INFORMATION AND COMMUNICATION TECHNOLOGY USAGE AMONG HIGH SCHOOL TEACHERS IN TEHRAN, IRAN

By
NAHID SHAHVERDIAN

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirement for the Degree of Master of Science

September 2010
DEDICATION

The completion of this study is dedicated to the following persons:

To my husband, Mostafa Langarizadeh, without whose love and support this task would not have been neither possible nor desired, his passion, honesty, and strength of character have made our life together my single greatest accomplishment.

To my son Mohammad Hossein, my love for you is without bound, you are my word finder and reader without peer.
Level of ICT usage may affect the rate of successful ICT implementation in education, and in the long run, the achievement of the goals of the fifth Iranian national socio-economic development program. The Iranian government has decided to offer ICT training courses for teachers to help them improve their ICT knowledge and skills. Thus, one of the most relevant objectives of this study was to determine the current level of ICT usage among high school teachers.

This study had four main purposes: (a) To determine the level of ICT usage among high school teachers; (b) To determine the significant difference in ICT usage according to selected socio-demographic factors (gender, age, teaching experience, and subject taught); (c) To determine the level of perceived ease of use and perceived usefulness towards ICT usage among high school teachers; and (d) To identify barriers to the use of ICT among high school teachers.
These issues were addressed using a self-administered survey questionnaire with a sample of high school teachers (n=395). Out of the 410 questionnaires, a total of 395 valid responses were returned. Data were analyzed using descriptive statistics, Analysis of Variance (ANOVA), and independent sample t-test. This study was conducted in 41 high schools located in two districts of Tehran.

The finding of the study showed that the majority of high school teachers were categorized in low level ICT usage, and it accounted for 66.3% of the respondents. Results indicated that: (a) The level of ICT usage among high school teachers is low (b) there is significant difference in the mean score of ICT usage according to age and teaching experience while there is no significant difference in the mean score of ICT usage by the gender and subjects taught ; (c) the level of teachers’ perceived ease of use and usefulness is high ; (d) lack of time, lack of effective training, technical problems and inadequate access to resources are major barriers to ICT usage among high school teachers.

The results showed that despite majority of teachers are in low level of ICT usage in their teaching but they have high level of perceived ease of use and usefulness. Participants indicated to have faced some problems when using ICT, and this needs to be given a serious consideration. Four major barriers such as lack of time, lack of effective training, technical problems and inadequate access to resources were identified. The present study proposed
potential recommendations to teachers and Ministry of education to overcome these barriers.
Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

PENGUNAAN TEKNOLOGI MAKLUMAT DAN KOMUNIKASI ANTARA GURU SEKOLAH TINGGI DI TEHRAN, IRAN

Oleh
NAHID SHAHVERDIAN

September 2010

Pengerusi: Shaffe Mohd Daud, PhD

Fakulti: Pengajian Pendidikan


Kajian ini mempunyai empat tujuan utama: (a) Untuk menentukan tahap penggunaan ICT di kalangan guru-guru sekolah menengah; (b) Untuk menentukan perbezaan signifikan dalam penggunaan ICT berdasarkan faktor-faktor terpilih sosio demografi (jantina, umur, pengalaman mengajar, dan mata
pelajaran yang diajar); (c) Untuk menentukan tahap persepsi kemudahgunaan
dan persepsi kegunaan terhadap penggunaan ICT di kalangan guru-guru
sekolah menengah; dan (d) Untuk mengenalpasti halangan-halangan kepada
penggunaan ICT di kalangan guru-guru sekolah menengah.

Isu-isu ini dialamatkan dengan menggunakan satu kajian soal selidik yang
dilakukan sendiri ke atas satu sampel guru-guru sekolah menengah (n=395).
Daripada 410 soal selidik, sejumlah 395 jawapan sahih telah dipulangkan. Data
telah dianalisis menggunakan statistik perihalan, Analysis Variance (ANOVA),
dan sampel bebas ujian-t. Kajian ini dijalankan ke atas 41 buah sekolah
menengah yang terletak di dua daerah di Tehran.

Penemuan kajian menunjukkan majoriti daripada guru-guru sekolah menengah
masih berada di tahap yang rendah dalam soal penggunaan ICT mereka, dan ia
jelas ditunjukkan oleh 66.3% daripada responden-responden. Keputusan
menunjukkan bahawa: (a) Tahap penggunaan ICT di kalangan guru sekolah
menengah adalah rendah (b) ada perbezaan yang signifikan dalam skor rata-
rata penggunaan ICT sesuai dengan umur dan pengalaman mengajar
sementara tidak ada perbezaan yang signifikan dalam nilai rata-rata
penggunaan ICT oleh gender dan mata pelajaran yang diajarkan; (c) tahap
kefahaman penggunaan yang mudah (PEOU) dan kefahaman kegunaan (PE)
terhadap penggunaan ICT guru-guru adalah tinggi; (d) kekurangan masa,
kekurangan latihan yang berkesan, masalah teknikal dan kurang akses kepada
sumber-sumber merupakan halangan-halangan utama kepada penggunaan ICT di kalangan guru-guru sekolah menengah.

ACKNOWLEDGEMENTS

The completion of this study would not have been possible without the support and guidance of the following:

Dr. Shaffe Mohd Daud, who provided direction, guidance, encouragement, and immeasurable assistance throughout the process.

Dr. Rosnaini Mahmud, who shared anecdotes and experiences enabling me to see the world of education in a broader perspective and provided encouragement and guidance.
I certify that a Thesis Examination Committee has met on 22 September 2010 to conduct the final examination of Nahid Shahverdian on her thesis entitled “Information and Communication Technology Usage among High School Teachers in Tehran, Iran” in accordance with the Universities and University College Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The committee recommends that the candidate be awarded the Master of Science.

Members of the Thesis Examination Committee were as follows:

**Mokhtar Dato’ Hj. Nawawi, PhD**
Lecturer
Faculty of Educational Studies
Universiti Putra Malaysia
(Chairman)

**Wan Zah Wan Ali, PhD**
Associate Professor
Faculty of Educational Studies
Universiti Putra Malaysia
(Internal Examiner)

**Wong Su Luan, PhD**
Associate Professor
Faculty of Educational Studies
Universiti Putra Malaysia
(Internal Examiner)

**Baharuddin Aris , PhD**
Professor
Faculty of Education
Universiti Teknologi Malaysia
(External Examiner)

---

**SHAMSUDDIN SULAIMAN, PhD**
Professor and Deputy Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 23 December 2010
This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

**Shaffe Mohd Daud, PhD**
Lecturer
Faculty of Educational Studies
Universiti Putra Malaysia
(Chairman)

**Dr. Rosnaini Bt Mahmud, PhD**
Lecturer
Faculty of Educational Studies
Universiti Putra Malaysia
(Member)

---

**HASANAH MOHD GHAZALI, PhD**
Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date:
DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been acknowledged. I also declare that it has not been previously and is concurrently submitted for any other degree at Universiti Putra Malaysia or other institutions.

Nahid Shahverdian
Date: 22 September 2010
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEDICATION</td>
<td>ii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>iii</td>
</tr>
<tr>
<td>ABSTRAK</td>
<td>vi</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>ix</td>
</tr>
<tr>
<td>DECLARATION</td>
<td>xii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>xvi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xviii</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
<td>xix</td>
</tr>
</tbody>
</table>

## CHAPTER

### 1 INTRODUCTION

1.1 Background of the Study 2
1.2 Statement of the Problem 6
1.3 Objective of the Study 9
1.4 Research Questions 10
1.5 Significance of the Study 11
1.6 Scope and Limitations of the Study 12
1.7 Definition of Terms 13
   1.7.1 Information and Communication Technology (ICT) 13
   1.7.2 ICT Usage 14
   1.7.3 High School Teacher 14
   1.7.4 Perceived Usefulness 14
   1.7.5 Perceived Ease of Use 15
   1.7.6 Barriers 15
1.8 Summary 16

### 2 LITERATURE REVIEW

2.1 Introduction 18
2.2 Iran Geo-Educational Characteristic 19
   2.2.1 ICT Infrastructure 21
   2.2.2 Iran’s National Information and Communication Technology Agenda (INICTA) 22
2.2.3 ICT Programs in Iranian Schools 23
2.2.4 ICT in Education in Iran 26
2.3 ICT Usage among Teachers 27
2.4 Teachers’ Usage of ICT and Socio-Demographic 33
   2.4.1 Gender 33
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4.2 Age</td>
<td>36</td>
</tr>
<tr>
<td>2.4.3 Teaching Experience</td>
<td>38</td>
</tr>
<tr>
<td>2.4.4 Subject Taught</td>
<td>40</td>
</tr>
<tr>
<td>2.5 Perceived Ease of Use and Perceived Usefulness</td>
<td>42</td>
</tr>
<tr>
<td>2.6 Barriers of ICT Implementation</td>
<td>44</td>
</tr>
<tr>
<td>2.6.1 Teacher-Level Barriers</td>
<td>48</td>
</tr>
<tr>
<td>2.6.2 School-Level Barriers</td>
<td>51</td>
</tr>
<tr>
<td>2.7 Theoretical Model to Explain ICT Usage</td>
<td>54</td>
</tr>
<tr>
<td>2.8 Conceptual Framework</td>
<td>58</td>
</tr>
<tr>
<td>3 METHODOLOGY</td>
<td></td>
</tr>
<tr>
<td>3.1 Introduction</td>
<td>61</td>
</tr>
<tr>
<td>3.2 Research Design</td>
<td>61</td>
</tr>
<tr>
<td>3.3 Location of the study</td>
<td>62</td>
</tr>
<tr>
<td>3.4 Population and Sampling</td>
<td>64</td>
</tr>
<tr>
<td>3.4.1 Population</td>
<td>64</td>
</tr>
<tr>
<td>3.4.2 Sampling</td>
<td>64</td>
</tr>
<tr>
<td>3.5 Instrumentation</td>
<td>73</td>
</tr>
<tr>
<td>3.5.1 The Instrument Structure</td>
<td>73</td>
</tr>
<tr>
<td>3.5.2 Validity and Reliability of Instrument</td>
<td>81</td>
</tr>
<tr>
<td>3.6 Data Collection Procedure</td>
<td>84</td>
</tr>
<tr>
<td>3.7 Data Analysis</td>
<td>85</td>
</tr>
<tr>
<td>3.7.1 Descriptive statistics</td>
<td>86</td>
</tr>
<tr>
<td>3.7.2 Inferential statistics</td>
<td>87</td>
</tr>
<tr>
<td>Summary</td>
<td>90</td>
</tr>
<tr>
<td>4 RESULTS</td>
<td></td>
</tr>
<tr>
<td>4.1 Introduction</td>
<td>93</td>
</tr>
<tr>
<td>4.2 Demography of the Respondents</td>
<td>94</td>
</tr>
<tr>
<td>4.2.1 Gender</td>
<td>94</td>
</tr>
<tr>
<td>4.2.2 Age</td>
<td>95</td>
</tr>
<tr>
<td>4.2.3 Teaching Experience</td>
<td>96</td>
</tr>
<tr>
<td>4.2.4 Subject Taught</td>
<td>97</td>
</tr>
<tr>
<td>4.2.5 Type of School</td>
<td>98</td>
</tr>
<tr>
<td>4.2.6 Teachers' Attendance in ICT Training Program</td>
<td>98</td>
</tr>
<tr>
<td>4.3 ICT Usage among High School Teachers</td>
<td>99</td>
</tr>
<tr>
<td>4.4 The Level of ICT Usage According to Selected Socio-Demographic Factors</td>
<td>102</td>
</tr>
<tr>
<td>4.4.1 The Level of ICT Usage Based on Gender</td>
<td>102</td>
</tr>
<tr>
<td>4.4.2 The Level of ICT Usage Based on Age</td>
<td>103</td>
</tr>
<tr>
<td>4.4.3 The Level of ICT Usage Based on Teaching Experience</td>
<td>105</td>
</tr>
<tr>
<td>4.4.4 The Level of ICT Usage Based on Subject(s) Taught</td>
<td>106</td>
</tr>
<tr>
<td>4.5 Perceived Ease of Use</td>
<td>107</td>
</tr>
<tr>
<td>4.6 Perceived Usefulness</td>
<td>108</td>
</tr>
<tr>
<td>4.7 Barriers</td>
<td>108</td>
</tr>
<tr>
<td>4.7.1 Lack of Confidence</td>
<td>109</td>
</tr>
</tbody>
</table>
4.7.2 Lack of Time 110
4.7.3 Resistance to change and negative attitude 111
4.7.4 Lack of Effective Training 111
4.7.5 Lack of Access to Resource 112
4.7.6 Technical Problems 113

5 DISCUSSION, SUMMARY AND CONCLUSION
5.1 What is the Level of ICT Usage among High School Teachers? 116
5.2 Is there any significant difference in ICT usage among high school teachers in terms of gender? 119
5.3 Is there any significant difference in ICT usage among high school teachers in terms of age? 120
5.4 Is there any significant difference in ICT usage among high school teachers in terms of teaching experience? 121
5.5 Is there any significant difference in the ICT usage among high school teachers in terms of subject taught? 122
5.6 What is the teachers' level of perceived ease of use towards ICT in high schools? 123
5.7 What is the teachers' level of perceived usefulness towards ICT in high schools? 125
5.8 What are the barriers that teachers faced when using ICT? 127
5.9 Summary 131
5.10 Conclusion 133
5.11 Recommendations 136
  5.11.1 Recommendation for the Government and the Ministry of Education 136
  5.11.2 Recommendations for High School Teachers 137
5.12 Recommendations for Future Research 138

REFERENCES 140
Appendix A 154
Appendix B 155
Appendix C 161
Appendix D 167