FACTORS MILITATING AGAINST THE INTRODUCTION
OF COMPUTER EDUCATION IN SECONDARY SCHOOLS

Richard Bukaliya
Zimbabwe Open University
Mashonaland East Region
Marondera, ZIMBABWE
bukaliar@yahoo.com

Augustine Kudakwashe Mubika
Zimbabwe Open University
Mashonaland West Region
Chinhoyi, ZIMBABWE

Abstract

The current study was undertaken in order to establish the factors militating against the introduction of computer education in secondary schools in Chegutu district, Zimbabwe. The study adopted the descriptive survey design for it was concerned with the gathering of people`s perceptions on the factors hindering the implementation of computer education. The population for the study was made up of 50 secondary schools. Out of these 50 schools, only 40 made it into the sample which was chosen through stratified random sampling. Data were gathered through the use of questionnaires and interviews. The use of these two instruments enabled data triangulation thus enhancing data validity and reliability. Major findings of the study reveal that there were no budgets for computer procurement in the majority of schools. Funds were inadequate for computer procurement as central government and the SDCs did not avail finances for computer procurement. However, stakeholders were willing to contribute towards the purchase of computers for computer education. Results also show that there were no teachers qualified to teach computers in schools. Those teachers who offered the subject were not willing to teach the subject mostly likely due to shortages in equipment and the unavailability of in-service computer training programmes. On a positive note, heads of schools and students had a positive attitude towards computer education. The study recommended that SDCs should source for computers from organisations such as banks. Schools through the SDCs should charge levies for computer education and government should make it compulsory for schools to offer computer education through policy statements. Teacher training institutions should incorporate computer education into their curriculum. Teachers should be offered administrative and technical support through in-service training programmes. Lastly, communities should be conscientised on the importance of computer education to inculcate in them a paradigm shift.

Key Words: Computer Education, Secondary Schools, Zimbabwe.

INTRODUCTION

In the globalised world, technology has become the in-thing as countries and/or organisations devise means of gaining a competitive edge over the others. In view of this, education systems in individual countries need to be tailor-made to suit this endeavour. Information and Communication Technology (ICT) has played a major role in linking business and individuals far apart in terms of geographical distance. Transactions are being carried out in or outside offices, twenty-four hours a day. In pursuit of the objectives to ensure that the country advances its technology base, Zimbabwe, through the Ministry of Education, has introduced computer education in the school curriculum. However, the introduction of computer education has failed to take off in the majority of schools, primary and secondary, rural and urban. Given this scenario, it is necessary for this study to look into factors militating against the implementation of computer education in secondary schools. In view of the fact that secondary schools are immediate sources of manpower for industry and commerce, it is hoped that ICT literacy could have been taught to students in preparation for employment. This however, has

not been the case for the majority of secondary school graduates who have gone job seeking without any knowledge of computers despite their being a prerequisite for employment in many institutions.

BACKGROUND TO THE STUDY

Computer education is of paramount importance to national development and it is on this premise that the government of Zimbabwe sought to introduce computer studies in the education system from primary through to tertiary institutions. Secretary for Education, Sport, Arts and Culture Circular Number 3 of 1999 stipulates that schools should offer technical and vocational subjects to students. At secondary school, a student should enroll for two technical/vocational subjects among which is Computer Studies. It against this background that the State President, His Excellency Comrade Robert Mugabe went about distributing computer equipment in schools across the country. Complementing these efforts, private companies donated and distributed computers to various schools in the district and the country. However, despite such efforts document analysis carried out in districts in Mashonaland West region shows that the majority of schools are not offering the subject. This has been the situation prevailing even in the schools which received the donations of computer packages, for free. This, therefore, has prompted this current research study to find out why computer studies are not being undertaken in the majority of schools despite the significance of the subject to national development and in the face of support from the political and corporate leadership. The study therefore aimed at unearthing those problems hindering the implementation of computer studies in the school curriculum in Zimbabwean schools located in Chegutu district, Mashonaland West Province.

Statement of the problem

Due to the fact that computer education has failed to take off in the majority of schools, fears are that technological development may be a pipe dream for the country. Given this scenario, it is necessary for this study to look into factors militating against the introduction of computer education in secondary schools. The question to be answered by this current study is: What factors have impeded the implementation of computer education in schools?

Research questions

In an attempt to answer the major research question, the following sub problems stood as research questions.
1. What is the state and availability of computer resources in the schools?
2. Are there any budgetary and funding constraints militating against computer education in schools?
3. Is there trained manpower to teach the subject in the schools?
4. What is the attitude of the school community towards the teaching and learning of computers in schools?
5. Is time adequate for the computer lessons to be incorporated on the timetable?
6. What remedies can be put in place to make sure computer education is fully implemented in schools?

REVIEW OF LITERATURE

There are many hindrances confronting schools in their quest to implement curricula as required by law and computer education faces similar challenges. In this section, we review frequently occurring factors affecting implementation of the computer education and curricula in general.

The state and availability of resources in the schools

A survey study elsewhere by Ginsberg and McCormack (1998) of 1163 teachers to establish what barriers teachers encountered in using computers revealed that issues surrounding computer hardware were the most serious barriers affecting implementation. The study showed that teachers in both highly and less effective schools reported "too few computers" and "too few printers." In the same study Ginsberg and McCormack (1998) found out that teachers in less effective schools also reported concerns about computers being too limited. Another study by Middleton, Flores and Knaupp (1997) also established the hardware factor as a significant barrier to computer education implementation. Middleton, Flores and Knaupp (1997) also contend that the accessibility to computer hardware may also be dictated whether or not the subject was taught.

Computer education requires a lot of capital outlay and funding for accessories and consumables. According to most research studies, teachers felt more money was needed for gadgets such as printers, scanners, digital

projectors and screens. In the cited website, it was also established that quality of computers was not reliable since they lacked modernity to the extent that internet access and intranet were both deterred, all these due to limited finances. Time as a resource may also play its part in the full implementation of computer education in schools. Preston et al (2000) found out that lack of time to explore ICT and prepare ICT resources was a barrier in implementing ICT in schools. Teachers are sometimes unable to make full use of technology because they lack time needed to prepare ICT resources for other lessons, including of course time for computer education lessons. Time is also needed for teachers to become more familiar with hardware and software, without which the teachers are unable to prepare fully for computer lessons.

Budgetary and funding constraints militating against computer education in schools

In researches carried out elsewhere, costs of training have been identified to be high so much that some schools cannot meet the expenses of making provisions for the teaching and learning of computers. In some cases, teachers who have trained in computers have done so at their own expense. Even where the training has been organised by schools and computer centres, payments in many of the cases have been from personal purses (Bukaliya and Mubika, 2011; Jegede, 2009).

Availability of trained manpower to teach the subject in the schools

Seidmen (1996) conducted a study into issues surrounding teacher training and its relationship with the successful implementation of computers. The majority of teachers in schools lacked computer training and a few of them had some sound working knowledge of computers. Along with the statistical analysis, Seidmen (1996) established that the handwritten comments to his research instruments by teacher respondents overwhelmingly expressed a need for teacher training on basic computer skills. Seidmen also states that teacher training should not be limited to teachers who teach computing. Seidmen (1996) refers to the need for an international trend on the part of educators to train all teachers on the use of computers and the pedagogy of teaching computers in the curriculum.

This need for teacher training is explained by the fact that most of the presently hired teachers received little or no training in their formal education. It could also be a reflection of the need to update teachers' knowledge in the world of fast moving technology of communication (Bukaliya and Mubika, 2011). Training all teachers on the educational use of computers is of special importance when considering integrating the computer into the regular curriculum. Teachers need to know how to use computers first before they can integrate them (Seidmen, 1996; Madden, 1989).

Research also goes to show that teachers the majority of teachers, even those trained to teach computers in schools are reluctant to do so. Seidman (1996) found out that subject matter teachers were reluctant to consider the implementation of computers in teaching. The relatively cautious position of the subject matter teachers was perhaps due first to their limited experience with software and hardware, and second to the uneasiness about changing their habits and techniques.

According to a study by Bukaliya and Mubika (2011), the qualifications of the majority of the teachers are far from being satisfactory due to lack of exposure to college curriculum that does not cater for ICT training. The teachers have poor practical skills in ICT usage since the majority of them could not even use the basic software in computers for the delivery of their lessons and indications are that the teachers lack the necessary skills and knowledge of computers in basic software usage. Mintz (1997) echoes Seidmen's view that teachers are unprepared to use computers in their classrooms and they lack support and educational guidance. Mintz points to professional development and training as a solution to successful implementation.

The Office of Technology Assessment Report (cited in Geisert and Futrell, 1995) was written for the U. S. Congress to provide federal policy-makers an information base for making long-term decisions about computers in education. The OTA Report states that technologies have the potential to enrich the teaching and learning process but only under certain related conditions: adequate teacher training in the skills needed to operate the technology a clear vision and understanding among educators of state-of-the-art development and applications support for experimentation and innovation time for learning and practice.

The most commonly identified factor, in the literature affecting ICT use by teachers is their level of knowledge and skill in using computers. This factor was identified by Zammit (1991), Ely (1990), Pelgrum and Plomp (1991) and Brummelhuis (1991). Van Lengen (cited in Morton, 1996) found that for the most part all teachers were willing to implement computer education but the problem was that most of them were either infrequent users or they did not know how to use them. Compounding this problem is the need for infrequent teacher users to have structured opportunities to develop and practice computer skills on their own Bukaliya and Mubika, 2011. In addition is the startling revelation that those that do not know how to use computers have successfully avoided the many basic staff development activities that have run over the years.

Another setback in computer implementation is schools has been identified in several studies which have shown that the learning potential of computers is deprived as many teachers are still not fully computer literate and do not the computers in instructional processes. Newhouse (1995) concurs when he identifies teachers' lack of computer literacy as being an obstacle to their using computers in classrooms. Studies by Ya`acob et al (2005) and So and Swatman (2006) on teachers` readiness for ICT generally, suggest that there is still a long way to go before schools can embrace on modern technology.

Attitudes of school community towards the teaching and learning of computers in schools

Individual teacher initiative accounts for much of the implementation of computer technology in schools. Lack of support by administrators is identified as a significant barrier toward implementation of computers in classrooms (Morton 1997; Brand 1998). Arzt, (1991) and Lockard et al (cited in Mann, 1997) argue that successful implementation of computers can only occur if administrators offer teachers support and leadership. Persky (cited in Brand, 1998) states that in addition to administrators developing a philosophy to guide the implementation of computer technology, they can support the technological professional development of teachers by establishing flexible schedules so teachers can practice what they have learned (or to continue their learning); encouraging and facilitating team teaching and peer coaching allowing teachers to visit each other's classrooms to observe computer technology integration; and scheduling regular meetings among teachers using technology to plan and evaluate instruction.

Teacher attitudes toward computer technology may be a significant factor in the implementation of computers in education. Griswold (1984), Stevens (1984) and Stephenson and deLandsheere (1985) cited in Madden (1989) express a concern that computer literate individuals will reap greater benefits than their counterparts who lack that knowledge. Their concern is that the development of computer literate individuals is dependent on computer literate teachers who have in general demonstrated a resistance to learning about computers.

A research by Madden (1989) reveals that teachers are reluctant to embrace computer technology due to a number of factors that include anxiety from dealing with equipment, a sense of loss of control over the teaching situation, hardware and software availability, lack of technical support, time and effort for training, remaining current in the field, and appropriately implementing the technology in the classroom. Results indicated that while teachers did not feel that their own jobs were threatened by computers, they still saw them as dehumanizing, isolating, prone to error and possibly as a violation of the right to privacy. Similar results were reported by Tetenbaum and Mulkeen (1984). A study by Newhouse (1995) revealed that a majority of the teachers did not believe that computers had a useful educational objective and that they were nonessential and supplemental to their teaching and classrooms, hence they had a negative attitude towards computers. These same teachers translated the same view to the introduction of computer education into a fully-fledged subject with its own budget, resources and fully time timetabled.

A research on an attempt to implement Information Technology in schools in Ontario by Drury (1995) found that only 20 percent of the teaching cohort is at least moderately committed computer users and even this 20 per cent may not be in favour of a dilution of the traditional curriculum model whereby computer education was integrated into the school system. However, the same research by Drury (1995) indicated that the main factor leading to a high level of computer education integration was a school-wide consensus on the importance of ICT and a very high level of teacher collaboration.

Observations by Kazlauskas and Koop (1995), on the barriers to the implementation of computers reveal that the most critical factor is that all staff needed to recognise and understand that integrating computers into classroom practice is a complex innovation which requires change to the whole school's practices and culture, to the curriculum, and in teacher's attitudes and classroom practice. They argue that such change is achieved incrementally over a long period of time.

Availability of time

According to Roszell (1995), the time factor surrounding the implementation process is viewed by teachers as being a major barrier in their using computers. In some instances teachers are reluctant to embrace technology because of its potential to shorten learning time for students. Teachers face a number of potential interruptions during the typical hour-long class and that, consequently, the actual time spent teaching and learning is shortened significantly. Hence, if the implementation of computer technology involves a potential interruption to teaching and learning time, teachers may avoid using the technology (Stallard, 1998; Roszell, 1995; Krysa, 1998; Madden, 1989).

Remedies to make sure computer education is fully implemented in schools

Due to the existing constraints in computer education implementation, remedial action needs to be taken. Lau and Sim (2008) propose the need to put in place measures to ensure that adequate access to technical support is provided. They further suggest that a teacher with computer literacy and competence be appointed as ICT coordinator in each school to provide and pedagogical support to the teachers.

Lau and Sim (2008) established that teachers needed training which should be offered on a continuous, rather than a one off basis so that their computer knowledge is upgraded over time. According to Mintz (1997) a crucial step in successful computer education implementation is the professional development for teacher that will provide them with materials, strategies and new understanding to meet the learning goals. It is indeed hoped that the use of computers in education can be fully realised and optimised in the teaching and learning processes. Mechanisms need to be put in place to ensure that teachers utilise computers for further development and communication and training programmes need to be designed to increase teachers` familiarity a wider range of ICT applications. Bukaliya and Mubika (2011) advocated for a clear and compulsory national ICT education policy should be drafted to drive ICT development among teachers so that they are able to be conversant with the necessary skills and knowledge of computers in basic software usage. The responsibility for ICT programme development for teachers should extend to all stakeholders and should not be limited to the Ministry of Education, Arts, Sport and Culture (Bukaliya and Mubika, 2011).

Technical Support

Technical support is another important enabling factor identified by Krysa (1998). He states that computer hardware and software problems occur frequently and that solving these problems is time consuming. Solving many of the problems is beyond his current level of the teacher`s computer knowledge (Krysa, 1998). It is therefore incumbent upon the head of school and other responsible authorities to appoint a technical person to look at issues of hardware and software while the teacher focuses on the instructional process (Madden, 1989; Lau and Sim, 2008).

Teacher In-Service

In-service and training is a very important remedy in the integration of computer education in the school curriculum. According to Krysa (1998) in-service sessions for teachers have paved way for the incorporation of computer education and technology in the school set up. Furthermore, according to STEPS (2007), the education policy should be tailor-made to increase, improve and diversify teacher education and support and attempts should also be made to build computer education into general educational policies. Stakeholders should ensure access to quality equipment and learning resources in schools should develop and open knowledge-sharing school culture. Teachers should also be given the opportunity and be encouraged to reflect on, and make decisions about their own computer development needs on on-going basis.

Administrative Support

Another remedy identified by Krysa (1998) as enabling successful implementation of computers in the school system is administrative support. Krysa (1998) believes that the implementation of computers in the school is one of the top priorities that is supported by the principal of the school. This is reflected in the fact that some principals have promoted computer use in the schools for use by both the students and teachers. Some of the principals have supported the new network lab by ensuring that money is made available for hardware and software (Madden, 1989; Krysa, 1998).

Middleton, Flores and Knaupp (1997) argue that computer labs are an effective strategy for reducing the student-to-computer ratio in schools. The school administration is therefore encouraged to set up these labs so that students are given the opportunities to visit the labs at different times. However, the competition between teachers for blocks of time in the computer lab may result in some teachers giving up on scheduling time in the computer lab and thereby ceasing to implement computers in instruction (Middleton, Flores and Knaupp, 1997; Madden, 1989).

Administrative support could also take the form policy enactments where ICT competence is made mandatory for school teachers. This can be an effective measure to improving teachers` ICT knowledge and skills (Bukaliya and Mubika, 2011).

RESEARCH METHODOLOGY

The present study adopted the mixed methods approach. Both quantitative and qualitative paradigms were employed in the process of data gathering, analysis and presentation. The study adopted the descriptive survey design for it is concerned with the gathering of people`s perceptions. Leedy (1990) argues that where perceptions are sought, surveys are excellent vehicles for gathering data. Data for the current study were gathered through the use of questionnaires, interviews and document analysis. The use of these three instruments enabled data triangulation thus enhancing data validity and reliability.

Population and Sample

The population for the study consisted of 50 secondary schools in Chegutu District, Mashonaland West Province, Zimbabwe. Out of these schools, only 40 made it into the sample that was chosen through stratified random sampling which accorded types of schools, that is, urban day, rural day, boarding and Former Group A secondary schools, proportional representation into the sample. It was felt 40 schools were representative enough of the population under study. From these schools, the head of the school and two teachers per school were conveniently selected to answer questionnaires as well as respond to personal interviews. This gave a total of 160 respondents among which were 40 heads, 80 teachers and 20 members of the School Development Committee.

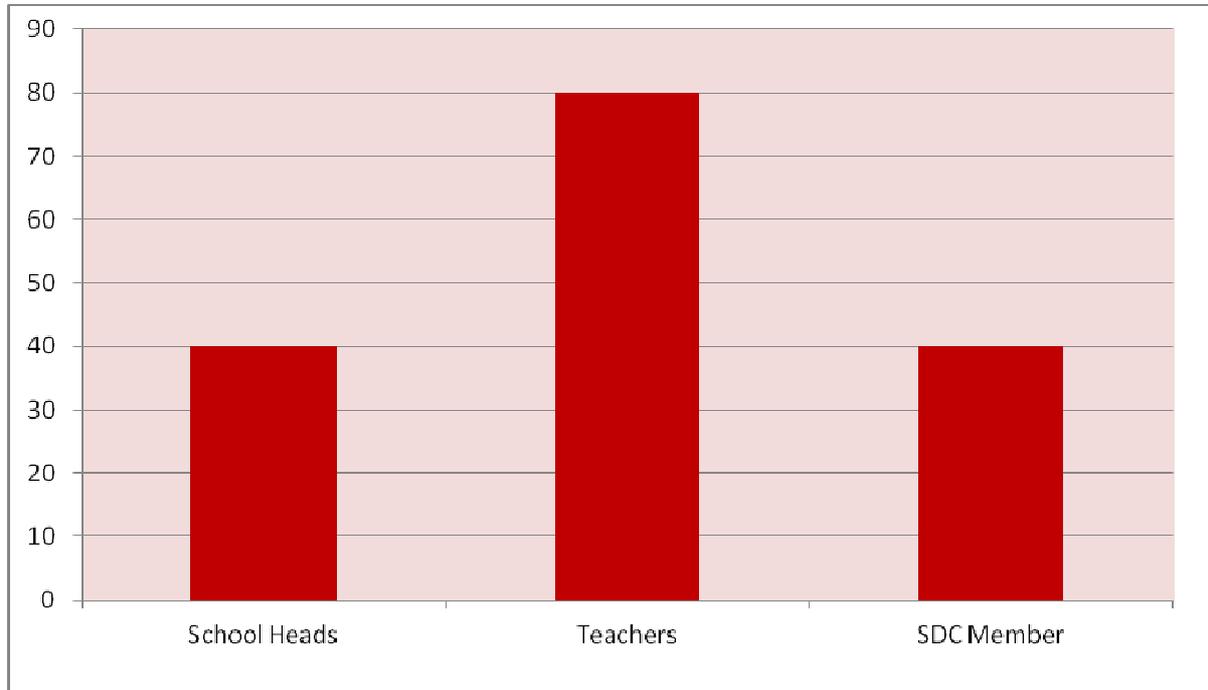**DATA PRESENTATION AND DISCUSSION**

Figure 1 Distribution of respondents by status

Figure 1 shows that there were 40 school heads, 80 teachers and 40 members of the School Development Committee. These acted as respondents to the questionnaires and interviews and supplied the much needed data meant to give answers to the research question.
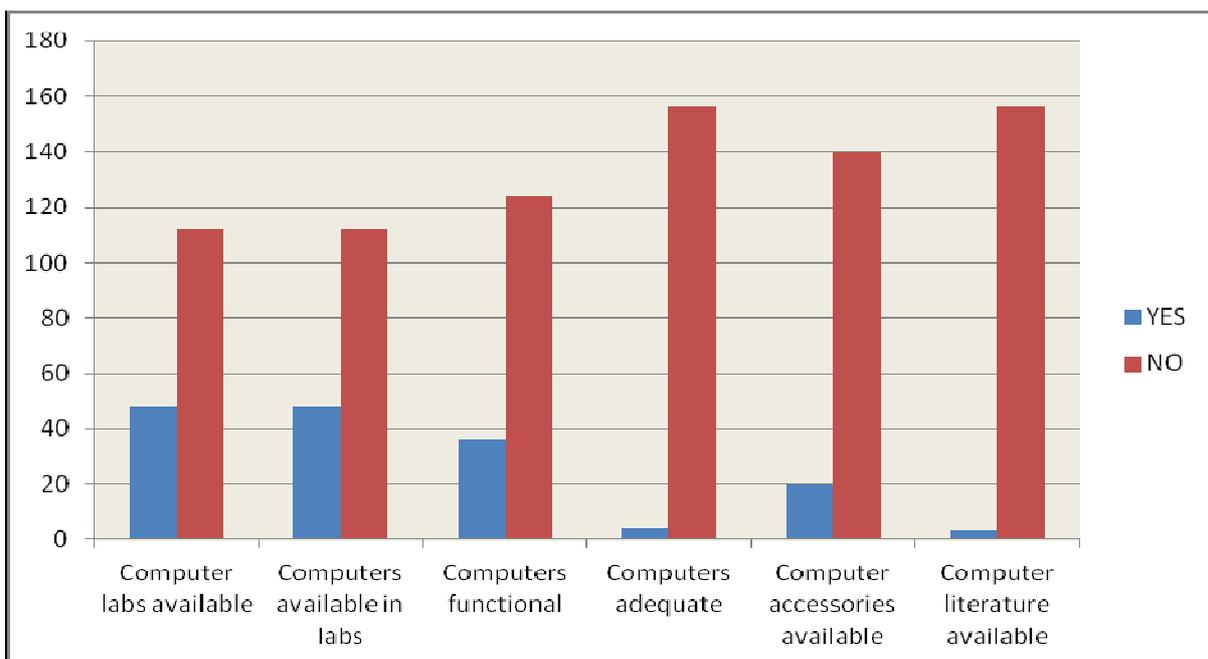

Figure 2: The availability and state of computer resources in the schools

Figure 2 shows that 48(30%) indicated that they had computer labs at their schools while the majority of 112 (70%) stated that they did not have such facilities. This translates to only 12 schools that have computer labs in the district out of the 50 secondary schools. This is despite the findings by Middleton, Flores and Knaupp (1997) who argue that computer labs are an effective strategy for the implementation of computer education in schools. The same number indicated there were computers in the labs and 112 (70%) indicated they did not have the computers. These findings replicate those by Ginsberg and McCormack (1998) who established that issues surrounding computer hardware were the most serious barriers affecting implementation. In concurrence, Middleton, Flores and Knaupp (1997) also established the hardware factor as a significant barrier to computer education implementation. Where the computers were available, only 36 (23%) stated that the computers were functional. Where the computers were functional and available, only 4 (3%) stated that these were adequate for the students. The majority, 156 (97%) said these computers were inadequate for the student numbers. Twenty (13%) stated that computer accessories were available in the labs with a majority of 140 (87%) indicating otherwise. Computer literature was available in form of books only for a few respondents, 3 (2%) while 157 (98%) indicated the non-existence of these books.

In an attempt to find out how the existing computers in the few schools had been sourced, one interview was quoted as saying that the President had donated them to their school. However, another respondent remarked that the models that had been donated were complicated to service hence this answers the problem why in most of the labs visited, the majority of the computers were not functioning. In another school, computers were donated by a local bank after they became obsolete. However, these remained useful in computer appreciation, in the words of one interviewee.
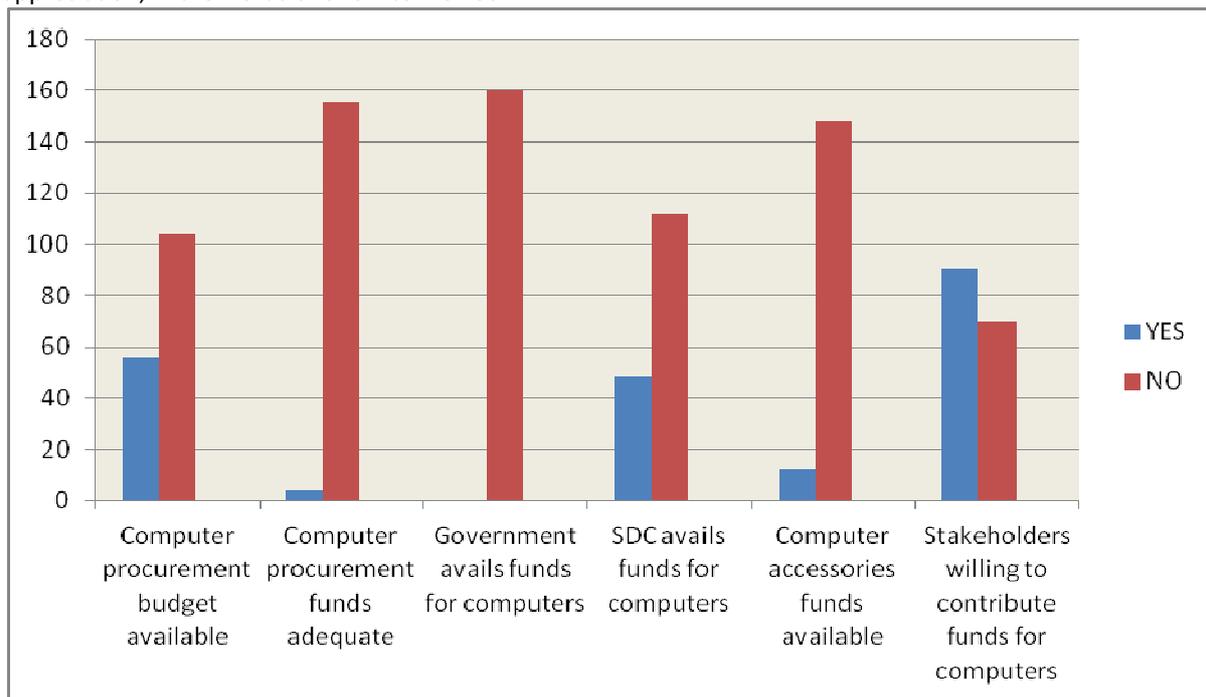

Figure 3: Budgetary constraints militating against computer education in schools

Figure 3 shows that 56 (35%) of the respondents indicated that there was a budget for computer procurement in their schools while the majority of respondents, 104 (65%) stated that there were no such budgets in their schools. These findings are inn contrast with those by Jegede (2009) who established that budgets for computers were high in some institutions and computer budgets were a major consideration. However, these high costs may help in ascertain why some schools have abandoned budgeting for computer education. They simply cannot afford the high costs. According to the majority of the respondents, 156 (97%) funds in the schools were inadequate for computer procurement as all the respondents, 160 (100%) indicated that central government did not avail funds for computer procurement. Another majority overwhelming majority of 112

(70%) stated that the SDC did not avail funds for the procurement of computers. Only 48 (30%) said the SDC made funds available for the procurement of computers. In most of the cases, 148 (92%) said funds for computer accessories were not available. However, on a positive note, according to 90(56%), parents and other stakeholders were willing to contribute towards the purchase of computers for computer education. Notably, their willingness could only be a wish since most school communities in Zimbabwe are predominantly poor and living below the poverty datum line. Computer purchases could therefore be a luxury bearing in mind that such communities have struggled to raise funds for the basic educational requirements.

Table 1: Availability of trained manpower to teach computers in schools

Variable	YES		NO	
	Number	**%**	**Number**	**%**
Are there any teachers to teach computers in the school?	64	40	96	60
Are the teachers qualified to teach computer education?	4	3	156	97
Are the teachers willing to teach the subject in the school?	56	35	104	65
Are there any in-service computer training programmes for teachers?	64	40	96	60
Are the computer teachers adequate considering the student enrolment?	0	0	160	100

Table 3 shows that the majority 96(60%) acknowledged that there were no teachers to teach computers in the school. Only 64(40%) stated that teachers were available. However, where the teachers were available, the majority of the respondents, 156(97%), indicated that the teachers were not qualified to teach computer education with a minority of only 4(3%) stating otherwise. Newhouse (1995) concurs when he identifies teachers' lack of computer literacy as being an obstacle to their using computer education implementation in schools. Ya`acob et al (2005) and So and Swatman (2006) also concur by remarking that teachers` readiness for ICT is a significant factor the attempt to embrace on modern technology in the schools. In concurrence, Bukaliya and Mubika (2011) noted that the qualifications of the majority of the teachers are far from being satisfactory due to lack of exposure to college curriculum that does not cater for ICT training. The teachers have poor practical skills in ICT usage since the majority of them could not even use the basic software in computers for the delivery of their lessons and indications are that the teachers lack the necessary skills and knowledge of computers in basic software usage. This obviously militated against the implementation of computer education in schools.

A majority of 104(65%) stated that teachers were not willing to teach the computer as a subject in the school. The present findings concur with those by Seidman (1996) who found out that subject matter teachers were reluctant to consider the implementation of computers in teaching due to their limited experience with software and hardware, and the uneasiness about changing their habits and techniques. Asked if there were any in-service computer training programmes for teachers in the schools, 64(40%) said yes against a majority of 96 (60%) who indicated otherwise. Interview results show that those who said yes had been in-serviced at one point or another despite the fact that the in-service training was a once off event despite the dynamism in technology. The Better Schools Programme of Zimbabwe (BSPZ) held in-service training courses for primary school computer teachers whereas secondary school teachers were in-serviced by the Higher Education Examination Council (HEXCO). Interviews also revealed that there were no staff development computer programmes for teachers and at most, the majority of teachers with computer literacy had done so through their own initiatives with the intention of securing better paying jobs in the private sector. Lau and Sim (2008) and Mintz (1997) teachers needed training on a continuous basis and successful computer education implementation was based on the professional development for teacher. Table 3 also goes to show a bleak picture for computer education in the district where all the respondents remarked that computer teachers were inadequate considering the student enrolment, a factor most likely to impede the implementation of the subject ion the country`s education system.

Table 2: Attitude of school community towards computer education in schools (N=160)

Variable	YES		NO	
	Number	%	Number	%
Heads have a positive attitude towards computer education.	90	56	70	44
Teachers have a positive attitude towards computer education.	54	34	106	66
Students have a positive attitude towards computer education.	130	81	30	19
Parents have a positive attitude towards computer education.	40	25	120	75
All the stakeholders are willing to have computer education succeed in the school system.	56	35	104	65

Table 4 shows that the majority of respondents, 90(56%) indicated that heads of schools had a positive attitude towards computer education while 70(44%) thought otherwise. This is in concurrence with the findings by Madden (1989) and Krysa (1998) who established that some of the principals have supported labs by ensuring that money was made available for hardware and software. According to 106(66%) respondents, teachers had a negative attitude towards computer education unlike the views expressed by a minority of 54(34%) who felt teachers had a positive attitude towards computer education. Newhouse (1995) also established the same in a research that revealed that a majority of the teachers did not believe that computers had a useful educational objective and that they were nonessential and supplemental to their teaching and classrooms, hence they had a negative attitude towards computers. Interview results show that the majority of the teachers indicated phobia for computers as a reason for resenting the subject. One elderly teacher respondent indicated that due to age they could not be expected to be involved in the intricacies of computer technology. Students had a positive attitude towards computer education according to an overwhelming majority of 130(81%). Probed further to substantiate this claim, in the interview, both parents and teachers admitted that students showed the desire to embrace computer education through their use of cellular phones and regular visits to internet cafes, particularly so for those in urban, peri-urban and growth points. Out of the 160(100%) respondents, only 40(25%) thought parents had positive attitude towards computer education. All the stakeholders were willing to have computer education succeed in the school system as suggested by the results in Table 2. However, contrary to this, a majority of 104(65%) indicated that all stakeholders had not given any meaningful support to the implementation of the subject. Findings by Bukaliya and Mubika (2011) however, show that the responsibility for ICT programme development for teachers should extend to all stakeholders and should not be limited to the Ministry of Education, Arts, Sport and Culture.

Table 3: Adequacy of time for the computer lessons on the timetable (N=160)

Variable	YES		NO	
	Number	%	Number	%
Is computer education timetabled at the school?	48	30	112	70
Is computer education accorded the same number of hours per week as other subjects?	36	23	124	77
Is computer timetabling given priority in the school?	34	21	126	79

Table 3 shows that computer education was timetabled at most of the schools that offered the subject as an examinable course at Form 4 (Ordinary Level). Asked if computer education was accorded the same number of hours per week as other subjects, a minority of 36(23%) said yes whereas 124(77%) thought otherwise. Thirty-four (21%) agreed that computer timetabling was given priority in the school as other subjects but the majority of 126(79%) disagreed. Roszell (1995) concurs by suggesting that the time factor surrounding the implementation process is viewed by teachers as being a major barrier in the implementation of computer education in schools.

Table 4: Remedies to make sure computer education is fully implemented in schools

REMEDY	NUMBER	%
Source for funds and computers from well wishers	120	75
SDC to charge levies for computer education	67	42
Government to make it compulsory for schools to offer computer education through policy statements that should be enforced.	100	63
Government to provide funding to schools for computer procurement	132	83
Invigorating the training of manpower to teach computers in schools.	148	93
Teacher education institutions to incorporate computer education into their curriculum.	76	48
Teacher support through in-service for computer education teachers should be regularised.	89	56
Communities to be conscientised on the importance of computer education.	51	32
Efforts to be made to motivate the school community into accepting computers as a valuable piece of technology	56	35
Administrative support should be given by heads that should make sure gadgets for the purpose are available.	80	50

A majority of 120(75%) thought that sourcing for funds and computers from well-wishers would contribute significantly to the implementation of computer education in schools. According to 67(42%), the SDC should charge levies for computer education while 132(83%) suggested that government should make it compulsory for schools to offer computer education through policy statements that should be enforced. STEPS (2007) concurs with the findings of the present study by remarking that the education policy should be tailor-made to increase, improve and diversify teacher education and support and attempts should also be made to build computer education into general educational policies. According to 132(83%), government should provide funding to schools for computer education. Invigorating the training of manpower to teach computers in schools was suggested by an overwhelming majority of 148(93%). According to 76(48%), teacher education institutions must incorporate computer education into their curriculum. Currently, computer education is not among the curricula for teacher training colleges though in some isolated cases computer short courses are offered to interested students by the colleges. Eighty-nine (56%) respondents suggested that teacher support through in-service for computer education teachers should be regularised whereas 51(32%) thought that communities should be conscientised on the importance of computer education, with the hope of challenging them towards a paradigm shift. Fifty-six (35%) suggested that efforts must be made to motivate the school community into accepting computers as a valuable piece of technology (Drury, 1995) whilst 80(50%) were of the idea that administrative support should be given by heads who should make sure gadgets for computer education are available. This is in agreement with the findings by Krysa (1998) who identifies administrative support as enabling successful implementation of computer education in the school system. Lack of support by administrators is identified as a significant barrier toward implementation of computers in classrooms (Morton 1997; Brand 1998).

CONCLUSIONS

The results of the current study paint a very gloomy picture of computer education in schools in Chegutu district of Mashonaland West, Zimbabwe. Results show that of the 50 secondary schools in the district, only 12 are offering computer education in their schools and of these only 4 are offering computer studies as an examinable subject at Ordinary level. From the results obtained in the study the following challenges have impeded the implementation of computer education in schools:

1. There are no budgets for computer education in most schools and were funds exists these are inadequate for computer procurement as all the respondents,
2. Central government as well as the SDCs do not avail funds for computer procurement in most cases.

3. The majority of teachers and parents have a negative attitude towards computer education there are no teachers qualified and trained to teach computers in the schools.
4. The few teachers available are not willing to teach the computer as a subject in the schools and computer teachers were inadequate considering the student enrolment
5. There is a negligible number of in-service computer training programmes for teachers in the schools.
6. Phobia of computers is another significant factor for resenting the subject.
7. Stakeholders are unwilling to have computer education succeed since they have not given any meaningful support to the implementation of the subject.

RECOMMENDATIONS

From the above conclusions the following recommendations are made:
1. SDCs should source for funds and computers from well-wishers.
2. Schools through the SDCs should charge levies for computer education.
3. Government should make it compulsory for schools to offer computer education through policy statements that should be enforced.
4. Government should provide funding to schools for computer procurement and invigorate the training of manpower to teach computers in schools.
5. Teacher training institutions should incorporate computer education into their curriculum.
6. Teachers should be offered administrative and technical support through in-service training programmes.
7. Communities should be conscientised on the importance of computer education, with the hope of challenging them towards a paradigm shift.
8. Authorities should motivate both the school and the local communities into accepting computers as a valuable piece of technology.
9. Administrative and technical support should be given by heads that should make sure gadgets for computer education are available.

REFERENCES

Bukaliya, R. and Mubika, A.K. (2011). Teacher Competence in ICT: Implications for Computer Education in Zimbabwean Secondary Schools, International Journal of Social Sciences and Education ISSN: 2223-4934 Volume: 1 Issue: 4 October 2011

Drury, C. J. (1995). Implementing change in education: the integration of information technology into Irish post-primary schools. (M. Sc. Thesis, University of Leicester, 1990)
Retrieved from http://indigo.ie/~cjdrury/thesis/chapter4.html on 23/02/12

Jegede, P.O. (2009). Issues in Informing Science and Information Technology, Volume 6, 2009, Assessment of Nigerian Teacher Educators' ICT Training, Obafemi Awolowo University.

Krysa, R. (1998). Factors Affecting the Adoption and Use of Computer Technology in Schools University of Saskatchewan Retrieved from:
http://www.usask.ca/education/coursework/802papers/krysa/krysa.PDF on 23/03/12

Leedy, P.D. (1999). Practical Research Planning Design, (5th ed) New York: McMillan Publishing.
Middleton, A. J., Flores, A., & Knaupp J. (1997). Shopping for technology. Educational Leadership, 53(3).

Mintz, D. (1997). Technology's promise: Responding to the la times. From Now On The Educational Technology Journal, 7(1) Retrieved from http://fromnowon.org/sept97/latimes.html on 23/01/12.

Roszell, D. D. (1995). The use of information technology in schools. Master's thesis, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

So, T. and Swatman, P. M.C. (2006). e-Learning Readiness of Hong Kong Teachers.
University of South Australia.

Solomon, G. (1995). Planning for technology. Learning and Leading With Technology, 23(1). 66-67.

Stallard, C. (1998). Factors that influence the integration of technology into the secondary curriculum.
http://ed.info.apple.com/education/techlearn/adapt/adaptfactors.html

STEPS (2007).Study of the impact of technology in primary schools Retrieved from:
http://eacea.ec.europa.eu/llp/studies/documents/study_impact_technology_primary_school/brochure291009
_en.pdf on 05/02/12.

Ya'acob, A., Nor, N., and Azman, H. (2005). Implementation of the Malaysian Smart School: An Investigation of
Teaching-Learning Practices and Teacher-Student Readiness. Internet Journal of e-Language Learning &
Teaching, 2(2).

http://www.det.nsw.edu.au/proflearn/der/docs/wherenow/teachict.pdf