Lighthouse

The Zimbabwe Ezekiel Guti University Journal of Law, Economics and Public Policy

ISSN 2957-8842 (Print)

Vol. 3 (Issues 1&2), 2024

Published by the Zimbabwe Ezekiel Guti University Press
Stand No. 1901 Barrassie Road,
Off Shamva Road
P.O. Box 350
Bindura, Zimbabwe

Typeset by Divine Graphics

Printed by Divine Graphics

SUBSCRIPTION AND RATES
Zimbabwe Ezekiel Guti University Press Office
Stand No. 1901 Barrassie Rd,
Off Shamva Road
P.O. Box 350
Bindura, Zimbabwe
Telephone: ++263 8 677 006 136 | +263 779 279 912
E-mail: zegupress@zegu.ac.zw
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Lighthouse: The Zimbabwe Ezekiel Guti University Journal of Law, Economics and Public Policy

ISSN 2957-884 2(Print)
ISSN 3007-2182 (Electronic)

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Creating an Innovative Graduate in Zimbabwe: A Curriculum Design Problem and Solution

GODFREY JAKACHIRA[1] AND SHEPHERD GUMBO[2]

Abstract

There is a growing and general view in world scholarship that higher and tertiary education institutions (HTEIs) ought to produce innovative graduates commensurate with the evolving trends in technology. However, many HTEIs in developing countries, including Zimbabwe, face challenges in fostering innovation in the teaching and learning landscape aimed at driving industrialisation. This article presents findings from a multiple case study rooted in Stake's (1975) Responsive Curriculum Evaluation Model. Data were generated through document analysis and qualitative interviews with 10 university students and 10 lecturers from private and public universities. The study identified various factors contributing to the innovation gap among graduates from Zimbabwean universities, such as lecturers lacking innovation pedagogical skills, the absence of innovation programmes, inadequate resources, limited industry-university linkages and adherence to traditional assessment criteria. To address these challenges, the study recommends proactive measures for HTEIs, including providing professional development opportunities for lecturers, introducing innovation modules and programmes, allocating more resources to innovation hubs, establishing industry partnerships for programme development and skills exchange and transitioning from knowledge-based assessments to skill-based evaluation and assessment methods. The study contributes to the ongoing discourse on fostering the development of innovative and entrepreneurial graduates in developing countries.

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Keywords: innovation competence, sustainable development, curriculum change, critical thinking, globalisation, technology

INTRODUCTION

In recent years, there has been a significant paradigm shift in the higher and tertiary education (HTE) landscape worldwide, particularly in the field of curriculum design. Traditionally, HTEIs focused primarily on teaching, research and community service/outreach equivalent to the Education 3.0 curriculum framework (Tagwira, 2018). However, recognising the need to adapt to evolving socio-economic challenges, there is a growing realisation that HTE should also play a crucial role in generating innovations for socio-economic development and industrialisation (Ministry of Higher and Tertiary Education, Science and Technology Development [MoHTESTD], 2019). In response to this, the Government of Zimbabwe (GoZ), through the MoHTEISTD, reconfigured her HTE curriculum from Education 3.0 to Education 5.0, incorporating two additional aspects of innovation and industrialisation.

The transition from Education 3.0 to Education 5.0 curriculum represents a fundamental transformation in the goals and outcomes of Zimbabwe's HTE curriculum. Education 5.0 curriculum places a strong emphasis on fostering innovation, aiming to produce graduates with the knowledge, skills and mindset necessary to create novel goods and services that effectively address socio-economic challenges and drive industrialisation (*ibid.*). It is geared at cultivating a new generation of graduates who not only possess a profound understanding of their respective fields, but also can apply their knowledge creatively and develop solutions that meet the needs of both industry and society.

Numerous research studies conducted in Zimbabwe have provided valuable insights into various aspects of Education 5.0. Muzira and Bondai (2020) examine the perceptions of educators, shedding light on their attitudes and beliefs towards this educational paradigm. Keche *et al*. (2022) focus on the challenges encountered during the

implementation of Education 5.0, offering a comprehensive understanding of the obstacles faced. Ncube and Khoza (2023) provide an examination of both the challenges and opportunities associated with Education 5.0, presenting a balanced perspective on its potential benefits and limitations. Siyakwazi and Machingura (2021) explore the implications of learner-centred approaches in teaching the Education 5.0 curriculum, highlighting the impact of student-centred pedagogy on its overall effectiveness. Additionally, Togo and Gandidzanwa (2021) investigate the role of Education 5.0 in accelerating the implementation of the United Nations Sustainable Development Goals (SDGs), while also discussing the challenges encountered in the process.

Despite the extensive research conducted on Education 5.0 in Zimbabwe, there remains a significant research gap concerning barriers to the creation of innovative graduates within the context of this curriculum framework. This research gap poses a challenge to achieving one of the primary objectives of Education 5.0, which is to develop graduates with innovative skills and mindsets. To bridge this gap, the current study aims to identify the barriers and propose intervention strategies to enhance the effective implementation of Education 5.0 in Zimbabwe.

CONCEPTUAL FRAMEWORK

This section canvasses the conceptual underpinnings on which this study is premised. All communities worldwide have a form of education to impart knowledge, develop skills and promote desired societal attitudes. The planned learning programmes delivered by educational institutions are known as the formal curriculum (Chimbi *et al.*, 2020). However, while the formal curriculum is typically officially taught in educational institutions according to policy guidelines, there is also the informal or hidden curriculum where individuals acquire knowledge, skills and values. This article focuses on the formal curriculum.

The formal curriculum is periodically adjusted to ensure that it imparts relevant content and skills aligned with the needs of society (*ibid.*). This process of adapting curriculum content, delivery methodologies and assessment criteria to suit the prevailing market demand is commonly referred to as curriculum innovation (Suprian *et al.*, 2022). Curriculum innovation is crucial in ensuring that graduates are well-equipped to contribute meaningfully to society and national development. To achieve an effective and innovative curriculum, careful curriculum design is essential. Curriculum design refers to the structure and organisation of the curriculum (Hordern *et al.*2021). A well-designed curriculum should produce innovative graduates who can adapt to prevailing societal demands.

Creating an innovative graduate is a gradual process, rather than an instantaneous event. In fact, there is a positive correlation between an innovative graduate and a well-designed curriculum. According to Suprian *et al*. (2022), a well-designed curriculum comprises four major elements: goals, methods, materials and assessment criteria. The convergence of these elements should result in the development of productive and innovative graduates. In the context of Zimbabwe, understanding the challenges of HTEIs in creating innovative graduates, requires an analysis of the nature of the current Education 5.0 curriculum in relation to these four elements. If the content of the Education 5.0 curriculum is deemed appropriate, but fails to produce innovative graduates, the issue may lie in stakeholders' misunderstanding of the curriculum goals, inappropriate implementation methodologies, inadequate or unsuitable educational materials or flawed assessment criteria. Therefore, the solutions to the challenges faced by the Education 5.0 curriculum framework, particularly in its failure to produce innovative graduates, can be established through an analysis of the curriculum design.

THEORETICAL FRAMEWORK

The study employs Stake's (1975) Responsive Curriculum Evaluation Model (RCEM) as the theoretical framework or lens to assess the

effectiveness of the Education 5.0 curriculum in nurturing innovative graduates. Stake developed this model in response to the shortcomings of traditional curriculum evaluation approaches which he believed failed to adequately consider the concerns of the stakeholders involved in the evaluation process. In this regard, the term "responsive" in the RCEM signifies Stake's commitment to addressing the needs of programme stakeholders. The RCEM places a strong emphasis on the concerns of primary stakeholders, gathered through ongoing conversations and engagement throughout the evaluation (Stake, 1975; Spiegel *et al*., 1999). The primary objective of the RCEM is to gain a comprehensive understanding of a programme from the perspective of stakeholders' real-life experiences (Abma, 2005). In the context of this study, the primary stakeholders are students and lecturers. Henceforth, the barriers to and solutions for cultivating innovative graduates are derived directly from the viewpoints and insights of these primary stakeholders, enhancing the authenticity of the research findings.

INNOVATION COMPETENCE: A REVIEW

The development of innovation competence is widely recognised as a crucial aspect of higher education across various domains in the 21st century (Ovbiagbonhia *et al*., 2019). Innovation competence is considered a core competency for learners to thrive in a rapidly evolving world. Therefore, it is imperative that the inculcation of innovation competence begins in primary education. To effectively create innovative graduates, educators must comprehend and foster innovation competencies in learners. Tidd and Bessant (2009) define innovation competence as the ability to generate creative ideas that can be implemented successfully as products, services, procedures, theories and strategies that are beneficial to the intended stakeholders, community and/or society. In essence, innovation competence entails the capacity to generate original, relevant and implementable solutions to address socio-economic challenges.

It is essential for educators to possess innovation competence themselves to adequately cultivate it in their students. Educators must not only possess a deep understanding of innovative processes, but also be skilled in guiding and nurturing students' creativity and problem-solving abilities (Ovbiagbonhia *et al.*, 2019). Without competent educators who can effectively foster innovation competence, it may be challenging to produce a substantial number of innovative graduates necessary to drive societal progress and meet the demands of an ever-changing world.

Creating a conducive teaching and learning environment is crucial for fostering innovation competence in students. Environments that facilitate the development of innovation competence are characterised by being less structured and more hands-on, offering multiple avenues for learning and featuring a less rigid lecture-based approach compared to traditional learning environments (Dalke *et al.*, 2007). These environments prioritise active student involvement, aligning with learner-centred pedagogy.

In a learning environment that supports the development of innovation competence, learning goals are explicitly stated and teaching is geared towards achieving these goals at both module and programme levels. Students recognise the significance of acquiring innovative skills for their personal and career development (Beghetto and Kaufman, 2014). Such an environment places emphasis on attaining learning outcomes and engaging students in authentic tasks that expose them to innovation opportunities.

Moreover, in an environment that fosters innovation, students learn about the dynamic nature of scientific knowledge and understand that it is subject to ongoing evolution (Fraser, 2012). Such an environment nurtures creativity, critical thinking and innovative skills in students. Therefore, the teaching and learning environment should be an integral part of the educational system, starting from the elementary stage and extending through HTE. By establishing

supportive environments throughout the educational journey, educators can effectively cultivate and enhance students' innovation competence, enabling them to thrive in a rapidly changing world.

RESEARCH METHODOLOGY

This study adopts the qualitative research approach to satisfy its objective to gain an in-depth understanding of how the Zimbabwean HTE Education 5.0 curriculum was failing to produce innovative graduates. Creswell and Creswell (2018) commend the use of the qualitative research approach when one intends to seek data about a phenomenon that is unfamiliar because the approach facilitates collection of detailed and untampered data. In this case, the qualitative research approach was suitable because it allowed the research to interrogate participants in their natural social environments that largely aided in the gathering of authentic data. For the purposes of strengthening the argument in the findings, the study employed a multiple case study design where 10 university lecturers, five from each of the two sampled universities, were purposively selected. The lecturers were selected from the following faculties; Commerce, Law, Education, Engineering and Agriculture and that was done to broaden the sources of data from the participants who were exposed to different professional experiences. The selection of the lecturers aided in getting the intricate details about how the graduates churned out of Zimbabwean universities were lacking in innovation because these were the people responsible for implementing the Education 5.0 curriculum which was introduced to fill the graduate-innovativeness gap. Other than the lecturers, 10 students, were also engaged, five from each of the two universities sampled. Students, who had completed their work-related learning, were deliberately engaged so as to get their views regarding how they had experienced and married theoretical learning and practice. These were selected in the same way the lecturers were selected, one from each of the faculties identified. All the participants consented after getting assurance that their rights to participate, confidentiality and privacy were to be respected (Creswell, 2018).

Accordingly, the universities are referred as UA and UB, just for identification purposes. The lecturers are thus named as UAL1-UAL5 for UA and UBL1-UBL5 for UB. For the students, UAS1-UAS5 and UBS1-UBS5 shall are used.

The lecturers supplied the data through face-to-face interviews, while the students engaged in Focus Group Interviews. To crosscheck the authenticity of some of the data provided, the research participants document analysis was also employed. Both the participants and the interviewers were able to ask questions for clarity which improved the credibility of the findings since adequate data were generated. One of the researchers was responsible for the participants at each of the two universities and the findings were then collaborated.

Data analysis involved the researchers reading the captured verbatims repeatedly and exchanging the transcripts from the two study sites to allow for alternative interpretations of the findings. Related ideas were coded manually and classified accordingly, in line with the thematic content analysis technique (Vaismoradi *et al.*, 2016).

HIGHER EDUCATION CURRICULUM REFORMS IN ZIMBABWE

EDUCATION 3.0 CURRICULUM FRAMEWORK

Upon achieving independence in 1980, the Government of Zimbabwe (GoZ) inherited a colonial HTE curriculum and higher education framework, commonly referred to as Education 3.0, which revolved around three missions: teaching, research and community service/outreach (Tagwira, 2018). By design, the curriculum framework was deficient in fostering innovation and industrialisation skills. Resultantly, graduates from this system were more inclined to seek employment, rather than actively engage in generating new ideas and establishing employment opportunities (Zvobgo, 1999). Similarly, Murwira (2019) observes that Education 3.0 curriculum

primarily produced workers rather than individuals capable of creating goods and services.

The inadequacies of Education 3.0 curriculum were also brought to the fore by the Chetsanga Commission Report of 1995 and the Presidential Commission into Education and Training (PCIET) of 1999, also known as the Nziramasanga Commission. Both reports concurred that the Education 3.0 curriculum failed to provide students with the necessary education and training for innovation and industrialisation. The reports recommended the development and implementation of a higher education curriculum that would equip students with the knowledge and skills required to produce goods and services.

A National Skills Audit conducted by the MoHTESTD in 2017, revealed that Zimbabwe boasted a literacy rate of over 95%. However, the availability of critical skills stood at a mere 38% (Tagwira, 2018). This disparity clearly demonstrated the Education 3.0 curriculum's failure to cultivate the essential skills necessary for innovation and industrialisation among graduates. The empirical evidence pointed to the urgent need for an HTE curriculum design framework that fosters the development of critical skills among students to drive innovation, industrialisation and development.

EDUCATION 5.0 CURRICULUM FRAMEWORK

The GoZ, through the MHTEISTD, implemented a curriculum reconfiguration from Education 3.0 to Education 5.0 in 2020. This initiative required all HTEIs in the country to adopt the new curriculum framework. The Education 5.0 curriculum framework incorporated two additional functions: innovation and industrialisation, alongside the traditional elements of Education 3.0. This re-orientation aimed to equip graduates with the necessary skills to contribute to societal development through transformative application of scientific and technological knowledge, resulting in the production of goods and services (Tagwira, 2018; Murwira, 2019).

Murwira (*ibid.*) argues that education that does not lead to the creation of goods and services is irrelevant, thus highlighting innovation as a key focus of Education 5.0. Ezeanya-Esiobu (2019) supports this notion, emphasizing that innovation in science and technology plays a crucial role in driving national economic growth. However, this article argues that innovation in the Arts and Humanities also contributes to economic growth. Therefore, under Education 5.0, HTEIs are mandated to spearhead the generation of new knowledge and innovations for industrialisation and socio-economic development.

It is important to recognise the interconnectedness of the five functions within Education 5.0. According to the MoHTESTD (2019), the teaching function facilitates research which, in turn, influences community service through innovation. Furthermore, innovation paves the way for commercialisation and industrialisation, often through the establishment of innovation hubs and industrial parks. The primary objective of Education 5.0 is to produce graduates equipped with innovative skills, enabling them to establish industries and contribute to economic growth, rather than relying solely on job-seeking. Recognising the significance of innovation and industrialisation in contemporary development agendas, several universities worldwide have established incubation hubs and fostered sustainable university-industry linkages (Mukhwana *et al.*, 2017).

Similarly, the GoZ has established innovation hubs and technology parks in various public HTEIs to address pressing national challenges and stimulate overall development. However, it is encouraged that the government extends its support to the establishment of innovation hubs at private HTEIs, to achieve the country's mission of becoming a competitive, modern and industrialised middle-income economy by 2030.

THE BENEFITS OF EDUCATION 5.0

Available literature highlights the benefits of adopting Education 5.0. The GoZ (2020) states that the implementation of Education 5.0 was necessitated by the National Development Strategy (NDS) 1 spanning 2021-2025, which outlines Zimbabwe's vision of modernisation, industrialisation and achieving middle-income status by 2030. Education 5.0 is seen as a critical component of this strategy, as it aims to cultivate a skilled workforce capable of driving innovation, productivity and sustainable economic growth. Dziwa and Postma (2020) also highlight that Education 5.0 has the potential to address Zimbabwe's economic and technological deficits by developing human capital capable of producing contextualised technological innovations for the industry.

Education 5.0 is also recognised as a powerful tool to tackle persistently high levels of unemployment and a declining economy in Zimbabwe (Ncube and Khoza, 2023). By nurturing graduates with an entrepreneurial mindset and equipping them with the necessary skills and knowledge, Education 5.0 aims to create employment opportunities and foster innovation and entrepreneurship. This has the potential to lower unemployment rates, increase foreign currency exports and address societal vices associated with poverty and unemployment, such as armed robbery and drug abuse (Muzira *et al.*, 2020). By empowering individuals to become job creators and contributing to a more prosperous society, Education 5.0 plays a vital role in transforming Zimbabwe's economic landscape and social fabric.

The adoption of Education 5.0 in Zimbabwe was also driven by the recognition of the Fourth Industrial Revolution (4IR) and the need to align the education system with the demands of this era of rapid technological advancement (Chinyamunjiko, *et al.*, 2022). By embracing Education 5.0, Zimbabwe positions itself at the forefront of technological advancements, empowering its citizens to harness opportunities presented by the 4IR and drive sustainable development. The aim is to ensure that graduates are equipped with

the necessary skills to effectively contribute to the economy and succeed in the digital age.

The GoZ (2020) reports that the adoption of Education 5.0 in Zimbabwe was guided by a broader global perspective, considering influential agendas such as Agenda 2030, Agenda 2063 and SDGs. By aligning its educational goals with these international frameworks, Zimbabwe aims to contribute towards a more equitable and prosperous future, in line with global aspirations. Education 5.0 serves as a catalyst for achieving the objectives outlined in these agendas, further positioning Zimbabwe as a participant in global sustainable development efforts.

The benefits of the Education 5.0 curriculum framework are extensive and promising. This transformative approach to education holds the potential to address economic challenges, reduce unemployment rates, foster innovation and align educational goals with global frameworks for sustainable development. However, it is essential to acknowledge that the realisation of these benefits depends on effectively addressing the barriers that hinder the creation of innovative graduates within the Education 5.0 curriculum design.

FINDINGS

The major findings of this study relate to pedagogical issues, inadequacy or inappropriateness of resources to effect innovation, dearth of innovation modules and programmes, limited linkages between universities and industries and adherence to the Education 3.0 knowledge-oriented assessment criteria.

Lack of Pedagogical Skills in Innovation

While the Zimbabwean government introduced the Education 5.0 curriculum, whose major thrust was to promote innovation among the graduates, it emerged from this study that little was done to equip educators with the necessary skills to transfer to the students.

UBL3 felt that the government was not sincere on the call for innovation because;

> *"they talk about an innovative product from the university but the lecturer has never been trained on the skills to transfer to the student so who is responsible for the non-innovativeness in our graduates?"*

UBL3's question seemed to have been answered by another lecturer (UAL5), who reasoned that:

> *"The government's Education 5.0 curriculum is unimplementable, at least for now until the educators are capacitated to deal with the skills gap. You see, I teach Accounting, I don't know what skill to transfer to my students that is different from what I learnt 20 years back.'.*

The lecturers' sentiments regarding pedagogical challenges were echoed by (UAS2, who narrated that

> *"My educational psychology lecturer talks about it, he says we should be innovative, but we were never introduced to any innovation module.".*

UBS1 shared what seemed to be a panacea to the challenges of skills development in students if ever the goals of the Education 5.0 curriculum were to be realised,

> *"In my view, our lecturers should emulate what our primary school teachers used to do. When they wanted us to design a cardboard aeroplane, they would design one for us to see. It was easy then because you could easily follow the steps."*

The call for emphasis on teaching innovation skills widely shared by the participants in the present study was also made by Billig (2015), who reasoned that innovation in graduates can be realised only if students were introduced to the theoretical foundations of innovation since a good theory always guides effective action. Unlike in Zimbabwe, university students in Germany and Thailand go through innovation programmes from the first year of university through to the final year where they are provided innovation knowledge and ideas in their general courses up to the stage where they are asked to present their innovation products before graduation (Manyat *et al*,. 2019; Jawyer, 2023).

LIMITED RESOURCES TO ESTABLISH INNOVATION HUBS

The participants reported that some institutions of higher learning in Zimbabwe showed some interest in fulfilling the Education 5.0 curriculum by establishing innovation hubs but were hamstrung by inadequate resources. One participant, UBL4, revealed that:

> *"Although we have an innovation hub at this university that was commissioned by the Chancellor this year, it's just a building that caters for a few in some Engineering and the Information and Communication Technology departments. Other faculties and departments have no stake there."*.

UBL1, another lecturer at the same university, echoed similar sentiments and said that:

> *"The idea of innovation hubs is noble, but I see these buildings becoming white elephants because the equipment is not there and the broken ones are neither repaired nor replaced."*

While the lecturer participants at the UB moaned the inadequacy of equipment to use in the innovation hubs, the story was more pathetic at UA, where the participants laughed off at the idea of establishing innovation hubs with UAL1 saying:

> *"We could be the last in this country to have such a thing. The authorities are ever complaining about lack of resources, even to remunerate staff. So, I don't see the institution affording that").*

When probed to suggest ways that could be adopted to innovate outside the framework of the innovation hubs, UAL1 added the concern that *"Lecturers and students can't innovate out of their empty pockets unless you tell me that innovations can be done at zero budget."* It seems like other than the budgetary constraints to meet the costs associated with innovation, the populace was not adequately consulted to give their views on the modalities shaping the Education 5.0 curriculum. Rosenthal (2020) raises similar antagonistic views to curriculum change and recommends that a culture of innovation needed to be set first in the population through advocacy, display of posters and through involving all the interested citizens in planning and designing the curriculum.

LIMITED UNIVERSITY-INDUSTRY LINKAGES

Another setback on the attempt to align the Education 5.0 curriculum to its major goal of producing innovative graduates was the limited collaboration between industries and the universities. The stories narrated by the student participants were more telling. UBS5, an accounting student in the final year had this to say,

> *"It seems our lecturers do not consult, because the voucher system that we are taught here is different from what I practised on my work-related learning."*

Another student also stated that it was important that universities linked up with the industries so that the skills imparted at the university matched those at the workplace. UBL3 suggested that universities needed to:

> *"…hire some artisans so that they come and demonstrate some skills here. I was ashamed when I was doing my attachment. We were three different groups at that company, students from the polytechnic college, those on apprentice and then our group from university. We were the least to perform some basic skills.".*

The sentiments raised by the students relating to the dissociation of the universities and the industries were echoed by the lecturers. When asked to relate the way he was teaching his class with what was happening in the industry, UBL4 said, "*This is my first job. I have never worked in the industry, nor visited them operating, so I can't compare any of them with us."* The same lecturer was dismissive of the idea of partnering with the local industries and defended himself, "*Industry is dead in Zimbabwe, so there is none to partner with. What we teach our students is final and they need to utilise that for their survival."*

Another lecturer, UAL3 argued that it was largely incorrect to suggest that universities were producing non-innovative graduates because, "

> *Our products are performing wonders everywhere in the world. We have never linked with companies in the diaspora, but that is where most of our successful graduates are working."*

UAL3's observation that Zimbabwean graduates were employable elsewhere was noted too by Garwe and Thondhana (2019) who report that highly qualified Zimbabwean professionals were a renowned source of manpower across the world. This scenario where professionals from Zimbabwe emigrate and work in industries in other countries because of limited employment opportunities in the country should be a good indicator that there is something wrong with the country's education curricula. Had the curriculum offered these professionals the relevant innovative skills to industrialise, more companies could have been established in the country and contained the emigration of high numbers of professionals.

DEARTH OF INNOVATION MODULES OR PROGRAMMES

The findings highlight the need for specialised modules and programmes on innovation in Zimbabwe's HTEIs. The lack of such modules and programmes was reported as a significant factor contributing to the limited number of innovative graduates being produced. Both students and lecturers recognised the importance of addressing this curriculum innovation gap to foster innovative skills and mindsets among students. In the words of UAS4,

> *"We are only exposed to a theoretical university wide module in entrepreneurship…there is no module or degree programme on innovation on offer, but we are expected to be innovative…"*

Similar sentiments were echoed by UBS3, who said,

> *"I'm not aware of any module or programme on innovation at this institution. The lecturers encourage us to innovate, but without structured knowledge of innovation, it is a daunting task…"*

The absence of modules or programmes on innovation at the institutions was corroborated by the lecturers. When asked how the universities expected to develop innovative graduates in the absence of the integration of innovation into the curriculum, UAL2 responded by arguing that, "*The university wide Entrepreneurship Module was designed to promote both entrepreneurship and innovation in students.*"

However, documentary analysis proved that the Entrepreneurship Module focused not only on the theory of entrepreneurship, but also excluded innovation. This analysis also confirmed the claim by the students that the Entrepreneurship Module was too theoretical and, therefore, void of practical application of knowledge. On the same issue, UBL5 expressed his perspective, stating,

> *"Innovation is the new thrust in HTE, but there is a conspicuous absence of innovation in the curriculum. That is impeding efforts by both students and lecturers to be innovative."*

To bridge the innovation gap, both students and lecturers encouraged HTEIs to introduce university specialised modules and programmes on innovation in their curricula. This approach has been successful in other countries and can serve as practical examples for HTEIs in Zimbabwe. For instance, the University of Colorado in the United States introduced the Bachelor of Innovation Degree, which has enhanced the production of innovations by students (Boult *et al*., 2009). Recently, several universities in China implemented an innovation and entrepreneurship training programme for all students, that is, a project-based module that allows students to actively engage in project design, execution and completion (Dai, 2023). The programme aims to enhance students' innovative thinking, entrepreneurial abilities and practical skills. Wang *et al*. (2013) observe that in Australia, many universities have established dedicated innovation centres and departments that provide integrated training for students in innovation and entrepreneurship. The centres and departments offer guidance on innovative technologies and support for entrepreneurial activities, creating a conducive environment for fostering a culture of innovation in students. These case studies provide HTEIs in Zimbabwe with practical examples to follow in their bid to align their curriculum with the creation of innovative graduates.

EDUCATION 3.0 KNOWLEDGE-CENTRED ASSESSMENT

The shift from Education 3.0 to Education 5.0 in HTEIs in Zimbabwe was expected to bring about a transformation in assessment

practices, with a specific focus on cultivating innovation skills in students. However, the findings reveal a worrying trend of most lecturers persisting with Education 3.0's knowledge-centred assessment criteria. This assessment methodology is incompatible with the nation's objective of fostering innovation skills which is the core of Education 5.0.

Through the analysis of assignment and examination questions, it became evident that several lecturers assign tasks requiring students to state, outline, discuss, assess, examine, analyse and explore specific content. Some examples of questions extracted from assignments and examination papers included the following: "Discuss the Social Justice theory"; "Explore the view that conflict is inevitable"; and "Analyse the role of digital technologies in society". The absence of practical assignments and examinations even in some practical subjects confirmed the persistence of the Education 3.0 assessment framework in HTEIs, despite the transition to the innovation-oriented Education 5.0. This traditional assessment approach, branded by Koh (2017) as limiting knowledge application and higher order thinking skills, hinders the development of innovation competences such as problem-solving, creativity and critical thinking. Similar sentiments are echoed by Simonson *et al*. (2000). The prospects of developing innovative graduates remains gloomy, if the assessment conundrum in HTE is not addressed.

During interviews about the potential of Education 3.0-style questions in cultivating innovative skills among students, the lecturers displayed defensiveness. UAL4, one of the lecturers argued,

> *"This assessment style has yielded accomplished professionals, some of whom have been sought by foreign institutions. I fail to understand why some officials and individuals attempt to discredit its effectiveness."*

The resistance of educators to curriculum reform is a perennial problem (Terhart, 2013) that necessitates evidence-based research and regular assessment capacity-building workshops.

Some lecturers attributed the responsibility for Education 3.0 assessment tasks to external examiners, whom they accused of failing to align with the Education 5.0 assessment framework.
This discrepancy was highlighted by UBL3, who stated:

> *"External examination paper moderators often dismiss innovation-oriented questions that require students to design, create or formulate specific phenomena as of the low order type."*

To address this challenge, universities must ensure that both internal and external assessment stakeholders are equipped with the necessary skills and knowledge to embrace assessment methods that promote innovation, as mandated by Education 5.0.

Interviews with students provided further evidence of the deficiencies in the Education 5.0 curriculum design when it comes to fostering innovative graduates. One student, USA1, questioned,

> *"How can universities expect students to be innovative when the curriculum primarily focuses on passing coursework assignments, in-class tests and exams, without any requirement for students to develop actual innovations to pass a module or complete a programme?"*

This observation was supported by other students and an analysis of degree programme regulations, revealing a lack of emphasis on fostering innovation. The scarcity of student-generated innovations at the two universities can be attributed to this issue. To effectively cultivate innovative graduates, HTEIs need to undertake a transition from the Education 3.0 to Education 5.0 assessment framework, along with the implementation of policies that prioritise innovation as a requirement for students to successfully complete modules or programmes.

DISCUSSION

The findings of this study reveal that it was possible to produce innovative graduates from the universities in Zimbabwe if the Education 5.0 curriculum was supported financially. It was stated that financial incapacity was thwarting the motivation for innovation among most students. The significance of financial support cannot be

overemphasized when developing an important national instrument such as education curricula because even in some developed countries, such as Russia, Didkovskaya and Onegov (2019) observe that curriculum innovation was hampered by the lack of interest of business and production in innovation and the lack or absence of government programmes to support youth initiatives.

Secondly, it emerged that there was need to train university teachers on innovation skills teaching so that they could transfer the skills to the students. The idea of capacitating both lecturers and students in skills development has been hailed as a major foundation for innovation at the Shoolini University in India, where a one-student-one-patent policy has been successfully implemented with good results (Vaishali, 2023). Likewise, students from Zimbabwean universities may take a leaf from India's Shoolini University and produce an artefact, be it a product or a service good that will motivate them to be critical thinkers and produce more.

Faculty wide and industry-university linkages ought to be operational so that students acquire adequate relevant knowledge and skills that may help them to be creative in the face of globalisation where knowledge economy is thriving. The Zimbabwe Council of Higher Education (ZIMCHE), a body that supervises quality compliance in HTEIs may stipulate that all university lecturers ought to have a qualification grounded in innovation before they are considered to teach modules at that level.

CONCLUSION AND RECOMMENDATIONS

The major objectives of this study were to establish the reasons for the poor performance of the Education 5.0 curriculum with respect to the production of innovative graduates and offering solutions to the shortcomings. The findings indicate that the Education 5.0 curriculum was fairly designed and that it was possible to produce the desired innovative graduates if well implemented. It appears there was inadequate consultation among stakeholders before the curriculum was gazetted for implementation because lecturers and students revealed that they were not sure of how they were supposed to implement the innovation component of the curriculum, although they thought that the idea of innovation as a product of the curriculum was motivational. The research deduced, from this

evidence, that any curriculum innovation which excluded the input of the implementers was bound to face challenges. They also asserted that successful curriculum implementation needed to be backed by adequate financial resources.

In line with the findings of this study, it is, therefore recommended that the Education 5.0 curriculum be supported through capacitating the implementers, in this case, university lecturers and their students. The lecturers need to be in-service trained on teaching innovation skills, engage in exchange visits with other universities outside of Zimbabwe where innovation hubs are performing well.

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