ICT.....	20
3. RESEARCH METHODOLOGY.....	22
3.1 Research Process.....	22
3.2 Theoretical Framework.....	24
3.3 Hypothesis.....	25
3.4 Basis of Sample Selection.....	25
3.5 Research Methods.....	26
3.6 Research instruments	26
3.6.1 Development of questionnaires.....	27
3.6.2 Practical implementation of questionnaire-based survey	28
4. FINDINGS.....	29
4.1 Students.....	29
4.1.1 Sample demography.....	29
4.1.2 Students computer access	30
4.1.3 Student's attitude towards use of ICT.....	33
4.1.4 Student's confidence in using ICT.....	33

4.1.5	Impact of ICT on learning.....	35
4.1.6	Analysis of hypothesis.....	36
4.2	Teachers.....	39
4.2.1	Sample demography.....	39
4.2.2	Teachers ICT skills/ competency.....	41
4.2.3	Professional development.....	42
4.2.4	Attitude of the teachers towards use of ICT.....	43
4.2.5	Perceived impact on teaching.....	44
4.2.6	Analysis of hypothesis.....	44
4.3	Principals.....	47
4.3.1	ICT skill level.....	47
4.3.2	ICT training.....	47
4.3.3	Analysis of hypothesis.....	48
4.4	Analysis of drivers and barriers.....	51
4.4.1	Drivers and barriers according to teachers' responses.....	51
4.4.2	Drivers and barriers according to principals' responses.....	53
4.5	Current ICT Usage in Schools.....	55
4.5.1	The extent of ICT resources available at school.....	55
4.5.2	Student's computer use.....	59
4.5.3	Teacher's computer use.....	62
4.5.4	Strategic use of ICT in schools.....	65
5.	DISCUSSION.....	68
6.	RECOMMENDATIONS AND CONCLUSIONS.....	72
6.1	Recommendations.....	72
6.2	Conclusions.....	76
7.	REFERENCES.....	77

LIST OF FIGURES

Figure 3-1 : Research process.....	23
Figure 3-2 : Theoretical framework.....	24
Figure 4-1 : Age distribution of the sample.....	30
Figure 4-2 : Gender distribution of the sample.....	30
Figure 4-3 : Computer access at various places.....	31
Figure 4-4 : Length of the time students have been using computers.....	32
Figure 4-5 : Number of students using computers during a week.....	32
Figure 4-6 : Attitude toward use of ICT.....	33
Figure 4-7 : ICT skills.....	34
Figure 4-8 : Categories of ICT skills.....	35
Figure 4-9 : Perceived impact of ICT on learning.....	35
Figure 4-10 : Age distribution of the sample.....	39
Figure 4-11 : Gender distribution of the sample.....	40
Figure 4-12 : Number of years in service.....	40
Figure 4-13 : Educational background of the teachers.....	41
Figure 4-14 : ICT skill level of teachers.....	42
Figure 4-15 : ICT training.....	42
Figure 4-16 : Attitude of teachers toward use of computers.....	43
Figure 4-17 : Perceived impact of ICT on teaching.....	44
Figure 4-18 : ICT skill level.....	47
Figure 4-19 : ICT training.....	48
Figure 5-1 : Availability of ICT infrastructure.....	56
Figure 5-2 : Availability and accessibility of ICT equipment.....	57
Figure 5-3 : Number of computers per student.....	57
Figure 5-4 : Availability of SchoolNet.....	58
Figure 5-5 : Number of ICT and CAL trained teachers in schools.....	59
Figure 5-6 : Experience in different kind of work.....	60
Figure 5-7 : Frequency of access at each location.....	61
Figure 5-8 : ICT usage in different subjects – junior secondary classes.....	62
Figure 5-9 : ICT usage in different subjects – Secondary classes.....	63
Figure 5-10 : Variation in computer usage in different subjects.....	64
Figure 5-11: Teachers access to ICT at different places.....	65

Figure 5-12 : ICT implementation plan for the school	66
Figure 5-13: Utilization of CLC by students and teachers	66
Figure 5-14 : Utilization of CLC by parents and other community members	67
Figure 5-15 : Number of awareness sessions conducted	67

LIST OF TABLES

Table 1-1 : Details of existing ICT labs in the system by 2007.....	6
Table 1-2 : Details of trained teachers and officers for ICT education	6
Table 1-3 : Details of trained teachers and officers for ICT education	7
Table 4-1 : Results of correlation analysis of hypothesis 1	36
Table 4-2 : Results of correlation analysis of hypothesis 1	36
Table 4-3 : Results of correlation analysis of hypothesis 2	37
Table 4-4 : Results of regression analysis of hypothesis 2	37
Table 4-5 : Results of correlation analysis of hypothesis 2	38
Table 4-6 : Results of regression analysis of hypothesis 3	38
Table 4-7 : Results of correlation analysis of hypothesis 4	44
Table 4-8 : Results of correlation analysis of hypothesis 5	45
Table 4-9 : Results of correlation analysis of hypothesis 6	45
Table 4-10 : Results of the regression analysis of hypothesis 6	45
Table 4-11 : Results of correlation analysis of hypothesis 6	48
Table 4-12 : Results of correlation analysis of hypothesis 7	49
Table 4-13 : Results of the regression analysis of hypothesis 7	49
Table 4-14 : Results of correlation analysis of hypothesis	50
Table 4-15: Drivers - According to teachers' responses.....	51
Table 4-16: Barriers – According to teachers' responses	52
Table 4-17: Drivers - According to principals' responses	53
Table 4-18: Barriers - According to principals' responses	54

LIST OF ABBREVIATIONS

ADB	-	Asian Development Bank
CAL	-	Computer aided learning
CDROM.	-	Compact Disk Read Only Memory
CINTEC	-	Computer and Information Technology Council
CLC	-	Computer learning centers
CRC	-	Computer Resource Centers
GIT	-	General information technology
ICT	-	Information and communication technologies
ICTPD	-	Professionals Development in Information and Communication Technology)
ITMF	-	ICT and Media in the Danish Folkeskole
MMU	-	Multimedia units
PISA	-	Programme for International Student Assessment
SEMP	-	Secondary Education Modernization Project
SPSS	-	Statistical Package for Social Sciences
WWW		World Wide Web