Original Research Article
Integrating 21st-century industrial expectation into the HND graphic design curriculum: linkage with key partners for engagement

ABSTRACT

This study is hinged on a previous study that explored the destinations of HND Graphic Design graduates (GDG). It looks at the relationship between HND graphic design education and the graphic art industry. Thus, the study evaluates the proficiency and work readiness of HND GDG to the world of work. The use of qualitative research allowed for an in-depth understanding of the phenomenon. An evaluative case study was adopted, with data collected through face-to-face interviews and focus group discussions. Purposive and snowball sampling approaches were used to get a sample size of 30 respondents from faculty members, graduates, and industry-based supervisors of the HND Graphic Design Programme (GDP) in Accra, Tema, Winneba, Takoradi, and Kumasi. The study found that the experiences gained by HND GDG are dependent on the Competency Based Education and Training (CBET), availability of experienced industrial trainers and lecturers for mentorship; modern facilities, teaching and learning materials such as a cohesive curriculum. Therefore, this study supports proper collaboration among key stakeholders in the HND GDP for cross-fertilization of ideas, open-mindedness and receptivity. Developing trends is the most effective way to improve pedagogic processes.

Keywords: Graphic design education; curriculum; competency-based education and training, world of work; stakeholders expectations; bridging skills gaps; technical vocational education and training

1. INTRODUCTION

Competency-based education and training is widespread across the Globe. Specifically, in the USA, Australia and Europe where it has been developed into a brand-new education policy because it provides students required competencies for the industry [1]. The ultimate goal of developing technical vocational education and training (TVET) in Ghana is to provide the youth with the necessary career skills for socio-economic development. Although technical universities are required to generate industry-ready graduates but training institutes are yet to achieve this goal. Baffour-Awuah and Thompson [2] confirmed that this shift was required after 1957, when the country's workforce outgrew its formal employment, resulting in substantial unemployment and underemployment. Ministry of Education [3]shared that traditional education could not produce employable graduates with the necessary skills. Consequently, TVET was placed at the forefront of the government’s policies to address both unemployment and poverty.

Traditional university education at the time had different mandates and was not geared toward providing the middle-level technical skills that the industry wanted. This necessitated the introduction of polytechnic education to fill the gap [4]. However, research shows that the HND curriculum is yet to have thorough review [5; 6]. The study by Afeti et al. [5]is part of an attempt to change polytechnics to meet industry standards and criteria and give trainees the necessary competencies to make them job-ready. Nevertheless, it has been noted that some HND graduates are unemployed after graduation because they are not work-ready [7; 8]. In light of this, it is critical to assess the value of the HND Commercial Art Programme in Graphic Design (CAPGD), identify its strengths and limitations, and provide suggestions to improve its relevance to the world of work.

As TVET has the potential to transfer higher education graduates into the 21st-century industry, the employability of TVET graduates is critical to the growth of any economy [9]. UNESCO [10] highlighted the importance of a dynamic and robust industrial and commercial environment for the development of prospects, opportunities, and resources. Thus, expediting the delivery of a well-trained, competent, and productive workforce to strengthen industry, commerce and increase productivity for countries south of the Sahara.

While highlighting the importance of training people for self-employment and industry, Ansah and Kissi[11] portrayed the expectations of TVET programmes as a mix of knowledge, career-focused, hands-on, and skill-based education that is necessary to run the productive sectors of the economy as well as develop the nation as a whole. Ansah and Kissi[11] also emphasise the necessity of giving opportunities for teenagers to improve skills after graduating from both junior and senior high schools and expressing a willingness to pursue technical education for employment. This, they claim, is what sets technical universities apart from traditional ones.

The erstwhile polytechnics were established to equip students with vocational, technical knowledge and skills; thereby employing the teeming Ghanaian youth; curbing unemployment; alleviating poverty; creating wealth and an economic boom [8]. The TVET is strategic in the delivery of its objectives in terms of method. This organization is in charge of technical and vocational education (TVE) as well as industry connections in Ghana. For the country's private sector development, it aims to increase skill acquisition for a paid job and extended self-employment. It also encourages industrial and socio-economic development, as well as competency-based education and training-CBET [11].

The competency-based training (CBT) paradigm of teaching and learning began as a pilot programme in early 2004 [12]. Previously, Takoradi Polytechnic was chosen to pioneer CBT programmes for HND Civil Engineering (CE) and HND Fashion Designing Technology (FDT) [13]. Following joint directives from the National Board for Professional Examination (NABPTEX) and the National Council for Tertiary Education (NCTE) in 2014, the polytechnics were urged to convert all programmes into CBT models of teaching and learning while providing learners with highly practical skills and competencies for industrial expansion and transformation for socio-economic growth [5]. Currently, HND C E and HND Building Technology (BT) are the two programmes that offer a full CBT curriculum, and they began in 2006 and 2014, respectively. Due to inadequate logistics and manpower, the Department of FDT has only been able to run portions of the CBT programme since its inception.

AIGA [14]reiterates that graphic design schools must instill lifelong learning abilities in students to cope with the dynamic nature of the field and the ever-changing—software. Most higher education institutions in other countries have regularly reviewed their courses to keep up with industry demands. Graphic Design, Digital Imaging Creation and Development,

Typographic Skills, Introduction to Visual Communication, Design Project, Leaflet, Magazine Design, and Introduction to Web Design, for example, were out for the 2019/2020 entrance. Professional Practice in Design, Photography, English language, Design History, Entrepreneurship and Printing were among the others [15].

However, courses such as Spray Painting, Interior Decoration, African Studies, and Traditional Studies are not featured in the current curriculum from the developed nations. Instead, Digital Imaging Creation, Introduction to Visual Communication, Advertising Campaigns, Interactive Media and Implementation, and Evaluation, and Professional Practice in Design were among the deficiencies in the current HND GDC. Developed countries have extensive experience implementing CBT in their TVET systems, and their curriculum lay a strong focus on the programme'sapplicability to the workplace [16].

TVET does not create jobs on its own, but when it is linked to current labour market demands, it becomes advantageous [17; 11]. To guarantee maximum collaboration between TVET programmes and industry, and to agree on future labour market demands, it is therefore vital to bring all stakeholders on board. Adopting acceptable approaches by human resource development experts in the graphic design sector would be appropriate to satisfy the demands of the labour market, given the purpose of TVET to boost socio-economic and industrial growth in this country. Hence, ensuring work-ready graduates requires more than just skills [18].

TVET Graduates' Expectations in the Workplace

The modern graphic design profession thrives on its employees' life skills and competence. Core subjects, professional skills, learning skills, innovation skills, and information technology (IT) skills are among these life skills that are required for the industry's normal operations [19]. Cognitive skills are "critical reasoning skills that stimulate numeracy, literacy thinking and learning, whiles "non-cognitive skills, such as soft skills, behavioural skills, or technical skills, indicate personality attributes such as leadership, communication, and trustworthiness that are appropriate for specific occupations requiring accuracy [19].

The GDC for example is expected to provide learners with the technical and aesthetic skills required for entry-level employment or even a higher position in the field of graphic design. Hence, the curriculum emphasizes design and liberal arts modules on Commercial art, computer-assisted design, printing techniques and technology, studio art and industrial attachment programmes (IAP) to put training into practice.

From traditional brushes and paint to high-tech computers and peripherals for creating computer-aided drawings, the graphic business has advanced quickly and has led to a higher employment rate. Cleary et al. [20]stressed the importance of graduates' competencies aligning with the training institutions' expectations in this regard. To develop the abilities of students, the Technical University Act [21] constrains technical universities (TU) to use a competency-based and practice-oriented approach to delivery. So that institutions will be better equipped to generate the type of graduates the industry demands.

Graduate unemployment could be ascribed to a misalignment of institutional goals and national requirements on topics such as job development and graduate employment [22]. As the desire to improve graduate employability grows, numerous studies have emerged to provide detailed breakdowns and classifications of specific skills and attributes required to improve graduate employability, such as core competencies [23]. Several employment traits need to be inculcated into the primary curriculum to ensure that TVET graduates in Ghana are well-positioned to secure and maintain jobs. Proficiency, entrepreneurship, numeracy,

leadership, emotional intelligence (interpersonal), motivation, and mentorship are crucial skill sets for the HND CAPGD [17].

Competency abilities

Employability skills are required to obtain jobs and advance in a line of business [24]. So, the employability of any graduate is determined by the level of competency required by the workplace, which is determined by ties between tertiary education and industry. Soft skills, according to Saad and Majid [25], are dependent on a graduate's ability to acquire and apply both academic and personal abilities to produce positive educational benefits for lifelong learning and employment. Today, graphic design has expanded to include print, advertising, and motion graphics for film and television. There have been significant developments in the graphic design sector, necessitating educational enhancement at all levels to keep up with the industry's dynamic character [26].

On the contrary, generic skills are transferable core competencies that embolden the abilities, knowledge, and experience required to advance in today's workplace [27]. While technical capabilities, communication skills, and personal traits are all part of the curriculum that some HND GDG possess, other graduates are unable to combine certain abilities to their advantage. This helps to explain why some students seek higher diplomas as a stepping stone to other careers [7].

Competency-based education Training (CBET)

Currently, TVET programmes incorporate CBT to improve quality as well as warrants long-term viability in this changing society [28]. CBET's goal is to ensure that students benefit from a holistic approach to teaching and learning for proficiency in the workplace. Consequently, the CBT system was introduced in Ghana by the Council for Technical and Vocational Education and Training (COTVET) to coordinate and supervise all areas of TVET. Through the support of the Ministry of Education and partners such as the Canadian Development Agency (CIDA), Japan International Cooperation Agency (JICA), and the Netherlands Organisation for International Cooperation in Higher Education (NUFFIC) sought to improve the quality of TVET education at the polytechnics.

The NUFFIC initiative aimed to update curricula in fields such as agricultural engineering, fashion design, building technology, and civil and automobile engineering [16]. The JICA also sponsored a pilot project that focused on specific programmes such as electronics, welding, and plant engineering [29]. Notwithstanding the importance of CBT programmes, only the BT and CE Departments have full accreditation to operate CBT programmes at the HND level, out of twenty-four departments at TTU.

One of the major issues that vocational and higher technical institutions in Ghana are facing is the implementation of CBT. Although this phenomenon is relatively new in Ghana, it has already helped certain sophisticated countries such as Japan, Germany, the United States, and the Netherlands [30]. JICA's proposal to deploy the CBT teaching style at the former polytechnic level was also praised by Ansah and Kissi[11]. This is a great step toward empowering the student to shadow a mentor in the workplace.

Additionally, Nyarko [30] appreciates the role played by the former COTVET and NABPTEX, now the Commission for Technical and Vocational Education and Training (CTVET); Ghana Tertiary Education Commission (GTEC); NUFFIC and JICA as critical to the success of CBT programmes[31]. CTVET, on the other hand, appears to have slacked off in its job of analysing and assessing HND training programmes regularly. These are currently

anticipated to enable a smooth transition of old polytechnic programmes into CBT systems. Amankwah [32] concurs that CBT training models, which contradict the existing HND GDP, promote passive learning, memorization, and lecturer-centred delivery [17]. Rather, CBT models are distinctive and progressive and so encourage learners to participate actively in the learning process. Thus, emphasizing student outcomes, self-paced learning based on a modularized curriculum, and skill demonstration [33; 34]. CBT modularized curriculum may be just what HND GDGs need to improve their skills thus bridging the gap between industry and academia.

Conceptual Framework Based on Education and Economic Development Theory

Dai et al. [35] admit that economic development, which is an important aspect of people's lives, is determined by positive changes in the level and distribution of employment. Furthermore, Dai et al. [35] celebrate the fact that education and economic development are collaborative as education endows a learner with knowledge, skills, attitudes and competencies to produce human capital. Therefore, economic development is key to improved living conditions. This requires appropriate proficiencies and aptitudes to nurture and match industrial expectations with academic provisions to produce graduates with relevant skills for today's world of work. The link between Education and Economic Development is shown in the following framework (Fig.1)

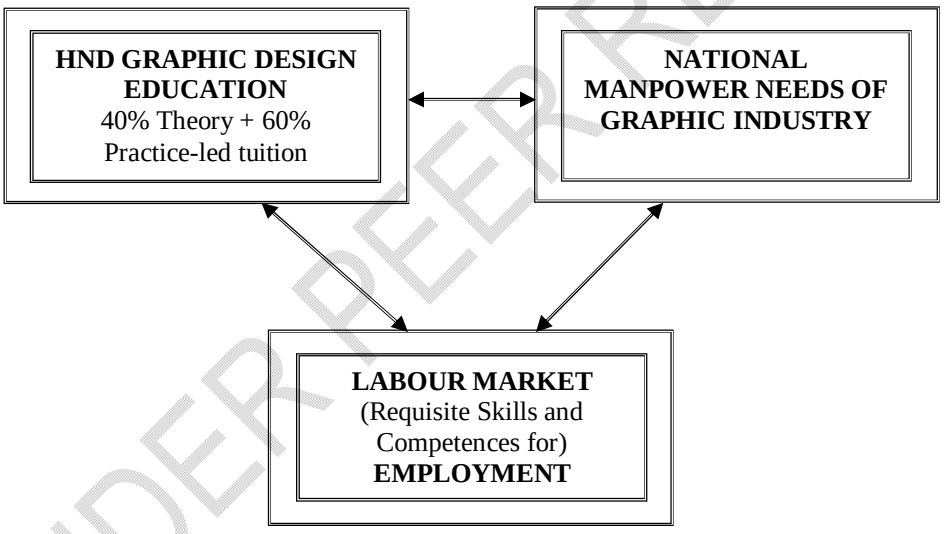

Figure 1: Researcher's theory on education, human capital, and economic development based on Dai et al. [35]

For HND CAPGD education, Figure 1 depicts a modified Dai et al. framework (2008). To prepare GDC for the job market and national manpower demands, GDC must incorporate both theoretical (40%) and practical (60%) components. Dai et al. [35]theorize that competencies can be reached primarily by combining education, skills, and the industry to ensure that the skills required for executing tasks on the job are classified through job titles and job descriptions. This is crucial because it has the potential to keep trainees up to speed on industry expectations and thus, prepare them for the job market.

Secondly, the curriculum content does not depict the job-specific talents leading to mismatch between the skills the sector requires and the skills graduates have. Ghana's economic future on a pragmatic education policy that serves the country's students [36]. As a result,

this study underlines the vital significance of higher education in society's development and advancement in support of holistic education for human capital development. However, studies reveal that in most Sub-Saharan African nations, education and national development are unrelated [37; 38]. Most technical universities, such as TTU, fail to engage their industrial partners for input in curriculum creation, resulting in educational system inefficiency, with the curriculum widely considered unrelated to trainee needs, the industry's wants, and labour market demands. Economic growth has been harmed as a result of this bad situation [5].

A curriculum is the focus of attention and activity in any educational system; students often enroll in a program to gain information, thus what they are supposed to learn is incorporated into the curriculum [39]. Ghana's educational system is based on a concept that emphasizes the development of a well-balanced individual. Following that, the learner develops the necessary intellectual, spiritual, emotional, and physical skills for self-actualization [36]. In light of this expectation, academic programme stakeholders make practical efforts to guarantee that the curriculum's contents are relevant to industry needs. This necessitates the inclusion of appropriate curriculum strategies capable of building and boosting learners' employability in institutions' curricula [40].

In Ghana, tertiary education institutions are required to undertake programmes in the fields of science, technology, and information communication and technology (ICT) that are of particular importance to the country's development strategy [36]. In 1995, Takoradi Technical University, then Takoradi Polytechnic, established the Commercial Art Program with options in Textiles and Graphic Design, to develop and unleash learners' potential for employment in technical and artistic industries [36].

The HND Graphic Design Programme's main goal is to provide students with theoretical knowledge, practical skills, and visual thinking in art, which are referred to as cognitive, psychomotor, and affective modes of development (Curriculum Development for Graphic Design Option). The following courses are intended to impart theoretical information, contain more intellectual subject matter or topics, and have no or few practical components. History of Ancient Art, Computer Literacy I, African Studies, Traditional Studies, History of Ancient Art II, Computer Literacy II, Communicative Skills II, Design History I, Entrepreneurship I, Design History II, Advertising & Public Relations I, Seminar in Graphics, Advertising and Public Relations II, Long Essay/Project Work, and Entrepreneurship II are the courses with 2-hour theory and interactive sessions per week.

On the contrary, the practical courses in the curriculum are intended to provide hands-on skills and competence. These are allocated longer practical sections and sometimes one hour for instructions and demonstration on the timetable. Examples are Elements and Principles of Basic Design, Basic Lettering and Typography, Photography and Computer Graphics.

2. METHODOLOGY

The qualitative research approach was chosen to provide a systematic description of actions, traits, experiences and views [41]. The study used an evaluation method to determine the strengths and limitations of the HND GDP in its academic setting [42]. To determine the relevance of the Programme, the study conducted one-on-one interviews and focus group discussions with 30 participants from Sekondi-Takoradi (Western Region), Winneba (Central Region), Kumasi (Ashanti Region), and then Accra and Tema (Greater Accra Region) as the study's population.

Research question

What are the gaps inherent in the HND CAPGD Curriculum?

3. RESULTS AND DISCUSSION

The subsequent thematic areas in both primary and sub-themes were determined by the data analysis procedure. The major theme focused on stakeholders' viewpoints on the HND CAPGD Curriculum with the following sub-themes:

i. The state of the HND CAPGD Curriculum

ii. Gaps inherent in the curriculum

3.1 The state of the Curriculum

Except for a few internal revisions made in the 2013/2014 academic years that are still not comprehensive enough, the Department of Graphic Design Technology (DGDT) has not had a complete curriculum review since the commencement of the HND GDP in 1995. The modification was done, however, to bring the curriculum up to date with today's graphic design market. For instance, CAG 260 Design History I and CAG 280 Design History II were replaced with CAG 260 Computer Graphic I and CAG 280 Computer Graphic II, respectively, by the department.

As the practical presentation of computer graphics techniques required to follow the basic concepts of design, students were introduced to the principles of computer-aided graphic design. In addition to these courses, the DGDT again introduced Research Methodology in both the First and Second Semesters of Level 200 to prepare students for PRW 310 Long Essay/Project Work, in Level 300. However, Research Methodology at Level 200 is not a graded course hence students do not pay much attention until level 300 when they have to produce a Long Essay/Project Work in partial fulfilment of the HND CAPGD.

As a result, a more complete examination of the HND Graphic Design Curriculum (GDC) is required to ensure its relevance in a rapidly changing profession. According to Bolaane et al. [43], adequate research of graduates' job outcomes can be used to assess the TVET curriculum since it provides a clear indication of the programme's relevance to the sector. Exploring the graduates' constructive viewpoints would allow the researcher to track and evaluate the success of the HND Graphic Design training programme to make the necessary adjustments.

3.2 Gaps inherent in the curriculum

Curriculum inconsistencies in the HND Graphic Design Programme are ascribed to a lack of teaching and learning tools, as well as shortcomings in the curriculum content that obstructs holistic training. These claims are supported by the following responses from graduates:

> Computer-aided design (CAD) software was my first difficulty. We were not taught how to use computer software. Mr “A” tried to teach me, but I was completely lost. Yes! When it comes to the industry, graphic design is combined with computer-aided design; everything is done on a computer. I believe that computer-aided design will be the most beneficial tool for students (FTFRSP8, personal communication 2015, November 27, Accra).

Furthermore, a few graduates stated that several courses need to be improved to cover current and new software packages. This allegation is supported by a graduate's response:

> Takoradi Polytechnic presents a challenge for me because I learned most of what I know on the job. Right now, I'm learning InDesign. We utilize Adobe InDesign instead of QuarkXPress. I didn't fully get CorelDraw when I was in school, so I came to this organization to learn it. There can be a significant gap between what one learned in education and what one can apply at the workplace. (FGDRSP6, personal communication 2015, November 19, Accra)

Meanwhile, a little more than a third of graduates said the curriculum gap was caused by outdated teaching and learning equipment, as seen in the following:

> Even if the institution is performing well, it needs to improve its curriculum and training facilities. This is because most of the things we were taught, such as the process camera for lithography and printing processes, are no longer in use, yet they are still taught on campus. Meanwhile, the image sector is popular in the industry, so newcomers' expertise is restricted and they are unable to cope. (FGDRSP1, a personal communication, 2015, November 18, Accra)

The analysis also revealed that teaching and learning activities were hampered by insufficient facilities. The lack of teaching and learning facilities, according to graduates' responses, poses a severe challenge in the training of HND Graphic Design students. Similarly, industry-based respondents claimed that the existing gap in the subject matter is caused by the lack of state-of-the-art technology, which is visible in most TVET programmes in Africa. The comments also indicated that the programme lacked modern practical components, as evidenced by the following industry response:

> Although the instruction you provide pupils is excellent, something is missing. They can’t accomplish anything if they can't acquire a PC when they come out. Press design differs from what is done elsewhere. When they work in the advertising field and send their work here for printing, it becomes more difficult since they set the work in RGB rather than CMYK, making it tough to set what they want. (IND FTFRSP 2, personal communication 2015, November 19, Accra)

3.3 Deficiencies in the Curriculum Content

Only a handful of the respondents claimed that the gaps in courses such as Computer Graphics and Printing Processes were due to a subject-centred approach to delivery. Subject-centred approach to delivery is one of the commonest techniques adopted in organizing educational enterprises. In this approach, mastering subject matter becomes the focus of the learning experience [44]. Teachers will have little choice but to finish the syllabus and teach only what is in the textbooks if the curriculum is subject-centred. As a result, classes become dull, uninteresting, and students grow inactive and underperform in their subjects. The following comment from the graduate backs up this claim:

> Tuition is not learner-centred rather it is rote-learning. Students are not able to articulate their understanding and knowledge of questions. What would I say if you asked me about what follows after A and B? Based on my comprehension, I should be able to say C and not according to the lecturer's handout. (FTFRSP 7, personal communication 2015, November 16, Accra).

A few faculty and industry respondents said that a lack of curriculum had resulted in the graduating of half-baked graduates. According to STF-FTFRSP 3, the HND Graphic Design curriculum is non-operational because it needs regular review to guarantee that students are up-to-date with industrial advances and requires refresher courses to keep students up to

date with time (STF-FTFRSP 3 personal communication 2016, April 15). These suggestions were strengthened by the following response:

> Almost every attempt in life is driven by technology. It means that it's critical to examine the two-or three-decade-long curriculum that was established as the foundation for teaching students to acquire practical skills to develop a more refined technologically oriented approach that will meet the needs of today's children in terms of learning (STF-FTFRSP 4, personal communication 2016, April 15).

However, the industry response indicated that the existing gaps in the topics are due to non-existing teaching and learning tools as well as lack of ideation in design thinking. As a result, the subjects lack the necessary training experience, as evidenced by the industry's responses:

> So, rather than teaching them how to operate a computer, educate them on what it should do. What fonts, colours, and uses must be presented in the background, for example? (IND FTFRSP 1, personal communication 2015, November 17, Tema).

The response suggests that the graduates are deficient in some key areas that requires redress. Graphic design education emphasizes creatively mixing design ideas and components in visual communication, not just software application expertise and comprehension. Principles, theory strategy, conceptual design, design development, methodologies, visualization composition, social responsibility, and application will all be necessary [45]. A graphic designer is communicator and problem solver and these abilities set him/her apart.

This finding supports Dacre-Pool and Sewell's [46]study, which concurred that introduction of abilities in the main employability model would ensure that graduates are well-rounded in terms of skills that complement their primary discipline. In light of this, the industrial training programme was established in the former polytechnic system to supplement on-campus instruction and provide trainees with the necessary practical experience to make them marketable [47]. Nonetheless, evidence from respondents suggests that certain HND GDG are unable to demonstrate the essential proficiencies in the field of graphic design due to a lack of generic skills that prohibit them from being completely prepared for the task ahead of them [48].

Meanwhile, Okumu and Bhaale[49]stress on the curriculum reform which includes imaginative abilities, flexibility, lifelong learning, teamwork, ability to manage others, capacity to work under pressure, strong oral and written communication for a variety of reasons, numeracy and ability to employ new technology. The study finds that emotional intelligence or social-emotional learning is absent in schools. Hence, Jackson [50] affirmed that most Sub-Saharan African countries have not grasp the significance of soft skills in preparing graduates for the workplace because policymakers consider them to be untestable and hence do not include them in curriculum design.

4. CONCLUSION

Most TVET programmes in Africa have curricula deficiencies which affects positive learning outcomes. Feedback from stakeholders intimate that absence of applicable teaching, learning facilities, state-of-the-art technology and resources precludes HND Graphic Design students from becoming fully baked and responsive to industry's prospects. Learner and graduate competency which are determined by the degree of abilities, experience and attitudes required to operate effectively in a given industry or profession is missing. Working out ways to bring academia and workplace together as partners in knowledge discovery and skill development is so timely. While integration of cross fertilization of ideas among all

stakeholders' bridges knowledge gaps, a new approach to curriculum design, instruction resource development and reorientation of purposeful staff is needful. Likewise equipping new technical universities with evolving proficiency to optimize basic teaching tools and the establishment of a requisite quality assurance framework.

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