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Research Application Summary

Re-aligning curricula and mode of delivery to impart relevant knowledge and skills to improve agricultural productivity

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Abstract

The purpose of this study is to contribute to the discussion on re-aligning curricula and mode of delivery to impart relevant knowledge and skills to improve agricultural productivity as stipulated in the Africa Agenda 2063, the *Africa We Want.* To better inform the argument in this study, a Delphi technique was used to gather opinions and views of experts in academic settings. The study specifically defined curriculum re-alignment, identified factors contributing to re-alignment of curricula for agricultural education, and identified the mode of instructions or methods of teaching agriculture that prepare youth in Africa for the Agenda 2063. In addition, the study analyses agriculture productivity in selected countries using available statistics. The Botswana University of Agriculture and Natural Resource (BUAN) was selected as a case to get the opinions and views of academic experts currently teaching there because of their diverse background of expertise and countries of origin. From the responses to open ended questions, experts in agriculture and related fields showed that re-aligning curriculum is about conceptualising and designing programs that respond to needs, challenges and opportunities of agriculture.

Key words: Africa Agenda 2063, Agricultural education, Botswana, curriculum re-alignment

Résumé

L'objectif de cette étude est de contribuer à la discussion sur le recadrage des programmes d'études et du mode d'enseignement afin de transmettre les connaissances et les compétences nécessaires pour l'amélioration de la productivité agricole, comme le souligne l'Agenda 2063 pour l'Afrique, l'Afrique que nous désirons. Pour mieux étayer l'argumentation de cette étude, une technique Delphi a été utilisée pour recueillir les opinions et les perceptions des experts dans les milieux universitaires. L'étude a spécifiquement défini le recadrage des programmes d'études et a identifié les facteurs contribuant au recadrage des programmes d'enseignement agricole ainsi que le mode d'instruction ou les méthodes d'enseignement de l'agriculture qui préparent les jeunes en Afrique à l'agenda 2063. En outre, l'étude analyse la productivité agricole dans les pays sélectionnés en utilisant les statistiques disponibles. L'Université d'Agriculture et de Ressources Naturelles du Botswana (BUAN) a été choisie pour recueillir les opinions et perceptions des experts universitaires qui y enseignent, en raison de la diversité de leurs compétences et de leurs pays d'origine. À partir des réponses aux questions ouvertes, des experts en agriculture et des domaines connexes ont montré que le recadrage des programmes d'études

consiste à conceptualiser et à concevoir des programmes qui répondent aux besoins, aux défis et aux opportunités de l'agriculture.

Mots clés : Agenda 2063 pour l'Afrique, Enseignement agricole, Botswana, recadrage des programmes

Background

Quote . . . . 'Present generations are confident that the destiny of Africa is in their hands, and that we must act now to shape the future we want' and "an integrated, prosperous and peaceful Africa, driven by its own citizens and representing a dynamic force in the global arena." Agenda 2063, the Africa We Want (2014) (p3)

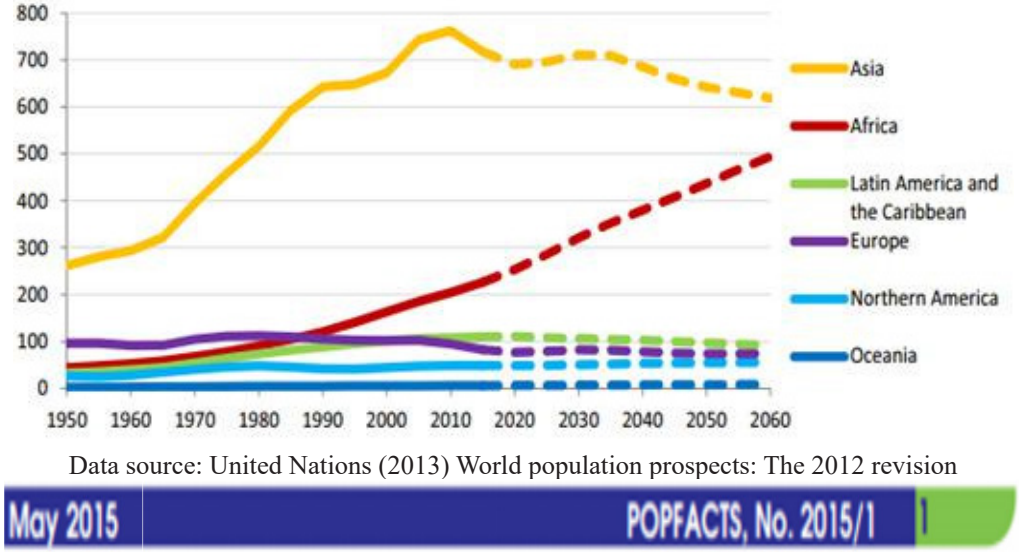
Africa has the highest growing population in the world compared to other regions and the majority are youth (Ighobor, 2013). According to African Union Commission (2015) it is imperative to note that today's generation is confident that the destiny of the continent is in the hands of the youth. Important also to note is the predictions that by 2055, the continent's youth population aged 15-24 years old would have doubled from the estimated 226 million in 2015 despite the inhospitable political, economic and social environment for the group. This would mean challenges if countries in Africa do not respond to them by coming up with correct policies to ensure economic growth which will produce demographic dividends and the well-being of families (David *et al*., 2015). According to David *et al*. (2015) the good news is that with the right policies and actions today, countries can accelerate the region's transition to smaller families, healthier and better-educated youth, and an expanded job market if policymakers make the right decisions. According to the United Nations (2015) the youth can be a positive force for development if provided with the knowledge and opportunities they need to succeed.

Lessons from the quote above also point to the fact that young people should acquire the education, skills and attitudes needed to contribute in a productive economy, and they need access to job markets that can absorb them into labour market. Unfortunately as stated by the United Nations (2015) the education systems of several countries particularly in developing nations, including those in Africa are leaving behind a substantial proportion of the youth population. This is so because the curricular for these countries seem not to prepare students to be able to get jobs upon their graduation. For example, as indicated by the United Nations, in 32 countries less than eight percent (< 8%) of the youth between the ages of 15-24 years are literate, while eighteen percent (18%) of these 32 countries are likely to experience increased number of youth between 2015 and 2030. According to Figure 1 the youth population in Africa has been increasing from 1950 and is projected to continue increasing compared to Europe, North America and Oceania. This puts pressure on the labour market thus demanding the attention of decision makers and educators to consider re-aligning curriculum issues. The concept of curriculum is viewed by scholars to include among other factors, objectives, subject matter, methodologies, evaluation of all activities taking place specifically to prepare learners (Sushoa-Wen, 2012).

Literature review

Youth in Africa. According to the United Nations (2015) countries are struggling to educate and employ their young people at the same time foreseeing the chances of significant growth in the number of youth. United Nations (2013) also foresee that education is essential to the concept of

development and for improvement of the lives of young people as it helps in eradicating poverty



Data source: United Nations (2013) World population prospects: The 2012 revision

Figure 1.Youth aged 15 – 24 years, by region, 1950 - 2060

and hunger promoting sustained, inclusive and equitable economic and sustainable growth. The former Minister for Higher Education & Scientific Research in Egypt, Salama in his PowerPoint presentation available online stated that *'if after years of "education", graduates are destined to unemployment or to non-productive jobs, then they are not "educated."*

According to Matshe and Mahlangu (2014) re-aligning the curriculum could be one of the strategies to address the challenges of the 21st century to meet the needs of the society. According to Amin and Awung (2005) as cited by Girgin (2003) investing in education for human capital is regarded as a factor to reckon for growth to increase labour productivity and reduce income inequality and poverty. This is to agree with the theory that the education enhances to an individual's productivity so as to increase the market value of that person's labour.

With this in mind, the education of youth and their employment becomes essential to address the 'opportunities for economic growth associated with the demographic dividend'. According to Anderson (2004), education is crucial as curriculum re-alignment ensures that (i)students have learned as a result of their schooling experience than with what they know and can do regardless of the source of that knowledge or those skills (ii) proper curriculum alignment enables us to understand the differences in the effects of schooling on student achievement (iii) poorly aligned curriculum results in our underestimating the effect of instruction on learning, and (iv) it stems from the current concern for educational accountability.

Agricultural productivity trends in Africa. According to Ajao and Salami (2000) there has been some improvement in the development of new technologies in the African continent. The study also pointed out to the fact that the continent experiences slow growth in agricultural productivity due to poor institutions, human capital development, and policies and natural factors. In line with this, Kumathi (2015) reported that in order to achieve increase of agricultural land use there is need for human capital development since there is correlation between increased education and agricultural productivity. Kampelmann and Rycx (2012) also raise the issue of mismatch in education which also has impacts on

productivity.

Methodology

Study description. The study was conducted at Botswana University of Agriculture and Natural Resources (BUAN), Sebele, Content farm from January to August 2018. The University was inaugurated as a standalone university on February 2nd 2016 from being a College of Agriculture and a Faculty of Agriculture of the University of Botswana. The University enrolment is approximately 1,600 students with 129 Faculty of Agriculture (FoA) Board Members. The main campus of the University has six departments namely: Department of Agricultural Economics, Education and Extension (AEE), Department of Agricultural Engineering and Land Planning (AEL), Food Science and Technology (FST), Department of Animal Science and Production (ASP) and Department of Crop Science and Production (ASP). The University has a Center for In-service and Continuing Education (CICE) as well as the Meat Industry Training Institute (MITI) based in Lobatse some 70 km south of Gaborone. Out of the 129 FoA Board Members 24 (19%) are Professors, 50 (39%) have PhDs while 55 (43%) hold MSc degrees.

Participants in this study were professors, senior lecturers, and lecturers and hold educational backgrounds in agriculture and related sciences in the field of agriculture. Being in academia, they are responsible for planning, designing and developing syllabus for teaching at the university. These experts are also facilitators, instructors and assessors of students in the university. They also have the mandate of conducting research in their respective fields. The survey showed that participants come from Botswana, England, Ethiopia, Ghana, Jamaica, Kenya, Malawi, Nigeria, Tanzania, Uganda, Zambia and Zimbabwe. At least nine opened ended questions were formulated to gather experts' views and opinions on the meaning of curriculum re-aligning, impact of higher agricultural education on youth employment, appropriate curriculum for the youth of Africa, delivery strategies and the technologies to meet the goal of Agenda 2063. The views of experts were formulated into a closed ended questionnaire and further requested participants to respond by rating the statements on a Likert type scale. Descriptive statistics were used to analyse the data.

Research application.

The study adopted the Delphi approach which involved collecting data using open ended questions followed by formulation of close-ended items in a questionnaire which was self-administered. Avella (2016) stated that the Delphi technique is predominantly used in research to gather qualitative data in the form of opinions from experts as well as quantitative data. The analysis involved mixed methodology analysing narrations (qualitative) and quantitative data using Excel spreadsheet from the first round to the second round of data collection.

Results

Round 1. Data were gathered through an open ended survey, the experts in agriculture and agricultural education defined re-aligning of curriculum as conceptualising and designing programs that respond to needs, challenges and opportunities of agriculture. Experts further indicated that if higher education in agriculture is to re-align and impart relevant knowledge it should consider five key issues which include, (i) placing emphasis on sustainability as the core of agricultural education curriculum, (ii) promoting inter-disciplinarily education in areas of health, nutrition, environment and gender to ensure some synergies and relationships are established, (iii) adopting inquiry based education for active learning and participation of learning (problem - solving techniques), (iv) ensuring linkage

to theory and practice throughout the curriculum and learning outcomes, and (v) infusing into the curriculum some transferable skills to ensure learners develop the ability to be entrepreneurial and adapt to both urban and rural environments.

Responding on factors that influence re-alignment of curricular, experts' responses were categorised to include, political, economic and social factors as attributes affecting re-alignment. Respondents also indicated that stakeholders such as farmers, educators, scientists, politicians, social workers, economists, youth of today, innovators, and planners in agriculture should be (a) active and life-long learners, and (b) entrepreneurs and innovators to have the ability to adapt and be effective information seekers, knowledge users and adaptors.

Round 2. Analysis of end of round 2 surveys were based on preliminary data received from 25% of the participants. The analysis provided data which were analysed using descriptive statistics (means) based on three variables: instructional methods used in higher education, technologies and media. Participants agreed to the adoption of interactive and problem-based techniques of teaching agriculture to influence agricultural productivity. In addition technologies should be made accessible to youth in higher education as a way to re-align the curricular for agriculture to prepare them for 2063. Figure 2 shows the average means on use of different classroom methods 1= Problem Based Learning, 2= Peer Exchange, 3 = Participatory Learning orientation, 4 = Exposure to a variety of examples, and 5 = Field-based practices on a 5-point likert scale as rated by participants.

Conclusions

The experts defined curriculum re-alignment to respond to needs, challenges and opportunities of students and the workforce in agriculture and agreed to most of the statements which described and identified the instructional methods of teaching agriculture that prepare youth through problem solving and field-based experiences for the Agenda 2063.

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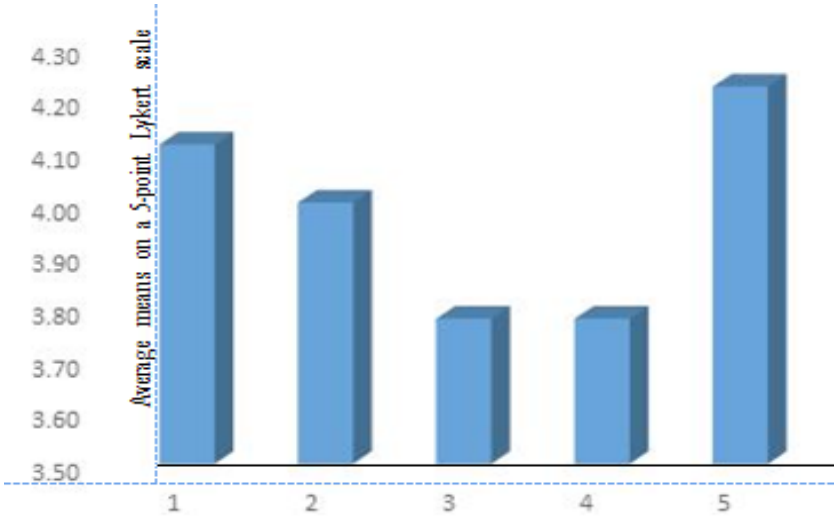

Figure 2. Instructional methods used in higher education.

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