

Integrating Information and Communication Technology in English Language teaching: A case study of selected Junior Secondary Schools in Botswana

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ABSTRACT

The paper discusses how Information and Communication Technology (ICT) could be integrated in the teaching of English Language in Botswana Junior Secondary Schools. It does so by exploring opportunities and challenges faced by teachers of English Language and the students they teach. Fifty five (55) teachers in eleven (11) Junior Secondary Schools in the Kweneng region, west of the capital city, Gaborone, Botswana, took part in the study by means of responding to a questionnaire. The findings from the study show that the majority of teachers are aware that ICT could be used to enhance English Language teaching and learning and were willing to go for ICT training to improve their teaching methods. Most teachers think ICT is the computer which shows lack of knowledge on various ICT gadgets and tools available which could add variety to classroom contexts. The paper further highlights what needs to be done to help overcome challenges and promote integration of ICT in English Language classrooms. Teachers should embrace the use of technology as times have changed and learners need to be stimulated to be eager and interested in learning using ICT.

Keywords: *ICT integration, tele-conference, Thutonet, media centre, English Language teaching.*

INTRODUCTION

As an international language, English unifies the globe and a great deal of this unification comes through the use of ICT. ICT has therefore become an integral part of our livelihood so much that it is now even embedded into the schools curricular. Contemporary education has become so advanced that ICT is now part and parcel of the teaching and learning process hence this study to specifically explore how the English Language teacher has fared.

According to Divaharan and Koh (2010), ICT is important in the sense that its progress allows the development of classroom based tele-conference that does not require the teacher and learners to be in the classroom at all times. Dang (2011) indicates that this technology also provides information more quickly when required and it is easily accessible for educational purposes, therefore, learners who grow up in an ICT rich environment are exposed to opportunities to experience and develop skills through its use in and outside the classroom.

Gorder (2008) states that whatever stage of learning a child may be at, ICT can help motivate, re-engage them and capture their attention. Challenging tasks even become more manageable and learners' participation reaches a much higher level when technology is made a part of the learning process. Knezek and Christensen (2002) further complement Gorder (2008) by agreeing that an integration of ICT into an English Language classroom can assist both the teachers and learners in achieving the intended objectives as tasks will become simpler and information will be readily available and accessible. In view of the foregone, the researchers therefore wanted to find out how teachers of English Language have made use of ICT in their teaching. The objectives of the study were to:

- a) evaluate ICT status in Junior Secondary Schools (JSS) in Botswana.

- b) find out what is in place to promote ICT use in English Language teaching.
- c) find out the value of ICT in English Language teaching.
- d) identify problems teachers of English face when using ICT in teaching English Language

The following are the Botswana JSSs research Questions:

- a) Are the Junior Secondary Schools in Botswana equipped with ICT equipment and tools that are appropriate and suitable to teach English Language?
- b) How can ICT be used in English Language teaching?
- c) Is it beneficial to use ICT in English Language teaching?
- d) What are the achievements and problems faced by teachers when they teach English Language using ICT?

LITERATURE REVIEW

Many researchers support ICT integration arguing that it enhances English Language learning on the part of the students. One such researcher and educationist is Professor Sugata Mitra, who discovered the Hole-in-the-Wall concept in 1992. Mitra proposed that:

“The acquisition of basic computing skills by any set of children can be achieved through incidental learning provided that learners are given access to a suitable computing facility, with entertainment”.

Professor Mitra was prompted to this hypothesis in 1982 after he had thought of learners learning by using only computers back in 1982, which he finally tested in 1999. He and his team made what was famously called a “hole in the wall” in New Delhi. Inamdar and Kulkarni (2007) had this to say:

In 1999, the ‘hole-in-the wall’ experiment in New Delhi, India, moved the computer out of schools and homes into playgrounds. A computer was connected to the Internet and embedded into a brick wall around an informal playground next to a residential slum. . . . The press called the experiment “hole-in-the-wall”. Researchers called it “Minimally Invasive Education” (MIE). Research showed that groups of children could learn how to use public computers on their own, without adult intervention (2004, p. 170).

From the above, children, more especially those without any experience on using a computer learnt to use it on their own. What can therefore be deduced from this concept is that having appropriate and suitable ICT equipment in our schools can help students perform most of their tasks with minimal supervision but still produce the desired results.

Several studies and papers have been carried out on ICT integration in teaching in general. A paper by Motshegwe (2005 p.10) states that “If the teacher has the skills to organise and stimulate the ICT-based activity, then both whole-class and individual work can be equally effective”. In view of this, it is clear that teachers, including those teaching English Language, should make use of ICT in their teaching as it enhances students learning.

Other scholars like Yunus *et al* (2009) discuss students’ use of ICT to learn English Language in addition to looking at challenges that they (students) face. Although the findings show that most of the students did not use ICT much in their learning of English, “some usage on surfing internet to get information”, and “searching for words’ meaning and pronunciation” (Yunus *et al* 2009 p.1456) was reported. So, when learners get into the internet, they obviously manipulate the ICT gadget, in the process learning the English Language. They learn new words, what they mean and the way they are pronounced. This goes to indicate how important the teacher should use ICT in the teaching and learning process of the English Language.

In addition to the above, Yunus *et al* (2009) say the findings of the study show students were aware of the crucial role ICT can play in the improvement of their English Language. They (authors) actually say ICT can “enhance their language learning in vocabulary, grammar, writing, speaking and allows them to take greater control in their learning” (Yunus *et al* 2009 p.1458). This shows how students value ICT integration in the learning of English Language. As a result, the teacher of English Language must put in every effort to integrate ICT in the teaching and learning process despite challenges they encounter

The Status of ICT in Junior Secondary Schools in Botswana

The Botswana government supports and promotes the use of ICT in education. This is noted by Isaacs (2007) that both junior and senior secondary schools in Botswana have PC laboratories which show the extent to which the country is committed to ICT integration and use in its educational system. Isaacs (2007) further alludes to the fact that Botswana’s PC penetration in educational institutions is the highest in the African continent and this is most likely the reason why the country has channelled a lot of funds towards the purchase and instalment of ICT in schools for use in teaching and learning.

Botswana has come up with a number of documents to guide the integration and usage of ICT for general teaching and learning purposes. These are the 1994 Revised National Policy on Education, the 1996 Vision 2016 and Botswana’s ICT policy known as Maitlamo. Vision 2016, (1996, p.7) clearly states that by 2016 “all schools will have access to a computer, and to computer based communications such as the internet”. The issue then could be, to what extent has this been achieved and what challenges have been there? Obviously, there are impediments as Dyman and Oestmann (2006) point to a significant inequality between urban and rural areas with regard to accessing ICT services. The two authors talk of no electricity in rural areas and high internet charges which the rural area dwellers find very difficult to meet as compared to those in the urban centres; challenges among others include the relatively high cost of PCs, lack of electricity in some rural locations, and high charges for internet usage. Despite these challenges and impediments, ICT in the modern world is very important in the teaching and learning process and life in general.

The Botswana Revised National Policy on Education (RNPE) of 1994 also highlights that it is necessary for all learners to be taught computer skills at all levels of schooling as teaching them such skills would enable them to learn much better using modern technology. Isaacs (2007) states that the policy called for the introduction of new subjects called Computer Education and Computer Awareness at junior secondary school respectively. At junior secondary schools, the subject would be offered as an awareness course while at senior secondary schools it is an optional subject. Now the question is, to what extent does the English Language teacher makes use of the computer skills supposedly acquired by the learners to teach them the language?

Isaacs (2007) indicates that the Botswana government also introduced a national ICT policy called *Maitlamo*. This policy is a document aimed at guiding and transforming ICT use in the country. According to the document, its key goals are:

Creation of an enabling environment for the growth of an ICT industry in the country; Provision of universal service and access to information and communication facilities in the country; Making Botswana a Regional ICT Hub so as to empower Botswana and to make the country’s service sector globally competitive (Maitlamo 2007, p.4).

On this note, therefore, it is proper to conclude that this can be partly realised through the use of ICT in the school system. Dyman and Oestmann (2006), found out that Maitlamo also has a component called *ThutoNet* that deals with the promotion of e-learning which strives to ensure that schools have computers and are connected to the internet, as well as outsourcing funds for continued ICT usage in the schools. This is obviously aimed at intensifying ICT usage in the

teaching and learning process. Isaacs (2007) also notes that all schools were supposed to be equipped with computers and have internet connectivity and that all teachers should have acquired basic computer skills by the end of 2010. The extent to which these have been achieved so that teachers across subjects can use ICT facilities to deliver subject content is an issue for another day. The country, as pointed out by Isaacs (2007), seeks to have very good ICT and lead the region in the invention and distribution of information. This was evidenced by the establishment of the Ministry of Infrastructure, Science and Technology in 2002 dedicated to ICT infrastructural development. This shows that efforts are being made to make ICT available and affordable to the citizenry.

Kajevu (2004) indicates that within no time, all junior secondary schools in Botswana managed to have fully equipped computer laboratories. This was a real milestone by the government to provide all junior secondary schools with these ICT resources despite them not fully utilised due to several reasons some of which have been noted earlier. However, the availability of such ICT infrastructure should motivate teachers, to some extent, to make use of it in their teaching despite the challenges they face.

How ICT can be used in English Language Teaching

According to Ofsted (2004) English Language is one of the most difficult subjects. Teachers must create an interactive teaching and learning atmosphere to sustain students' interest in the subject. As curriculum implementers they should make ICT an integral part of teaching and learning process. Kent and Facer (2004, p.25) say, "ICT in an educational point of view supports teaching, learning and a range of activities in education in various ways". So, modern education is best achieved through the use of ICT and related facilities and this can only be possible if both the teacher and students are ICT literate. Giordano (2007) points out that for learners to be equipped with ICT literacy and be lifelong learners ICT must successfully be integrated into both the English Language curriculum and academic practice in general. Gumbo (2003) actually confirms that ICT is an important tool to enhance teaching and learning that an English Language teacher can make use of in teaching the subject. Its use accords learners an opportunity to manipulate the ICT gadgets as they engage in various learning activities. Rumpagaporn (2007) says with ICT, students can organise, present and work out their tasks in many different ways. Learners would normally be given work to do which may call for the use of ICT facilities and gadgets like working to produce a school magazine, word processing an assignment, preparing a power-point presentation or just carrying out research. When they carry out such tasks, they also learn to correct their own grammar mistakes, mechanical errors and effective means of communication. Related to the above, Huang (2005) further notes that many of these ICT gadgets have word processing software with tools that learners can access and manipulate as a way of learning. In the process they play around with text in ways that previously were difficult to tackle. When learners access those tools, at the same time, they make use of them, reflect on what they do and ultimately correct themselves.

Dickinson (1998) too alludes to this view about the effectiveness of ICT that it should be embedded in the curriculum, and integrated into various parts that are to be taught. The English Language teacher should then maximize the use of ICT in their classrooms to deliver content in dynamic ways. Teachers need to know how to use ICT to achieve their objectives. The nature of ICT usage is that it is interactive and dynamic, and as such meets individual students' needs. It provides learners with opportunities to focus their learning activities as they gather information to complete their academic tasks. This may see the teacher playing a very minimal role of just ensuring that students carry out their tasks.

Unit 6.1 of the Botswana Three-year Junior Secondary School English syllabus stipulates that learners should use word processing functions to produce texts, use reference tools to search for information, produce publishable materials using desktop publishing and also use the internet for

different purposes. The hindrance to achieving these could be the fact that the syllabus does not go further into explaining how teachers should carry out the teaching process to achieve the above mentioned objectives. The teacher is expected to be creative and innovative on how to conduct classroom activities in order to achieve these objectives. And there are various ways through which the teacher can achieve this through the use of ICT. Arnell (2012, p.9), notes that “Svensson (2008) defines four different ways in which ICT can be used in language teaching and learning: ICT as an automat, ICT as a tool, ICT as an arena and ICT as a medium”.

ICT as an automat

The use of ICT as an automat involves reinforcing behaviour that goes with correct responses at the same time making learners aware of incorrect ones. Arnell (2012) says computers can be used to teach learners in a manner similar to that of Skinner when he worked with animals in teaching them certain behaviour, enforcing correct behaviour. Arnell (2012) further points out that this is the way much of grammar is still being taught and as such, computers can be used to teach English Language that way albeit many teachers and researchers have a different view.

ICT as a tool, arena and medium

With regard to the above, again Arnell (2012, p.10) makes reference to Svensson (2008) who says ICT can be used as a learning tool meaning “that ICT is used to facilitate communication with teachers, other learners and people outside a particular school setting”. Using ICT as a tool ensures learners access relevant information by using the Internet. The use of ICT and the internet therefore makes learners manipulate the device at the same time interacting with the English language, thus learning it (the language). Regarding the use of ICT as a medium, Arnell (2012) says Svensson talks of instances where ICT can be used to post information online on administrative and course related matters, like course outline, assessment and important dates about the course.

So, the above clearly show that ICT can be very helpful in the teaching of English Language in situations/countries where English is used as a medium of Instruction like Botswana. The students do not only get an opportunity to learn the English Language but also acquire the necessary communication and computer skills that they will make use of in other subjects.

METHODOLOGY

To collect the data a case study was used, which according to Bell (2003) is a term used to describe an investigation on a scenario. “...The great strength of a case study method is that it allows the researcher to concentrate on a specific instance or situation to identify the various interactive processes at work” (Bell 2003, p.8). Because the researchers wanted to find out how ICT can be integrated in teaching English Language at Junior Secondary Schools in Botswana, this method helped them concentrate on a specific group of people and situation. The researchers also chose this method because it yielded in-depth information about that particular group.

Use of questionnaire

The questionnaire used was researcher-made and it comprised thirteen (13) items divided in two major parts. Part A was soliciting for demographic information while Part B was on the teaching of English Language. The majority of these questions were open-ended questions to allow for teachers to express themselves as much as they want. The researchers printed the questionnaires and administered them as hard copies.

Selection of respondents

Purposive sampling was used to choose the respondents which Bell (2003) notes as non-probability because the researchers were subjective in selecting the respondents. The researchers knew that the people being selected would give the information that was required which translated to more than 80% of the questionnaires returned.

In this study, the questionnaire was taken to the schools and administered to fifty eight (58) English Language teachers from eleven (11) Junior Secondary Schools in the Kweneng region, west of the capital city, Gaborone, Botswana. These eleven (11) schools have a total of about seventy (70) teachers of English Language. The questionnaires were given to the eleven (11) Coordinators of the English Departments in the eleven (11) schools to distribute to those teachers who could diligently respond to them. However, when the responses were collected the only fifty-five (55) were returned, which means 95% of the respondents returned the questionnaires.

DATA PRESENTATION AND ANALYSIS

Demographic/background information

Category				
Age	Age	25 and below	26 – 35 years	36 years and above
	No. of teachers	22	16	9
No. of years as teacher of English Language.	No. of years	1 – 5 years	6 – 10 years	11 years and above
	No. of teachers.	22	16	17
Qualification	Level	Diploma	First degree	Masters
	No. of teachers.	47	8	0

Responses from questionnaire

1. Are you aware that you can use ICT to teach English Language?

Thirty nine (71%) of the respondents were aware that they could use ICT to teach English Language, but only four (4) of them had actually used it in a lesson. These are respondents who know the importance of adding variety to a lesson but lack of technological support does not favour them. Hare (2007) states that this is due to inadequate infrastructure in schools that hinders teachers to perform their duties as best as they can. The remaining sixteen (29%) were not aware that ICT could be used in English Language teaching and had never made an attempt to use it as they had never received ICT training and stated that there was no equipment they could use even if they had ICT skills. Kent and Facer (2004) state that using ICT in a lesson gives a different classroom delivery and those students may enjoy learning over the traditional use of the teacher doing the talking while they listen.

2. If no, what measures are you willing to take so that you become aware?

In response to what measures they would take to beware of ICT in the teaching of English Language, eleven (20%) responded that they were willing to go for ICT training. The other five (5) did not say what measures they would put in place to become aware. The Mochudi Media Centre that provides in-service training and support to teachers would be suitable for them as it trains in ICT and new relevant technologies required for teaching English language. Once trained, the teachers will have the skills and therefore easily integrate ICT in their teaching. Earlier on reference was made to Arnell having taken note of Svensson (2008) who indicates that ICT technologies

facilitate communication between teachers and learners. Learners can therefore access these technologies provided the teachers have the skills and pass them on to the learners. These exchanges of ICT skills in the long run will benefit both parties when positive results are achieved.

3. If you have used ICT in your English Language lessons, how did you use it?

At least half (50%) of the respondents who said they used ICT in their lessons indicated that learners wrote letters to a friend using Microsoft Word and sent emails to those who helped them create email addresses in groups of five. These are the respondents who have attempted to at least cover one topic and objective in Unit 6.1 of the Botswana Junior Certificate English syllabus on Computer Assisted Language Learning (CALL). Even though the respondents have not undergone any ICT training and the schools have shortage of equipment, the respondents took initiatives to learn to use ICT so that students too could be equipped with the skills and learn for their own benefit.

4. How was your experience teaching English language using ICT?

The respondents who had used ICT in an English Language lesson described it as challenging because of the language on the computer that the students found difficult to understand and spent most of the lesson time explaining instead of getting the tasks done. Some of the students are said to exhibit a negative attitude towards participating as they shared one computer in groups of five. They hid behind others as they had no adequate skills in the use of a computer. Sandra (2008) believes that students' lack of ICT skills makes them reluctant to use the technological device when given an opportunity, which is why some still prefer, the traditional face to face interaction with the teacher and the everyday textbook.

5. If you have not used ICT, what are your reasons?

Of the fifty one (93%) respondents who had not used ICT in their English Language lessons, thirty three (60%) stated that they had not been trained to use ICT to teach English Language. They lacked ICT skills and competence that they could use and display to their students. Knezek and Christensen (2002) observe that teachers need to be competent in ICT usage as this is a crucial factor in integrating ICT in teaching; therefore with no competence they cannot integrate ICT in their teaching.

Are you satisfied and happy with the way you were trained to teach English Language using ICT? Table 1

6.

Responses	Number of respondents
Yes	15
No	40
Total	55

The majority of the respondents, forty (73%), were not satisfied with the way they were trained to teach English Language using ICT stating that they had not been introduced to ICT or the training was limited during their training. One of them had this to say: *"During our times at college computers were few and students had limited access to computer labs"*. These findings are further supported by Robert (2008) who had stated that the major challenge of teachers not using ICT in their English Languages lesson was that they had no prior training therefore they lacked the skills on the use of ICT equipment and tools. This inadequate training in ICT usage now results in teachers being unable to integrate ICT during content delivery.

7. How can one's attitude towards ICT affect the way they teach English Language?

Forty one (75%) of the respondents gave similar answers that positive attitudes towards ICT use could benefit the students by arousing their interest in the lesson and helping them become open

minded hence improve independent learning. One of them said “*ICT inspires students and make them enjoy the lesson. It cultivates a culture of creativity among teachers*”. Speier, (2008) also indicates a good attitude towards using ICT may directly influence its usage. 15 (27%) respondents did not answer the question, clearly indicating that they were clueless about using ICT or they had a negative attitude towards its use. These 15 are also part of those respondents who stated that they were not aware that ICT could be used in English language teaching.

8. List appropriate and suitable ICT equipment that can be used in the teaching of English Language in Botswana’s junior secondary schools.

All the respondents listed computers as appropriate and suitable equipment for teaching and learning of English language. Eight (8) of them though varied from others in that they included equipment such as a projector and radios. Their lack of knowledge on the various ICT equipment and tools such as clickers, smart boards and interactive whiteboards indicate they are not knowledgeable about the various ICT equipment that could be used in an English Language classroom. This could also be a statement that they do not vary their teaching methods and materials to keep learners interested in the lesson or expose them to different learning materials apart from everyday textbooks.

9. What challenges do teachers of English face in teaching English language using ICT?

All the respondents stated lack of equipment in schools as the major challenge they faced in their teaching of English Language. As Robert (2008) found out, shortage of resources hinders teachers from using ICT in their English Language lessons.

Another challenge identified was lack of ICT skills by teachers. Related to this issue, Jones (2001) and Anderson (1995) point lack of technical support for the teacher which ultimately compounds the problem. The other challenge is that some long serving teachers still stick to and firmly believe in the old ways of teaching hence their reluctance to accept ICT integration in content delivery.

CONCLUSION

The findings of this study show that the government is trying its best to provide ICT infrastructure in schools to improve the education standards but there are constraints and limitations to successfully implement such initiatives. The constraints are, among others, due to some teachers’ limited ICT skills, computer language that is difficult for the learners and inadequacy of ICT equipment gadgets. Lack of ICT knowledge is caused by limited ICT training at teacher training institutions on how to infuse ICT into English Language teaching. Generally, the teachers’ knowledge on ICT is not at par with their qualifications and experience in the field.

Despite efforts by the Ministry of Education and Skills Development (MoESD) to supply junior secondary schools with ICT equipment and tools, a lot still needs to be done. The syllabus used in the training of English Language teachers should infuse the use of ICT in language teaching. Similarly, teachers have to be in-serviced, time and again, on ICT usage in the teaching and learning process generally. The data provided indicates that teachers are willing to be trained in ICT usage and the government should adequately resource schools with ICT gadgets as the respondents indicate.

RECOMMENDATIONS

- a) The study focused on teachers only and the researchers feel if this was extended to students to get their views and experience on the use of ICT in English language lessons, a more broad perspective would have been unearthed on the status of ICT in English Language classrooms as they are the beneficiary.

- b) The study should also be extended to other regions in Botswana to get an overall picture of teaching English Language using ICT in junior secondary schools.
- c) The researchers recommend that the Ministry of Education and Skills Development roll out a robust implementation plan to train teachers on the use of ICT in English language classrooms.

REFERENCES

- Anderson, LW 1995, "Attitudes and their measurement". in T. Husen, & TN. Postlethwaite, (Eds.), *The International Encyclopaedia of Education*, vol.1, no.6, pp. 352-358.
- Arnell, A 2012, *The use of ICT in the teaching of English grammar: views and experiences of six teachers of English in Sweden*. Available from: <http://www.diva-portal.org/smash/get/diva2:531320/FULLTEXT01.p>. [12 June 2016].
- Bell, J 2003, *Doing Your Research Project*, 3rd Edn University Press, London.
- British Education Communications and Technology Agency 2006, *Benefits and features of ICT in English. ICT in the Curriculum*. Available from: <http://curriculum.becta.org.uk/docserver.php/?docid=657>. [19 April 2016].
- Dang, XT 2011, *Factors influencing teachers' use of ICT in language teaching: A case study of Hanoi University*, Master's Thesis, Vietnam.
- Davis, M & Danning, K 2001, "Transition to virtual learning", *Association for Learning Technology Journal*, vol. 9, no. 2, pp. 64-75.
- Dickinson, D 1998, *ICT in English*. Available from: <http://www.le.ac.uk/education/staff/ICTEnglish.html>. [9 March 2016].
- Divaharan, S & Ping, LC 2010, "Secondary School Socio- Cultural Context influencing ICT integration: A case study approach", *Australian Journal of Education Technology*, vol. 26, no. 6, pp.741-763.
- Dyman, A & Oestmann S 2006, "*Universal Access and Service for Botswana Program for Internet and ICT Workshop*", paper presented at Grand Palm, Gaborone, 2 August.
- Giordano, V 2007, "A professional development model to promote internet integration into P-12 teachers' practice: A mixed method study". *Computers in the schools*, vol. 24, no. 4, pp. 111-123.
- Gorder, LM 2008, "A study of teacher perceptions of Instructional Technology Integration in the classroom". *Delta Pi Epsilon Journal*, vol. 1, no. 2, pp.63-76.
- Gumbo, SD 2003, "Utilization of ICT as tools and resources for teaching and learning at the Midlands State University in Zimbabwe", Proceedings of the 11th annual Conference in improving cooperation among researchers, policy formulators and implementers of policy in mathematics, science and technology education, pp. 47-55.
- Hare, H 2007, "ICT in Education in Tanzania", in G. Farrell, S. Isaacs & M. Trucano (eds.), *Survey of ICT and Education in Africa: 53 Country Reports*, DC: infoDev / World Bank, Washington.

- Hartoyo, K 2012, *Individual Differences in Computer-Assisted Language Learning*, Pelita Insani, Semarang.
- Hernandez-Ramos, P 2005, "If not here, where? Understanding teachers use of technology in Silicon valley schools", *Journal of Research on Technology in education*, vol. 38, no. 1, pp. 39-64.
- Huang, SH 2005, *Factors that influence students' learning attitudes towards Computer Courses*. Available from: <http://mail.nkmu.edu.tw/~khsu/main/paper/conference/2005%20Hawai%20Conference.pdf>. [14 April 2016].
- Inamdar, P & Kulkarni, A 2007, "'Hole-In-The-Wall' Computer Kiosks Foster Mathematics Achievement - A comparative study", *Educational Technology & Society*, vol. 10, no. 2, pp. 170-179.
- Isaacs, S 2007, *Survey of ICT and education in Africa: Botswana Country Report. Info Dev. ICT and Education Series*. Available from: <http://documents.worldbank.org/curated/en/2007/04/10022273/survey-ict-education-africa-botswana-country-report>. [4 March 2016].
- Jones, CA 2001, "Teach Support: Preparing teachers to use technology", *Principal Leadership*, vol. 1, no. 9, pp. 35-39.
- Kajevu, Z 2004, "BOCODOL to Improve Learner Support Services." Mmegi, 19 October. Available from: <http://www.mmegi.bw/2004/October/Tuesday19/6712157781513.html>. [15 May 2016].
- Kent, N & Facer, K 2004, "Different worlds? A comparison of young people's home and School ICT use", *Journal of Computer Assisted Learning*, vol. 20, no. 3, pp. 440-455.
- Knezek, G & Christensen, R 2002, "Impact of new information technologies on teachers and students". *Education and Information Technologies*, vol. 7, no. 4, pp. 369-376.
- Maitlamo 2007 – *National Policy for ICT Development*. Available from: <http://www.bits.org.bw/wp-content/uploads/2016/05/Final-Revision-MCST-Maitlamo-Policy.pdf>. [29 June 2016].
- Motshagwe, MM 2005, *The role of ICT in the Curriculum Development and Evaluation*. Available from: http://wikieducator.org/images/a/ac/The_Role_of_ICT_on_National_Curriculum_of_Botswana.pdf. [12 October 2016].
- Ofsted 2004, Report: *ICT in Schools- The impact of government initiatives*. Available from: www.ofsted.gov.uk [5 October 2016].
- Robert, W 2008, "Use of ICT in education in South Pacific: findings of the Pacific eLearning Observatory", *Distance Education*, vol. 29, no.1, pp. 53-70.
- Rumpagaporn, MW 2007, *Student's critical thinking skills, attitudes to ICT and perceptions of ICT classroom learning environment under the ICT schools pilot project in Thailand*. University of Adelaide, Bangkok.

Sandra, MM 2008, *A qualitative study of barriers to participation in web-based Environments among learners at the Community College level*, Capella University, United States.

Speier, C 2008, *Attitudes towards Computers: The Impact of Performance*. Available from: <http://hsb.baylor.edu/ramsower/acis/papers/speier.html>. [25 May 2016].

Yunus, MM, Lubis, MA & Lin, C P 2009, "Language Learning via ICT: Uses, Challenges and Issues", *Wseas transactions on information Science and applications*, vol. 6, no. 9, pp. 1453 – 1467.

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