

## Integrating e-learning in teacher education

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**Abstract:** In considering the integration of electronic learning (e-learning) in teacher education, there is also a need to consider the kinds of skills and competencies the teacher needs for using such technical media in pedagogical activities in a teaching classroom. Such competencies will enable the teacher to guide the learners in encoding and decoding messages. It is also important that the teachers acquire various forms of knowledge and background assumptions about the relevance of the use of technology in pedagogical practice. This paper covers the e-learning issues of both the teacher and the learner. It gives a brief history of distance learning to include e-learning and teacher competencies in the utilization of related technology used in e-learning delivery modes. It also discusses how important e-learning is in the current society where technological know-how is advancing.

**Keywords:** Curriculum, Distance education, Education, E-Learning, Teacher, Teacher education

### 1. Introduction

Education trends in the twenty-first century are greatly influenced by advances in information and communication technologies (ICT). Consequently, learning is dynamic therefore in terms of its content, the delivery modes and learners (Agalo & Oluoch, 2014). Therefore, education institutions continue to strive to identify and institutionalise best approaches in integrating technology in the delivery of their services and programmes as they prepare their learners to fit in within the world of work specifically and the society in general where ICT has become the operating environment (Agalo & Oluoch, 2014). It emerges, therefore, that teacher education is critical in transforming society to benefit the present technological demands for learning appropriate knowledge and skills. The use of ICT therefore provides opportunities to develop frameworks and practices for enhancing teacher development. The classroom, therefore, needs to provide an education scheme that involves the learner in processing this information. This will shift education from brainwashing passive learners. It is an attempt to switch the education process from package to discovery (Jans, 2009). However, the shifting process will require new teacher competencies. So there must be a focus on the duties,

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responsibilities and conduct of a teacher to make us understand the new competencies required in the transforming education process. In today's teaching classroom, one of the tasks of the teacher is to prepare students to learn virtually (Jans, 2009).

The learner today rejects set goals of a curriculum which does not reflect the needs of industry. They prefer roles, that is, total involvement in relevant learning where technology plays a significant part. This total involvement may not be what the practical curriculum in schools have, thus they may not be at ease with fragmented, specialised goals of the curriculum. This situation would need new teacher professional competencies. Such competencies can be defined broadly to include knowledge, skills, and behaviours. Education, as is known to many is face-to-face or eye-ball-to-eye-ball. However, new approaches have emerged which do not require the actual physical presence of the teacher, together with students, for the teaching and learning process to take place. This leads to an increased flexibility with regard to time, course (content), pace, and place (Agalo & Oluoch, 2014). It can also accommodate large numbers (mass education) by use of few experts to reach out to many learners. It is, however, important to note that there is a need for mediation through ICT to bridge the physical gap and enable virtual presence (Hansen, 2004). Some of these new approaches include distance education which can be used broadly to incorporate blended, flipped, virtual, and e-learning.

## **2. Distance education**

Distance education and technology are intrinsically linked. Its evolution has been driven by the advances in ICT used to bridge the gap (Agalo & Oluoch, 2014). Distance education has evolved from the first generation of print-based technologies, through radio, television, and now computer and specifically internet/web-based (Hansen, 2004). Along the way emerged electronic learning (e-learning) and now the shift to mobile learning (m-learning) with the emergence of mobile technologies such as laptops, tablets, and mobile phones which are now used to access the content. According to Bjekic, Krneta and Milosevic (2010), distance learning is where the instructor and learner are physically separated for the major part of the study, and the distance gap is bridged by media / ICT. It is a flexible option in the delivery of education that can accommodate learners who cannot physically attend campus-based courses for a variety of reasons (Bjekic et al, 2010). For example, adult learners with family commitments, those in employment and cannot get study leave, and those who may want to learn through electronic formats/means.

Donnelly and McSweeney (2008) argues that e-learning is conducted through electronic media, usually over the Internet. Its success depends to a large extent on access to electronic content (e-content), Internet, connectivity, support services, and self-motivation of individuals. E-learning can be synchronous (real-time) or asynchronous (flexible-time). It offers convenience for the student (training anytime or anywhere) and consistency of content delivery (Nyankanga, Joshua, Wekesa, Ongaga & Orina, 2013). However, there is now a shift to provision through e-learning where they have developed some content under the open educational resources movement. In most situations, the adoption of new technology is compounded by many factors that affect the rate at which technology is embraced and integrated in institutions. They range from attitudes toward ICT, the cultural context, language barriers, access to both hardware and software in addition to Internet and connectivity issues (Agalo & Oluoch, 2014).

In a research conducted by the Institute of Open and Distance Learning (IODL) at Moi University, Kenya, in 2012, some of the reasons advanced by academic staff for the slow adoption of e-learning, according to Agalo and Oluoch (2014), included; inadequate ICT literacy levels, slow internet connectivity especially in the offices and classrooms, heavy workloads which do not allow for extra time to develop the content into formats appropriate for e-learning, among others. These factors, therefore, lead to resistance in integration and adoption of ICT in education. However, the current world order is driven by information and communication technologies, and no institution can survive or remain relevant if it does not adopt their use.

### **3. Teacher's professional competence**

Teacher professional competencies can be viewed in terms of knowledge, skills, understanding, and application which can also mean delivery or practice. The application component is the apparent determinant of good or successful teaching, and it depends on the effective utilization of relevant content, strategies, and techniques (Namunga & Otunga, 2012). Performance should therefore be evaluated based on competence in content knowledge, pedagogic, and application. In an e-learning context, utilization of technology in the delivery of courses and other administrative services is another core competence that is required of a teacher (Namunga & Otunga, 2012). The contribution which the teaching profession makes to society in all fields is immense. Every individual goes through the hands of a teacher who moulds them from the foundation at kindergarten right through to university, where they finally become professionals or experts in their own right.

According to the Commission for University Education (CUE) (2014), for an individual to become a professional teacher, they require going through a formal education system where they take programmes leading to teaching such as the early childhood development education (ECDE), primary teacher education, Bachelor of education (B-Ed) at university level or attend Teacher Training colleges. In the Kenyan context, for one to teach at secondary level, they require expertise in two teaching subjects in addition to knowledge in foundations of education, psychology and pedagogy as per the Teachers Service Commission (TSC) requirements (Commission for University Education, 2014).

Being a professional teacher involves more than just the acquisition of knowledge and skills through training. Effective application of the knowledge and skills in practice is also critical. One requires communicating the information adequately for the learners to understand the content as intended (Namunga & Otunga, 2012). A good teacher will also recognize that learners learn differently and therefore utilise a variety of learning styles such as incorporating visual, auditory, and kinaesthetic aspects, presenting information in multiple formats, scaffolding, modeling, and ensuring that your learners participate in enhancing understanding and retention of the subject matter (Darling-Hammond, 2006). Darling-Hammond (2006) avers that the teacher should also be able to vary the learning experiences to include expository methods such as lecturing, allowing the learner to actively participate in building up knowledge through inquiry-based manipulations such as drills, simulations and games, and also letting them interact by constructing knowledge through inquiry-based collaborative interactions with other learners and teachers. Providing timely positive feedback assists the learner in improving on subsequent assignments.

Apart from the expertise in knowledge and skills required, teachers also have to adhere to a professional code of conduct which spells out behavioural dispositions that they out to adopt and practice. Most countries have a defined code of conduct for their teachers (Agalo & Oluoch, 2014). However, they all revolve around setting out the ethical foundation of the teaching profession and the knowledge and skills that a teacher ought to acquire before claiming to be a professional in the field. The code provides guidance to the teachers, informs on expectations of the teaching profession, and is used to sort out disciplinary matters (Commission for University Education, 2014). It is apparent, therefore, that the centrality of that cannot be disputed. It is also evident that learner performance is dependent on the teacher to a great extend. For example on the choice and structure of content, its delivery approach, the kind of feedback and follow-ups, the choice of learning styles, and support provided to the learner will either enhance or derail their performance.

### **4. Teacher's ICT competencies**

A teacher should require basic computer literacy and communication skills. In addition, teachers should learn ethical issues related to the use of new technological advancement as well as tools and criteria for searching, identifying, and sharing relevant information (Namunga & Otunga, 2012). It is therefore imperative that teachers must undergo ICT training before they can embark on delivering programmes through e-learning, since they will be required to create courses and upload content, assignments, discussion and chat topics and

also send emails, respond to student questions, mark assignments and provide support services (Bjekic et al., 2010).

Those who went through training before ICT subjects were introduced can either go for in-service courses or take up computer packages which are offered by most institutions. For those still undergoing training, it should form part of the curriculum and made core courses (Bjekic et al., 2010). This will remove the fear of technology that some individuals may have while at the same time impart computer literacy skills and other relevant competencies such as surfing the internet, creating programmes using software and tools such as audacity, evernote, and hotpotatoes necessary for e-learning mode of delivery (Donnelly & McSweeney, 2008). Donnelly and McSweeney (2008) argue that in addition to the basic computer skills, it is important to acquire competence in the application of new technology in teaching. Utilization of learner and content management systems such as Moodle, WebCT, and Blackboard is critical in course delivery through e-learning.

Competence should also be at the level where one can conduct research, access relevant information, solve problems, and even engage in the innovative development of new products. It is also critical to be aware of malicious software such as viruses and how to prevent them in order to avoid challenges and disappointments when work is destroyed. According to a report by the Kenya National Union of Teachers (KNUT, 2015), the use of new technology in teaching in schools is being embraced globally and therefore, teachers should also be trained to understand the trend for effective service delivery and performance. UNESCO (2008), under the curriculum framework, has highlighted the technology literacy competences which must form part of the transformed teacher education programme. In the framework, it argues that teachers should have digital literacy skills and must also be in a position to use new ICT in managing classroom data.

## **5. E-teaching competencies and the e-instructor roles**

Professionally, the development of Self Learning Instructional Materials (SLIMs) (also sometimes referred to as modules), for utilization in distance education delivery modes is usually conducted by course teams. The course teams comprise the subject specialists, instructional designers, technologists, graphic designers, language editors, information and communication experts (Agalo & Oluoch, 2014). Each team member brings in their expertise such that the end product is quality pre-prepared instructional materials. Agalo and Oluoch (2014) adds the SLIMs have the following characteristics, namely: self-explanatory, self-contained, self-directed, self-motivating, self-evaluative, and finally, self-learning. The emphasis is on the “self” since these materials are intended to be used by individual learners who, in most cases, are in separate locations and also physically away from their instructors.

Sometimes the course teams may not be available; therefore, it becomes necessary that the e-teacher may have to develop competencies beyond subject specialization (Bjekic et al., 2010). They need to acquire technological skills and knowledge of web resources necessary to enhance their course content and pedagogical support of the learners. It is therefore recommended that the teacher's professional development should include ICT literacy skills in the programme. Organizational change and adaptation depend on the development of staff. The capacity building of staff changes the perceptions and understandings they have of the organization and consequently, the nature of the organization. As an organization changes staff, it changes itself. In educational institutions, traditional purposes and modes of operation are being challenged and changed just like in the wider society (Agalo, 2015). The changes that take place may be unintended as well as intended. Integration of technology in the delivery of services and programmes is one of the major transformations that most academic institutions are striving to accomplish. E-teaching competencies are therefore required among the academic staff in order to deliver courses through electronic means. According to Agalo (2015: 1), “Integration of technology in the delivery of academic programmes is increasingly becoming the norm rather than the exception and there is, therefore, a need for academic institutions to adapt

to the necessary changes. The new approaches require adapting the content, teaching styles and instructional methods to delivery via technology”.

There is need for induction and extensive training for skill acquisition and practice to gain both experience and confidence. Faculty preparedness is, therefore a very important component in the success of e-learning. They need to transform their attitude, believe that it is possible to teach online and decide to practice delivering their course through electronic learning. The transition or paradigm shift is a significant change that will require training, for example, on computer literacy and online pedagogy. They also have to accept that their role will shift from that of being an instructor to facilitator. Agalo (2015) argues that in designing, developing or repackaging content for e-learning delivery, it is critical to create a more student-centered teaching model that engages learners. It is about being a guide or facilitator on the side and not a sage on the stage.

There is a need to transform the preparation and presentation of the course content in such a way that the teacher; undertakes a detailed planning of the content, chooses a learner-centered design, provides a detailed course-description, provides content in manageable steps or chunks (weekly or topic by topic), provides adequate assignments and relevant electronic activities (e-tivities), and provides discussion forums initiated by lecturer or learner, among others (Agalo, 2015). In an e-learning environment, the e-instructor has several roles to play. These include being a course designer, author, creator, or writer with reference to the development or repackaging of content. A course writer uploads the content created onto an e-learning platform and structures it appropriately. The writer, according to Agalo (2015), provides guidelines, course schedule, outline, glossary of new or key terms used per topic, reference materials and an overall introduction to the course. This is bearing in mind that somebody else could manage or facilitate the course. It is important to point out that instructional materials for distance learning are intended to be self contained and written in a conversational language or what is commonly known as dialogue. This makes the learner feel included in the conversation and leads to higher participation and motivation.

The e-instructor, who may be the course writer also assumes the role of a course manager, facilitator or tutor where he/she takes charge of the course from the beginning, that is, enrolling the learners, taking them through assignments, discussions, chats and any other relevant learner related activities, conducting and marking the examinations and presenting marks to the learners. The e-instructor under this situation is able to account for all the students taking the specific course and is the contact person. This can also be seen as performing the role of an administrator (Reinhart, 2000). Another important role for the e-instructor is that of being a counselor or adviser both on academic, administrative and social issues. Being a distance learner may become challenging along the way and support services are critical to the success of a student. Learners may have some difficulties in understanding the content, assignments or participating in discussions (Reinhart, 2000).

The e-instructor should devote some time to addressing issues raised by such learners through emails, phone calls or even physical visits in designated study centres. Sometimes the learners may have social issues which may constrain successful completion of the course and an encouraging word or pastoral services from the e-instructor may provide a solution to the challenges being faced by the learner. Hansen (2004) advises that the e-learning field is fairly new and there is need to conduct research to ascertain any emerging issues. One other role that the e-instructor may have to assume is that of a researcher even as they conduct the teaching. For example on learner participation in discussion forums, any challenges in submitting assignments or accessing content provided through web links and other resources.

## **6. The e-learner roles**

A learner profile describes the characteristics of the student and assists in determining the way he/she learns best. The approaches adopted in distance education are mainly those that are learner-centred. This, therefore, implies that learners take charge of their learning by ensuring that they access content, respond to



assignments, participate in discussion and chat forums according to schedule. Education provision must shift from traditional transmission models to those that accommodate learner involvement, give room for discovery and exploration by the student. Learner-centred approaches such as elearning require a shift in the roles of both the learner and the teacher. The e-learner must acquire ICT skills that will enable them navigate through the platform and even search for relevant information on the Internet (Reinhart, 2000).

The e-learner roles become manifest in learning activities as follows:

- Motivated enough to endure any emerging or eventual challenges.
- Active participant: participate actively in responding to activities as provided by the tutor/lecturer/instructor.
- Autonomous learner: a resilient and independent individual ready to make decisions and act on them as may be required by the course teacher.
- Time keeper: meets datelines to ensure that they are not locked out before handing in assignments or performing any other tasks assigned/ required.

Possessing ICT literacy skills that enable navigation through the content and ensure full participation in the virtual learning environment.

## **7. Teaching development from e-learner to e-teacher**

The current world order demands integration of technology in the delivery of services for efficiency, effectiveness, transparency and accountability. As Agalo (2015: 4) highlights, “teaching at a distance involves more than just adapting the face-to-face delivery strategies. In designing the course, there is need for more learner centred approaches that focus on the activities that the learner will perform while the instructor provides content, facilitation and guidance”. It is apparent therefore that before an individual acquires the competencies to be an e-teacher, they must first be e-learners to practice and gain experience in order to confidently take up the e-teaching role. There are many resources which a teacher can use to learn the new skills. However there is need for formal training either at pre-service or in-service levels or through organised short-term training programmes such as seminars and workshops. The KNUT (2015: 79) report indicates that “among the professional needs of the teaches are teaching and learning resources (materials, laptops, infrastructure) and training (in-service, refresher courses, induction).

## **8. Issues in integrating e-learning in teacher education**

E-learning is a fairly new concept especially in Africa where information and communication technologies that support such delivery approaches are still not accessible in all parts of the continent. The concept of e-learning is also a challenge in itself in that its application is on a continuum of a variety of models from those that are purely online through blended to CD-ROMS (Bjekic et al, 2010). This makes the application of e-learning and its emerging scenarios and the utilisation of attendant technologies a challenge. A number of issues are bound to emerge since this is new ground and most teachers may have to learn how to deliver instruction through the technologies before they can use them in class. Some of the issues may include:

- E-readiness of most educational institutions which is still wanting.
- Integration of elearning elements in the curriculum is minimal. Therefore, as Kafu (2010) points out it important to broaden the teacher education curriculum to include areas demanded by the modern, technologically-oriented society.
- Competence of instructors in elearning to be able to deliver and guide the learners appropriately is inadequate.

- Attitude towards elearning especially from die-hard believers that teaching and learning can only take place face-to-face hinders adoption of new approaches especially those that involve utilisation of technologies where some may be technophobic.
- ICT literacy levels of learners and the teachers may be inadequate.
- Internet access and connectivity in general which is still a big challenge in most parts of the country, especially in the rural areas. Sometimes it may be available but the costs are prohibitive.
- The appropriate support services may not be adequate. Most teachers already have heavy workloads and may not have time to respond to the needs of each learner individually. This may lead to high drop-out rates.
- Policies on elearning and distance education in general are either lacking or not yet fully institutionalised. This makes implementation a challenge.
- Initial costs pertaining to purchase and installation of equipment in addition to training staff are usually high and most institutions shy away or postpone its adoption.
- Distance education and particularly elearning is still a growing field and in some situations experimentation is still ongoing to establish concrete responses to issues raised and find solutions for emerging issues.
- Staff motivation in the form of compensation for time taken to develop the instructional materials may not be factored in the budgets of most academic institutions and this becomes another issue that may constrain adoption. Inglis, Joosten and Ling (2003: 107) point out that “the time spent by the teaching staff in the design and development of courseware needs to be recognized in the same way as classroom teaching. This will further encourage participation and innovation, especially where the use of knowledge media is seen as an add-on activity.”

In the face of dwindling resources, there is competition and prioritisation of services, activities and projects for implementation in most academic institutions. Such a situation introduces tensions and challenges in identification of what to fund among the many requirements. Among the issues that Kafu (2010, p.49) highlights are those touching on use of technological appliances, provision of suitable facilities and resources, review of teacher education curriculum and related high cost.

In most of emerging economies, the rapid advances in information and communication technology result in high rates of obsolescence making it difficult especially for academic institutions with constrained budgets to keep up with their purchase, installation and maintenance (Kafu, 2010). Most institutions therefore continue to use traditional teaching methods and less effective instructional technology techniques despite the fact that they are aware they require to change. Some possible solutions to this challenge may be to encourage staff and students to bring their own access devices so that the institutions can concentrate on developing the backbone infrastructure.

Even though ICT has permeated in most sectors in Kenya, such as transportation, communications, banking, medical services, and the emergence of concepts such as e-governance, M-Pesa, and M-banking, the Kenyan educational system in general seems to continue lagging behind. My main interest in recommending integration of ICT as a subject of study (content) and a delivery mode is inspired by its potentials as a medium in the provision of flexible learning, lifelong learning and a learning society. Those of us in education are aware of these potentials of ICT and would wish that teacher education training institutions emphasize the role of ICT in the curriculum of teacher education such that the teachers would eventually acquire mastery of ICT skills and resources for education in today’s information and knowledge-based society (Hansen, 2004).

Learners today are beginning to get disappointed when they get into classes where there is no Internet access, information is scarce and ordered by the presence of the teacher and structured by fragments of subjects and schedules (time-tables). With the changing profile of the learner in today’s digital and networked society, the traditional classroom begins to be challenged (Hansen, 2004). Its effective survival will depend on integration of ICT by creating an enabling environment for e-learning to maximize perception and make

everyday learning a process of discovery. Obviously, mere instruction step-by-step will not suffice. There is therefore a need for a paradigm shift as indicated below:

**Table 1:** Emerging educational paradigm shifts

<b>Conventional/Traditional learning</b>	<b>Emerging/Flexible learning</b>
Offer-driven	Question-driven
Class/ location based	Flexible settings / e-learning platforms
Transfer model	Interaction model
Standardization	Tailored for specific audiences/ learners
Teacher is the sole knowledge expert	Teacher a learning guide/ facilitator
Linear curriculum	Circular/ modular curriculum
Selection of what is presented	Adaptation of content
Based on abstractions	Based on authentic contexts
Discipline structured	Problem structured
Limited resources in a physical library	Rich variety of print and electronic recourses via web/virtual access
Institution /school linked	Society /Community linked

## 9. Conclusion

Education is dynamic in terms of its content, delivery modes, and learners. Emerging approaches such as distance education, e-learning, blended, flipped, and virtual learning need to be embraced. However, they require a transformation in content storage and delivery. E-learning takes place virtually where the centre of attention is the learner, and the teacher facilitates and guides. Integrating e-learning in the curriculum for education is a desirable effort in the current world order where ICT has become the operating environment and the driving force in interaction and access to information. Nevertheless, from a social constructivist perspective, all technologies embody the social and historical context and values that produce them; the integration of ICT in the dynamics of education today will therefore not be a decontextualized inclusion.

Indeed the ICT needed in the classroom for e-learning are not essentially different from any other technologies that have been used before. They are essentially products of development in prior technologies. Earlier technologies functioned to enhance learning – printed book, blackboard, radio, pictures and use of other visual aids. Such historical technologies have now converged into telematics; telephony, television, video, computer, internet, photography, broadcasting and film. What is needed for the learner is therefore a kind of holistic knowledge gained through technical reality and their everyday experience both brought into the classroom. This then requires the teachers to acquire new competencies to pedagogically operationalize them. Knowledge is no longer a cultural accessory but is becoming increasingly a consumer commodity. It means then that the business of teaching is ensuring that customers (learners) are suitably motivated is becoming important as the perfecting of commodities (knowledge) which are to be sold (taught). There is no doubt that use of ICT in classroom will enhance media literacy that will also continue helping learners in their daily activities in the current information age. It will also help develop literacy skills that the learners will use in continuing education.

## 10. Reflective questions

1. E-readiness of most educational institutions which is still wanting.
2. How can teachers make their courses more flexible, accessible and remain educationally sound?
3. Why is it important to focus on staff training and development in distance education?
4. How do teachers learn and adopt new techniques for instruction?
5. What ICT competencies do teachers and learners need to have?

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