Journal of Education and Practice
ISSN 2222-1735 (Paper) ISSN 2222-288X (Online)
Vol.6, No.14, 2015

Investigation of Teachers' Attitudes towards Computer Use in Primary Education in Kurdistan

Hewa Balisane
Faculty of Education, Soran University, Soran, Kurdistan Region of Iraq
E-mail: hewa.balisane@soran.edu.iq

This research has been conducted by the Faculty of Education, Soran University, Kurdistan Region of Iraq.

Abstract
Technological advances have pervasively changed our behaviours, beliefs and approaches in working, socialising and entertaining. Educators, including those in primary education, have acknowledged the positive effects of computer use in the classroom in various ways. With regard to pedagogical consideration, primary school teachers have adopted computer use in teaching pupils with emphasis on student-centred teaching techniques. The integration of computers in the primary curriculum has been applied in many countries, from developing (Chile) to developed nations (the US and UK). With regard to Iraqi Kurdistan, in particular, the education sector has undergone a major reform in order to improve the regional education standards and, as part of a new curriculum, the computer element has been embedded alongside the mathematics subject. Since the reform occurred, no academic study has been conducted to not only evaluate the effectiveness and efficiency of computer use in primary schools in Kurdistan, but also to investigate teachers' attitudes towards the use of computers in their teaching approach. Hence, the present study aims primarily to explore the general background of primary school teachers as well as their experiences, skills and pedagogical attitudes towards computer use in primary education.
Keywords: Computer use, technology, primary schools; teachers; pedagogical approaches

1. Introduction

A spectrum of literature has already asserted the positive impacts of computer use on young children's learning and mind development (Feinberg et al, 1998; Gialamas and Nikolopoulou, 2010; Karagiannidis, 2014). The valuable learning experience while utilising computers in a pedagogically appropriate manner has been studied in different countries. A number of quantitative and qualitative studies have been undertaken to extend the understanding of the potential benefits accrued from using computers in education and to endeavour to identify compelling factors influencing the use of computers in classrooms (Blackwell et al, 2014; Kerckaert et al, 2015). Interactively, traditional pedagogical approaches have shifted to approaches focusing on children development and social efficiency, based on technologically-advanced learning environments (Hermans et al, 2008).

The use of computers in primary and preschools classrooms has grown exponentially, especially in developed countries (US, UK and Canada), since the early 1980s (Mohammad and Mohammad, 2012). According to a study by Papadimitriou (2004), the UK government established a series of initiatives emphasising their beliefs in the crucial role of technology contributing to pupils' academic achievement. Based on a 1999 survey, there were on average approximately 13 pupils per computer in primary schools and 62% of the total number of primary schools in the UK had Internet connection (The Guardian, 1999). Reportedly, in the US, in the middle of the 1980s, approximately 25% of the licensed preschools had computers, and in 2012, almost all preschools had computers. In other words, the ratio of computer to students plunged drastically from 1:125 in 1984 to 1:22 in 1990 (Mohammad and Mohammad, 2012).

In developing countries, a similar trend has been replicated in recent years. Recently, in primary schools in Chile, the computer to pupil ratio was reportedly 1:16 and children in public schools, including those in primary education, were receiving instructional practice in relation to computer use in classrooms on a weekly basis (Hinostroza et al, 2013). Based on another report by Al-Zaidiyeen et al in 2010, the Jordanian government endeavoured to reach the target of 1 computer for every 6 learners (1:6) in public schools (Al-Shboul, 2012). But according to an extensive report issued by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) (2013), Jordan and Oman achieved computer-to-learner ratios of 1:12 and 1:7, respectively, in 2011, in primary public schools. This is lower than in other countries such as Egypt, Palestine and Qatar. Furthermore, based on the same report, all of the above 5 Arab countries achieved computer connectivity to the Internet in primary schools, however the ratio of computer-to-Internet connection remained significant low.

Various investigations have gone beyond the general understanding of the use of computers in early childhood education to explore the opportunities and support of various computer software and modelling tools for some specific learning areas (Hinostraza et al, 2013). Clements (2002) and Van Scoter (2008) identified an association between subjects, such as language and writing development, problem solving and drawing, and

mathematics, and the consequential benefits accrued from computer use. A study by Couse and Chen (2010), following the recording of the learning progress of 41 children aged from three to six, reported that the group of children adapted promptly with the use of tablets for drawing.

It is undeniable that technology has become an integral part of our lives, and the UNESCO suggested that children should be equipped with appropriate knowledge and skills in order to be able to undertake basic developmental activities (UNESCO, 1992). In many developed and developing countries, computer use has been integrated into the educational system, from preschools to universities, and the prevalence of the integration of computers into the early childhood curriculum has been on a sharp rise. In Kuwait, which is classified as a developing country, the Ministry of Education directed that, in order to integrate computer use into all curricular areas, all Kuwaiti kindergarten classrooms should be equipped with computers (Mohammad, 2007). This fact demonstrates the awareness of the Kuwaiti government of the potential benefits resulting from computer usage on children's learning and development.

With the recent booming economy in Iraqi Kurdistan, the government has endeavoured to achieve an international education standard by replacing traditional pedagogical paradigms with new teaching-quality standards and improving the infrastructures of schools, not only across large cities, such as Erbil, but also in rural areas. Primary education has undergone a tremendous transformation: new curricula were introduced and a requirement for new teachers to attend 4 years of Bachelor's education prior to qualifying as teachers became mandatory. As a result of such reforms, improved statistics were attained, such as increase in net enrolment and a reduction in illiteracy.

As per many other countries, Kurdistan integrated computer education as part of the school curriculum since the reform took place in 2009. However, since then, no study or academic publication (in the English language) attempted to evaluate the use of computers in the education system, especially in primary schools. Therefore, this study aims to primarily investigate the opinions of teachers in the Kurdistan Regional Government (KRG) with regard to the effect of early computer use on the learning development of primary school students.

2. Literature Related to the Educational System in Kurdistan

2.1 Facts and Figures of the Educational Reform in Kurdistan

The KRG has an estimated population of over 5.2 million and comprises a variety of ethnicities, such as Kurds, Assyrians, Chaldeans, Turkmen, Armenians and Arabs (Kurdistan Regional Government, 2015). Kurdistan's population is skewed towards a young population with 60% aged 15-62 (USA International Business Publications, 2012). The education system in Kurdistan is public-based and comprises 2 preschool years for the 4-5 year age group, which is not compulsory, 6 years of primary education, which is compulsory, 6 years of secondary education (2 cycles of 3 years each) and higher education ranging between 2-6 years (Kurdistan Democratic Party, 2015). The primary education is free for all Kurds and, in 2009, the government expanded the range of compulsory education to Grade 9.

It should be emphasised that the education sector in Kurdistan has been drastically expanded in recent years. In 2009, the Ministry of Education implemented a strategic modernisation plan in order to reform the educational system and reduce the illiteracy rate (Vernez et al, 2014). As a direct result, the number of schools, often of different types, such as quick-learning schools and evening schools, incremented sharply (Kurdistan Observer, 2011). With regard to public primary and secondary education, in 2009-10, there were 5,162 primary schools in the entire region of Kurdistan. In 2012, the total number of schools increased by 2,641, equivalent to an increase of 81%. Alongside this increase, it is worth noting that the quality of education in Kurdistan also rose significantly as Kurdish schools achieved the highest primary school completion rates in the whole of Iraq and attained a substantially higher rate of primary school enrolment than the rest of the country (Investingroup, 2015). In addition, the KRG, through the Ministry of Planning, endeavoured to bring primary and secondary education quality to a (yet non existent) international standard level. As part of the strategy, improving teaching quality was considered to be an important element; therefore a new mandate was introduced requiring teachers to hold at least a Bachelor's degree, in addition to attending a recently deployed teacher-training programme.

2.2 Teaching Quality and Curriculum in the Pre- and Post-Reform Periods

During the pre-reform period, the majority of existing teachers who qualified to practice their career were required to be secondary school graduates and received subsequent teaching training for a period of two years. Nonetheless, some academic organisations acknowledged that some students who completed primary education, followed by 5 years of teaching training, were allowed to embark on a teaching career. This is reflected by the demographic characteristics of this study, which are presented in section 5.1.

Unfortunately, since the educational reform took place, combined with a strong growth in educational demand, the KRG experienced not only a shortage in number of teachers, but also a relative dilution in pedagogical quality. Based on the estimation by Vernez et al (2014), the number of teachers would have to increase by

approximately 1,000 per year, against a situation where teacher institutes were being gradually closed down in order to comply with the new requirements. Thus the post-reform period has led to the following dichotomy with regard to the types of teachers: those who registered on the old requirement with 2 years of training, and those who had to go through a longer period of education of 4 years, up to Bachelor's degree at least.

In support of the educational reform, teachers were encouraged to revise their pedagogical methods and practices by adopting student-centred teaching techniques focusing on the development of creative analytical skills. As part of the old curriculum, the Mathematics/Computing subject was being taught from Grade 1 to Grade 12. The reform period saw the introduction of a new and more challenging curriculum. One example of this is the requirement for the English subject to be taught from Grade 1 and the units of Mathematics and Sciences were increased to become one third of the total units in Grades 1-9 (Sharif, 2013). All in all, regardless of new or old curriculum, the Computing subject element mapped across the curriculum throughout all grades. This fact leads to the main hypothesis of this study, which posits that teachers are expected to possess substantial confidence and basic experience and skills in computer use in order to be able to convey an adequate level of training to children in primary schools.

2.3 Review of Evidence on Computer Use in Primary Schools in Kurdistan

A comprehensive quantitative review was undertaken in this study, focusing on computer use in early childhood in Kurdistan, especially in primary schools. The initial phase of the research consisted of a secondary literature review based on various combinations of relevant main keywords, namely, Kurdistan, computer use, technology use, ICT, early childhood, preschool, primary education, primary teachers, educators, pedagogical approaches, etc. The author searched for published academic articles in EBSCOHOST, ProQuest, HEER, Sciendirect, SAGE and ERIC during the last 2 decades and up to the present point in time (April 2015). Not entirely unexpectedly, the results showed no relevant study being published in the English language in any of those online academic repositories. This finding supported the strong need for academic research to be conducted in order to evaluate the role of technology in Kurdish educational system, especially in relation to primary schools. Moreover, and as a result of the educational reform measures undertaken by the KRG, a simple academic evaluation of the impact and efficiency of integrating computer use in the new curriculum, and the corresponding quality of teaching, needed to be carried out.

3. Influencing Factors on Computer Use in Children

During the last two decades, the global educational system and curriculum approaches have clearly shifted from traditional instructional methods to a learner-centred constructivist approach (Hannafin et al, 1997). Information Technology and Communication (ICT) use seemed to be adopted inherently while applying constructivist practices where there is teacher-student and student-student collaboration and co-construction of knowledge (Levin and Waldmany, 2005; Killen, 2009). This approach demands strong willingness on behalf of teachers and requires them to adopt and integrate innovative pedagogical methods into the classrooms. A spectrum of research in developed countries, such as in the US, Europe and Australia, promoted the adoption of constructivist approaches in order to evaluate teachers' acceptance towards ICT use in classrooms. However the main findings demonstrated that most teachers applied technology use through teacher-centred methods rather than through constructivism (Orlando, 2011). In other words teachers are generally reluctant to change.

Although generally end-users admit the vital role of ICT and its viral scale, the actual use of computers in classrooms remains relatively infrequent, especially in early childhood education (Gray et al, 2010; Vockley and Lang, 2011; Wartella et al, 2013). Fullan (2001) and Hermans et al (2008) pointed out that the role of a teacher in motivating children in using technology is critical. Therefore, various models were studied in order to investigate the relationships between first- and second-order extrinsic barriers, namely, a lack of access to technology and teaching beliefs, comfort with technology, and perceived values of technology for student learning, respectively, with computer use of teachers (Blackwell et al, 2014). A recent study conducted in Turkey reported that colleagues' support and technology competencies have significant positive associations, and that teaching attitudes/beliefs have a significant positive association with computer use (Karaca et al, 2013).

4. Research Methodology

4.1 Sample Selection and Participants' Characteristics

The general design of this study corresponded to a survey applied between January and February 2015. A sample of 154 teachers participated in the study and were geographically attached to primary schools in Soran (including Rawanduz), Choman and Mergasur. All participants, who voluntarily partook in the study, are enrolled on a part-time basis on a BSc in Education programme at Soran University as part of the new regulations from the Ministry of Education.

In order to empirically investigate the effect of primary school teachers' educational attitudes towards computer use in classrooms, a comprehensive questionnaire was disseminated to the above sample. As a result, a

total of 126 questionnaires – equivalent to a response rate of approximately 82% – were returned and completed. The participants were distributed evenly across all primary school grades. The vast majority of respondents were males with a percentage of 86.5%, which is in opposition to the more common situation in other countries where females dominate the primary education teaching profession (Hermans et al, 2008; Gialamas and Nikolopoulou, 2010). The age of respondents ranged from 24 to 49 years old (mean = 35, SD = 6.4).

4.2 Questionnaire Design

The questionnaire comprised 3 parts. The first part aimed to capture the detailed demographic characteristics of the participants. A pool of 12 multiple-choice and Likert-scale items were included in this section. The second part focused on personal experience in relation to computer use and contained another 12 multiple-choice questions. The last part concentrated on teaching experience relative to computer use. This section consisted of 11 multiple-choice, open-ended and Likert-scale items. The questionnaire was first piloted across 4 experienced members of the Faculty of Education at Soran University, refined and subsequently translated into the Kurdish language and validated by another 2 native lecturers from Soran University in order to maintain both linguistic and conceptual equivalences. At this stage a final process of refinement was undertaken before authorisation was granted by Soran University's Research Committee to deploy it.

The average completion time of the questionnaire was estimated to be approximately 30 minutes.

5. Results

The analysis focused on the descriptive statistics and factor analysis using Chi-square and logistic regression techniques, taking into account the frequency and/or percentage of answers to the different items of the questionnaires. All statistical analyses were undertaken using the Statistical Package for the Social Sciences, SPSS 22.0.

5.1 Demographic Characteristics

5.1.1 Participants' Background

Table 1 summarises all demographic information pertaining to the participants. It shows that the median age of the sample population is 33 year old, ranging from 24 to 49, which is slightly lower than the mean. This demonstrates that the distribution of participants' age is skewed positively and slightly to the left. In other words, the sample population is considerably young with an average of below 10 years of teaching experience. This young population, embarking on a teaching career in primary schools, has similar characteristics to those from other countries in the region, such as Kuwait. Alawadhi (2011) stated that 80% of Kuwaiti primary students were taught by teachers who were in their 30s. With respect to ethnicity, most of the participants (96%) were Kurds and their geographical distributions were such that 69% were from Soran, 11.1% from Choman and another 11.1% from Mergasur. All three towns are closely co-located.

Unlike for other countries, the levels of education of the teachers who participated in the study varied from no completion of high school education (17.5%) to diploma graduates (61.9%), whereas 9.5% did not state their level of education. As mentioned above, the number of females in this study was substantially small and included only 16 teachers; however almost all of them held high school diplomas or their equivalent. A finding from a pair-wise comparison of the percentage between genders and the level of education articulated that, although the total number of females (n=16) is significantly smaller than male participants (n=109) (1 respondent did not declare their gender), the proportion of females (81.3%) graduating with high school diploma was significantly higher than their male counterparts (67%) (Figure1).

Furthermore, 19 participants out of 125 (15%) had been practicing primary teaching while not in possession of any teaching license or certificate. Among those there were 4 (25%) male primary teachers aged 28 years or older who had neither a teaching license nor completed high school education. The Chi-square test (p=0.106 > 0.05) proved that there was no association between levels of education for teachers and possession of teaching license. This underlines the fact that a primary teacher in the study could acquire a teaching license without even having completed high school education. Moreover, it appears that 19 teachers who did not complete high school education held various positions in schools: head teachers (15.8%), assistant head teachers (15.8%), general teachers (57.9%) and school social workers (5.3%).

According to the latest regulations from the Ministry of Education, potential primary school teachers need to complete at least 3 years of study at a Teacher Training School following their completion of the first stage of secondary education (Kurdistan Democratic Party, 2015). The study revealed that 44.4% (n=56) of participants attended the Central Teachers Training Institute, 26.2% (n=33) underwent general 5 years education at a Teacher Training Institute, 14.3% (n=18) partook studies at a Teacher Training Centre and only 12.7% (n=16) received a specialised 3 years education course. Table 2 reveals that 15.2% (n=15) participants did not complete high school; however they attended general education of 5 years at a Teacher Training Institute, and are currently primary teachers.

With regard to experience of teaching children, 78.6% (n=99) received training on early childhood education. This percentage went down to 46.8% (n=59) when participants were asked whether they had specifically attended elementary/primary education training. This implies that there was a substantial number of teachers who did not go through elementary/primary education training whilst still practicing teaching primary classes on the basis of general preschool education knowledge and skills acquired. On the other hand, approximately 20% of participants did not state whether they had attended elementary/primary education training. This gives rise to a level of ambiguity in relation to the actual level of these participants' knowledge or skills pertaining to their specialisation in primary education. Nonetheless, in relation to child development, 59.5% of teachers had undergone such training. Positively, out of 126 teachers, there were 31 individuals who possessed some level of training for children with disabilities; however only 34.1% of the participants, i.e., approximately one third of the sample population, underwent English language training.

In terms of their current school positions, over half of the participants (60.3%) were general education teachers, 17.5% were head teachers and 11.9% were assistant head teachers. Evidently, in comparison to males, although almost all female respondents (81.3%; n=13) had acquired a high school diploma or equivalent, no female held the post of head teacher and only one (6.3%) was holding an assistant head teacher position (Table 3).

5.1.2 Personal Experience towards Primary Education Teaching Career

In the questionnaire, this part included Likert-scale items, consisting of a simple statement and a corresponding scale enabling participants to express their level of (dis)agreement with the statement, ranging from strongly disagree to strongly agree. Table 4 presents the total counts of all statements from respondents. The majority of respondents (93.7%) either very much enjoyed or enjoyed their jobs. This indicated a positive emotional enjoyment of the teachers towards their career development. A similar proportion of teachers (92.1%) also either strongly believed or believed that their contribution would make changes in the lives of the children they taught. In terms of career choice, the proportion of teachers who were either very happy or content with their career reduced slightly to 82.5%. Somewhat expectedly, the percentage of participants who were strongly or normally satisfied with class size or case load, plunged down to 39.7%, representing over one third of the sample population. In other words, the remaining two thirds of primary teachers were not happy with their class size/case load. In turn, this has a negative impact on the quality of teaching and might lead to teachers' attrition as was evidenced in the study by Moore (2012).

In relation to teaching different grades, a total of 27 teachers, representing 21.4% of the whole study sample, had simultaneously taught 6 different grades, starting from Grade 1; another 6.4% had taught 5 different grades; 20.63% had taught 4 different grades, with the same percentage having taught 3 different grades; and 14.3%, who were holding different positions in schools from head teacher to social worker, had only taught one grade. Furthermore, over half of the sample (57.1%) reported that their class size exceeded 26 children in each class.

Logistic regression tests were conducted in order to identify differences between participants' levels of education and their job satisfaction levels. Relying on four personal statements, in conjunction with a 5-point Likert scale (ranging from strongly disagree to strongly agree), the binary logistic regression test (p=0.07) from Table 5 indicates that the likelihood of the participants who obtained a high school diploma, or equivalent, and who might consider changing their career if an opportunity arose was nearly 4 times higher than those who did not complete high school. Although the p-value is slightly higher than the significant level of 0.05, the result was still considered to act as an indication for the modelling; therefore this finding indicates a higher likelihood of teachers who possess better knowledge and skills than others seeking a career other than education.

5.2 Teachers' Individual Experience in Relation to Computer Use

This section aims to explore the actual competencies and skills of primary school teachers and their capabilities in relation to computer use in those 3 areas of Kurdistan as a representative sample. A small proportion of respondents (4.8%; n=6) reported that they never used computers before. Surprisingly, most of these teachers with no experience or computer skills graduated with a high school diploma or equivalent education. Furthermore, with regard to locations where teachers used computers, the respondents seemed to use them at home much more frequently than at school, university, place of employment or other places (Table 6). This finding was supported by the fact that almost all respondents (98.4%) had computer access at home.

A Chi-square test was carried out to explore the association between the various locations where participants use computers and their background qualifications. This test aimed to identify any hidden pattern that might be uncovered in teachers' habits and behaviours towards computer usage. Based on large p–values (considerably larger than 0.05), the outcome demonstrated no difference in pattern for computer use between participants who did not complete high school and those possessing a high school qualification or diploma. Similarly, the levels of qualifications did not evidently affect primary school teachers' habits in using computers at schools or workplaces. In the interest of investigating the possible effect of geographical location, and since

the study covered 3 Kurdish towns, a comparison between 2 groups of teachers, those from Soran versus the other two towns was undertaken in order to test the hypothesis of whether the geographical location played a role in teachers' habits of computer use. Once again, the Chi-square test results denied this hypothesis as the *p*-values were also substantially larger than 0.05.

When asked in detail about some basic technical skills, and whilst nearly the entire sample (95.2%) experienced computer interaction, only 84.9% could load a programme, and the percentage went down to 62.7% when being asked about their ability to actually use the programme that had been loaded. Furthermore, approximately half of the sample (57.9%) could manage to successfully connect a keyboard/monitor/printer to a computer.

When asked about their confidence in using computers, 19.8% and 58.7% felt either strongly confident or confident in using hardware, respectively. Similar percentages applied to general skills pertaining to software usage. However, when asked about their confidence in the general use of computers as an individual, as opposed to a teacher, the percentage went marginally up to 94.4%. As a teacher, the percentage was 92.8%. Noticeably, although 92.8% of the primary teachers in the study felt confident or strongly confident in using computers, nonetheless only 62.7% of them could use a computer programme. The above statistics demonstrate the general teachers' incompetence in ICT use and their lack of knowledge and skills, such as technology-supported pedagogical knowledge and skills, technology-related classroom management knowledge and skills and specific technology knowledge and skills. These could substantially decelerate the process of ICT integration in the educational sector, in general, and within specific curricula, in particular (Cohen, 2010; Sebolai and Ogutu, 2012). Therefore, due to the academic evidences and based on the above findings, a strong need emerged to further investigate the actual situation of teachers' competence and skills in using technology.

Since only 22.2% of the survey sample reported using a computer in the classroom and almost all participants (98.4%) admitted that no Internet connection was available in the classroom, such figures led to the hypothesis that due to lack of practice in classroom computer usage, this contributed to a decreased level of confidence in teachers' feeling towards the use of ICT. This finding is supported by the statement from the Office and Technology Assessment of the US which stipulates that teachers need opportunities to practice their ICT skills in order to lend them with confidence in leveraging their pedagogical methodologies through computer use (OTA, 1988).

External factors such as support from experts and schools in relation to computer use were taken into account while designing the survey. As proven in various previous studies, support given by managers and technical experts results in an increase of computer use (New and Cochran, 2007; Schiffer, 2008). This study reveals that only 14.3% of those who asked for computer support from their school received it, 29.4% received assistance occasionally and 3.2% seldom received help. Adding up these 3 figures, it is clear that under half of the teachers received any sort of assistance from their school with regard to technical issues. This in turn raises the two following questions: (1) do managers of primary schools in those 3 areas of Kurdistan pay any attention to the promotion of pedagogical computer use in their schools? and (2) if so, whether such level of attention is sufficient to encourage teachers to take advantage of technology in their pedagogical approach to children's development?

5.3 Teaching Experience in Relation to Computer Use

In this section, the study aimed to capture the basic experience of primary school teachers towards computer use while teaching. Firstly, it is crucial to explore the pedagogical methods and practices that are currently being used in schools in those 3 areas of Kurdistan regardless of the academic domains/subjects the respondents are responsible for.

There were a total of 7 approaches listed in the questionnaire. Of these methods, direct instruction (DI) proved to be the most used approach by 91 participants (72.2%), while computer-based instruction was the lowest, used by only 16 participants (12.7%). A pool of scientific evidence indicates that DI is being heavily used in order to promote on-task student behaviour and, eventually, achieve learning outcomes through teacher's effort (Magliaro et al, 2005; Pham, 2011). Many DI models have been widely used, especially through the integration of DI in technology-based learning environments, in order to enhance the quality of teaching. The study revealed a common use of DI in teaching, which matched with the academic climate in other countries. However, computer-based instruction was evidently scarce. Only male teachers reported the usage of computers in teaching practices and methods (Table 7). Another item of the questionnaire again strengthened this finding when teachers were asked about computer use in relation to their teaching activities in the classroom. Of the 126 teachers who participated in the study, only 27 participants (21.4%) reported to have used a computer for teaching purposes. In other words, only under a quarter of the total survey sample possessed experience in technical computer use in their pedagogical practice. This is despite the fact that the pedagogical integration of computers was embedded in the curriculum of primary education, especially in the post-reform period.

Moreover, 61.9% of the participants did not report any weekly time consumption in relation to

computer use while teaching. In other words, only 48 participants responded to the question probing about the number of weekly hours spent on using a computer while teaching. However, in relation to this item, there were substantial outliers since one participant (0.8%) stated spending 45 hours per week when using computers for teaching; 2 participants (1.6%) stated using 20 hours; and 3 other participants, stated using 10, 4.5, and 4 hours, each, respectively. The remainder of respondents (n=41) reported spending between 40 minutes and 3.2 hours per week (Figure 2). In comparison with other countries, such as Poland, primary school teachers are explicitly assigned to spend at least 2 hours per week on computer problem-solving activities for Grade 4-6 students (Syslo, 2011). However, such information was neither found in the available literature nor in online written repositories in the KRG. This can be construed as the reason providing the explanation as to why the related collected information appeared to have many fluctuations, including outliers and a high proportion of unreported responses.

From a children's perspective, in relation to technological skills, the majority of participants (93.7%) reported that most primary school pupils did not possess a computer at home, demonstrating that technological availability and accessibility in households in the 3 Kurdish towns considered in this survey proves to be virtually non-existent. Hence, this finding could become a real challenge for teachers to adopt computer use in their teaching based on a constructivist approach to maximise learning potential and increase teaching quality, especially since evidence-based research proved that the home learning environment also plays a crucial role in supporting children's education and development (Morgan and Siraj-Blatchford, 2009)

The participants were also asked to evaluate students' reaction and the differences in genders towards computer use in their learning process. Approximately half of the survey sample did not report their opinions or views on these issues. This finding, again, reflects the fact that there exists some form of teacher confusion or inexperience in relation to techno-pedagogical methods.

Although, a large proportion of teachers did not report their views on children's improved learning through computers, the percentage of participants who agreed that computers could be of valuable assistance to both children and teachers was 92.9%. This finding can be useful for decision makers in the KRG educational sector to design a systematic framework which integrates the use of computers in primary education more comprehensively.

6. Discussion and Conclusions

Firstly, based on the findings from the teachers' personal statements, it is suggested that class size/case load need to be improved in order to not only retain primary school teachers, but also to maintain the quality of teaching in classrooms.

In relation to computer use in primary school education, the results demonstrate that participants had very little say about their understanding and experience of the potential benefits of the impact of technology on children's learning and development; this is despite the fact that the computer element was integrated into both the old and new primary education curricula. The study reveals a clear vagueness of understanding on the part of primary school teachers towards the use of computers in the classroom due to their lack of actual ICT experience and basic technological competence. This ambiguity will inevitably hamper the integration of ICT in the KRG education curriculum. Since this study considered only 3 geographical locations in the KRG (Soran, Choman and Mergasur), it is recommended that a larger study covering other geographical areas of Kurdistan be carried out. Such study should elucidate more information on the types of software and purposes of computer use in primary education in order to diagnose the difficulties in and challenges to promoting technology in primary pedagogy in Kurdistan.

Since the reform measures were introduced in the KRG educational sector, no academic research was conducted in order to simply evaluate the effectiveness and efficiency of the new curriculum and current pedagogical methods towards children's learning and development. Such research would enable decision makers and educators to move forward on the right path to not only reduce the illiteracy rate, but also to increase the quality of pupils and provide the right environment to effectively nurture the talent of young children. Primary teachers in other countries, especially in developed countries, have shifted from the traditional approaches to an instructional process encompassing technological development and aiming at empowering learners to advance society (Hermans et al, 2008). Overall, in Kurdistan, generally, and in the 3 areas of this study, particularly, very little evidence points to embracing modern approaches in relation to computer use being applied in the classroom.

7. Limitations

One of the main limitations of this study is that it was confined to a limited geographical location covering 3 areas of the KRG, namely, Soran, Choman and Mergasur. Hence, a comparative study between rural and urban areas would act as an ideal study for future research in order to identify the gaps in computer use in primary school education. Additionally, participants in this study were skewed towards the male gender as they represented the majority of respondents; hence the disparity in gender-related beliefs and skills, as well as the

relative experience in classroom computer usage, were not adequately assessed.

Moreover, there is a need to further investigate computer-based modelling tools and software packages for primary education with respect to their quality and effectiveness in supporting teaching activities. A further investigation of the specific purpose(s) of classrooms computer use is also required. The conditions of ICT infrastructure in primary schools were not included in this study. Therefore, no conclusions in relation to it can be drawn in order to assist Kurdish educators in developing a long-term strategy geared towards the effective and efficient integration of ICT methodologies into primary education.

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Table 1. Summary of Primary Teachers' Demographic Information

SUMMARY TABLE OF TEACHERS' DEMOGRAPHIC INFORMATION						
Total sample size	n = 126					
Gender	Male (%) 109 (86.5)	Female (%) 16 (12.7)				Not stated (%) 1 (0.8)
Age	Min 24	Max 49	Mean 35.1	Median 33		Not stated (%) 1 (0.8)
Teaching Experience	Min 1	Max 24	Mean 9.6	Median 9		Not stated (%) 6 (4.8%)
Teaching Experience at the Current School	Min 0.17	Max 24	Mean 7.9	Median 6		Not stated (%) 6 (4.8%)
Current Position	Head Teacher (%) 22 (17.5)	Assistant Head Teacher (%) 15 (11.9)	General Education Teacher (%) 76 (60.3)	School Social Worker (%) 1 (0.8)	Other (%) 11 (8.7)	Not stated (%) 1 (0.8)
Ethnicity	Kurdish (%) 121 (96)	Turkmen (%) 1 (0.8)	Assysian (%) 2 (1.6)			Not stated (%) 2 (1.6)
Region	Soran (%) 87 (69)	Choman (%) 14 (11.1)	Mergasur (%) 14 (11.1)	Other (%) 10 (7.9)		Not stated (%) 1 (0.8)
Level of Education	Did not complete high school 22 (17.5)	High school diploma or equivalent 78 (61.9)	None of the above (%) 14 (11.1)			Not stated (%) 12 (9.5)
Teaching License/Certificate	Yes (%) 100 (79.4)	No (%) 19 (15.1)	Invalid item 1 (0.8)			Not stated (%) 6 (4.8)
Attend Teaching Training Program	General Education- 5 years (%) 33 (26.2)	Specialised Education-3 years (%) 16 (12.7)	Central Training Teachers Institute (%) 56 (44.4)	Teachers Training Centre (%) 18 (14.3)		Not stated (%) 3 (2.4)
Early Childhood Education - College course	Yes (%) 99 (78.6%)	No (%) 18 (14.3)				Not stated (%) 9 (7.1)
Elementary/Primary Education - College course	Yes (%) 59 (46.8)	No (%) 42 (33.3)				Not stated (%) 25 (19.8)
Childhood Development - College course	Yes (%) 75 (59.5)	No (%) 36 (28.6)				Not stated (%) 15 (11.9)
English Language Learners - College course	Yes (%) 43 (34.1)	No (%) 58 (46)				Not stated (%) 25 (19.8)
Classroom Management - College course	Yes (%) 88 (69.8)	No (%) 26 (20.6)				Not stated (%) 11 (9.5)
Children with Disabilities - College course	Yes (%) 31 (24.6)	No (%) 72 (57.1)				Not stated (%) 23 (18.3)
Person's opinion towards enjoyment while working with children	Strongly Disagree (%) 1 (0.8)	Disagree (%) 0	Neither (%) 4 (3.2)	Agree (%) 37 (29.4)	Strongly Agree (%) 81 (64.3)	Not stated (%) 3 (2.4)
Person's opinion on personal achievement re making a difference in the lives of the children while teaching	Strongly Disagree (%) 0 (0)	Disagree (%) 1 (0.8)	Neither (%) 3 (2.4)	Agree (%) 37 (29.4)	Strongly Agree (%) 79 (62.7)	Not stated (%) 6 (4.8)
If an opportunity comes, a person would pursue different career	Strongly Disagree (%) 4 (3.2)	Disagree (%) 3 (2.4)	Neither (%) 13 (10.3)	Agree (%) 30 (23.8)	Strongly Agree (%) 74 (58.7)	Not stated (%) 2 (1.6)
Personal experience towards satisfaction re class size/case load	Strongly Disagree (%) 33 (26.2)	Disagree (%) 30 (23.8)	Neither (%) 6 (4.8)	Agree (%) 19 (15.1)	Strongly Agree (%) 31 (24.6)	Not stated (%) 7 (5.6)

Table 2. Cross-tabulation of Level of Education vs. Training Experience*

			Training Experience				Total
			General 5 years	Specialist education	Central training	Teacher training	
Level of Education (Leducation)	Did not complete high school	Count	17	5	0	0	22
		% within Leducation	77.3%	22.7%	0.0%	0.0%	100.0%
		% within Training	58.6%	38.5%	0.0%	0.0%	19.6%
	High school diploma or equivalent	Count	7	8	44	17	76
		% within Leducation	9.2%	10.5%	57.9%	22.4%	100.0%
		% within Training	24.1%	61.5%	83.0%	100.0%	67.9%
	Others	Count	5	0	9	0	14
		% within Leducation	35.7%	0.0%	64.3%	0.0%	100.0%
		% within Training	17.2%	0.0%	17.0%	0.0%	12.5%
Total		Count	29	13	53	17	112
		% within Leducation	25.9%	11.6%	47.3%	15.2%	100.0%
		% within Training	100.0%	100.0%	100.0%	100.0%	100.0%

**This contingency table displays the frequency distribution of the participants' training experience and their level of education.*

Table 3. Cross-tabulation of Gender vs. Positions

			Gender		Total
			Male	Female	
Position	Head	Count	22	0	22
		% within Gender	20.4%	0.0%	17.7%
	Assistant Head	Count	14	1	15
		% within Gender	13.0%	6.3%	12.1%
	General Teacher	Count	62	13	75
		% within Gender	57.4%	81.3%	60.5%
	Social Worker	Count	0	1	1
		% within Gender	0.0%	6.3%	0.8%
	Other	Count	10	1	11
		% within Gender	9.3%	6.3%	8.9%
Total		Count	108	16	124
		% within Gender	100.0%	100.0%	100.0%

Table 4. General Teachers' Statement on Working with Children

	Strongly Disagree (%)	Disagree (%)	Neither (%)	Agree (%)	Strongly Agree (%)
I really enjoy my present job	1 (0.8)	0	4 (3.2)	37 (29.4)	81 (64.3)
I am certain I am making a difference in the lives of the children I work with	1 (0.8)	0	3 (2.4)	79 (62.7)	79 (62.7)
If I could start over, I would choose this career again	4 (3.2)	3 (2.4)	13 (10.3)	30 (23.8)	74 (58.7)
	33 (26.2)	30 (23.8)	6 (4.8)	19 (15.1)	31 (24.6)

Table 5. Binary Logistic Regression between Level of Education and Personal Statement

		Score	df	Sig.
If I could start over, I would choose this career again	Strongly disagree	5.229	4	.265[a]
	Disagree	.884	1	.347
	Neural	.884	1	.347
	Agree	.389	1	.533
	Strongly agree	3.273	1	.070
Overall Statistics		5.229	4	.265

Table 6. Summary of Teachers' Computer Usage

	Yes (%)	No (%)
Have ever used computer	6 (4.8)	120 (95.2)
Have used computer at school	66 (52.4)	60 (47.6)
Have used computer at university	39 (31)	87 (69)
Have used computer in employment	42 (33.3)	84 (66.7)
Have used computer at home	105 (83.3)	21 (16.7)
Have used computer at other place	6 (4.8)	120 (95.2)

Table 7. Usage of Computers in Teaching Practices and Methods

			Gender		Total
			Male	Female	
Teaching with computer-based instruction	Yes	Count	15	0	15
		% within Gender	13.8%	0.0%	12.0%
	No	Count	73	7	80
		% within Gender	67.0%	43.8%	64.0%
	Info N/A	Count	21	9	30
		% within Gender	19.3%	56.3%	24.0%
Total		Count	109	16	125
		% within Gender	100.0%	100.0%	100.0%

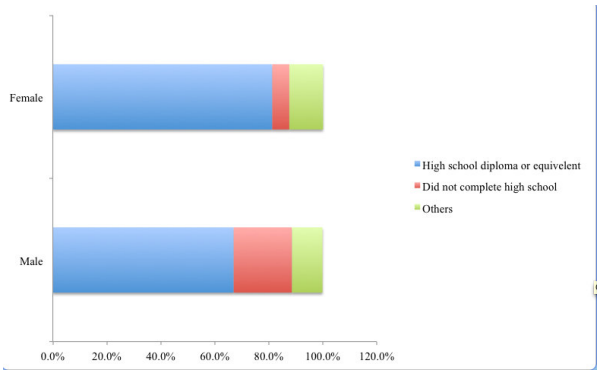

Figure 1. Stacked Graph of Gender and Level of Education

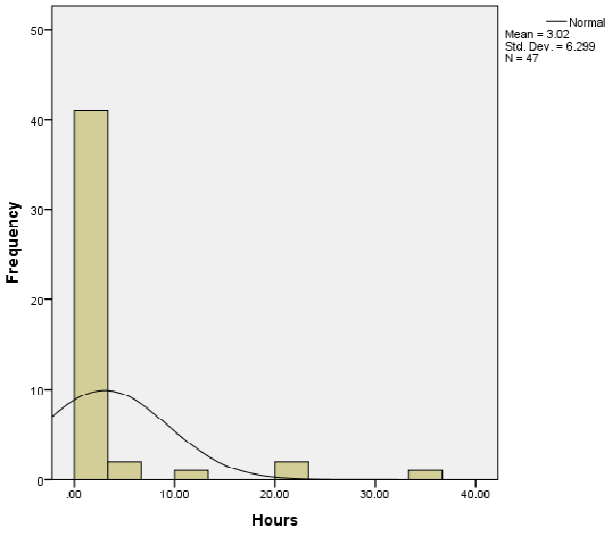

Figure 2. Histogram of the Number of Hours per Week Spent by Primary Education Teachers in Using Computers while Teaching

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