

Teaching With and Learning Through ICTs in Zimbabwe's Teacher Education Colleges

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The use of ICTs (information and communication technologies) in Zimbabwe's teacher education colleges is of paramount importance. The teacher trainees have a dual role to play: learning through ICTs and also learning how to teach through them. Interestingly, the rate at which schools have embraced the use of ICTs is unprecedented, but this has not been matched with an equal effort by teacher education colleges and hence teacher trainees have been less exposed and trained in using such technologies. Evidently, this has created a mismatch between the need for teachers who are conversant with ICTs and e-learning and their availability. This paper stems from a pilot programme in which the author was an active participant. It reflects on efforts made to integrate ICTs into the teacher education curriculum and evaluates the impact that this programme will have on teacher education in Zimbabwe.

Keywords: ICTs (information and communication technologies), teacher education, Zimbabwe, curriculum

An Overview of Zimbabwe's Education System

Zimbabwe is in Southern Africa, sharing its borders with Mozambique to the East and Northeast, South Africa to the South, Zambia to the North, Botswana to the West and Southwest as well as Namibia to the West at the Caprivi Strip. The 2002 census puts Zimbabwe's population at 11 million, though four to five millions more are thought to be living in Diaspora. Zimbabwe is multi-lingual and multi-cultural with English as the official language of instruction, ChiShona and IsiNdebele as the other national languages. Zimbabwe follows the 7-4-2-3 system of education, that is, seven years of primary, four years of secondary, two years of advanced high school and three years of college or university (Mupinga, Burnett, & Redmann, 2005, p. 76). Secondary education is subdivided into three two-year phases: ZJC (Zimbabwe Junior Certificate), Zimbabwe General Certificate (O level) and Zimbabwe Advanced Level Certificate (A Level). The first two levels of secondary education are commonly referred to as high school (Mupinga et al., 2005, p. 76). On attaining independence from Britain in 1980, primary education was made free and compulsory, while secondary and tertiary education were made easily accessible but at an affordable cost¹. Tertiary education has also expanded rapidly since 1980².

Teacher Education in Zimbabwe

Most of Zimbabwe's teachers are trained through the country's 15 teacher training colleges, of which 12

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¹ Zimbabwe's education policy was guided by the policy of Socialism then embraced by the government at independence. However, this policy has been quietly abandoned, though some of its elements are still evident in the system.

² Zimbabwe's Universities have increased one at independence in 1980 to 12 in 2010 (eight are state Universities and four are private) and 15 teacher education colleges.

are state owned and the other three are Church related institutions. Of the 15 colleges, 12 are primary teacher training colleges and three are secondary. Together, by 2007, they were producing a combine total of over 18,000 teachers a year of which 78% were primary and 22% secondary (National Status of Education in Zimbabwe 2008 Report). Another sizable number is trained through the various universities that offer the PGDE (Post Graduate Diploma in Education) or other degrees with an education component. The University of Zimbabwe's Department of Teacher Education runs a scheme of association with all the 15 teacher training colleges, besides training its own teachers in the Faculty of Education. The scheme of association allows it to be the certification authority and maintain the required standard of tuition. However, each of the colleges designs its own syllabuses for approval by DTE (Department of Teacher Education). The ZINTEC (Zimbabwe Integrated National Teacher Education Programme)³ and the Zimbabwe—Cuba teacher education programme⁴ have also been some of the most notable features of teacher education in Zimbabwe. The ZINTEC programme became the basis of what primary teacher training is based on today, though the duration has been restructured to have more residential time.

ICT Infrastructural Development in Educational Institutions

The provision of ICT resources to the education sector in Zimbabwe has been growing in leaps and bounds since 2002. The Zimbabwean government developed a national ICT policy in 2005. According to Isaacs (2007), the policy was informed both by a Harvard University-guided e-readiness survey, which suggested the country was not e-ready, and by a host of preceding general and sector policies that included the Nziramasanga Education Commission Report of 1999, the national science and technology policy of 2002 and vision 2020. In particular, the Nziramasanga Commission recommended the use of computers for teaching and learning in educational institutions. The National ICT policy that was adopted in 2005 makes significant references to the promotion of ICTs in education including their pedagogical use in educational institutions (Isaacs, 2007, p. 2). President' office also launched a campaign to provide most schools with computer related equipment. This resulted in most schools (including schools in the remote areas of the country) and universities benefitting and thus enable them to utilise ICTs in the teaching and learning process, although an audit still needs to be carried out to ascertain how far the equipment has been put to good use. However, this campaign created a mismatch in the provision of IT resources. It is the extreme ends of the education sector that were capacitated leaving middle but essential departments, particularly Teacher Education Colleges, as well as Polytechnic Colleges not catered for. Teacher Education Colleges were the worst hit, since they are essentially a service sector that also cannot raise any extra income to help themselves survive. It is precisely for this reason that a nongovernmental organisation, VVOB⁵ (Vlaamse Vereniging voor Ontwikkelingssamenwerking en Technische Bijstand), carried out a needs analysis survey and identified a gap in the use of ICTs in teaching and learning at Teacher Education Colleges and Polytechnics in Zimbabwe, which it decided to roll out a programme that came to be known as the CITEP (College IT (information technology) Enhancement

³ Zimbabwe launched the ZINTEC programme after independence to address the shortage teachers in primary schools. Teacher trainees were to spend the first two terms at College, four terms on teaching practice and the last two terms at college, in what came to be known as the 4-2-4 programme.

⁴ In secondary schools, there was a critical shortage science and maths teachers and hence quite a number were trained in Cuba on a government to government agreement. Later, the programme was shifted from Cuba back to Zimbabwe giving birth to what is now the Bindura University of Science Education.

⁵ VVOB stands for Vlaamse Vereniging voor Ontwikkelingssamenwerking en Technische Bijstand, which in English is translated as the Flemish Association for Development Cooperation and Technical Assistance.

Programme).

The CITEP (College Information Technology Enhancement Programme)

Teacher education students have a significant role to play in the sustained application of ICT in schools. Therefore, it is imperative that they are exposed to effective use of ICT in their training (Steketee, 2006). By integrating ICT as a learning resource during regular classes, lecturers are exposing students to innovative ways of learning. Teacher training programs need to effectively train their prospective teachers in using different ICT materials for lessons and also to be able to direct and have learners effectively benefit from such materials (Osborne & Hennessy, 2003). The integration of ICTs in the Zimbabwe teacher education curriculum was achieved through the CITEP⁶. VVOB identified a needs gap in the integration of ICTs in Teacher Education Colleges and Polytechnic Colleges. Although Zimbabwe has a total of 15 Teacher Education Colleges, only three secondary teacher education colleges were taken aboard in addition to the 10 Polytechnical Colleges. The programme ran from January 2003 to December 2008. Although the programme involved 10 Polytechnical Colleges and three Secondary Teacher Education Colleges, this paper reflects exclusively on the impact of the programme on the three Secondary Teacher Education Colleges.

The planning, implementation and evaluation of CITEP, was modelled on OM (outcome mapping), an integrated programme planning and evaluation tool developed by the IDRC (International Development Research Centre) in Canada. OM focuses on outcomes as changes in the behaviour, relationships, activities, or actions of the people, groups and organizations with whom any particular program works directly.

Initially, planning meetings were held to identify stakeholders and put in place implementation structures, such as the NPMT (National Programme Management Team), TASC (Technical Assistance Support Committee) and College IT Units.

Using the OM strategies, the following broad areas were dwelt on: (1) intentional design of the programme; (2) outcome and performance monitoring; and (3) evaluation planning.

Through a series of workshops, stakeholders were introduced to OM concepts before taking part in the planning of the programme. The programme was designed after a critical analysis of the vision and mission of the higher education sector in Zimbabwe, hence, justifying the inclusion of the involved stakeholders. Each stakeholder had to carefully identify own boundary partners⁷, outcome challenges⁸, as well as coming up with progress markers (indicators or benchmarks).

Since the programme was more concerned with outcomes, it also meant that the participants had to evaluate their own activities as a part of performance improvement and goal attainment. Thus, training in data collection and evaluation was done and stakeholders were trained in the use of necessary tools in performance journals, strategy journals and outcome journals. These tools also were made readily available in hard and soft copies. Throughout the duration of the programme, participants had to adhere to set dates and deadlines in collecting data and evaluations for the programme. At the end of the programme in 2008, both internal and external terminal evaluations were done.

⁶ The CITEP programme came in to existence as a result of the partnership between the MHTE (Ministry of Higher and Tertiary Education) and the Flemish Association for Development Cooperation and Technical Assistance (VVOB), a non-governmental organisation from Belgium.

⁷ Individuals, groups and organisations within higher education sector it interacts with directly and from which change is anticipated.

⁸ Description of the changed behavior, action or relation in the boundary partner.

The rollout of the programme was in three phases, namely, the development of IT infrastructure, ICT support and staff development. These are partly the same concepts identified by the UNESCO-UIS (2009) in its guide in measuring ICTs in education.

Developing ICT Infrastructure

CITEP engaged in a variety of activities that included the follows:

- (1) Establishment of an IT unit at each college whose role was to coordinate all IT activities at the institution;
- (2) Establishment of student computer laboratories at colleges where these were not available;
- (3) Networking the various college buildings and departments into a college area network;
- (4) Linking all the participating colleges in to a wide area network and the World Wide Web through broadband connection.

ICT Support

Capacity building in IT unit members by training them in hardware and software repair and maintenance was initiated. IT Unit members were afforded professional training in Hardware, software and network support leading to the CompTia A+ and N+ certification⁹. From all the 13 colleges, 26 lecturers were trained over a period of six months at an IT training institution. However, over the subsequent years, the lectures trained took the forms of workshops based on the “train the trainer concept” as well as peer to peer teaching. IT unit members were also helped in formulating IT policies and end user policies for the respective colleges.

Staff Development

This phase focussed on the use of ICTs in teaching and learning. To this end, the programme set up server computers for local mail, sharing files online and for MOODLE¹⁰ e-learning platform. IT unit members for each college conducted staff development workshops for college lecturers on sharing network resources, using local mail, designing and running e-learning courses. The training workshops were standardised so as to allow the sharing of ideas and transfer of personnel across the colleges. It was hoped that once trained, the lecturers would make use of ICT skills in their teaching methodologies and also cascade the same skills to students in their respective departments. The MOODLE platform was also intended to allow lecturers to deliver tuition to student teachers who were in the field on teaching practice.

The last phase of the integration was on the infusing, cascading and effective use of ICT methodologies in to the various college syllabi. Interestingly, the CITEP programme was instituted at a time when the DTE¹¹ at the University of Zimbabwe had unveiled a policy in which IT education was made mandatory for every student at a teacher education college. DTE clearly spelt out that it would not certify any student who had not passed the ICT course. Luckily, the policy came into effect in 2007 when the colleges had already been capacitated to offer courses in ICTs in education as well as using such technologies in the delivery of the teacher education curriculum.

⁹ When IT units were set up, staff to man the unit was drawn from the existing pool of staff members. These were specialist academic subject lecturers who were given technical training to run the unit. The programme paid for their certification through the CompTIA (Computing Industry Technology Association) scheme.

¹⁰ MOODLE (Modular Object Oriented Dynamic Learning Environment) is a learning management system software which allows instructors to manage materials distribution, assignments, communications and other aspects of instruction for their courses.

¹¹ All teacher education colleges in Zimbabwe are associate colleges of the University of Zimbabwe and DTE regulates the functioning of colleges, registration and certification of students at these colleges.

Reflections

The CITEP programme proved to be a worthwhile intervention for participating teacher education colleges. Besides bringing with it a lot of benefits, it has also brought some challenges. These benefits and challenges are discussed in this section.

The most important benefit of the programme was that it ensured that colleges were found ready in compliance with the new DTE regulation that made the use of ICTs and the development of ICT skills in students mandatory. However, the other 10 primary teacher training colleges that were not the part of CITEP were caught off guard, hence now there are efforts to try replicate programme in these colleges as a way to ensure compliance with the new policy. Secondly, there has been a marked increase in the demand and use of ICT facilities in all the three secondary teacher training colleges. This can be interpreted as success of the staff development programme as well as a result of efficient cascading of ICT knowledge and skills to college students. Thus, college administrators have had to keep up with the demand of ICT facilities by efficiently maintaining the existing facilities and at times improving on accessibility and availability.

College IT Units were also capacitated to measure the utility of equipment using programmes, such as the uptime software¹². This enabled them to deploy equipment where it was effectively used and remove it from areas where it would lie idle, hence there was effective utilization of the available resources by both lecturers and students. The participating colleges also ended up developing standardised networks (identical set-ups). It became possible for a college lecturer or IT Unit member to be attached or to be transferred to another college for a period of time should need arises. Such movement of staff meant that there was and there still is no need for retraining of staff, since there is an identical setup of infrastructure and programmes. Such a set-up has become handy for the college personnel to help each other in trouble shooting and sharing ideas.

The CITEP programme also brought with it unintended consequences. It brought with it an inclination towards the use of FOSS (free and open source software). Initially, FOSS was used to run the colleges' domain controllers, e-mail and e-learning servers. The move toward FOSS was meant to cut costs. Whilst, it proved to be difficult in the initial stages to integrate FOSS with the common windows platforms and it is now paying off in terms of licensing. Varieties of Linux that are in use do not need licensing and can be customised to suit the needs of the various colleges. In addition, FOSS has proved to be excellent, since it does not easily succumb to viruses. For colleges in developing countries, this is of immense value, since they save on money and the need for specialised technical expertise.

Challenges

The major challenges facing the integration of ICT into the teacher education curriculum in Zimbabwe are sustainability and replication. Firstly, it was an external partner who managed to identify the gap that existed within the higher education sector, particularly within teacher education, that there was a need to provide both ICT resources and skills. Yet, teacher education colleges should have been treated as the nerve centre of the whole computerisation programme. It defies logic that teachers were expected to help pupils later in schools with their computing when little was being done to expose them to ICTs. One then wonders whether ownership of change is guaranteed in such a scenario where an external partner initiates change, and hence sustainability is

¹² Uptime is an open source programme that not only measures the total time a machine has been up to, but also can calculate the percentage time that machine has been in use and or has been idle. It is available for different operating systems.

threatened. Many similar external funded programmes ended with the expiry of external partnership.

Secondly, although the CITEP programme remains one of the most tangible and successful programme yet in the history of teacher education in Zimbabwe, it still remains too little and too late. It can be described as a trial or pilot programme, since it operated in three secondary teacher education colleges only. The other 12 colleges were not involved and will need to undergo the same development. Taking into account that it was an external partner who identified the knowledge and resource gap and funded the programme, then it may be an uphill task for the other colleges to develop to the same level, since the external partner is now involved in other programmes. If both the Ministry of Higher and Tertiary Education and the remaining colleges work hand in hand in replicating the programme, then continuity and sustainability will be assured.

The training period is another challenge facing the integration. The course is two years inclusive of a four months teaching practice period. Experience on the ground has shown that the period is so packed with teaching subjects, professional subjects, research and other ancillary activities. Thus, the imparting of ICT skills has not been as effective, as it should be especially if one takes into account that some of the students join the college without any computer skills at all. ICT infrastructure has also proved to be capital intensive. Besides buying new hardware and software, there is a need to continually upgrade them and yet ensure backward compatibility with the existing system. This has led to the co-existence of various Windows platforms, meaning that both staff and students have to be taught how to operate in each of them effectively.

An evaluation, carried out by Manyati (2006), itemised a number of constraints and challenges on the integration of ICTs into Zimbabwe's teacher education curriculum. These constraints include the following among others:

- (1) Lack of skills in end users on using ICTs;
- (2) No defined training plan for end users;
- (3) Inefficient infrastructure affecting the proper ICT maintenance and assistance to end users;
- (4) Inadequate financial resources to procure the required ICT hardware and software in sufficient quantities to meet institutional needs;
- (5) No prioritization of ICT budget.

These constraints are inherent in the institutions and hence have to be resolved before this pilot project can be of benefit to the other 12 remaining teacher education colleges.

Staff turnover across the colleges has also become a thorny issue in the sustainability of the programme. The IT units have been ever training new staff with an equal number leaving over a short space of time and hence the actual cascading of skills to the teacher trainees has suffered. The problem has further been worsened by the natural fear of ICTs and computers and resistance to change by some of the lecturing personnel. It is also interesting to note that brain drain has not spared the college IT units and the programme implementation personnel. Out of the original 26 people who were initially equipped with specialist technical skills in 2003, by 2006, only four remained. Thus, CITEP had to embark on a massive peer to peer training to fill the gap. Actually, by giving specialized computer training and certification to lecturers, there were now more marketable and thus moved on to the so called greener pastures.

Another very interesting discovery that was made during the course of the programme was on the involvement of the senior administration in integration issues. ICTs are a specialized area and though the colleges administration initially pledge to work for the total success of the programme, it became evident in due course that its members did not fully appreciate the importance of the programme. Thus, sometime during the

implementation stage, the programme had to hold training workshops for administrative staff so that they would become knowledgeable in the integration of ICTs in teacher education curriculum. This exercise did pay off handsomely, as the acquisition of resources, budgeting and the efforts towards staff development became a priority in the three colleges.

Conclusions

As Unwin (2005, p. 117) argued, there should be a shift from an emphasis on “education for ICT” to the use of “ICT for education”. Tubin (2006) went further pointing out that the ICT “lever” takes many forms and as such ICT’s roles in the curriculum can be viewed as learning about ICT, learning with ICT and learning through ICT. This is an ideal situation that unfortunately, the author’s experience as a participant in CITEP does not confirm. Very few lecturers were prepared to integrate ICT technologies into their own subjects. Many of them were of the view that IT should be a separate subject taught by IT personnel. For them, such integration was time-wasting and of no importance. Of course, there are several reasons for such a scenario as pointed out by Coutts, Drinkwater, and Simpson (2001). They argued that teachers in schools see ICT use as an additional subject or complementary teaching activity, because of the lack of the knowledge or skills that would allow them to integrate ICT into classroom learning, or begin to think about how ICT could be used to transform learning and teaching. As Loveless (2007, p. 514) revealed, ICT can be presented as a subject with particular knowledge, skills and concepts and as a tool to support learning in other curriculum subjects. However, both aspects are lacking in Zimbabwe’s teacher education curriculum, as these are yet to be incorporated. No integration model or framework was employed. Indeed, the belief was that once adequate hardware and software resources were made available, integration would be a success.

Despite of these challenges, the CITEP program provided an excellent launch pad, not only for the integration of ICTs into the teacher education curriculum, but also for the effective development of ICT skills within the teacher trainees, making it possible for the further cascading of the same skills to pupils once they join the schools as professional teachers.

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