

BACKGROUND

The start of the 21st century has witnessed significant social trends in which people access, use and create information and knowledge very differently than they did in the previous decades, in many ways due to the ubiquitous availability of ICT (Price, Griffin & Roth, 2011). Training in the past decades did not involve equipping school teacher trainees with ICT skills (Lubuva, 2012). Training these teachers in new technologies has therefore become a concern for institutions and ministries throughout Commonwealth countries, as most teachers do not have enough skills, experience and confidence to use technologies for instruction, yet all learners go through these schools before going for further training and gainful employment.

Kiilu and Muema (2012) have posited that integration of ICT in teaching is in tandem with Kenya's plans to use education as a platform for preparing learners to play an active role in an e-society of the 21st century, as envisaged in its Vision 2030. Therefore, teachers require further training in order to equip them with knowledge, skills and attitudes in ICT, to enable them to use it for teaching and learning. Equipping teachers with ICT skills will require among others, to carry out continuous professional development (CPD) for the teachers. The purpose of this paper is to discuss how CPD may be carried out by use of Open and Distance Learning (ODL).

RATIONALLE

I think a brief description of my background will be necessary here. I am a secondary school teacher, specialised in teaching Physics and Mathematics in Kenya. Throughout my practice, there have been computers in the school but I only used them, like most of other colleague teachers, to prepare schemes of work and examinations for learners. We also had software for filling in the marks and analyzing examination data. To me that was integration of ICT in teaching and learning. However, when I joined a Masters programme (where I specialised in Mathematics and Science education), I was introduced to practical pedagogical use of ICT, including open distance learning- which is the focus of this paper. Courses that helped to fire up my passion on pedagogical use of ICT were 'ICT in Education' and 'ICT in teaching of science and Mathematics'. I prepared and taught 16 practicum lessons using ICT, giving me experience that helped grow my belief that teachers training on appropriate technologies is the missing link to determine whether teachers will use ICT in teaching or not. In writing this paper, I will focus

on the various ways in which ODL can be applied to enhance teachers ICT skills, to match that of their learners.

CONTINUOUS PROFESSIONAL DEVELOPMENT (CPD)

According to Guskey (2002), CPD is the systematic effort to bring about change in the classroom practices of teachers, in their attitudes and beliefs, and in the learning outcomes of students. This is to say that, any professional development for teachers will only make sense if it focuses on change in teachers' mode of instruction and hopefully, improve learners' outcome. The most popular model of providing CPD to teachers is using one-shot seminars and workshops. These seminars involve putting teachers in one central place, accommodated and given teaching and learning materials, with external experts as facilitators. In Kenya, SMASSE in-service training is one such training. It takes places during school holidays for a period of one week per year. It has not had much impact because the time for training is short (Mwaruma, 2013) and lack follow-up and monitoring mechanisms (Summey, 2013) of ensuring that teachers use ICT in teaching. Another reason for its lack of impact is that teachers are not incorporated in suggesting how the programme should be run. Besides, training teachers on ICT skills has been difficult because they perceive ICT in education as a substitute to themselves (Kahiigi et al., 2009).

To organise a CPD that meets the professional needs of the target audience, Summey (2013) posits there is need to carry out needs assessment. Needs assessment helps establish interests of different teachers, including feedback from prior training events, in order to align the training to institutional and programme goals. Doing needs assessment does not occur in traditional CPD because they are mostly sporadic and avenues to make money. The next section looks at how mobile learning, an aspect of ODL, has been and may be used to mediate CPD.

MOBILE LEARNING (ML)

The ML value proposition, although underdeveloped, purports to extend the reach of learning opportunities to remote areas, thereby supporting the expansion of educational access (Isaacs, 2012). According to UNESCO (2013), ML is viewed as unique and significant means to achieving the education for all (EFA) goals of increasing access and quality of education. EFA goals that relate to mobile learning are: improving levels of adult literacy and youth literacy, and

improving the quality of education. Mobile phones can improve the quality of education by supporting teachers and their CPD.

Different writers have provided varied conceptions of the term mobile learning. Pinkwart, Hope, Mildrad and Perez (2003) defined mobile learning as elearning that uses mobile devices and wireless transmission. This definition seems to suggest and describe ML in terms of the nature of devices it utilizes. However, some definitions suggest that ML should also include the mobility of the user. For instance, learners are described as accessing mobile devices to acquire and learn through a wireless transmission tool anytime and anywhere (Chen & Kao, 2000). The concept of 'anytime', 'anywhere' connotes movement of users and is supported by Laouris and Eteokleous (2005) who propose that ML should be viewed as the momentary access to the learner's private learning environment (which is constrained or controlled by the mobile device at hand).

ML is a necessary undertaking which may reduce cost of carrying out CPD since the cost of training has continued to rise (Schoolnet Africa, 2004). As discussed earlier, ML will allow will help teachers to learn ICT skills at the comfort of their homes and work places, without having to move to a central place.

Teachers already may be possessing skills required to manipulate basic ICT equipment for social and lesson preparation purposes such as word processing, emailing, chatting and blogging. In a recent study which I did in a County in Kenya to *map out the level of integration of ICT in secondary school science teachers*, I found that 80.2% of the secondary school science teachers surveyed could use email and chat, with the younger teachers (54.5%) being more adept in using these communication software. These findings are in consonance with findings by Gakuu and Kidombo (2010) who reported that younger teachers have more experience with computers due to their higher exposure to email and social networking like facebook etc. However, these skills do not equate to the digital literacy adequate for teaching and learning (Pelgrum, 2010), but offer a good platform and starting point for training teachers on pedagogical use of ICT.

When teachers embrace the use of mobile phones to do their CPD, they may realise the need to use them in class for teaching. Teaching using mobile phones in class enhances use of inquiry based learning and constructivist theory (Duffy & Kirkley, 2004), both of which are

learner centred and enhances outcome (Harlen, 2004). However, this would be a topic for another day.

USE OF SHORT MESSAGE SERVICES

Short message services can be used to support CPD in areas where there is no internet, or as a means to communicate instantly to teachers in workshops. For example, the faculty members of the Aga Khan University (IED, EA¹) were able to carry out training in Kisumu town of Kenya using PDT²s on the site of the workshop, while they monitored the progress from the main campus in Dar es Salaam (over 1300 Km apart) a database and Nokia blogs (Onguko, 2010). The PDTs were alumni of AKU-IED-EA. This was made possible by the PDTs sending messages to the faculty members and they would receive responses on how to manage the CPD process and any challenges.

The feasibility of using ML learning in Kenya is enhanced by the lively and energetic mobile phone networks in Kenya, coupled with a high mobile phone ownership, acceptance and usage (Traxler and Dearden, 2005). The prices of the mobile phones have also gone down since 2009, owing to the government removal of import tax- now a phone which can access internet costs about 50 dollars (Cellular news, 2009). According to Onguko (2010) SMSs have the advantage of leaving a trail of evidence by allowing for conversation through the messages to be saved in a database both in the phone and other external databases.

Nigeria has also launched a project that utilises mobile phones to help improve teaching of English language (UNESCO, 2013). Participant teachers sign up for a service which sends them richly formatted messages containing education content and pedagogical advice via a platform called Nokia life. It is very cheap. Working with Nokia life, the British council tailored content specific for use on mobile devices and for teachers working with large classes in resource poor schools. This method of ML can be adopted by trainers to carry out CPD on ICT skills.

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USE OF FACEBOOK, TWEETER IN ML

Facebook and tweeter are most common social media platforms available in Kenya that I suggest may and have been used to create user groups and sharing forums for people with the same interests, and can be accessed in phones which are internet enabled. Social media may be harnessed to encourage sharing of information among teachers. This information may be in form of topical discussions, and attaching videos and tutorials on different ICT innovations. Teachers could also report on their own findings on action research of a given intervention in class using ICT.

Facebook had a lot of advantage during my days as a masters student where we were required to work collaboratively through critical friends and buddy system. When chatting with a these friends on a particular issue, it was possible to immediately attach a document through facebook chat. This was also possible when we were doing assignments during holidays, when all students had travelled back to their home countries within East Africa. We were able to respond to each other's queries within a short time and our skills were enhanced. We shared academic papers for critiquing by attaching them on emails or facebook. I therefore propose that trainers can use this as a model that to raise ICT literacy among teachers.

Besides, facilitators of CPD may follow what the teachers are posting and this offers opportunities for peer coaching and scaffolding. The responses from use of social media are spontaneous since most people access facebook at all times. On the same note, ML at this level may be used by conference attendees to take notes by use of mobile phones, tablets during breakout sessions, capturing audio and video clips for the use in the on-campus workshops they will facilitate later, when they go back to their schools back using tweeter, facebook or other social media platforms (Summey, 2013).

Summey (2013) explains that conference innovators are now trying new innovative methods of engaging participants in collaboration at multiple levels, by use of a back channel. A back channel is a sidebar discussion that is facilitated through tweeter, using a unique hashtag such as hashTechConF2012. This often begins long before the actual date of the conference and goes beyond. Attendees plan meet ups in advance and maintain ongoing conversation using their cell phones and tablets while attending sessions. Those who did not attend will follow the proceedings and gain knowledge at their own time and pleasure. In addition to providing avenue

for virtual conversation during the live event, a backchannel becomes a lasting transcript that can be referred to indefinitely.

Mobile devices allow conference attendees to capture gems of information – perhaps audio or video clips, pictures or text based notes – that can be referred to at point of need and disseminated to peers within professional development communities and personal learning networks.

Another avenue is using wiki, which is a type of collaborative website where schools delegation might create a knowledge base by posting notes and resources from each other's session attended. The wiki serves as a sort of virtual homepage where teams organise their lists of sessions to attend so that they can obtain the widest range of information eg wiki spaces, google sites and PB wiki.

Use of ML enables teachers get CPD that is fitted into their schedules without disrupting them too much, and therefore likely to succeed. Schoolnet Africa (2004) posit that self paced distance learning is attractive at the in-service level, but when motivation can be maintained through regular interaction with fellow learners and or facilitators. This interaction can be sustained via email or social media like facebook or tweeter. Expert trainers can post online training modules and this might enable a greater number of teachers to receive in-service training at a lower cost. Teachers can also share notes by pasting links in facebook, email and other social media. Social media can also serve as discussion forums where challenging issues can be discussed within user groups and get useful insight on how to deal with situations almost immediately. This is because most teachers are facebook users and access it at short intervals, or they get in touch with each other asynchronously.

USE OF MOODLE

Moodle is free and open source software accessible on <http://moodle.org/>. Moodle is developed on theory of social constructivism. Social constructivism connotes the idea that people learn best when they engage in a social process of constructing knowledge together (Taylor, 2008). Again borrowing from my own example in my Masters course, we used to do all our courses both face to face when in Campus and online using Moodle when away from campus. We were required at a designated time to log in and comment on each other's topics.

For example, when we were making learning objects in the course of ICT in Education, we first suggested how one expected to create the object and posted that on Moodle. Colleague course mates critiqued the process and gave their feedback. After that, we were supposed to use the created object during practicum, where one would use it for practical teaching. Again we would post experiences of the use of objects and course mates would comment. The final part formed peer teaching using the object on a face to face interaction with course mates followed by a reflective paper for the whole process starting from object creation to implementation.

Those forms of hands on experience taught me that the best way to make teachers less phobic on technology is to create circumstances where they can use technology in all the things that they do in school. For instance, all the notes, schemes, assessment should be done by the teachers themselves. In a recent study of teacher preparation in a college in Tanzania, student teachers were trained on how to use Moodle to access materials other than an avenue for collaboration. Care should therefore be taken to make sure that use of Moodle is for integrative purposes and not just creating a repository for ICT materials (Lubuva, 2013).

VIDEO LEARNING COMMUNITIES USING ML

In 2012, Ryan Kinser, an eighth grade teacher used video cameras and a software (Teachscape Reflect) to capture videos and share it online, and offer other teachers to comment on it (Raths, 2013). These teachers discussed the videos on teaching either in real time or discussion boards.

Additionally, Mobile phones can be used to capture videos of examples of practice on camera or video and may not significantly change the dynamics of a classroom, unlike the normal full size video recording device such as the film camera. These videos about best practice can then be made available for teaching and learning using ICT. However, Burden, Schuck and Aubusson (2011) suggest that ethical concerns and dilemmas are prevalent and may need to be considered if the videos are to be used for learning. There may be need to seek informed consent. In this case, teachers will become producers of learning materials, other than just consumers.

In Michigan, budget cuts on CPD that involve travel were witnessed. In 2008, four specialists who trained teachers on technology decided to take a new approach and launched 21thingsforteachers.net, a virtual CPD environment built around Adobeconnect webconferencing sessions (Raths, 2013). Teachers can sign up and attend virtual sessions that cover a variety of

technology topics. The learning environment features live chat, polling, integrated audio and video and screen sharing.

USE OF ML FOR COMMUNITIES OF PRACTICE

After realising the shortcomings of one day seminars, Sheryl Nussbaum, cofounder and CEO of Powerful Learning Practice (PLP) thought of setting up ongoing job-embedded collaborative experience of collaborative learning (Raths, 2013). They have carried out for six years, seven month long CPD programme called Connected Learner Experience. It starts with synchronous webinars in Blackboard collaborate, which includes 40- 50 people. PLP offers smaller spinoff meetings in skype and google hangouts. Educators can connect via asynchronous sharing tools such as tweeter.

Teachers then may co-construct innovations over time. For instance, they can set up an inquiry and after identifying a topic for the research, they can engage each other on tweeter and using PLP hashtags. It is not a canned online presentation. Sheryl sets the ball rolling but teachers are expected to participate in the open window. She says that it is a busy way to learn, but it is exciting.

Further, ML can be a type of workplace learning (Burden, Schuck & Aubusson, 2011). These writers emphasize collaboration for professional learning, harnessing the power of mobile technologies to provide for collaborative communities for teachers professional learning. In these communities there are a lot of interactions which offer support even when the teachers are geographically isolated, provide access to expertise over a large of area made readily available in an online learning environment, and build personal and professional networks.

CONCLUSION

If teachers are made aware that they can use ICT skills to learn pedagogical skills, they will see its importance and embrace it. According to Meriam (2001), CPD providers can stimulate and motivate teachers by considering some tenets of andragogy (the theory adults learning). He posits that teachers as adult learners want to know expressly how they will benefit from any activity they engage in, and must be relevant to their specific need. ML can serve to motivate teacher engagement and participation is higher when ML strategies are incorporated, compared with lectures-only formats or even participant interaction via other means (Wilshart, 2009).

From the foregoing discussion, it is evident that CPD is possible by use of mobile learning platform. Similarly, use of mobile learning for CPD provides motivation for teachers to undertake building up their Knowledge and skills of ICT. I therefore, stress the thesis that teachers may not get motivation to learn ICT if they cannot understand how important it is to their professional lives.

REFERENCES

- Burden, K., Schuck, S., & Aubusson, P. (2011). Ethical mobile learning for teaching and nursing workplaces. In N. Pachler, C. Pimmer & J. Seipod (eds). *Workload based mobile learning: Concepts and cases*. Bern, Switzerland. Peterlang AG, International Academic Publishers.
- Cellular News (2009, June 16). Kenya Government cuts costs in mobile handsets. International Communication Union. Retrieved www.itu.int/ITU-D/ict/newslog/Kenya+Government+cuts+Taxes+on+Phone+Handsets.aspx
- Chen, Y & Kao, J. (2000). A mobile learning system for scaffolding bird watching learning. *Journal of computer learning*, 19, 336-346.
- Duffy, T., & Kirkley J. (2004). Designing environments for distributed learning. Learning theory and practice. Mahwah, NJ: Lawrence Erlbaum and Associates.
- Gakuu, C. M., & Kidombo, H. J. (2010). Pedagogical integration of ICT in selected Kenyan secondary schools: Application of Bennett's hierarchy. *Journal of Continuing, Open and Distance Education*. Retrieved from http://www.uonbi.ac.ke/openscholar/sites/default/files/hkidombo/files/gakuu_and_kidombo_pedagogical_integration_of_ict_-_bennetts_model_jcode_1.10.09.pdf
- Guskey, T. R. (2002). Professional development and teacher change. *Teachers and Teaching: Theory and Practice*, 8 (3/4), 381 – 391.
- Harlen, W. (2004). Evaluating inquiry-based science developments. In Paper Commissioned for the Meeting on the Status of Evaluation of Inquiry-Based Science at the National Research Council, Washington, DC. Available Online at [Http://www7.nationalacademies.org/BOSE/WHarlen_Inquiry_Mtg_Paper.Pdf](http://www7.nationalacademies.org/BOSE/WHarlen_Inquiry_Mtg_Paper.Pdf). Retrieved from http://www7.nationalacademies.org/BOSE/WHarlen_Inquiry_Mtg_Paper.pdf
- Isaacs S, Hollow D, Akoh B, and Harper-Merrett T. (2013). Findings from the eLearning Africa Survey., in Isaacs S (ed). The eLearning Africa Report, ICWE: Germany
- Kahiigi, K. E., Danielson, M., Hansson, H., Ekenberg, L., & Tusubira, F. F. (2009). *Criticism of elearning adoption and use in developing country contexts*. Paper presented at the IADIS Multi Conference on Computer Science and Information Systems, Algarve, Portugal.

- Kiilu, R., & Muema, E. (2012). "An E-Learning approach to secondary school education." E-readiness implications in Kenya. *Journal of education and practice*, 3(16).
- Laouris, Y., & Eteokleous, N. (2005). We need an educationally relevant definition of mobile learning. Retrieved from [www.mlearn.org.za/CD/papers/Laouris & Eteokleous.pdf](http://www.mlearn.org.za/CD/papers/Laouris%20&%20Eteokleous.pdf)
- Lubuva, E. (2012). Implementation of the policy on ict integration in teaching and learning. A case of a Public Teachers' College in Tanzania. (*Unpublished Masters thesis*). Aga Khan University, IED, East Africa. Dar es Salaam, Tanzania.
- Merriam, S. B. (2001). Andragogy and self-directed learning: Pillars of adult learning theory. In *New directions for adult and continuing education*, No. 89. Jossey-Bass.
- Mwaruma, J. (2013). *Exploring the level of integration of ICT in teaching of Science in Secondary schools in a County in Kenya.* (*Unpublished Masters thesis*). Aga Khan University, IED, East Africa. Dar es Salaam, Tanzania.
- Onguko, B. (2010). Design, Implementation and Institutionalization of Mobile Learning in Higher Education Brown Onguko , Aga Khan University – Institute for Educational Development , Eastern, 1-8. In *Journal Of African Studies*
- Pegrum, M. (2010). Modified, multiplied and (re) mixed: Social media and digital literacies Retrieved from <http://elanguage.wikispaces.com/file/view/Pegrum++Modified,+multiplied+and+re+mixed+%28Draft+Feb+2010%29.pdf>
- Pinkwart, N., Hope, H., Mildrad, M. & Perez, J. (2003). Educational Scenarios for the cooperative use of personal digital assistant. *Journal of Computer and assisted learning*, 19, 3, 383-391.
- Price, J., Griffin, P. & Roth, M. (2011). Transforming education: Assesing and teaching 21st century skills. In S. Burton et al. (Eds), *Proceedings of Global Learn 2011* (pp 417-418). Retrieved [http:// www.editlib.org/p/37205](http://www.editlib.org/p/37205)
- Raths, D. (2013). 3 ways webconferencing is transforming CPD. The Journal. Retrieved from thejournal.com/Articles

- Schoolnet Africa. (2004). *Towards a strategy on developing African teacher capabilities in the use information and communication technology*. Retrieved from http://www.col.org/SiteCollectionDocuments/04Towards_Strategy_Africa.pdf
- Summey D. (2013). Mobile learning strategies for K-12 professional development. In Z. Berge, & L. Muilenburg (eds). *Handbook of mobile education*. Newyork, Routlegde. pp 447-457
- Taylor, A. (2008). *Using moodle to leverage technology integration*. Ann Arbor, USA. ProQuest LLC.
- Traxler, J. and Dearden, P. (2005). *The potential of using SMS to support learning and organization in sub Saharan Africa*. Retrieved from <http://www.wlv.ac.uk/pdf/cidt-article20.pdf>
- UNESCO (2013). ICT in education: mobile learning week 2013. Retrieved from www.unesco.org/new/en/unesco/themes/icts/m4ed/unesco-mobilelearning-week/ Paris France.)
- Wilshart J. (2009). Use of mobile technology for teacher training In M. Ally (Eds). *Mobile learning: Trasforming the delivery of education and training* pp 265-278. Edmonton, AB; AU Press.