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TEACHER EDUCATION IN CONTEMPORARY SOCIETY: TRANSFORMING TEACHER EDUCATION THROUGH TECHNOLOGY INTEGRATION IN LEARNING

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Abstract:
This paper reviews literature on the role of technology integration in education and illustrates how integration of technology in learning could transform teacher education by equipping teacher trainees with the skills that enable them to transform learners into empowered and ethical citizens who effectively contribute to sustainable development. Technology integration in education is crucial because the youth today are growing in an environment where they are interacting with various forms of technology and their operations. Integrating technology in their learning is therefore likely to offer them motivation and curiosity to learn as the learning is in the context of their daily experience, thus meaningful. The review is done with a view to making recommendations on how teacher training institutions could support curriculum delivery with mobile technologies in order to set the pace for other learning institutions on the need to provide learners with holistic quality education that meets the needs of today's dynamic global society. Integration is critical because technology is the major key driver of the 21st century skills (including communication, critical thinking, collaboration, problem solving and innovation), which has revolutionized education, making it accessible anytime and at any place. This paper will focus on the benefits accrued by employing technology to shift teaching from the formal education knowledge production model to a more engaging and collaborative model that is competence based. It is hoped that this review will shed light on the need to reform teacher training curricula content and scope, objectives, teaching methods and resources to ensure that the programme produces teachers who are well equipped with skill that enable them to effectively develop learners with skills that enhance their contribution to the development agenda of the society.

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1. Introduction

Education is regarded as the driving force behind development in a society. Through the knowledge and skills learned in school, individuals are enabled to work in the modern and informal wage sectors. Thus, adequate levels of general education have a positive influence in health and agricultural productivity. Education therefore encourages more efficient production of goods and services. In this respect, schools play a significant role in training entrepreneurs (Sifuna, Chege & Oanda, 2006). To this end, teachers are the key drivers of economic development of a nation. Kafu (2015) adds his voice to the discussion noting that teacher education programme is a critical component of education which determines the rate and level of development in any society. This is so because the programme focuses on preparation and production of school teachers whose main role is to transform a society with relevant competencies for development. Also, Lucas (1972) asserts that teacher education is the main pillar of any established system of education and the custodian of the society's culture. This view is supported by Kenya's Sessional Paper No. 6 of 1988 in its statement, "*there is urgent need to develop and promote teacher education programmes if the administration of education in the country is to succeed and national development is to be accelerated*". Achievement of sustainable development by the year 2030 is pegged on education's significant role of developing learners with relevant skills to help them contribute to the economic development of their society.

Teachers are the most important factor in achieving this goal because they are mainly responsible for the implementation of the educational process at any stage. However, their success in this endeavor demands a huge investment in teacher preparation so that the future of a nation is secure (www.archive.mu.ac.in/myweb_test/ma%20edu/Teacher%20Education%20-%20IV.pdf).

Such investments include reforms in pre-service and in-service training to ensure that teachers are facilitated with holistic quality training. They should also be offered regular staff development programmes to keep them abreast with new developments in education to continually empower them with knowledge and skills that enable them to offer education that is relevant to the needs of the society. The notion that education is the key to development shows the significant role of teacher education in the survival of any society. On this reason, many countries including Kenya have a higher investment in education than in any other Ministry (Kafu, 2011). However, despite the pivotal role

that teachers play in the development of a nation, they continue to receive a raw deal in their training due to the numerous challenges that have riddled teacher education in Kenya. Such challenges include irrelevant and outmoded curricula, meagre resources and outstretched facilities as a result of expansion that has attracted huge numbers, unmanageable student-teacher ratios that influence teachers to entrench the outmoded transmission model of education , lack of qualified trainers as most tutors have not had a practical experience in teaching the levels for which they train teachers (thus have no practical base), and lack of reforms in curricula content despite the major changes that have resulted from the growth of technology (Challenges and remedy of Teacher education. www.globalscienceresearchjournals.org/gjses/110320171477.pdf).

These and other challenges seem to imply that the education offered in teacher training institutions is not relevant to the needs of today's society. This scenario has far reaching implications in education. For instance, teachers can only deliver education to learners the way they were taught. To this end, they perpetuate the use of the elitist model of education whose intellectual focus only benefits a few learners with academic inclination while the majority others are dismissed as failures. The model also neglects the development of gifts and talents of learners who are not intellectually inclined. Thus, it denies them their right to education. Modern trends in education emphasize the need to employ modern pedagogical practices in curriculum delivery to ensure that individual learners are enabled to realize their full potential in education cognizant of their abilities, interests and talents. In line with this, Sustainable Development Goal No. 4 seeks to ensure inclusive and equitable quality education and to promote lifelong learning opportunities for all (www.un.org/sustainabledevelopment/education).

The goal reflects a global education landscape that emphasizes the need to develop learners with skills that transform them to be innovators, problem solvers, critical thinkers and ethical citizens (Basic Education Curriculum Framework, 2017). Developing teachers with such skills demands reforms in curricula, teaching methods and resources (to include mobile technologies). Such reforms are critical if teacher trainees are to be effectively equipped for their teaching assignments which require them to develop learners with skills that will enable them to contribute to the development of the society.

2. Teacher Education Concept

Teacher education refers to the policies and procedures designed to equip prospective teachers with the knowledge, attitudes, behaviors and skills they require to perform their tasks effectively in the classroom, school and wider community. It is also defined

as a programme of education, research and training of teachers from pre-primary to higher education level. Teacher education influences all aspects of education and like other components of education; it is influenced by social, political, economic and technological developments in a society. These influences call for continuous reforms in teacher education to ensure that education responds to the needs of the society (Kafu, 2011).

Nyerere (2009) maintains that teacher education is a recent development in education whose purpose is to promote the quality of teaching profession by ensuring that teacher training institutions produce teachers who are competent to effectively deliver education in the 21st century and adequately confront the emerging societal issues, initiate and participate in modern development-related activities. Its main purpose is to produce teachers who are creative, innovative, adaptable and initiative (Johnson & Adams 2004). Its curriculum covers areas (including content, general knowledge current affairs, professional areas, ICT and social issues) that were traditionally not considered aspect of teacher education in the inherited Western Europe programme in the mid-nineteenth century. However, although Johnson & Adams (2004) observes that the programme seeks to produce teachers who are creative, innovative, adaptable and initiative, it is paradoxical that research in Africa indicates that teacher education curriculum has not undergone reforms. Kafu (2013) for instance observes that its content, resources and mode of delivery have remained the same despite the dynamic changes in the society. He recommends that a teacher preparation programme should reflect the dynamic global environment in order to offer relevant education that addresses the needs of the society.

While some people regard teacher education as a programme that equips teachers exclusively with pedagogical content, others see it in a broader perspective that involves training and developing teachers with competences in both pedagogical and academic content.

Kafu (2011) argues that this unclear definition has tended to affect the mode of training teachers and the quality of teachers produced by teacher training institutions as well as the "identity" of teacher education and teaching profession. It is critical that stakeholders in teacher education engage in a serious academic debate to enable them harmonize its meaning as well as establish policies and standards to guide the operation of the programme if the confusion brought by the lack of clarity is to be overcome. In addition, they should create communities of learners and networks locally and internationally for the purpose of benchmarking the programme to align it with the global education standards and to also enhance its continuous improvement.

However, the differences in meanings notwithstanding, the concept encompasses three components namely teaching skills, sound pedagogical theory and professional skills (Challenges and Remedy of Teacher Education. Global Science. www.archive.mu.ac.in/myweb_test/ma%20edu/Teacher%20Education%20-%20IV.pdf).

Teaching skills refers to the training and practice in the different techniques, approaches and strategies that help teachers to plan and impart instruction, provide appropriate reinforcement and conduct effective assessment, acquire effective classroom management skills, prepare and use instructional materials and communication skills. Pedagogical theory refers to the philosophical, sociological and psychological knowledge provided to trainees to enable them to have a sound basis for practicing the teaching skills in the classroom. Professional skills include the techniques, strategies and approaches that help teachers to grow in the profession and also work towards the growth of the profession. These include soft skills, counseling skills, interpersonal skills, computer skills, information retrieving and management skills as well as life-long learning skills. The three components are integral to a teacher education programme which seeks to offer holistic quality pre-service training. As such, a teacher education programmes should develop teachers with skills across the three areas if they are to produce competent teachers who will impart learners with skills that enhance the development of the society.

In addition, teacher education focuses on the development of teachers' proficiency and competence that empower them to meet the requirements of the profession and face the challenges therein. It entails all the formal and non-formal activities and experiences that help to qualify a person to assume responsibilities of a member of the educational profession or to discharge his/her responsibilities more effectively (Challenges and Remedy of Teacher Education. Global Science. www.archive.mu.ac.in/myweb_test/ma%20edu/Teacher%20Education%20-%20IV.pdf). Non-formal activities include various support services provided for the teacher such as mentorship, student academic advisory, guidance and counseling, financial support for vulnerable student, clubs and societies, and sports and games. The services enhance the socio-emotional wellbeing of learners and development of soft skills including communication, problem solving, respect, co-existence, teamwork and leadership. Financial support ensures retention of students in the programme. This comprehensive and holistic approach to teacher education should be embraced by teacher training institutions if they are to effectively prepare trainees with knowledge and skills that can help them cope with the demands of the teaching career.

Teacher education is also viewed as a continuous process which comprises three phases which are complementary to each other namely pre-service, induction and in-

service. (International Encyclopedia of Teaching and Teacher education, 1987). This complementation implies that teacher professional development is a lifelong process that should be undertaken at any point in the process as needs arise. For instance, education reforms demand that practicing teachers are in-serviced in order to acquire the skills needed to implement the changes. Similarly, reforms demand that teacher training institutions align their curricula with the changes in order to equip trainees with relevant skills that help them to competently implement curricula, cognizant of the changes.

Like any other aspect of education, teacher education is ever-evolving and dynamic. Thus, to prepare teachers who are competent to face the challenges of today's dynamic society, teacher education programme has to keep abreast with recent developments and trends and also prioritize professional development to enable teachers to offer relevant education that responds to the needs of the society (International Encyclopedia of Teaching and Teacher education, 1987). For instance, today's dynamic world demands that teachers integrate technology in instruction in order to base teaching and learning on what is familiar to learners. This is imperative because the 21st Century learners are exposed to an engaging, dynamic and instant electronic and digital environment with an instant communication medium (Andrew Churches, 2008). Contrary to this, Kafu (2013) maintains that teacher education programme has remained dogmatic and conservative, noting that it has not had reasonable reforms and innovation since it was formalized during the industrial revolution in Western Europe. He maintains that the function of teacher education has remained the same and predictable. Such stagnation raises concerns to an educator because the status quo has been overtaken by the numerous global changes affecting education and society today which demand a paradigm shift in teacher education in order to align it with the 21st century standards of education to make it relevant to the needs of the society.

In a related study, Kafu (2011) asserts that there has never been a formally designed and taught course on ethics in teaching to teacher-trainees since the colonial period. Issues of ethics are rather mentioned casually in passing as aspects of principles and practices of teaching. Consequently, teachers do not understand the teaching profession and its demands. They also do not understand themselves and their role in the profession, other than instructional responsibilities. It is perhaps no wonder that the media continues to report issues concerning teachers' involvement in activities that go against the expectations of the profession and the society. For instance, concerns have been raised by stakeholders on reports over teachers' behaviour with regard to relationships with students of the opposite sex where sexual abuses including male

teachers defiling their students are brought to the limelight. This among other issues has compromised the integrity and image of the teacher. It has also raised concerns on teacher ethics, responsibility and trust over children under their care. In addition, teachers' timing of strikes to coincide with national examinations has been interpreted by education stakeholders as irresponsible punishment to innocent children at a time they need their teachers most. Other areas that continue to raise questions about teachers' ethics include unbecoming behaviour in the streets (when on strike) including actions that depict hooliganism, use of vulgar language and interference with private school operations as they threaten teachers to stop teaching and join the strike. These and other issues have raised concern on the need for teacher education programme to incorporate ethics to develop teacher trainees with soft skills including values of citizenship, respect and responsibility to help them contribute positively to the welfare of human society and to prepare them to nurture the same to their learners. It is imperative that learners are nurtured with values from the formative years of learning in order to internalize them so that learning institutions produce empowered ethical citizens who positively contribute to the development of the society.

In addition, Ochangi, Ayot, Kamina, Ondigi & Kimemia (2015) report that teacher trainees were unable to integrate Information Communication Technology (ICT) in their TP. This is a major issue of concern in this paper because technology is the key driver of education in the 21st century. A teacher education programme should reflect the dynamic global environment we are in today in order to offer relevant education that addresses the needs of the society.

Failure to integrate technology in teaching indicates there is a mismatch between education offered in schools and the needs of the society. It is no wonder the debate on graduates' lack of employability skills is resurgent in all forms of media in Kenya. Bunyi (2011) also observes that the wide curriculum scope in Primary Teacher Education programme (PTE) attracts knowledge transmission teaching methods that subject learners to the role of passive recipients of knowledge packaged by the teacher. Further, the researcher observes that trainees have inadequate practical teaching experience in public teacher training institutions due to the unmanageable huge numbers of students in a class and overstretched human and material resources. As a result, students have no opportunity to participate in tutorial group activities (comprising 6-8 students) for research seminar presentations and micro teaching. Such activities enabled students to engage in collaborative learning in the 1980s and 1990s. Their absence in the last almost two decades implies that students rely solely on the knowledge transmitted by professors and thus they have no opportunity to experience the practical angle of training and collaboration with peers. However, the challenge of

delivering education through transmission is the common practice in many countries. Nevertheless, Scott (2015) maintains that the formal/ traditional model of education is widely used across the globe despite the fact that it has been rendered obsolete by the growth of technology. There is urgent need to establish global networks on reforms in curricula and modes of curriculum delivery if education is to keep pace with the dynamic changes in the world. This is critical if the symbiotic relationship between education and society (Wilson, 2011; Sifuna, Chege &, Otiende, 2006) is to work with equilibrium. Sifuna, Chege & Otiende (2006) argue that the two influence each other in almost equal measure in that changes that take place in a society influence or force education as an institution to change in order to reflect and influence the changes. When education changes in form of curriculum or structure (cycle), the changes influence the socio-economic and cultural activities in society. However, when either education or society does not keep pace with changes happening in the other, a disequilibrium is created, either in school or society. To this end, a paradigm shift in the delivery of teacher education programme is imperative if it is to align itself with the dynamic 21st century society and address its needs relevantly. This cannot be realized without technology integration in learning

This notwithstanding however, it is worth noting that introduction of technology to the educational process is not enough. One must ensure technological integration since technology by itself will not lead to change. Rather, it is the way in which teachers integrate technology that has the potential to bring change in the education process. Therefore, the aim of teacher education is to develop skills and appropriate knowledge among teacher trainees for using and integrating the correct technology in an appropriate manner. Technology integration entails changing the way education is delivered (Laxmi & Gure (2016). For instance, Andrew Churches (2008) recommends that project-based learning should not be conducted traditionally with the textbook because learners can access authentic resources on the web, experts anywhere in the world, and peers learning the same subject somewhere else. Further, survey research could use e-mail questionnaires while interviews and focus group discussions could be conducted on Skype to save time and speed up the research process.

Otunga, Odero & Barasa (2011) support this view noting that technologies in and of themselves do not drive learning. As such, teachers should creatively and imaginatively design and select relevant technologies and drive them to support the achievement of the learning outcomes of the curriculum and also understand that technology cannot replace the teacher as its role is to enhance and support teaching and learning. Further, the authors recommend that teachers must take their responsibility in ensuring that they clearly define the learning task and framework, and drive

technology, cognizant of the fact that its benefits are derived from the collaboration, communication and creativity that the tools support. In addition, effective technology integration employs personalized and self-directed learning to help learners drive their learning in and outside the classroom, make their own choices based on individual goals and needs that can be addressed on individual basis, motivate them to put in more effort, take full responsibility of their learning and enhance better learning outcomes. Teacher trainees should be adequately facilitated with the knowledge and skills regarding technology integration if they are to effectively deliver education relevantly in the current education landscape after pre-service training.

As noted above, teacher education is a continuous process comprising three complementary phases namely pre-service, induction and in-service. This complementation implies that teacher professional development is a lifelong process that should be undertaken at any point in the process as needs arise.

The following section briefly discusses professional development in the context of teacher education.

3. Professional Development in Teacher Education

Professional development is the process of improving and increasing capabilities of staff through access to education and training opportunities. In teacher education, professional development provides opportunities for a teacher's growth after acquiring a training certificate and securing a job (Business Dictionary). It is crucial that teachers are provided with opportunities for professional development because building teacher capacity is the chief means for improving classroom instruction and, in turn, student achievement. Professional development also helps to build and maintain the morale of the teacher. In addition, availing teachers, an opportunity to grow professionally is critical because they are not only the most important factor in improving education; they are also the single most influential and powerful force for equity, access and quality in education. Quality teachers are also pivotal in accelerating sustainable global development (Teachers- UNESCO). However, if teachers are to play their roles effectively, they should be facilitated with regular in-serviced training and opportunities including study leave for further training to enable them to acquire new skills and advance in their career, and to also keep abreast with the current development and research in education. In addition, teachers should be accorded motivation through adequate remuneration and housing, decent accommodation and attractive scheme of service and conditions of service among other things. However, contrary to this, research indicates that teachers are not facilitated with professional

development both in pre-service and in-service training. For instance, Njui (2010) established that the Ministry of Education had no plans to facilitate in-service teachers with professional development (in-service training or study leave).

Similarly, in a case study of Teaching Practice (TP) in a public university in Kenya, Wagai (2003) established that TP supervision began quite late into the school term causing the trainees inconveniences of organizing lessons at the behest of the supervisor. This impromptu arrangement is unlikely to provide effective feedback and mentorship to a trainee. It does not also enhance meaningful professional development at this critical stage in pre-service training. Further, Wagai (2003) established that there was no partnership between schools where students were posted for TP and the university. This indicates that schools did not contribute to the assessment of a student on teaching practice. Thus, the grade given to a student did not reflect the whole picture of one's performance, particularly where a student had been supervised an average of 2-3 times instead of the minimum requirement of 6 observation. Such a grade does not take into consideration important factors related to TP including trainees' commitment to his/her assignments in school outside teaching, rapport with learners, relationship with staff and faculty members, punctuality in school and class attendance, involvement in the school life (sports, games, clubs and societies) and general attitude and demeanor. This omission in assessment also depicts a major gap in trainee's professional development that has affected the quality of education in all schools as teachers are churned out of teacher training institutions when they are not adequately equipped with teaching skills in the three components of teacher education discussed above. These challenges call for reforms in the assessment of internship programmes like TP and Community Service to make them more collaborative, comprehensive and meaningful. To this end, schools should be involved in the assessment of trainees during TP in order to factor in the related aspects of assessment outlined above. This could be done through a comprehensive report guided by the variables outlined to rate the trainee's performance. The report should be signed by the school head teacher and facilitated to the training institution at the end of TP. The school assessment should contribute a certain percentage (such as 20%) of the final TP grade.

In a similar study, Ochangi, Ayot, Kamina, Ondigi & Kimemia (2015) also found out that trainees were supervised once or twice. Also, a special content area with limited supervisors (such as Foreign Languages) forced supervisors to travel long distances to supervise and offer their expert feedback to trainees. This compromised debriefing and feedback discussion of observed lessons because a supervisor had to observe many trainees in different schools; thus, had limited time to provide appropriate feedback and mentorship support to the trainees as he/she exited from a

school quickly to supervise in another school. There is urgent need for teacher training institutions to invest in training supervisors to ensure that trainees are effectively guided and mentored through TP experience in order to master their professional skills for their career success in future.

In all, the findings have indicated that professional development in pre-service training is not adequately facilitated to teacher trainees. With regard to teacher motivation, Kibera & Kimokoti (2007) assert that poor terms and conditions of service have demoralized teachers and put off potential aspirants to the teaching profession This has also affected the image of the teaching profession and that of teachers. There is need to review the terms and conditions of service for teachers upwards and to give them motivation in form of decent housing in order to make the profession attractive and competitive.

Teacher development should be prioritized in order to continually equip teachers with relevant skills to help them offer holistic, quality and relevant education with the capacity to promote the development of the society. Lifelong teacher empowerment is critical in enhancing development of new skills that enable them to cope with the rapid technological changes which dictate new ways and approaches of teaching. UNESCO-IBE (2013) maintains that achieving holistic quality education requires highly competent and committed teachers who employ interactive and engaging teaching methods with technology support. It is the conviction of this paper that such teachers are not born, they are made through deliberate teacher development efforts and practices.

Scott (2015) adds her voice to the discussion arguing that providing teachers with opportunities for professional development can help them seize opportunities for integrating 21st century skills, tools and modern pedagogies into classroom practice to help them identify what activities they can replace from the formal education model and how to balance direct instruction with project-oriented teaching methods. This enhances continuous improvement in curriculum delivery as teachers have an opportunity to reflect on their teaching practice. It also ensures that education is relevant to the needs of the society. Further, professional development can help teachers to understand how inter-disciplinary education enhances a deeper understanding of subject matter and how it enhances development of 21st century skills. It is therefore necessary that teachers are facilitated with opportunities for professional development in order to help them understand the new developments in education and how to offer education aligned with the changes and the need for reforms in education. Professional development also helps teachers to understand the significance of creating professional learning communities that model classroom

learning that best promotes 21st century skills. This encourages knowledge sharing among communities of practitioners, using face-to-face, virtual and blended communications. This is a great synergy that can help teachers and stakeholders to offer relevant education that is aligned to the needs of the dynamic world. Teacher education institutions in Kenya should embrace this modern approach to professional development in order to set the pace for all other learning institutions. This is critical if the congruence needed between the school curriculum and teacher training curriculum (Laxmi & Gure, 2016) is to become a reality**.** It is critical that teachers understand the value of networking with reputable like-minded learning institutions for the purpose of benchmarking. This enables the institutions to engage in conversations that enhance continuous improvement of education. It is also a major way of ensuring that learning institutions across the globe align with the 21st century standards-based education to ascertain that graduates can compete for jobs anywhere in the world.

Further, Scott (2015) maintains that professional development cultivates teachers' ability to identify students' particular learning styles, intelligences, strengths and weaknesses and helps teachers to develop their abilities to use various strategies to reach diverse students and create environments that support differentiated teaching and learning as well as assessment. Teachers need this understanding so that they can treat learners as individuals who have a right to education and ensure that each is well facilitated to achieve the level of education one's abilities, interests and talents can enable. The current trend in the 8-4-4 system of education in Kenya only caters for learners with academic orientation and erroneously labels the rest as failures as noted earlier in this paper. The ongoing reforms in Basic Education Curriculum Framework (2017) demonstrate a shift from the traditional education model to a skills-based model that is inclusive.

This will ensure that all learners (including those with Special Needs) have an opportunity to acquire education to their highest ability. Professional development also helps teachers to support formative evaluation of students' 21st century skills development. Laxmi & Gure (2016) maintain that teacher education should develop skills and appropriate knowledge among teacher trainees for using and integrating the correct technology in an appropriate manner. The researchers maintain that every teacher should know how to use technology. The following section briefly discusses the significance of technology integration in education.

Notably, lack of teacher professional development in Kenya has forced teachers to engage in flexible study modes including distance learning, e-learning and blended learning modes. The modes have given teachers (particularly in primary schools) a window of opportunity to pursue further education at Diploma, degree and graduate

levels, despite the sharp criticisms levelled against the quality of education offered through such modes by education stakeholders . For instance, the Teachers' Service Commission (TSC) continues to lament that the Bachelor of Education (B.Ed) degrees acquired by primary school teachers using the blended mode (which allows them to utilize school holidays in April, August and December to study) have no impact on the teacher's teaching practice. This criticism has been attributed to lack of coverage of required contact hours of teaching due to factors which include lack of commitment to teaching by faculty members and lack of content coverage due to limited contact hours as the school holidays are fairly short. There is urgent need to address the challenges curriculum delivery using the above modes to ensure that teachers acquire the knowledge and skills prescribed for the programme of study. This is critical because, enhancing an adequate supply of well-trained and motivated teachers and school leadership; improving teacher education, conditions of service and deployment; and offering ample professional development opportunities are key factors for achieving sustainable development. Developing teacher capacity is also helpful in preparing learners for life and work in the context of a global world with numerous emerging challenges (UNESCO and UNICEF, 2013a).

4. Technology Integration

Technology integration is using computers effectively and efficiently in the general content areas to allow students to learn how to apply computer skills in meaningful ways. It also refers to incorporating technology in a manner that enhances student learning. Technology integration entails having the curriculum drive technology usage (not vice-versa) and organizing the goals of curriculum and technology into a coordinated, harmonious whole (What is Technology Integration. www.jan.ucc.nau.edu/~coesyl-p/principle3-article2.pdf) Integration of technology in learning today is critical because digital learners want an active learning experience that is social, participatory, supported by rich media and within learner control. Technology teaches them how to find information on anything they need to know including definition of a term or word spelling. This helps them to experience learning beyond the curriculum prescription as they seek the specific information. However, to achieve positive results with technology, teachers and learners must acquire digital skills to help them access and share class resources through digital links that enhance digital discussions between them (Characteristics of the 21st-Century Teacher, 2015). Technology integration must also cut across various disciplines if it is to effectively deepen and enhance the learning process. It must further emphasize learner

engagement, group participation, frequent interaction and feedback and connection to real-world experts. Effective integration also demands that the use of technology is routine and transparent, and that it supports curricula goals (Why integrate Technology into the curriculum. https://www.edutopia.org/technology-integration-introduction?page=1%2C27, 2008). Integrating technology with classroom practice can also strengthen engagement by linking students to a global audience, turning them into creators of digital media, and helping them practice collaboration skills that will prepare them for the life and employment (An introduction to Technology Integration. Edutopia. https://www.edutopia.org/technology-integration-introduction-video Dec 12, 2012). Global audience linkage is a significant way of enhancing creation of virtual communities of learners such as open online courses to encourage productive communication between learners taking the same class across different time zones (UNESCO, 2013a). It also helps teachers to keep abreast with changes in education and this helps them to offer education that is relevant to the society. In addition, integration expands the potential of individualized and personalized learning as well as flexibility for learners to learn at their own pace and engage in lifelong learning opportunities (UNESCO, 2013a). It also enhances independent and enquiry-based learning.

Further, technology enhances equitable and quality education for all as it helps to facilitate learning anytime and anywhere. It also enhances collaboration between teachers and learners and teamwork among learners (Andrew Churches, 2008 & Scott, 2015). Collaboration and teamwork are among the 21st century skills that learning institutions are expected to nurture learners with in order to effectively prepare them for life and work. Technology also allows for instant, flexible and reflective formative assessment. This provides both learners and teachers with immediate feedback on progress (Learnovation, 2009; UNESCO, 2013a). Reflective formative assessment is crucial in enhancing skill development as it offers learners continuous feedback as they go through the learning process. Technology also helps teachers to reach different types of learners and assess their understanding with flexibility through multiple means https://www.edutopia.org/technology-integration-introduction). This is one major way of ensuring that an individual's right to education is upheld as individual learners have and opportunity operate at their pace and ability without the unhealthy competition characterized by the formal education model. Learner interests and talent are also taken into consideration.

Technology also enables educators to build professional learning networks and to organize personal professional development. It further supports learners in research investigations as noted earlier. Technology also helps learners to reflect and construct new knowledge; develop new competencies and skills through simulations and extend

educational opportunities to learners who may not have access to high-quality schools (Bates, 2011; UNESCO, 2013a). It also enables teachers to customize and personalize learning as the technologies are portable and owned by their users. However, to meet the needs of different learner abilities, interests and background, teachers should creatively select varied teaching methods, learning activities and assessments to ensure that all learners benefit from the teaching-learning experiences. They should also employ a global approach in teaching in order to help learners learn about other cultures, people, and events from the media to train them about citizenship and cohesive living (Characteristics of the 21st-Century Teacher, 2015). It is however worth noting that most teachers in developing countries have difficulties integrating technology to the level described above due to lack of skills in technology (as noted elsewhere in this paper) and ineffective training in interactive teaching methods given the extent to which the transmission model is entrenched in virtually all learning institutions in Kenya and across the globe (Scott, 2015). This implies that the teachers churned out by such institutions have not empowered with professional skills that can enable them to successfully engage in their teaching assignments. Reforms in teacher education are therefore critical if teacher training institutions are to churn out teachers who are capable of training the workforce needed for economic development.

Further, technology diversifies the learning landscapes through varied educational institutions and other providers. This entails that learning is no longer confined to the classroom (Gijsbers and van Schoonhoven, 2012, p. 3; Redecker et al., 2011, p. 12). To this end, e-learning and open university has gained recognition and acceptance for their ability to facilitate education to many students whose work contexts cannot allow them to enroll for the regular university schedules. However, the modes have been criticized for denying learners opportunity for face-to-face interaction with teachers. This challenge could be alleviated by use of a blended mode to provide opportunities for face-face interaction. However, despite the challenges of assuring quality and standards in education, flexible modes of delivering education have given a window of opportunity to those in employment to develop their careers not to mention their enhancement of lifelong learning.

Educators should exploit the capacity of mobile technologies cognizant of the learner's experience with a variety of them today in the environment in which they are growing. This is a way of making learning meaningful because it is in the context of the learner. It is also an acknowledgement of the *familiar to unfamiliar* and the *known to the unknown* principles of teaching with their benefit of easing and systematizing learning. This does not only enhance learners' motivation and interest in learning; it enables them to identify with what is taught and make meaning out of it (Ingule, 2011; Woolfolk,

2014). In all, technology integration in education today is critical if learning institutions are to reflect the trends in the society and also contribute to its development. It is the view of this study that success in technology integration in learning institutions is pegged on strengthening the teacher education programme to ensure that it embraces and actualizes it in all aspects of training teachers in order to set the pace for other learning institutions and to also ascertain congruence between the school curriculum and teacher training curriculum.

Notably, however, technology integration in education is yet to be achieved in many countries despite massive government investment and intensive promotion by the industry (Buckingham, 2007). Davidson & Goldberg (2009) assert that despite changes in the ways people access, exchange and interact with information today; learning institutions have remained the same. However, while this may be true in the developed countries, governments in many developing countries are yet to invest in technology. They are still lagging behind due to challenges including lack of skills, experience and familiarity with technology by both teachers and learners; learner inability to own basic technologies such as a smartphone or tablet; unaffordable cost of installation of technology; lack of support resources such as electricity; negative teacher and learner attitudes towards technology which makes them view it as complicated and sophisticated; and challenges in cost and equipment maintenance (Otunga, Odero & Barasa, 2011 p. 117-119). If learning institutions in Kenya are to offer competitive holistic quality education that matches the 21st century standards, the government should be prepared to invest in technology. This entails establishing structures for technology installation and facilitating schools with the necessary resources and training teachers in technology to prepare them to effectively integrate technology in their teaching practice.

5. Conclusion

Literature reviewed in this study indicates that teacher education is key to the development of a nation as it sets the pace of education in all other levels. However, despite its significant role in the society, the programme has been marred with challenges that have impeded its effectiveness in training quality teachers with capacity to impart learners with knowledge, skills, values and attitudes that could enable them to contribute to the economic development of the society and also compete for jobs anywhere in the world. Further, literature shows that teacher education in Kenya has not embraced reforms for several decades, thus, it is not cognizant of the changes and needs of today's dynamic society. To this end, the quality of teachers produced by

teacher training institutions is not able to offer relevant education to enhance the development of the society. This is a big challenge because teacher education is a critical component of an education system and the development of the society as stated above. Reforms in curricula, teaching methods and learning resources are critical if teacher training institutions are to offer holistic quality education that meets the 21st Century standards-based education that are global. In particular, technology integration is a critical reform needed to drive education today. To enhance achievement of the global standards of education, teacher education should embrace holistic professional development in both pre-service and in-service training to ensure that teachers are empowered with relevant academic and professional knowledge, skills, values and attitudes. The vast global changes demand that teacher professional development is a lifelong process that enhances acquisition of new skills to enable teachers to effectively respond to the changes. Investment in teacher development is critical if teachers are to remain relevant in the dynamic 21st century and beyond.

6. Recommendations

The study recommends the following:

A. Teacher Motivation

Teachers should be provided with a conducive working environment including decent housing and catering facilities). Improving the terms and conditions in the scheme of service for teachers is also necessary if the profession is to attract the youth.

B. Collaboration with Teaching Practice Schools

Universities should establish partnerships with TP schools with a view to involving them in the assessment of identified aspects related to TP that supervisors cannot assess including rapport with students, relationship with staff, punctuality to school and class and trainee involvement in school activities. This could make TP assessment more collaborative, comprehensive and meaningful. It could also enhance a more holistic approach to professional development at this stage of in-service training.

C. Investment in Teacher Education

The government should invest in facilities and resources for teacher education programme in recognition of the fact that teachers are the key drivers of economic development of the society. For instance, if teacher training institutions are to produce competent teachers who are capable of accelerating sustainable development (by imparting learners with relevant knowledge and skills), reforms and innovations in the programme are imperative. This should set the pace for government investment in education in other institutions.

D. Reforms in Teacher Education

Reforms are crucial in curricula, teaching methods, policies, administration, and recruitment of staff and students. The curriculum should be diversified to allow for interdisciplinary learning. This could broaden the trainees' minds and help them to cope with the numerous social, political and economic challenges emanating from the exponential growth in technology today. Further, structures on recruitment of trainers and teacher trainees should be established with a policy framework to ensure that only the right people are in the teacher education programme. This could alleviate the challenges besetting teacher education in Kenya outlined in this paper.

E. Networking with Teacher Education Institutions

Teacher training institutions in Kenya should establish networks that enable them to collaborate with stake-holders in teacher education institutions offering similar programmes at both national and international levels to enhance continuous improvement of quality and standards of teacher education. This can enhance keeping pace with societal demands, expectations and challenges. It is also a roadmap to offering relevant and quality teacher education for the vast global industry..

F. Designing and Formulating a Policy Frame-Work on Teacher Education

To minimize the challenges affecting teacher education in Kenya and to ensure that the programme is administered effectively and efficiently, the government should come up with a policy framework providing a clear concept of teacher education and teaching profession as well as guidelines for organizing and administering teacher education programme.

G. Enforcing Policy on Standard Teacher-Student ratios

Aligning teacher-student ratio to standards (particularly in public universities) is critical if teacher trainees are to be facilitated with the practical aspect of training through micro-teaching and collaborative peer activities. Re-introducing tutorial groups could go a long way in enhancing effective preparation of university graduates for the job market

H. Microteaching and Teaching Practice Policy

Teacher education should have a clear policy on microteaching and TP activities to ensure a systematic and practical approach in developing teacher trainees with pedagogical skills.

I. Teacher Professional Development

This should be facilitated systematically and regularly during pre-service in-service training as needed to enhance teacher empowerment for effective implementation of reforms in curriculum and embracement of lifelong education.

J. Integration of Ethics in Teacher Education Curricula

Teacher education programme should incorporate a course in professional ethics in teaching to help them understand the teaching profession, expectations and demands of the profession and the society, their roles and responsibilities in the profession, other than teaching. This knowledge could enhance their effectiveness in their career.

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