Bridging the Gap between Curriculum Theory and Industrial Innovation Practice in Kenya

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ABSTRACT

The aim of this paper was to highlight the existing gap between theoretical knowledge acquired by college and university students and the needs of a real-world industry. The paper investigated the limitations of the current curriculum in terms of its ability to provide students with critical thinking skills and hands-on practical experiences that would make graduates competent enough for the current industrial innovative needs. The study was conducted through a review of the existing literature including policy papers, journal articles, and research papers on the Kenyan curriculum and its suitability to prepare students for the job market. The paper proposes a review of the curriculum to incorporate industrial skills training in academic institutions through attachments and internships, collaboration with industry professionals, creation of innovation and incubation hubs, simulation labs, etc. The intended outcomes of these recommendations are that they will provide students with the required skills and hands-on practical experience, that would make them competent enough for the job industry, and contribute to the socioeconomic development of Kenya.

Key words: Theory, Practice, Curriculum, Industry, Innovation

INTRODUCTION

The gap between theoretical knowledge taught in Kenyan Universities and Colleges, how it is taught, and the ability to apply that knowledge to satisfy the demands of the modern real-world industry, has never been clearer than it is today. The working environment all over the world is experiencing rapid transformations which have brought about unprecedented and significant changes in labor dynamics all over the world (Wahungu, Wawire & Kirimi 2023). The fact that industrial training which should have already been part of the college and university curriculum, is still lacking, is appalling. The Kenyan government and other stakeholders in the education sector have not made enough deliberate efforts, towards the modernization of the Kenyan education curriculum, to encompass the acquisition of skills and experiences that would make graduates competent enough for the current technological dispensation in the job market.

Most college and university graduates in Kenya, continue to struggle to fit in the existing job market. A study conducted by Kelei (2015), revealed that there is an employability skills gap between what the employers need in the industry and what the graduates can offer. The United Nations Development Program (2013) established that the rate of youth unemployment is quite high. In the present-day, knowledge-based economies that have emerged following globalization and the information technology revolution, universities are expected to play a pivotal role by generating, harnessing, and transmitting knowledge for sustainable development (Bassey & Atan, 2012). In Kenya however, many of her universities have not been able to live up to this billing. Many employers have made it clear that Kenyan graduates at most levels of education, do not have the practical skills or industry experience, that can directly be applied to a role within the various industries.

This paper seeks to underscore these existing gaps and highlight the consequences of such a gap to industrial and technological advancement. To bridge this gap, this paper proposes solutions that augment the training

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of industrial skills in the Kenyan curriculum and implementation.

LITERATURE REVIEW

The role of universities and colleges in producing competent and industry-ready graduates is extremely important as part of their contribution to the socioeconomic advancement of the country and society at large. According to Bassey and Atan (2012), universities are places where specialized human resources are developed, which means, they play a crucial role in generating human capacities for leadership, management, and technical expertise. Universities, colleges, and Technical and Vocational Training offer opportunities for students to access education and training. According to Hope (2012), what is relevant is not just access to formal academic curricula (which is in abundance) but access to acquire appropriate skills to fit the educational background and demand of most of the youth as well as the Kenyan job market both now and in the future.

In Kenya, the education curriculum is grounded in theoretical approaches, and emphasis is placed on passing examinations. The current system has inculcated an unfortunate pattern of memorizing academic concepts for the sole purpose of excelling in tests. Most employers perceive the current students as too theoretical but deeply lacking in hands-on practical aspects (Ponge, 2013). Instead of overemphasis on passing examinations, more effort needs to be placed on understanding the intricacies of the topics at hand to enhance innovativeness, critical thinking skills, and creative ways of solving problems. A study conducted by Miriti, Mugambi, and Ochieng (2014) established that the focus of the current system of education elevates theoretical knowledge above the development of practical skills that apply to the job market. Bunyi (2013) argues that, argue that for various reasons, many of the curriculum reforms implemented in Kenya have remained at the level of intentions with little implementation or enactment of the intended innovation. More targeted solutions need to be implemented to change this theoretical approach into a more practical approach.

The quality of graduates is currently low in the country since most of them have inadequate practical industry experience. A study conducted by Maiyo, Abong'o, and Tuigon'g (2014) to establish the training needs of university fashion and apparel design graduates, exposed a serious indictment on the quality of graduates that universities are releasing to the job market. The graduates had low industrial exposure and lacked experience in market-relevant selling strategies and current fashion market trends (Maiyo, Abong'o & Tuigon'g, 2014). The curriculum as it is currently, across major universities in Kenya, has training programs that are more focused on theory, than practical application of that knowledge and this must change for any sort of progress to be realized. However, lately, the case for skills-oriented education has received impetus owing to the current development blueprint – Kenya Vision 2030 (RoK, 2007) – whose aim is to transform Kenya into a newly industrialized, middle-income country by 2030 (Bunyi, 2013). According to Mbore (2021), academic institutions should focus on courses like entrepreneurship education that would provide the graduates with innovation skills that offer high valued contributions to the accomplishment of quality strategy goals and organizational objectives, enabling businesses to achieve market-leading performance and thus competitive advantage. Clearly, consistent efforts need to be made to realign the Kenyan education system to the current market demands.

Most students in Kenya lack access to real-world experiences while in college or university and this continues to deny them the exposure necessary to understand how the industry operates. Minimal adoption of practical components in the curriculum has been identified as a barrier to acquiring skills, consequently affecting TVET students' capacity to secure employment (Muchira et al., 2022). Limited, or complete lack of, interactions between the students and the industry players, reduces the student's opportunities to learn real-world scenarios, limiting their chances of mentorship by experienced professionals. The Kenyan students lack experience in an everyday work environment, thus making them less competitive and minimizing their ability to be hired. The undesired and of course unintended consequence of this system of

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education is that it ends up denying graduates the chance to contribute to the growth and development of an already struggling Kenyan economy.

Kenya, being a developing economy, is largely marred by inadequate investments at all levels of the education sector, leading to a noticeable shortage of academic resources. Colleges and universities in the country are characterized by inadequate qualified tutors and a shortage of course books and classrooms. A study conducted in Nyamira County in Kenya established that most learning institutions faced serious challenges such as inadequate funds, inadequate reading resources, and a lack of qualified teachers among others (Onderi & Makori, 2013). The lack of technical competence of the human resource from our colleges and universities, to meet the demands of the job market, paint a gloomy picture of the possibility of achieving Kenya Vision 2030. More needs to be done as Otieno (2013) suggests, more resources must be invested in supporting the capacity of universities to conduct meaningful research and support industry players. There is a need to strengthen university–industry linkages and ensure knowledge transfer (Otieno, 2013). In essence, deliberate investments in the provision of academic resources have a direct impact on the quality of graduates that the universities will produce.

Additionally, there is inadequate modern technology necessary to enable a more conducive and impactful transfer of knowledge to the learners. According to research conducted by Tarus, Gichoya, and Muumbo (2015), 92% of the respondents identified inadequate ICT and e-learning infrastructure as one of the challenges hindering the implementation of e-learning in Kenyan public universities. Most Kenyan universities are faced with a scarcity of modern infrastructure like network coverage, internet connectivity, and computer labs (Tarus, Gichoya & Muumbo, 2015). The Medium-Term Plan noted that the training being provided by the Technical, Industrial, Vocational, Entrepreneurship Training institutions 'has been hindered by inadequate facilities and inappropriate curriculum, hence most graduates at this level lack appropriate skills' (Republic of Kenya, 2008). Poor technology in academic institutions frustrates any efforts to produce technologically skilled graduates.

Finally, the review of the existing literature reveals that many studies have been conducted that highlight the unemployability of Kenyan graduates under the current education system. The studies different studies and papers have recommendations that encourage the acquisition of industrial skills outside academic institutions, especially after graduation. However, there seems to be no practical recommendations on how to incorporate industrial skills training into the Kenyan education curriculum to develop graduates and make them industry ready by the time of their graduation.

RESEARCH METHODOLOGY

The two research methods used in this study are Literature Review and Content Analysis. The two methods employ secondary sources, and they included a systematic collection and synthesizing of the previous research. The process involved systematic gathering, organizing, analyzing, and synthesizing of the existing scholarly works, research reports, articles, peer reviewed journals, publications, and books. The resources analyzed were determined to be relevant to the research topic and were able to provide insights on the theoretical concepts taught in the Kenyan academic institutions, show the level of theory-inspired innovation in the industry, and provide more insights on the practical skills demanded by the industry.

The study began with a search for relevant literature that addresses the key concepts in the study i.e., the curriculum theory in the Kenyan education system and practical skills demanded by employers in the industry. The quality, validity and relevance of these sources were then evaluated and reviewed to determine their ability to provide a wide range of insights and valuable perspectives for this paper. The selected sources were then organized and analyzed to establish existing patterns, contradictions, and gaps that currently exist in the Kenyan education curriculum vis a vis the industrial skills required to excel in the job market. The facts established from review and analysis of the findings and conclusions of these sources

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were then used to identify the knowledge gap, support certain arguments, and draw conclusions for this paper regarding curriculum theory and practical industry skills that are needed.

The diverse insights gained from these sources of literature, provided a clearer understanding of the relationship between curriculum theory, industrial innovation practice, and evidence on the need for augmenting industrial skills training the Kenyan education system.

FINDINGS

1. **The State of Industrial Skills Training in Colleges and Universities**

Current graduates are struggling to work collaboratively with industry experts or meet industry needs because they lack professional competence in terms of the required practical skills. The review of the literature established that there are three major causes of this inadequate industry skills and experience:

- The overemphasis on theoretical knowledge instead of practical skills that are relevant to the current technological market. This has created graduates who are extremely good at memorizing and regurgitating theoretical concepts but every inept in creativity, problem-solving skills, and innovation.
- Underinvestment in academic resources has resulted in poor-quality of education that doesn't offer the best training to students.
- Limited exposure or engagements with real-world situations that would improve the hands-on application of concepts taught in class. This creates a poor understanding of real industry operations thus reducing the competitiveness of graduates.

2. **Impact on Industrial Growth and Technological Advancement**

The gap between theoretical concepts taught in the current education system and the practical skills required to spur creativity and innovation hampers socioeconomic and technological development in the country. An incompetent and poorly skilled personnel is less likely to innovate or create new solutions, and this causes low productivity. A less productive workforce lowers socioeconomic and technological growth in thecountry, making Kenya less competitive in the global market.

Strategies to Overcome the Gap

1. **Review of the Academic Curriculum**

The introduction of the Competency-Based Curriculum (CBC) at primary and secondary levels in Kenya has been lauded as a game changer by academic professionals and experts. The curriculum focuses on promoting critical thinking skills, the use of practical skills to solve problems as well as applying these skills in real-life scenarios and real-world challenges. However, if a similar system is not embraced at higher levels of education, then the entire program is an exercise in futility. College and university curriculum needs to be reviewed and refocused from the current theoretical, classroom, approach to a more practical approach that is based on acquiring industry skills and concepts. In essence, the establishment of project-based learning at universities will allow a smooth transition of students from CBC at primary and secondary, thus enabling students to build further on the practical skills foundationally established at the lower levels. According to Hope (2012), the overall government policy is to enhance skills development, and critical stock of the country's human resource.

2. **Internship Programs and Industrial Attachments**

These programs must be incorporated and become part of the academic calendar in the academic life cycle of students. The programs play an important role in providing hands-on experience and practical industry skills, that make students all round competent and industry ready by the time of their graduation. While in

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their internships or attachment programs, the students will be able to apply the knowledge they acquired theoretically in class, in providing solutions for real-world industry problems, and develop networking relationships with industry experts.

3. **Collaboration between Academic Institutions and Industry Experts.**

The theory and industry skills gap can be reduced by developing fora or platforms for structured engagements, and open communication channels, in a way that encourages more collaboration between industry partners and academic institutions. Methodical engagements between these two entities are key to enhancing sharing of ideas on the best ways forward. Collaboration can also be forged through the advancement of expertise on specific industry requirements and the adoption of the most current technological solutions that are relevant to Kenyan students. The universities and other academic institutions will be able to receive the much-needed market information on what the labor market demands and inform the new frontier of training methods and skills.

Relevant research projects that inform the development of industry skills and the growth of industry concepts can also be carried out jointly by collaboration between the two entities. The outcomes of such projects can therefore be employed to advance programs in academic institutions, and to develop the student's practical skills in alignment with the industry needs.

4. **Mentorship Programs.**

The opportunity for industry professionals to share their experiences with students can have an insurmountable impact in terms of providing insights on what a student needs to succeed in the profession. The mentor will be able to provide guidance, practical experiences, and networking opportunities to the student. The life-relevant lessons learned from such an industry expert, can go a long way in shaping the professional conduct and competence of a student, in terms of their understanding of the industry and revolutionize the mindset with which they would approach future challenges.

5. **Innovation and Incubation hubs within the university**

The establishment of innovation and incubation centers within academic institutions provides students with opportunities to come up with novel ideas and solutions to existing challenges. These hubs should be manned by experienced mentors, who are professionally equipped in terms of skills, and who can guide, support, and nurture the student while they develop their ideas to mature concepts that are scalable in solving real-life challenges.

6. **Setting up Virtual Labs**

Resources need to be used for the establishment of real industry simulations within the institutional setup. Incorporating these simulations into the curriculum will help provide a glimpse of the level of dynamic industry environment like the inner workings of an industry. The time these students will spend in manufacturing simulations, virtual coding simulations, and experimental simulations, will provide the much-needed real industry experiences in controlled environments. The simulations will also provide lecturers and tutors with the opportunity to actualize some of the theoretical concepts they taught in classrooms.

7. **Incorporating Life Skills into the Curriculum.**

One of the main challenges that graduates continue to face is their inability to express and show life skills in interviews or real-life industry situations. The ability of a graduate to communicate effectively, and to build mutually beneficial work relationships, are concepts that would make them more suitable for different industries. Academic institutions should therefore establish mechanisms within their curricula to develop

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these skills among their students to polish further. Life skills will help graduates in adapting to the dynamic work environment and be able to relate and work with different kinds of people and personalities.

8. **Project Challenges**

Establishing challenges that require the students to apply their classroom theoretical knowledge and apply the different skills that they have learned at school, to solve real industry problems is one way of improving their practical skills. Introducing a competition aspect in such exercises can promote the institution's efforts to nurture creative skills and innovation among students as they work to beat timelines and challenges, which are situations they may be faced with in real industry scenarios. Guaranteeing the students, a certification for coming up with good projects that demonstrate their ability for critical thinking and advance their practical skills, their level of motivation to engage and excel in these challenges is likely to rise.

9. **Incorporate Technology Training into the Curriculum**

The collaboration between industry experts and stakeholders in academic institutions should be leveraged to determine technical skills that would make a graduate competitive in the industry. Training these skills should be incorporated in the academic curriculum in a way that will benefit the students and equip them with the necessary practical technology skills that they need. To achieve this, universities and colleges must purposefully invest in establishing adequate computer laboratories, reliable internet coverage and employing highly qualified tutors to train these skills to the students. Academic institutions can also utilize these relationships to jointly organize technology related bootcamps for their students, as well as internship programs. Students can acquire practical skills and industry experiences from such events, and consequently contribute to technological developments, and economic growth in the country.

CONCLUSION

In essence, the study revealed that there is an existing gap between theoretical knowledge gained in Kenyan colleges and universities and the market needs in terms of practical skills and understanding of real-life industry operations. The study showed that the current curriculum creates misalignment with the industry needs and the graduates are not able to competitively provide the hands-on practical skills needed to advance the economy. The inability of the Kenyan graduate to exercise practical industry skills is also compounded by limited opportunities for collaboration with industry experts that would provide them with guidance and mentorship. The Kenyan socioeconomic and technological situation is already doing poorly. The need for a productive, competent, and technologically savvy workforce is a matter of utmost urgency.

The paper highlights possible solutions that can be implemented to promote the augmentation of industrial training in the Kenyan curriculum. The incorporation of skills training in academic institutions should create a synergy that culminates into a workforce that is practically capable enough to work in the current job market. The goal is to ensure academic institutions can produce graduates who are equipped with practical hands-on skills and experiences, and the ability to be creative and innovative enough to find solutions for existing and predictive future challenges. A highly competent and skilled workforce would therefore generate sustainable socio-economic and technological development in the country.

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