

The Role of Education in the Knowledge Age, Trends and Transitions: The Case of Botswana

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Abstract—Global changes have taken place in education in the 21st century. Changes relating to how education is theorised, provided and assessed. In Africa, education provision faces challenges and opportunities. Traditional methods of teaching are still being practised. Adoption of Information and Communication Technology (ICT) is still slow while in other sectors, like the Bank sector, it has contributed significantly to its growth. In future people will change jobs frequently and employment patterns will be different. This calls for acquisition of competencies fitting into the knowledge age. The paper argues that policy implementation in Africa is still a major challenge. The Delphi Real Time questionnaire, a futures thinking methodology, provides scenarios that describe the future education systems up to 2025. Which scenarios seem probable or preferable for the African continent? The paper further explores how the following signals and trends shape education and training in Botswana: transformed education, life-long learning, youth bulge and new technology influencing educational transformation. Reflections and implications of the four signals and trends show proliferation of private tertiary institutions, entrepreneurial skills development and opportunities for self-employment among others. The government's role in the provision of education in the knowledge age is highlighted and contextualised.

Index Terms—21st century skills, knowledge age, signals, trends, scenarios, transformation

I. INTRODUCTION

The 20th century and the beginning of the 21st century brought in significant changes in education and training across the globe. It was a period when the knowledge age was ushered in. This is a period when major changes culminated in the way people perceive and used knowledge [1]. Knowledge and ideas or philosophies became the key ingredients of social and economic advancement. People became innovative and produced goods and services that continue to have positive impact in their livelihood. Patterns of work developed and business practices improved a great deal. The workplace needed or needs the new kind of worker with different skills. These changes brought by the knowledge age have far reaching implications on how education and training

is conceptualised, organised, delivered and measured (assessment) [2].

II. INSIGHTS INTO THE FUTURE OF EDUCATION IN AFRICA

What are the patterns and relationships in terms of new models for learning trends shaping education systems in Africa? It is clear that education systems in Africa face challenges and exciting opportunities brought by the advent of technology, particularly Information and communication Technology (ICT). The potentials of ICT will “facilitate the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems” [3] ICT has contributed significantly to other sectors of the economy, like in the tourism and banking sectors, while education has lagged behind. The education sector appears not to keep pace with these developments. Some of the challenges relate to policy and its implementation, planning, infrastructure, learning content and language, capacity building and financing [3]. In the classroom, traditional methods of teaching are still prevalent in Africa and adoption of ICT is slow. On the other hand, the next decade promises to be an exciting era for education in Africa. Vibrant innovations in education will take place outside the traditional institutions. In future people will change jobs frequently and employment patterns will be different. The following key competencies will be critical in fitting into the knowledge age: problem solving, reflection, critical thinking, risk taking, collaboration, and entrepreneurship to mention but a few [4]. Since the main focus will be on life-long learning, the use of ICT will come handy in ensuring quality education is accessed by all irrespective of their geographical location in the country. There will be greater flexibility in education. Learners can enter and leave the education system at different points as most education providers will implement advanced forms of semesterised programmes. More players will play a meaningful role in education provision like private tertiary institutions, private sector universities and government agencies. The gap between formal and informal learning will be narrow as a result of ICT. The concept of classroom without walls will be common as learning will take place anywhere and at any time. Technology will make personalised learning and individual mentoring a common practice. It is predicted

that by 2025 some of today's jobs may no longer exist, therefore people need to regularly update their skills and competencies to fit into the ever changing landscape [5]. ICT is valuable in this regard as a major facilitator for educational development reforms. These insights help to conceptualise and see the patterns inherent in the education and training systems in Africa, as the future of education unfolds. The issue is do African countries regularly review their education policies to address the ever changing educational landscape? In many African countries implementation of policies has been divided into short, medium and long term phases. It takes several years to comprehensively implement policies because the burden lies with the government as the private sector is not fully developed in Africa unlike in the developed countries.

III. PARTICIPATING IN THE DELPHI REAL TIME QUESTIONNAIRE (DRTQ)

In 2014, I participated in a Leadership Development in ICT and Knowledge Society programme run by the Global e-Schools and Communities Initiative (GESCI), a brainchild of the United Nations Task Force in ICT. One of the activities involved participating in the DRTQ to provide judgements about the scenarios describing the future education systems. Taking part in the DRTQ taught me to appreciate the signals and trends that are likely or will shape the future of education in Africa in the next ten years. The questionnaire provided six scenarios describing the future of education systems up to 2025. These scenarios are available in the School of Tomorrow series developed by the Organisation for Economic Co-operation and Development's (OECD) Centre for Education and Research (CER) [6] [7]. The scenarios have been clustered into three main categories: 'attempting to maintain the status quo', 're-schooling' and 'de-schooling'.

IV. MAINTAINING THE STATUS QUO

This scenario seems to be a probable (not preferable) one for majority of the participants. Some of the arguments put forward are that although class-room teacher mode with centralised curriculum and organisational administration is the current trend, there is likely to be slow change towards developing learners with 21st century skills of problem solving, creative, collaboration, critical and innovative thinking. Africa's education systems are rigid and learners have no say in what they want to learn once they have enrolled in institutions of learning. There is over emphasis on examinations rather than flexibility in modes of assessments. As one participant puts it, 'Teachers expect learners to learn the way the older generation learnt' and therefore 21st century skills needed for the knowledge age are not emphasised in the classroom.

Teacher exodus in this scenario is likely to happen if teachers working conditions are not addressed. In many African counties private schools attract better qualified teachers from government schools because they offer

better salaries. This trend is likely to paralyse the provision of basic education as majority of citizens cannot afford to enrol their children in private schools because of high school fees. As one participant argues, 'Teacher motivation is a problem in Africa. Whilst teachers are held in high esteem in the western world, the same cannot be said of the situation in Africa'. Teachers need to be treated well as they are the backbone of a country's human resource.

V. SCHOOLS AS CORE SOCIAL CENTRES (RE-SCHOOLING)

Re-schooling is a preferred scenario for participants in the DRTQ. African countries currently emphasise non-formal learning to augment classroom learning in an endeavour to cut huge operational costs associated with formal education. Government investments in ICT infrastructure is an attempt to make education accessible to all. The status of teachers in some countries continues to be rewarded and parents play an important role in the education of their children. Many participants think this is a preferred scenario given the status of education in Africa. The school of tomorrow will definitely have an extended mandate in terms of community outreach for greater involvement of parents and the community in school life. One of the participants summed it up by saying, 'Schools as focused learning organisations has taught me to see them as places where team building initiatives and networking are nurtured to flourish'. Highly motivated teachers enjoy favourable working conditions with strong emphasis on research and continuous professional development. Policy makers in Africa should explore this scenario as it ushers in a new era in provision of quality education for all with relevant skills and competencies compatible with the knowledge age.

VI. DE-SCHOOLING

This scenario is unlikely to happen in Africa by 2025. Schooling systems cannot be abandoned because it will take some time to reach the 'network society'. There is still strong emphasis on classroom teaching. Although learning materials will be available on-line or other technology based platforms, the school will remain an integral part of the education systems in Africa. This is more of a probable scenario than a preferred one. Today's education emphasises ICT and entrepreneurial skills but looking at the trend, employment patterns which requires the workforce to be always on their toes to update their skills and competencies.

VII. SIGNALS AND TRENDS SHAPING EDUCATION AND TRAINING IN BOTSWANA

A signal may appear to be minor variations in some instances but together they form new trends that can lead to future widespread changes. There are several signals, like new jobs, transformed education, employment patterns, lifelong learning, fertility rates, mortality rate and youth bulge that can have an impact in the future of

education for any country. The four major signals that are crucial in shaping education in Botswana are: Transformed education, Lifelong learning, Youth bulge and new technology influencing educational transformation.

VIII. TRANSFORMED EDUCATION AND LIFELONG LEARNING

The transformed education signal traces the historical background of the role played by classroom activities in laying the foundation for acquisition of vital skills. The 21st century ushers in an era where critical thinking, innovative and technological skills are important in shaping the future direction of education in the country. Graduates with relevant and appropriate skills are necessary for the workplace market requirements. Such skills are provided by Limkokwing University of Creative Technology in Botswana. The university has invested heavily in technology in an endeavour to create a platform where students explore during learning to come up with solutions to today's problems. Botswana International University of Science and Technology (BIUST) is a government of Botswana supported institution which has 'a national strategic initiative that is intended to serve as one of the key platforms for transforming Botswana's economy from being resource-based to knowledge-based through skills capacity building in Engineering, Science and Technology' [8]. The Government of Botswana continues to support such institutions in many ways like quality assuring their programmes and sponsoring students pursuing both undergraduate and post graduate studies among others.

Lifelong learning signal emphasises continuous self-improvement as essential in the face of ever changing technology and education landscape. The focus is not only in acquiring 21st century skills but also in developing personalities and attributes that are critical in the knowledge age. One company in Botswana which rates high in terms of lifelong learning for its employees is Botswana Telecommunications Company (BTC). The company runs its own training school and regularly conducts seminars to equip its employees with the necessary skills and attitudes needed for company growth, personal and professional development. Such companies are better placed to have employees who are lifelong learners, flexible and multi-skilled.

IX. YOUTH BULGE AND NEW TECHNOLOGY INFLUENCING EDUCATIONAL TRANSFORMATION

Youth population is the highest in Botswana. It stands at about 46.5% of the country's population [9]. This places the country as having more energetic and productive members of the population and the challenges they face include unemployment, drug abuse etc. Therefore, relevant education is necessary for these youth to have a brighter future. The government and other stakeholders continue to invest in education that will produce graduates with 21st century skills which will fit in the information age. Policies and programmes are

being put in place to address the challenges and opportunities brought by the ever increasing youth population growth. The last signal on new technology and educational transformation is also important in directing education in Botswana. Following the Revised national Policy on Education (RNPE) of 1993 [10], ICT provision in schools continues to be top on the agenda. For example, computer awareness was introduced in schools as a subject and teachers continue to be trained in this area. Computer technicians have been posted to schools to offer technical support. Education programmes have been launched on Botswana Television (Btv) to argument the schools curricular.

X. REFLECTIONS AND IMPLICATIONS OF THE FOUR SIGNALS AND TRENDS

The signals have tremendous implications on the future of education and learning in Botswana. The signal on transformed education, especially with the proliferation of private tertiary institutions, will see more graduates with skills needed for the future being produced. These skills which emphasise innovation and creativity will help nurture talents and solve future problems. The education system will also harness skilled people who are able to adapt to the changing global pressures of the workplace. Development of entrepreneurial skills will witness more jobs being created and export of highly skilled labour a possibility. Since lifelong learning will be part of an on-going self-development, the demand for education will increase. As people change jobs in their life time, they will continuously update their skills to fit in the changing work environments. Workers will not focus on training for a particular skill but multi- faceted skills. Growth in youth population will have positive and negative implications. The right education which places emphasis on the 21st century skills will be crucial in opening opportunities for self-employment or the creation of employment for the booming youth population. On the other hand social ills like drug abuse and cyber-crimes may be a problem if the young graduates are not absorbed by the country's economy. Lastly, ICT integration in education transformation will result in Botswana utilising technology in all spheres of their lives. ICT will make content delivery and assessment methods reliable and fast. Quality education will be accessed by all irrespective of their geographical location. The four signals are interrelated and their implications gives a window of what the future of education and learning will look like in Botswana.

XI. CONCLUSION

The signals and trends shaping the future of education in Botswana cannot be over emphasised. As more people enrol for online courses in institutions like Botswana College of Open and Distance Learning (BOCODOL), quality education will be accessed by all anytime and anywhere. The trend reflecting more private tertiary institutions playing a major role in education provision

will open more avenues for creating a more informed and educated nation [11]. Policies and laws should be in place to ensure that academic standards are not compromised. As more students enrol in private tertiary institutions, robust checks and balances need to be effectively implemented so that relevant and quality education is provided. In this way the government will play a monitoring and regulatory role of quality education provision which is guided by global events, trends and signal as far as education is concerned. Policies need to be harmonised to reflect a common direction the country's education system will take. Knowledge society pillars of Education, ICT and STI policies need to be identified to chat common trends for the future. There should be collaboration among different stakeholders, that is, government and private tertiary institutions by creating consultative forums that will make information sharing easy. Collaboration will help in the coordination of innovative activities that will benefit the country in the long run. Those who cannot cope with the changing nature of education should give way to energetic and innovative individuals who will embrace technology and 21st century skills to propel the country into the future.

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