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## REVIEW ARTICLE

### EMERGING LEARNING PERSPECTIVES: TECHNOLOGY AS THE DRIVING FORCE

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#### ABSTRACT

The great advances in information and communication technology (ICT) have made it possible for individuals to live, learn, work, communicate and undertake leisure activities in a different and better way. In addition, the current world order requires quality systems which are efficient, accurate, and fast for operation and service delivery. For this reason, technologies and especially the ICTs open up new horizons that provide avenues and strategies leading to the emergence of new perspectives and approaches. In education, some of the emerging perspectives considered in the paper include: the changing learning environments, learner profiles, and roles of the teacher; adoption and integration of educational technologies; emphasis on quality; and the institutional ranking systems. Technology is being used to enhance learning as well as facilitate teaching in the classroom and virtually at a distance across all disciplines and levels. The impact of technology on the quality of education delivery has been tremendous. The development of self-learning instructional materials and use of learner/content management systems through blended and e-learning have enhanced the quality, structure, delivery, monitoring, evaluation, flexibility and access to content. By leveraging into the multiple technological tools that are available for teaching and learning today, we are better equipped to enhance learning and teaching at the same time. However, despite the positive impact, there are issues and challenges which must be addressed, ranging from costs associated with development and maintenance of infrastructure, sustainability especially with the high rate of obsolescence and training of staff to acquire the appropriate skills, to changing the mind-set of those responsible for the provision of education to accommodate and appropriately invest in emerging trends. Examples used in the paper are drawn mainly from our experiences through interactions with colleagues from different institutions and within our work environments.

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#### INTRODUCTION

Education in the twenty first century is an asset that any forward looking country cannot afford to ignore for its citizens. Indeed when you look at national budgets globally, allocation for the education component takes up a significant percentage. UNESCO is of the view that transformations in education emanating from integration of technology will change the learning environments, instructional methodologies and delivery of content. Another key aspect is the emergence and great advances in the field of information and communication technology (ICT) which have impacted tremendously on how societies function, integrate and relate to each other. In addition, the current world order requires quality systems which are efficient, accurate, and fast for operation and service delivery. For this reason, technologies and especially the ICTs become the driving force while at the same time opening up new horizons that provide avenues and strategies leading to the emergence of new perspectives and approaches. In education, some of the emerging perspectives considered in this paper

include: the changing learning environments, learner profiles, and roles of the teacher; adoption and integration of educational technologies; emphasis on quality; and the recent focus on institutional ranking systems. These are components that each educational institution must take cognizance of as it develops and implements its plans within the dynamic economic, political and social environments. According to Jeffrey *et al.* (2006), "Three significant trends have caused tertiary education organisations to rethink how they prepare graduates for their place in the community. These trends include: the changing face of the student body, rapid technology developments and new educational goals. Educational organisations must find appropriate ways of meeting the dynamic needs of their diverse students; integrate new technology into the teaching process and up-date curriculum goals to address societal expectations of tertiary graduates."

Educational paradigm shifts are inevitable in the face of emerging technologies and their integration into the education system and society as a whole. There is need to transform traditional education or what is referred to as "nibbled learning" by Huang *et al.* (2013:7) who defines it as "the

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process by which the learners pass required tests according to standard requirements and a set order of knowledge units so as to comprehensively master the learning contents within a specified period of time.” Such modes are linear, homogeneous, teacher – centred, tied to specific locations and most often not flexible and allow minimal innovation. However, for new teaching and learning environments enhanced by technologies, learning is constructive, autonomous, collaborative, inquiry based, innovative and flexible.

Technology when integrated into the practices of an institution enhances the delivery of services, by creating a conducive environment for effectiveness and efficiency. The impact of technology on the quality of education delivery especially in the twenty first century has been tremendous. By leveraging into the multiple technological tools that are available for teaching and learning today, we are better equipped to enhance learning and teaching at the same time. The development and utilization of learner/content management systems for blended and elearning have enhanced the quality, structure, delivery, monitoring, evaluation, flexibility and access to content. This is a development that is enhanced everyday with advances especially in information and communication technology. However, despite the positive impact, there are issues and challenges which must be addressed in order for the society to transform and take off in the desired direction. The challenges range from costs associated with development and maintenance of infrastructure, sustainability especially with the high rate of obsolescence and training of staff to acquire the appropriate skills, to changing the mindset of those responsible for the provision of education to accommodate and appropriately invest in emerging trends. It is important therefore that these issues and challenges are addressed in order to pave way for adoption of improved systems which are of high quality and sufficient in supporting emerging desired trends.

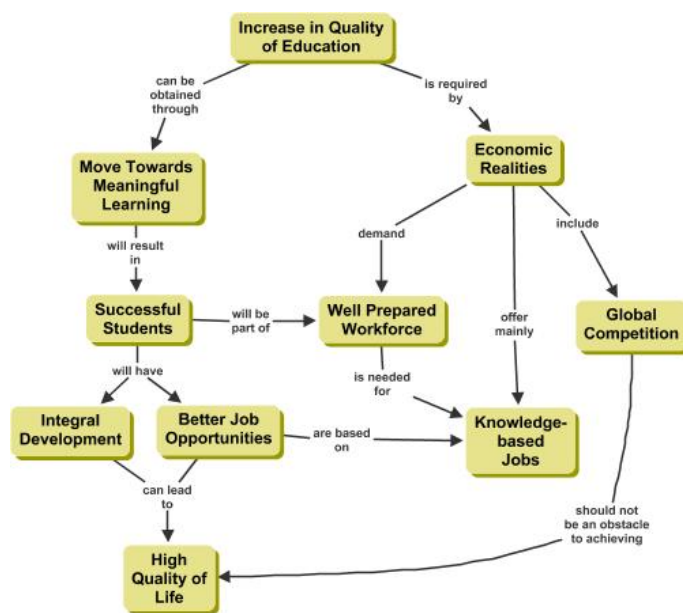
**Emerging perspectives**

The dynamics, especially in the education and communication fields have significantly transformed the delivery of instruction, learning and learning environments. The walls of the brick and mortar classrooms are already collapsing with the emergence of web-based content, learner management systems and video streaming tools available in virtual learning environments. Today, it is even possible to learn face-to-face at a distance using communication technologies such as video conferencing and Skype. Under such situations, the role of the teacher changes from that of being a sage on stage and originator of knowledge, to that of being a guide on the side and facilitator/coach or moderator, while the learner takes a more active role in constructing knowledge. Indeed according to the ICDE Strategic Plan (2013-2016: 3), “learners are gaining more influence and increasingly demanding quality online, resource-based and flexible learning. The future higher learning system will be learner-driven, and knowledge-driven, building on the experience of conventional universities, open universities and a diverse range of actors, in particular those at the forefront of online and mobile learning.” Both the instructors and the learners therefore need to acquire a new set of skills in order to comfortably navigate through new access

tools, transformed learning environments and repackaged content.

Flexibility in the delivery of education programmes and access to courses have enabled a greater number of learners to take up more learning opportunities. Flexible learning is now gaining widespread acceptance as a generic concept covering virtually all educational situations where the learner has some control over the way in which learning occurs as pertains to the time, place, mode and even in some cases sets own goals and formulates own objectives (Garrison and Anderson 2009). Educational institutions are increasingly providing to learners courses of their choice, at a pace that their other commitments can allow and at a location of their choice. Schedules are designed to accommodate learners who can physically go to the institution for face to face or contact sessions, either during the day, in the evening or over the weekends in addition to blended, online and elearning delivery where actual physical presence in a lecture hall is not required. This is now the trend in most institutions where programmes are repackaged to suit the variegated modes of delivery supported by the emerging information and communication technologies.

The changing nature of society in the 21<sup>st</sup> century has contributed not only to changes in actual work that is performed and its organisation at the workplace, but has also influenced private lives of individuals since they have to adapt to the emerging requirements. The need by organizations and industry for higher qualifications has inculcated a culture of continuous or lifelong learning. This has significantly changed the learner profiles from the relatively youthful group straight from secondary school and with minimal experience to more mature learners with a wealth of experience both in life and from working environments. Another interesting phenomenon is a situation where one can encounter three generations (child-parent-grandparent) in the same cohort all seeking to acquire higher qualifications while gaining new knowledge and skills.



**Figure 1. Lifelong learning and the development of diverse quality content. (Source: Cmap Increase Quality Education.png)**

According to quotation by Agalo (2002:100), such a cohort “forms a highly disparate and heterogeneous group with varying cognitive processes, existing stock of knowledge, skills, values, previous experiences, age and worldly responsibilities.” The following diagram indicates the cyclic nature of lifelong learning and the development of quality education content, processes and scope accommodating diverse needs.

The integration of technology is responsible for emerging concepts such as “social informatization” which is defined by Huang *et al.* (2013:7) as “the process by which the social capacity to generate, process and transmit information increases, or a process by which the focus of national economic and social structures transfer from a physical space to an information or knowledge space”. Technology is definitely involved in these processes as the driving force. There is therefore a need to reshape teaching and learning environments to reflect such transformations and educational paradigm shifts.

### Role of technology in enhancing quality education

The advent of technology and in particular the unprecedented advances in ICT have virtually turned the world into a global village. Political, economic and cultural changes in one country have an instant and significant impact on other countries worldwide albeit at different magnitudes. The field of education has been affected greatly by these developments. Indeed the tremendous advancements at the turn of the century, for example the emergence of social networks, expansion of the Internet and introduction of portable or mobile, hand held devices such as laptops, tablets/i-pads, and mobile phones have played a catalytic role in enhancing the capacity, speed, access to and sharing of content. The “ global Internet penetration has increased by more than 500% since the year 2000, and many parts of the world now have access to high capacity networks (broadband). The digital network revolution together with increased digital skills in the population has enabled major uptake of new learning applications and methodologies throughout the world.” (ICDE Strategic Plan 2013-2016:4)

Education in the twenty first century is geared for an information and knowledge based society. Apparently, as new and more advanced ICT impact on all sectors of society, they will entirely change the way individuals live, learn, work, shop, travel and spend their leisure time. The emerging impact of these ICT knows no boundaries. It impacts with profound effects in both industrialized and developing countries. As societies continue to be impacted upon by the effects of the great advances in information and communication technologies, evidently an information society is in the making and this will continue to revolutionise our concept of a classroom, hence learning and teaching approaches. From an educational perspective, the lecture hall can then be viewed as a communication system for teaching and learning that emulates the society outside the classroom.

The emergence of a learning society, which is basically information and knowledge based, requires a new type of learning which calls for active learners who are able to initiate, plan, implement, control, evaluate and most importantly, apply

what they have learnt. Not only is factual knowledge important, competence in methods of obtaining it as well as the knowledge of networking and cooperating with others are also critical in the quality equation. For quality education therefore, there is a need to move away from conventional or traditional situations where expository teaching and receptive learning are still the norm. It is imperative to transform the existing teaching learning approaches to maximally utilize the potentials and capacity of ICT in enhancing quality delivery of programs.

Quality issues revolve around focusing on accountability, performance and value. We find that most countries have established institutions that monitor and ensure quality within their educational systems. For example in Kenya, we have the Commission for University Education (CUE) whose main functions include: (c) Promote, set standards and assure relevance in the quality of university education; (d) monitor and evaluate the state of university education systems in relation to the national development goals; (h) undertake or cause to be undertaken, regular inspections, monitoring and evaluation of universities to ensure compliance with set standards and guidelines; (j) accredit universities in Kenya; (k) regulate university education in Kenya; (i) accredit and inspect university programmes in Kenya ; and (m) promote quality research and innovation. With such a massive task on its hands the CUE can utilise ICT to enhance its efficiency, accuracy and speed of service delivery. It is also increasingly becoming apparent that quality demands the setting of benchmarks, standards, ranking and accreditation instruments, which utilize technology as the operating environment.

The integration of ICT in the delivery of education programmes increases access and flexibility. Indeed according to the International Council for Open and Distance Education (ICDE) Strategic plan 2013- 2016: 3, “Never before has the world experienced such a great need for barrier-free access to higher education as we can observe today. And the need will continue to increase. UNESCO has observed that in less than 40 years, enrolment in higher education has increased five-fold. Globally, it is estimated that demand will expand from less than 100 million students in 2000 to over 250 million in 2025” This kind of expansion and the maintenance of quality can only be possible through the facilitation of technology.

Integration of ICT facilitates monitoring and evaluation especially for large institutions with many learners. The use of online forms which can be completed and results obtained instantly enhance the monitoring and evaluation process. Statistics and even graphs can be generated instantly and these enrich the production of reports which can be accessed by all authorised stakeholders.

### Challenges of integrating ICT in the delivery of education programmes

Challenges relating to quality, relevance and uptake of technology emanate from inadequate funding levels leading to inadequate facilities and resources, low ICT literacy levels, negative attitude inappropriate teaching and learning environments, inadequate staff, large class sizes, weak

correlation between the competences acquired and demands of the market. These compounding factors constrain the need to prioritize investment in technology and its institutionalization in order to improve service development and delivery. In integrating ICT in the delivery of education programmes, there are both technology related and skills based challenges. In addition, the type of learner, the reliability of the technology and the availability of adequate technical support are critical components that should be addressed and regularly reviewed for quality to be maintained. Costs associated with access, acquisition, development and maintenance of infrastructure are critical to the successful integration of ICT in the delivery of programmes and overall provision of services. It has become evident in the current world order that one of the pressing challenges facing educational institutions and especially universities worldwide is inadequate resources. How to increase revenue, diversify sources of income, improve allocations and prudently manage resources in order to meet the needs and expectations of quality service delivery from stakeholders. The desire to uphold quality systems is therefore extremely challenged in the face of inadequate resources.

Inadequate power supply, fluctuations and the general instability in the provision of electricity especially in the developing world is another challenging factor in the integration and utilization of ICT. Most of the ICT tools require electricity to be operational and this limits their spread and adoption since vast areas especially in rural locations are not connected. In addition, the fluctuations easily damage the equipment and also interrupt access to information leading to low motivation which results in slow rates of adoption. Sustainability especially the high rate of obsolescence of equipment is an issue that needs to be well thought out and incorporated in the institutional budgetary plans. If the institution wants to remain connected to the world, it must acquire the appropriate equipment that is compatible and enables access to content and other information as may be required. In the education context, ICT enables the transmission of content and also bridges the gap between the instructor and the learner especially in virtual learning environments. It is therefore important that despite the high costs involved, there is need to maintain connectivity in order to provide continuous services and delivery of programmes.

Change of attitude is key to the success of adoption and implementation of technology enhanced approaches and processes. As Darwin gleaned long time ago, "it is not the strongest species that survive, nor the most intelligent, but the ones most responsive to change." Pressure for transformation will come from the impact of economic and technological change. Such pressures signal the need to redesign our teaching and learning strategies in order to accommodate the changes. Embracing ICT in its full potential is a transformative process that calls for long-term commitment with a need to acquire new navigational skills, and operate within new learning environments, most of them virtual. This is new ground hence the perception by many that there is need to tread carefully, while others refuse to take the route altogether. This no doubt is the root of inevitable resistance that has resulted in the slow uptake of ICT in most of our institutions. From our experience, individuals start giving excuses of workload, limited time and

doubting the efficacy of the technology in order to avoid transforming their approaches and strategies.

Training costs is another component that needs to be factored in the institutional budget. As the need for continuous or lifelong learning and the knowledge era converge, institutions must plan and prepare to focus greater attention on the strategic integration of ICT. Regular updating of skills is necessary in view of the dynamic advances in the field of ICT. In addition to the acquisition of ICT skills, individuals also require what is commonly referred to as the 21<sup>st</sup> century skills which include critical thinking, problem solving, communication, collaboration, creativity and innovation. All these come with additional costs that institutions need to bear despite the limited resources available. Focus on the acquisition, development and maintenance of infrastructure though critical, is not enough. The biggest problem especially for developing countries is the generation of relevant and appropriate content. Sometimes even repackaging what is available into formats suitable for delivery through technical means is a great challenge, especially when faced with copyright issues. Hence the availability of ICT still requires the development of quality content otherwise what goes in comes out or what is commonly referred to as 'garbage in- garbage out'. Indeed there is also need to take cognizance of the following five laws of technology enhanced learning as

Indicated by Huang *et al.* (2013:7) thus:

- digital learning resources,
- virtual learning communities,
- learning management systems,
- effective learning activities and
- the process of transformation of traditional content into digital resources.

### **Proposed solutions**

Commitment to invest is a key component in the development and sustainability of infrastructure and delivery of quality services. Plans and strategies which have no financial investment and commitment from the leadership of the institution are doomed to remain just dreams. It is therefore important to identify sources of funding at the initial stages before implementation and continuously allocate resources appropriately.

Continuous training is required for individuals to keep updated with new knowledge generated on a daily basis and develop skills required to utilize the dynamic advances in ICT. The growing importance of the concept of continuing education, has given rise to the need for greater expansion of educational institutions especially in terms of courses offered and infrastructure required to support the system based on flexible delivery approaches. This is due to the fact that in the current world order, the rate of new knowledge acquisition is so fast that the idea of training once in a lifetime is no longer tenable. Development of high quality content relevant to the market needs which are derived from continuous consultation among the stakeholders and evaluation by peers and experts should be a policy guideline. The availability of Open Educational

Resources (OERs) and Massive Open and Online Courses (MOOCs) can be taken advantage of although with the necessary acknowledgements to avoid infringement of copyright. In addition, institutional collaborations are also encouraged where mutual support and sharing of content, expertise and other resources results in enhanced quality of products. One of the possible solutions lies in the development and implementation of appropriate policies which guide the integration of technologies for efficient and effective utilization. The guidelines should be formulated and adhered to in order to enhance and also enforce the adoption of emerging trends relevant for positive transformation.

### Conclusion

It has become apparent that there is need to reorganise teaching and learning in order to accommodate technological, educational, social, political and economic changes emerging in the current information and knowledge-based society. Information and communication technology is at the centre of transformation in the education sector, a transformation that requires a new way of thinking about teaching and learning in digitized environments. ICT has become the environment and therefore the driving force for successful transformation to forward looking institutions. The appropriate integration of ICT in the delivery of programmes and provision of services enhances quality in any system. In this regard, quality assurance requires the development and implementation of relevant, clear policies, strategies and diversified approaches in addition to good leadership to spearhead its institutionalisation. ICT has the real potential of enhancing the traditional values and ethos of education by creating conducive operational environments, ushering connected and flexible learning approaches while fostering creative and innovative thinking. Despite the challenges, possible solutions are available and institutions should take bold steps in investing and adopting the integration of technology which would be beneficial for their growth and development.

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