

Embracing electronic communication in the 21st-century classroom: Rural Zimbabwean teachers' experiences and perspectives

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ABSTRACT

This article investigated rural Zimbabwean secondary school teachers' experiences and perceptions of the challenges that confront them in integrating Information and Communication Technologies (ICTs) into classroom practice. Given that Zimbabwe's updated curriculum underscores ICTs as a critical vehicle for mediating the teaching-learning experiences of the learners in all subjects, the study sought to find out secondary school teachers' experiences and any potential challenges they faced in embracing the country's new educational thrust. The research's ultimate objectives were to make recommendations on how ICTs could profitably be harnessed in rural schools and how teachers' ICT know-how could be improved. A survey design was adopted for the study with three data-gathering instruments, namely; interviews, questionnaires and observation. The study's results indicated that most rural teachers continued to rely on the traditional teaching approach and had not fully embraced the new educational paradigm. The findings also showed that there was prevalent lack of know-how amongst most 'old generation' teachers on how to adapt ICTs to their classroom practices. Amongst schools that had adopted ICTs, the study found out that there was lack of uniform practice in the way ICTs had been harnessed in lesson delivery. Basing on the results of this study, the researchers recommended in-service training for qualified teachers in ICT skills and also that teacher training colleges incorporate ICT in their curriculum.

Keywords: *Electronic Communication; Updated Curriculum; Information and Communication Technologies; Computer-mediated Teaching; Classroom Practice*

Background

The impact of Information and Communication Technologies (ICTs) in stimulating classroom interactions across the curriculum can never be contested. Various communication researchers have posited ICTs as having great potential to influence the learners' cognitive and affective domains, amongst many other benefits (Zaied, 2006; Jhuree, 2005; Clark, 1994). Basing on the exponential global growth of online teaching and learning in developed countries, there have been accentuated calls for the introduction of ICTs into the curricula of many developing countries. Lwoga and Sangeda (2018) have cited some educationists in the Third World, including Kaware, Lwoga and Sangeda who have underscored the need for the integration of ICTs in the education systems of developing nations. They have noted that technological advancements in education come with improved quality of teaching and

learning. Improving the quality of teaching and learning is fundamental to any developing country as this speaks to the improvement of its growth prospects. Kaware and Sain (2015:23) define ICT as “the manipulation and communication of information by using electronic resources and tools such as computers, internet, and broadcasting technologies.” This reflects ICTs as based on the use of diverse approaches to information dissemination. The word ‘broadcasting’ suggests that the same information that is disseminated can reach a wide audience. The definition above locates ICTs as instrumental in “the delivery of curricular activities” to learners who may be geographically separated (Tsikaderi, 2015). Malleus (2011) has underlined ICTs as key in assisting teachers to streamline routine tasks while improving student assessment and data collection. Despite these important observations on the utility of ICTs to teaching, one key question that has inspired this study revolves around whether all teachers can embrace ICTs and enrich the classroom experiences of their learners. Given teachers’ crucial role in the successful implementation of any educational policies, it becomes critical that their experiences are examined and whatever challenges they confront are addressed so that learners get maximum benefits from the country’s new educational thrust. To address these concerns, this article first highlights scholarly input on the rise and critical role of ICTs in educational practices before examining the key characteristics of Zimbabwean rural schools.

Role of ICTs in educational practice

The rise in the use of computer technologies, not only within the classroom but also across social life, has been largely predicated upon the teachers’ attendant advantages of compressing and combining technologies of text, sound and visual, as well as movement, and this has ultimately enriched information dissemination (Hungwe, 2007). Research on the impact of ICTs within the education sector reflects how ICTs have transformed many an education system across the globe ever since the first electronic computer was commissioned in 1946 at the University of Pennsylvania (Hungwe, 2007). One of ICTs’ major contributions to the classroom is that learners can benefit from distance education through easy access to information which may enable learners to learn and monitor their own progress outside the classroom setup. In light of the recent (and ongoing) global pandemic, Covid-19, that has resulted in the closure of schools and borders for more than half a year or more in various countries, there have been calls for schools to adopt ICTs as a means to ensure that learning is not disrupted. This has demonstrated that through ICTs, learners can assume a more active role in their learning and personalising their education in a context where teachers merely act

as facilitators of learning rather than knowledge transmitters. This establishes the adoption of ICTs by schools as an important teaching strategy that empowers learners to enjoy greater control of their educational growth. This affirms Zaied's (2006:2) argument that "Information and communication technologies (ICTs) empower both people and systems with information, which is transformed into knowledge and intelligence." All these views buttress ideas of the unlimited potential of using information technologies in the classroom. This also communicates that ICTs have indelible merits over traditional systems of communication. Consequently, the development of ICTs has been touted by many as a potent tool in the sustainable development of a nation (Becta, 2015; Zaied, 2006). Schools have been viewed as the logical base to initiate the introduction of computer-mediated learning programmes to ensure developing countries are not left behind in terms of political, social and economic development (Zaied, 2006). Although Johnson, Jacovina, Russell and Soto (2016) have suggested that many challenges are encountered when using technologies in the classroom, it is apparent that there are more advantages than disadvantages. The afore-mentioned advantages of ICTs have seen many developing countries, Zimbabwe included, embracing ICTs in the classroom. In the case of Zimbabwe, an interesting question is whether all teachers can adequately integrate ICTs in their teaching and what challenges they face in their classroom practices.

The integration of ICTs within the Zimbabwean classroom is one that can be understood by providing a historical account that informs this curriculum initiative. Since gaining its independence in 1980, Zimbabwe has grappled with efforts to address the legacies of colonialism in education. As Chimhenga and Chivhanga (2013:45) have shown, "At independence, educational reform was high on the agenda in Zimbabwe" as the political leadership sought to address the educational and social imbalances that had been created by the country's colonial education system.

Characteristics of Zimbabwean rural schools

Zimbabwean schools are dissimilar and these differences are reflective of the schools' different geographical locations and the authorities that run them. There are urban schools, rural schools, mission schools and private schools but all schools fall under the ambit of the Ministry of Primary and Secondary Education (MoPSE) which has promulgated the need for all Zimbabwean schools to embrace ICTs in their teaching. Rural schools, which are the focus of the study, are by nature, identifiable by their rural physical location and the fact that

they are day schools run by the government or by rural councils on behalf of the government. Generally, rural schools are characterised by inferior educational infrastructure when compared to other school types. Fundamentally, the reader of this paper can distinguish rural schools from mission schools which, though geographically situated in rural areas, maybe church-run and have superior social and educational amenities to rural schools. Zimbabwe's ICTs reform agenda has not been exclusive but nationalistic in scope as it has been driven by the desire to improve the quality of the country's educational offering across different school categories. The study's desire, however, is to understand what impact ICTs have had in rural secondary schools given the fact that these schools have generally lagged. This study takes into cognizance that the ICT reform agenda is not the first educational reform in the country. Major educational reforms and curriculum innovations, including Zim-Scie, Political Science, to mention a few (Zvobgo, 1999), have been introduced in the past in a bid to improve the country's curriculum offering. However, most of these reforms either suffered tissue rejection or received partial implementation and died down over time.

In the wake of the above-mentioned failed reforms of the past, in 2014, Zimbabwe's then Minister of Education, Lazarus Dokora, undertook major steps of developing a new home-grown curriculum. This culminated in the country drafting *The Curriculum Framework for Primary and Secondary Education, 2015-2022* in 2015, thirty five years after the country had gained political independence from Britain. This wholesale curriculum review intended to revolutionise the country's educational offering by embracing an ICT-driven teaching and learning programme that reflected current best practices in education. In 1999 Zvobgo (1999:153:4) observed at the time that Zimbabwe's education system, "as presently structured, has failed to transform society and the national economy for the better, and that it has failed to respond appropriately to the needs of the child in terms of developing skills that are essential for survival." To resolve some of the challenges which characterised the education system, in 1999, the then President of Zimbabwe, Robert Mugabe, set up a twelve-member commission, headed by Dr C.T. Nziramasanga, to carry out an inquiry as well as suggest recommendations on how to improve the country's education and training systems. Part of the Nziramasanga Commission's terms of reference was to assess how far the country's curriculum met the technological demands of the 21st century in light of globalisation trends. This was an acknowledgement by Government of the centrality of ICTs in the envisaged education programme. The Presidential Commission made recommendations to revise the Zimbabwean curriculum to reflect some of the best practices in education that

have been adopted in the developed world and these included making ICTs central to classroom teaching and interaction. Thus, the Nziramasanga Commission report gave base for the country to rebrand its curriculum by departing from the old curriculum which was deemed too academic to embrace the country and learners' felt needs. The new Curriculum Framework for Primary and Secondary Education (CFPSE) underlines this view as it observes how:

The expansion in the capabilities of information and communication technologies and the emergence of an information-driven economy underpin the need for the development of new skill sets that enable citizens to live and work competitively in the global village (Ministry of Primary and Secondary Education, 2015:1)

Therefore, the new curriculum initiative spearheaded by Dokora, can be viewed as a culmination of the findings of the Nziramasanga Commission.

However, the introduction of the updated curriculum “sparked a heated debate with parents accusing the Minister of railroading the programme into the education system without adequate consultations” (Sibanda, 2017:1). Some stakeholders' concerns regarding the changes to the existing teaching-learning programme have been posted on many social and educational platforms, including the radio, television and the country's parliament, a concession of how topical this issue has become within the Zimbabwean educational discourse community. Stakeholder resistance saw the Minister defending the updated education curriculum on many platforms and occasions.

The Zimbabwe Updated curriculum and ICT thrust

This paper acknowledges that the basis by the MoPSE in Zimbabwe to review the country's curriculum offering was informed by the recommendations made by the Report of the Presidential Inquiry into Education and Training, herein shortened as the Nziramasanga Commission. The new *Curriculum Framework for Primary and Secondary Education, 2015-2022 (CFPSE)* handbook affirms this view as it spells out how Zimbabwe's new curriculum initiative “takes into account the recommendations of CIET [the Presidential Commission of Inquiry into Education and Training], the local socio-economic imperatives and global changes and continuing trends that have taken place since 1999.” Thus, in 2015, the Ministry of Primary and Secondary Education sought to act on the CIET recommendations.

The departure from the traditional teaching-learning approaches to a new teaching methodology where ICTs are placed at the centre of the teaching programme has made

teachers' computer literacy integral to their successful implementation of Zimbabwe's new curriculum thrust and indispensable to the learners in preparing them for participatory citizenship in the world after school. This is because the updated curriculum aims to offer a learning programme that prepares the learner for an increasingly globalised environment (Zaied, 2006). Thus, it becomes important to examine teachers' experiences and their perspectives as far as this curriculum innovation is concerned and whether reality on the ground in rural secondary schools reflects the letter of the CFPSE.

Drawing from the foregoing arguments, it can be concluded that Zimbabwe's new curriculum initiative is quite noble as it seeks to address the challenges in the education system as noted by the Nziramasanga Commission. Its import is to ensure that the country's education system moves beyond basic literacy by making it more practical, with the ultimate desire being the reversal of the shortcomings of the largely elitist inherited colonial education system. This is important especially if viewed in the context of the concept of globalisation where Zimbabwean learners cannot be allowed to lag but keep abreast of world trends in education. Thus, as part of the changes promulgated by the MoPSE, computer-mediated teaching becomes obligatory for all Zimbabwean schools as articulated and underlined in the country's various syllabi. For instance, the *Zimbabwean Indigenous Languages Syllabus Forms 1-4(2015:iv)*, like many of the new syllabi for other subject areas, underscores a teaching programme that is responsive to this ICT thrust as it states as one of its aims, the desire: "to develop in learners skills that will enable them to use ICT *intensively* and *extensively*" (emphasis supplied). The *Zimbabwean Indigenous Languages Syllabus Forms 1-4* lists use of Information and Communication Technology as one of the recommended methodological approaches to teaching. This reflects how the need to integrate ICTs in the classroom pervades the new curriculum thrust, making ICT literacy a must for both teachers and learners.

Despite this noble initiative from the MoPSE, the researchers concede that most rural schools in Zimbabwe, unlike those in the urban centres, are more likely to face challenges in implementing the updated curriculum as they are largely defined by a lack of electricity and other requisite infrastructure. However, to bridge the gap between rural and urban schools, the Government embarked on a rural electrification drive that saw most rural schools getting electrified. Apart from that, Zimbabwe's rural educational landscape was also re-sculptured and revolutionised through computer donations rolled out through the Presidential Computer

Scheme which saw most previously disadvantaged rural schools as beneficiaries of new computers. However, the researchers as educationists themselves, concede that the availability of electricity and computers alone does not necessarily entail the success of the programme as there are other key variables, such as the teacher him/herself, that need to be considered for the successful implementation of the updated curriculum. It is against this background that this paper sought to explore the rural secondary school teachers' experiences and their perceptions on the implementation of the provisions of the new curriculum, with special focus on the adoption of ICTs in the teaching-learning programme. The study contends that the country's new curriculum initiative, underpinned by the desire to produce learners who reflect international trends of being ICT-conversant right from Early Childhood Development (ECD) stage up to tertiary level, can only be achieved if teachers' computer knowledge bases and their perceptions on the matter are put into consideration. The question that this research seeks to address is what the academic impact of computers in rural Zimbabwean secondary schools has been as well as examining teachers' experiences of the introduction of computer-based learning in their schools.

Research sub questions

In order to address the research questions, the researchers formulated the following sub research questions:

1. What perceptions do the rural secondary teachers have regarding the introduction of ICTs in the updated curriculum?
2. How do the teachers rate their computer literacy?
3. To what extent have the teachers embraced ICTs in their respective subjects and schools?
4. What challenges undermine rural Zimbabwean secondary school teachers' efforts in embracing ICTs?

Research methodology

This study adopted a survey design with the data collected from five purposively sampled schools in Murinye area in Masvingo rural district of Zimbabwe. The targeted population comprised all rural secondary school teachers in the district but purposive sampling was used to select the participants and the participating schools. The schools selected were those equipped with computer facilities. A total of twenty-five (25) teachers and five (5) Heads of schools took part in this study. The teachers ranged in age from twenty-five to over fifty

years and differed in teaching experience from newly qualified to the experienced. The newly qualified teachers were purposively sampled to cover different year groups from 2013 to 2016 and three teachers were used to represent each year category. This means that all in all, twelve teachers were regarded as newly qualified while the rest were considered experienced. The teachers selected for this study represented four subject categories as follows: Commercials, Languages, Humanities and Sciences. Five teachers, one each from every school under study, and the five Heads were interviewed while the rest (20) responded to a self-administered questionnaire as shall be further explained below. A self-administered questionnaire was distributed to twenty rural secondary school teachers who were furthering their studies with a university in Zimbabwe as in-service undergraduate students to find out teacher perceptions, experiences and challenges regarding the embrace of ICTs in their subject areas and the school in general. These teachers had already attained teaching certificates or diplomas with teacher training colleges and were qualified teachers in their rights. To counter the limitations of the questionnaire as a data collection tool and to enable the researchers to probe on concerns and gaps identified in the questionnaire, five Heads of schools were interviewed as part of the study so as to get an administrative position relating to ICTs policy and challenges in the school. The researchers visited five schools with the permission of school authorities and the MoPSE. The five teachers selected for interview were first observed as they taught to have a general understanding of how they attempted to integrate ICTs in their teaching and to note the challenges that confronted them. For ethical reasons and the convenience of the study, the teachers who responded to the questionnaire will be coded Teacher 1 up to Teacher 20, those who participated in the interview will be coded Teacher 21 up to Teacher 25 while the Heads of schools will be coded Head 1 to Head 5.

Findings and discussion

This study found out that most rural Zimbabwean secondary school teachers perceived the Ministry of Primary and Secondary Education's recommendation to integrate ICTs into classroom practice as problematic. They indicated that they faced numerous challenges in embracing the country's new ICTs policy which ranged from external to internal challenges. External challenges were those that related to availability of hardware and internet connectivity which the teacher had no control over. Internal factors were to do with the teachers' computer literacy, their attitudes and abilities to adapt new educational technologies into the teaching-learning programmes (Johnson, Jacovina, Russell & Soto, 2016). The major

internal challenge that undermined rural schools' embrace of computer-aided learning was the teachers' lack of ICT skills. Thirteen out of twenty teachers (65%) who responded to the questionnaire stated that the new requirement of integrating ICTs into classroom interactions came after they had long graduated as qualified teachers, implying that the teachers may not have had the opportunity of getting formal training in computer use during (or after) their teacher training course. This was confirmed by two teachers out of the five (40%) who participated in interviews. Among those who indicated that they had done computer lessons during teacher training, seven out of all the twenty-five teachers who responded to interview and questionnaire (28%) reported that they still required more computer literacy lessons. The researchers interpreted this as a concession by the respondents that they lacked the requisite computer knowledge-base to adopt ICT-driven teaching.

There was hesitancy by seven teachers (from the twenty-five teachers who responded to both the questionnaire and interview questions) to directly respond to questions that demanded that they outline how they had embraced electronic communication in their teaching or how they could do so. Asked during an interview why she had not yet integrated ICTs into her teaching, Teacher 21 responded: *It is embarrassing for a teacher to reveal one's lack of ICTs knowledge in front of pupils who may have better skills than you. It is normal that a teacher should be ahead of the learners but as far as ICTs are concerned this is not usually the case.* Teacher 23 affirmed the same view as he pointed out that the introduction of computers in schools before the teachers were trained had created what he called *reverse osmosis of knowledge from the learner who should be a region of low concentration, back to the teacher who is supposed to be a region of high knowledge concentration.* A similar response came from Teacher 17 and was captured in her response to the questionnaire as follows: *I stopped attempting integrating ICTs when some students laughed after I made a mistake and I've never wanted to do it again. I don't think I will unless I'm first taught.* What these comments revealed was the need for the teachers to be fully equipped through training workshops. The researchers concluded that lack of computer literacy and adequate training made most teachers less confident to embrace computer-mediated teaching in their classrooms lest they exposed their shortcomings in computer use and lost respect with/amongst their learners. Thus, one of the major reasons for schools' non-compliance with policy pronouncements regarding ICTs could be the teachers' general lack of computer literacy and 'technophobia', or the fear of technology.

From the questionnaire responses, sixteen out of twenty participating teachers (80%) indicated that they had never attempted to integrate ICTs in their lessons at all as they did not want to expose the inadequacies of their technical know-how and ‘embarrass’ themselves before their learners. From the interviews, only one out of five (20%) of the teachers who stated that they had attempted to integrate ICTs in their lessons indicated that they still needed further training on how to integrate certain aspects of the subject areas they felt were difficult to teach using computers. To assess all the teachers’ and Heads’ computer literacies, the researchers asked similar questions to the respondents and participants. The table below gives a summary of the findings on the levels of teachers’ and heads’ computer competencies and literacies as reflected by information collected from both the questionnaire and interview: Number=30 (Teachers and Heads)

RESPONDENTS	TEACHER COMPUTER SKILLS					
	I have done computer lessons during teacher training	My training college adequate	ICTs at teacher college was	I need computer literacy lessons	I need assistance to operate computer	I have integrated ICTs in lessons
25- 35 Years old (10 teachers)	7	2		9	6	3
36-45 Years old (8 teachers)	2	0		7	6	2
46+ Years old (7 teachers)	0	0		0	7	0
School Heads (5)	1	0		1	4	0

Table 1 *Assessing Teacher computer competence and literacy*

(NB. The teachers and Heads had room to give multiple responses)

The table above demonstrates that many teachers lack computer competence. It can be used to argue that lack of computer literacy amongst teachers has militated against their effective adoption of ICTs in schools. Lack of teacher expertise in computer use transports the teacher from the ground of knowing to that of ‘unknowing’ and that may culminate in teacher resistance to adopt ICT-driven classroom practices. Teachers’ unpreparedness to exhibit their

lack of expertise in the classroom has been captured in a report by the United Nations Educational Scientific and Cultural Organisation (UNESCO). The UNESCO (2016) report states that “The ‘feel’ that the teacher remains an authority and a ‘know-it-all’ in class is something that most teachers cherish, and anything that makes them otherwise is deemed an enemy of the classroom.” This view helps explain why most teachers in the area under study may have continued to adopt the traditional means of information dissemination and not adopt current trends of integrating ICTs in the classroom. There is, therefore, need for the MoPSE in Zimbabwe to work towards enhancing teachers’ computer literacy. The fundamental need to improve teachers’ computer literacy contrasts early studies by Fisher, Dwyer and Yocan (1996) that have promoted the idea of increasing the number of computers in schools. While increasing computer access in rural schools is important, this study’s results underpin that ICTs’ impact is commensurate with teachers’ ICT literacies and skills. Therefore, teachers’ technological expertise in adapting ICTs to classroom practice was discovered to be necessary to create teacher confidence in integrating computers in lessons.

The study found out that as a consequence of teachers’ lack of computer literacy, seventeen out of twenty teachers (85%) who responded to the questionnaire still relied on the traditional teaching-learning methods that considered the teacher’s ‘chalk-and-talk’ as central to classroom practices. They had not yet migrated to the use of ICTs in the classroom in spite of the expectations set by the national syllabi. The teachers explained that this state of affairs partly emanated from the fact that the ICT-driven teaching-learning programme was a new approach to teaching and such a huge paradigm shift could not be an overnight success without the retraining of teachers. Though all the teachers conceded that ICTs were critical in education and should play a crucial role in the classroom practices, the low uptake of ICTs in classroom interactions demonstrated that the new curriculum initiative’s prescriptions had not yet been fully realised in the rural secondary schools by the time of the study.

Drawing from this huge figure of non-compliant teachers, it was apparent that, by the time of the study, the updated curriculum had faced resistance from many teachers who are key stakeholders in the education sector. Asked during the interviews why they had not yet embraced ICTs and what it is they were waiting for, 80% stated that their non-compliance was not deliberate and called for teachers’ computer training before the new ICT-driven curriculum could be implemented. Out of the teachers who responded to the questionnaire,

seventeen (85%) argued that the MoPSE authorities should have sought teachers' input to find their challenges before demanding that they implement the new policy. Their views were corroborated by four teachers (80%) from those interviewed and two Heads (40%). One of the interviewees, Teacher 22, who was a teacher of English captured the sentiments of several teachers across subject categories when he responded:

Don't you think we should have been trained on how to introduce ICTs in the English classroom? How do I use computers to teach the various comprehension skills?

Language skills such as countables and uncountables? I can only do that once I've been shown how to go about it and until then, I rely on the traditional methods. Why should we just implement what someone in a higher office instructs us without showing us how to do it?

Teacher 4, a Shona teacher, pointed out that it was difficult to use ICTs to teach the subject as she felt that the language barrier was not helpful to her subject cause and needed training on how ICTs were relevant to her subject area. In total, thirteen teachers questioned the need to depart from the old teaching approaches and defended the traditional teaching methods. For instance, Teacher 2 contested that there was nothing wrong with "the old approach to teaching that had produced many graduates and leaders who have exhibited intellectual capacity and a competitive edge in many countries where they are working as migrant workers." Drawing from these responses, it was apparent that the general perception among teachers was that they were not ready to adopt the new curriculum initiative because it could potentially unsettle their 'tested and trusted' teaching strategies. Lack of preparedness by individual teachers to adopt and embrace changes in education underscore Payne's (1999: 41) observation that "often people at the individual level and in organizations are afraid of the introduction of new systems or ways of doing things. Change is always an unknown variable with uncertainties." These views suggest the need for the MoPSE authorities to always engage teachers as key stakeholders first to win their confidence and buy-in in policies of national interest. Because of this lack of initial training in embracing ICTs in the classroom, the study found out that there was a gap between the new curriculum policy pronouncement and practice in most schools as a majority of rural secondary schools stuck to their old ways of teaching despite the syllabi they were using recommending otherwise. Thus, ignorance and lack of training were the reasons why some rural school teachers had not yet fully integrated ICTs into classroom interaction despite the letter of the new national syllabi making it mandatory for all schools to do so.

Out of the five Heads, only one of them indicated that there had been efforts to embrace ICTs in his school. In this school, three subject areas: Computer Science, Science and Geography had, by the time of study, embraced ICTs. However, the Head stated that use of ICTs was very infrequent practice for the last two subject areas. Science and Geography were taught by the same teacher at the school and so, in effect, only two teachers at the school had attempted to integrate ICTs into their teaching. One of these two teachers who taught Science and Geography at the school, Teacher 9, argued that her learners did not have adequate computer access as they were limited by the length of their lesson periods. The lesson periods varied from thirty-five minutes for a single lesson, to one hour and ten minutes for a double session. Teacher 9's perception was that the time allocated for learners' interface with computers in the school computer lab for her two subjects was inadequate. She also argued that a lot of time was usually lost when learners shifted from their classroom bases to the computer lab and this resulted in infrequent visits to the computer lab to save on learning time. She recommended that each classroom should be equipped with computers. An observation carried out during a Computer Sciences lesson revealed that the computer-learner ratio was very high as there were nine learners to a single computer. This further demonstrated that learners' access to the computers was still a problem at the school.

Evidence from the data gathered also revealed that schools had done little on their own to promote computer procurement in the schools and improve the computer-learner ratio. The introduction of computers in rural schools was found out to be a government initiative with most schools providing little or no homegrown initiative in procuring more computers for their schools in support of the government initiative. Four out of the five schools (80%) in Murinye rural area had all their computers solely procured through the Presidential Computer Scheme programme with only one school pointing out that there were well-wishers, in the form of former students, who had also made computer donations to the school. This casts the idea of computer-mediated lessons as a foreign concept to the schools as it never received the schools' homegrown initiative and grassroots support. Of the five schools visited, only one had built a computer laboratory while three had converted a staff room or one classroom into a computer laboratory. At one school, a small office had been turned into a computer storeroom with one computer visible in the School Secretary's office. In her response to the questionnaire, Teacher 9 pointed out that using a staff room for computer lessons complicated

lessons for learners as the space was intended to be used by the teachers and there were intermittent disturbances during lessons.

From the information gathered through lesson observations, this research found out that many external challenges made it difficult for most of the schools to effectively embrace ICT-driven teaching. Four out of the five schools under study (80%) had not yet fully embraced ICTs. One major reason why a majority of the rural schools in this study had not yet embraced ICTs was found to be the schools' lack of all requisite infrastructures to do so despite being equipped with computers. Two of the four schools that had not yet adopted ICTs despite receiving computer donations from the Presidential Computer Scheme did not have electricity to enable the integration of ICTs into the teaching-learning experience. This was because the transformers had been blown out by lightning but had not been repaired by the time of the study. Consequently, the computers were lying idle in these schools without impacting positively on the learners' education. Financial challenges also compounded the challenges faced by schools as highlighted by one of the Heads of Schools, Head 2, who pointed out that the learners at his school rarely paid tuition fees in time and this meant that the school could not afford buying generators and fuel as a fall-back-on plan when power outage was experienced. Challenges related to internet connectivity also worsened the situation as this meant that the computers were not used as often as they should have been. These findings confirm Agere's (2013:4) assessment of the challenges that riddle the integration of ICTs into the education systems in developing countries where he asserts that, "with schools joining the international migration towards ICT, educationists say it is worrying to note that the development is not commensurate with local investments to equip the tutor." Therefore, it can be drawn from all this that the school infrastructure development is a key pillar of the new curriculum initiative without which no meaningful ICTs integration can take place in rural secondary schools. This implies that rural learners will continue to lag in terms of computer literacy and educational achievements unless something is done to address the gap.

Despite the sporadic nature in which ICTs had been embraced in schools, all the respondents and participants were, nevertheless, generally agreed that the era of the internet had the potential to usher in a new educational paradigm that fostered increased pupil participation across all subjects in the creation of knowledge. They viewed the teacher as playing a critical

role in facilitating learning outcomes through use of ICTs. Their perspectives confirmed Tsikaderi's assertion that the "teacher's role is to structure a curriculum-related learning for the pupils and extend the physical classroom in different learning environments" (Tsikaderi, 2015: 13). This communicates the need for a major teacher retraining exercise if the envisaged production of computer literate learners is to be achieved.

The results of the study have also revealed that comparatively, more 'old generation' teachers lack computer literacy when compared to the younger generation of teachers. Teacher 17 who belonged to the 'old' generation of teachers echoed the sentiments of most teachers of her generation as she stated, in her response to the questionnaire, that computer education "was not part of college curriculum" when she trained as a teacher. Her views drew similarity from Teacher 21 who stated during the interview that: *There were no computers when we trained as teachers. It is unfair to expect us to just wake up one day full of computer literacy.* What exacerbated these teachers' plight was that they had never received any kind of post teacher-training computer literacy workshops after joining the MoPSE.

Although the results of the study showed that more new generation teachers reported that they had received computer training during teacher training, this did not imply that all newly qualified teachers enjoyed computer literacy. The researchers further examined the questionnaire responses from the twelve newly qualified teachers who had graduated in four different years to gauge their computer literacies and find out if teacher training colleges were doing enough to equip student teachers in areas of computer competence. They compared these teachers' computer literacies and the results are as shown in *Table 2* below:

YEAR OF QUALIFICATION	NO. of Trs	Computer Literate Trs	Trs who Need Assistance
2016	3	1	2
2015	3	1	2
2014	3	0	3
2013	3	1	2

Table 2 Comparing newly qualified teachers' computer literacy in 4 year categories

What the above findings show is that teacher training colleges have not produced teachers with adequate computer competence as the newly qualified teacher was equally ill-prepared to integrate ICTs in the school. This reveals the need for teacher training institutions to embrace ICTs in their teacher training programmes. This confirms Agere's (2013:4) concern that "the country's teacher training module is seen as lagging behind on the requisite ICT training before the teachers are released to the schools." Some teachers pointed out during interviews and in the questionnaire that though their teacher training institutions had modules that tested them on computer literacy, often, teacher trainees simply paid outside computer experts who could be non-students to do the course work tasks for them so that they could get good grades without actually acquiring ICT skills.

When asked how teachers' computer competences could be improved, eighty percent (16/20) of the teachers who responded to the questionnaire, three out of five teachers who participated in the interview (75%) and four out of five of the school Heads (80%) considered it to be the responsibility of their parent Ministry to retrain the teachers on ICTs integration in their subject areas before asking teachers to implement the ICT policy. One participant explained this position by arguing, *Teachers' salaries are already inadequate and they cannot waste the salary on computer lessons. If anything, the Ministry should workshop us before demanding literacy from us. Let the Government pay. This is a Government initiative. I don't need any computer lesson. After all, I'll be retiring soon.* Only six of the teachers and one Head argued that the teachers should have a greater role to play than the MoPSE to attain computer literacy. Of these, one respondent observed, *A good teacher is one who does not tire of improving oneself. Look, technology is the buzz word and you will be left behind if you wait for the Ministry to educate you.* It is clear from these statistics and the majority of the sentiments that integrating ICTs into classroom interaction will remain a dream as long as teachers who interface with learners on a daily basis lack computer know-how.

Amongst the teachers who had adopted ICTs, the study found out that there was varied understanding on how the implementation and integration of ICTs in the classroom could be done by teachers. A majority of the teachers (72%) conceived of laptops and desktops as the only ICT tools. They did not see the possibility of using learners' ipads or cell phones as a means of enriching the classroom experiences of their learners. When asked to justify learners' bringing or not bringing cell phones to school, most viewed cell phones as having a

disturbing influence in the school. Four (4) out of the five schools (which represents eighty percent (80%)), had actually criminalised learners' possession of ipads and cell phones within the vicinity of the schools as these E-communication gadgets were viewed as impacting negatively on learners' education by fostering pride, promoting unnecessary cases of theft and other anti-social behaviours detrimental to learners' educational performance. Negative perceptions of computers included viewing computers as instruments of delinquency, pornographic and satanic activities/materials.

Apart from that, fourteen teachers (70%) out of those who responded to the questionnaire perceived embracing ICTs in the classroom as not possible across the curriculum. For instance, Teacher 15 and Teacher 19 who taught ChiShona argued that it was difficult to embrace ICTs in the subject as the computer hardware was tailored for subjects where English was the medium of instruction. Some felt that moving towards computer-mediated lessons posed threats to their job security in the long run and contested that computer-mediated teaching should be left to the Computer Sciences teachers. This was observed to be common practice in most of the schools that had adopted ICTs as computer-mediated lessons were only observable during the lesson slots for Computer Science and not in other subject areas. One Indigenous Languages teacher, Teacher 10, explained that this partial integration of ICTs by his school was, to a certain extent, due to the fact that their Head did not allow teachers of other subjects to freely use the computers in case these got damaged, thereby creating an unnecessary expense for the school. One English Language teacher, Teacher 20, stated:

Yes our school has computers that were donated by the President but learners rarely use them as they are just there for the creation of a positive feel and image in the schools. The computers have remained useless in many subjects. If you try to use them, you will face opposition from two fronts, the Computer Sciences teacher who does not allow us to use them in his absence, and the Head who is afraid we will damage them given the general lack of competence amongst many members of staff. The Head threatens that those who will damage the desktops will replace them, so normally we desist from using them

Thus, the study found out that the donated computers were revered in most schools as most teachers without computer expertise were not allowed to use them. This gave the computers a

cosmetic function in the school, resulting in a theoretical approach without practice on the gadgets. Most of the teachers, however, felt that their schools should allow all teachers the opportunity to freely experiment with computer use so that they learn along even if it meant the computers got damaged in the process.

Lesson observations carried out in the schools revealed that some Computer Science teachers did not teach the application of ICT skills to enable learners to use these skills across other subject disciplines of the curriculum. Their lessons bordered on teaching *about* computers and not teaching how to implement the acquired knowledge in other subjects. This created a reductive teaching approach as the Computer Science lessons focused more on the hardware than the software and research skills. As an example, some written exercises observed focused on labeling parts of a desktop computer without allowing learners to be more adventurous. This was viewed by the researchers as teaching *about* computers as opposed to teaching computer competence because knowledge about the computer was found to be less beneficial to the learner. The researchers viewed this as merely paying lip-service to Ministry policies and pronouncements by the schools. At Schools A, B and C, learners were not given room to use computers for research on their own without the supervision of the teachers as the school authorities suspected the learners could misuse and abuse the facilities for pornographic entertainment and games. Such restrictions were observed to limit learners' potential to develop as envisaged by the blueprint of the new curriculum initiative.

Conclusions and recommendations

From the findings of this study, the researchers concluded that Zimbabwe's updated curriculum which has sought that teachers embrace ICT-driven teaching is quite noble. However, it has been beset by various challenges which were classified into two: external and internal factors. These challenges could have been mitigated through wide consultations that ensured teachers' involvement at the formulation stage of the ICTs policy in education in Zimbabwe. The peculiar challenges that are characteristic of Zimbabwe's rural school settings should have been considered so as to ensure that rural schools are not excluded from enjoying the anticipated gains envisaged by the new curriculum thrust that locates ICTs at the centre of classroom practice. It is recommended that in future, Ministry of Primary and Secondary Education officials desist from adopting top-down approaches to curriculum change and innovation as this has been the major handicap in the successful implementation

of the noble vision of an ICT-driven educational programme. Government policy makers need to consult with the teachers and other stakeholders to find out their concerns and perspectives before making policy pronouncements that affect them.

The study also concluded that without establishing a clear training programme that fosters computer literacy amongst teachers, integrating ICTs in the classroom in Zimbabwean rural schools will continue to be dogged by challenges and resistance. It has also shown that increasing the number of computers in school will not solve anything as long as the teachers lack computer literacy. Without knowledge, teachers fail to harness ICTs in their teaching or to spark interest in ICTs in the learners. As this study has shown, there is need for work-shopping of teachers to prepare them for the demands of the new curriculum. Teacher training colleges and universities should, therefore, take leading roles in preparing student teachers who are conversant with the use of ICTs in the classroom upon completion of their studies. These teacher training institutions should ensure that the teachers under training do not receive assistance in doing their coursework tasks from computer experts whom they pay, but rather the lecturers should supervise their learners to hone their expertise.

Absence of the requisite infrastructure in rural areas, including constant power supply, internet connectivity and computer laboratories were also found out as negating ICT driven teaching. The study recommends that such infrastructure be put in place and that education authorities and policy makers desist from adopting a cut-and-paste or copy-and-paste approach of noble ideas from developed countries that may not be applicable in the local context without a relook of the rural situation, teachers' computer competences, the ICTs infrastructure and other potential challenges. From the results of the study, ICTs integration could best be realised if the teachers are (re)trained and the Ministry of Education provides regular ongoing support to improve rural teachers' technological experiences.

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