



# **Enabling and Impeding Factors in the Provision of Business, Vocational, Entrepreneurship, and Technical Training Education under COVID-19**

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## **Authors' contributions**

*All authors had equal contributions to all stages of this study and all authors read and approved the first draft of the manuscript.*

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## **ABSTRACT**

Education systems have been grossly negatively impacted by COVID-19 globally. Education Institutions including universities, colleges, and elementary schools were closed to prevent the disease from spreading. Lockdown and social distancing are some of the disease preventive measures that imposed the greatest challenges on the education system. Different training and learning strategies were adopted to ensure continuity in the provision of Business, Vocational, Entrepreneurship, and Technical Training (BTVE) education across the globe. These strategies include individual learning, online or remote training, and focus group discussion. Several Scholarly studies show that it was not easy for developing countries like some African countries to adopt the

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online or remote education mechanism while the developed ones took a temporary short period to adjust to the new system. In this article, we used systematic literature review methodology to examine the enabling and impeding factors associated with COVID-19 pandemic that impacted the provision of BTVET education in African the setting right from the onset of the pandemic. We also identify mitigation strategies that should be put in place to abate similar future occurrence. We argue that the lack of strategic foresight in emergency readiness was a major cause of national failures to promptly combat COVID-19 in most African countries including Uganda. BTVET education in Uganda was not spared the bitter effects of the pandemic. However, the pandemic taught a number of hard lessons to the Government of Uganda to strategically outmaneuver the effects of the pandemic. We recommend a number of strategies for outmaneuvering any future effects of pandemics on the provision of BTVET education in Uganda.

**Keywords:** COVID-19; business; vocational; entrepreneurship; and technical training education; BTVET.

## 1. INTRODUCTION

Education, technology, skills, and competencies were formerly seen as the cornerstones of economic and social growth and development [1]. The current trend of the increased unemployment rate, stagnation of economic growth and development, and financial instability in most African countries can trace to the post-world war II strategies which can be treated as faded and cannot stand the taste of generations. Transformation [2], The globe, in a broad sense, appears to be unpredictable which is a result of global power, technology, international politics, geopolitical shift, and international relations [3], which has a direct impact on energy, climate, food, cyber security, rivers and oceans, health and education which in turns are world issues because they posse the opportunities and challenges.

COVID-19 turned out to be a global issue since its first discovery in the city of Wuhan, in Hubei province, China. WHO was informed on December 31, 2019, of a novel viral pneumonia [4]. This enticed global recognition in that two weeks later was identified as a severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) [5]. A few weeks later, on January 30, 2020, the cases were confirmed in over 18 countries and declared a public health emergency of international concern (PHEIC) by WHO.

The most common way for an infected person to spread the virus to another was through direct, indirect, or close contact with their secretions, such as saliva or respiratory droplets released when they cough, sneeze, or talk [6]. A study conducted also found the disease's spread rate to correlate positively to the population as well as being an air-born disease whose virus inoculates

the organisms through the respiratory pathway [7]. This prompted many countries to begin restricting social gatherings as a preventive measure though these could not do much as the first cases in Africa were confirmed in Egypt on February 14, 2020 [8]. WHO declared COVID-19 a pandemic by March 11, 2020, as the confirmed cases had been registered in 113 countries with some recording more than a million positive cases [7]. By the time COVID-19 was declared a pandemic, African countries had registered fewer infection rates although the trend started changing when the cases were confirmed in Kenya following Egypt making it the first country in East Africa on 13 march, 2020 [8]. In terms of numbers, Ethiopia registered the largest number of 92,229 cases followed by Kenya with 47,843 cases while the lowest cases were registered in Eritrea. In Uganda, the first case was confirmed on 21 March 2020 two days after the suspension of all mass gatherings for 32 days and the closing of all schools for 30 days [9].

COVID-19 caught the world unprepared since most of the healthcare systems were constrained within a short time across nations and most of the multisectoral activities were hampered by the disease [10]. However, the government of Uganda took more than thirty-five controls measures to prevent the spreads of the disease which include but are not limited to the following; closures of schools, colleges, universities, and businesses such as bars, and music shows, lockdown on the movement of people as well as prohibiting gatherings of 10 or more people like in markets, churches, and other public places [9]. Social distancing and home staying except for emergencies were some of the preventive control measures which were taken including isolation and mandatory quarantine of COVID-19-positive suspects and people who had recent travel

history [11]. COVID-19 disrupted the world causing a crisis in the operation of education, health, business as well as normal daily life in most parts of the world [12]. Over the years many scholars identified the need for redesigning the technical and vocational education provision in a bid for technological and skills development which would be used for confronting any emerging global crisis [13].

Although the introduction of BTVET education training was intended to address challenges related to economic growth and development by exploring the psycho-motor domain of the population [14], it has also been hampered by a range of impediments which include but are not limited to government involvement in terms of management, funding, policy formulation among others [15] emerging circumstances like technological advancement and catastrophe like COVID-19 impacted greatly on the trend and these forms the backbone for this conceptual review paper to postulate the missed and gained opportunities in the provision of BTVET education training during the era of the COVID-19 pandemic in Uganda.

## 2. METHODOLOGY

This study employed systematic literature review to synthesize literature related to factors that enhanced or impeded BTVET education during and after the COVID-19 pandemic. The literature was sourced from Google, Google Scholar, Academia.edu, Research Gate, and other indexing sites. The inclusion criteria included relevance of the source to the topic of study, that is, content related to factors enhancing and inhibiting BTVET education the world over and in Africa in particular. The use of other sources that dealt with pandemics other than the COVID-19 pandemic was minimized. The related literature was discussed in light of comparisons and contrasts of arguments by the different scholars. The review was organized into sections including introduction, context of BTVET education in Uganda, impacts of COVID-19 on the provision of BTVET education in Uganda, positive gains in BTVET education, negative impacts of COVID-19 on BTVET education, and strategies for enhancing BTVET education in the face of pandemics. We eventually provided conclusions and recommendations of the review. The literature sourced and used for the review is all listed in the reference list.

### 2.1 The Context of BTVET Education Training in Uganda

Before the COVID-19 pandemic, the government white paper of 1992 had foreseen the need for BTVET education but was challenged by the negative attitude toward hands-on skill training since it was initially treated to be for the most vulnerable populations; those who drop out of school early, are indigenous, come from low-income households, live in rural or isolated locations, or have a disability [16]. In consideration of Sustainable Development Goal (SDG), 4 as well as other scholarly recommendations which are not limited to [17] as cited by [18] suggested the need to restructure the education system towards BTVET, 2008, the government took tremendous steps committing into providing better education. These include reviving the 1995 constitution which gives powers for the operation education handling purpose, organization, structure, assessment and awarding of the certificate [19].

Uganda Business and Technical Examination Board (UBTEB) report of 2021 shows that BTVET education was in existence far before independence in Uganda and can be traced back to the late 1940s when the former World War II camps were transformed into centers for skill training to retrain demobilized troops and young people to acquire skills for survival [20]. This was also followed by the establishment of an Artisan training organization in 1952 in the ministry of labour while in 1953, an assessment section was developed to determine the competencies of those who were being trained [21]. In 1967, the Japanese government aimed at producing more craftsmen and women to meet the industrial demand thereby building a modern vocational training institute at Nakawa [20]. This inspired the government to come up with their gradual response of strengthening vocational training schemes which did not yield fruits up to 1972 when the employment act was remembered as well as the Industrial Training Decree No.2 of 1972 together with the Industrial Apprenticeship Training Regulation [22].

According to [23], if Uganda had continued with her positive response towards strengthening industrial vocational training, technology, and innovation in financial services, then it would have attained a middle-class state in 2000 because it would have more job creators than job seekers as this was also affirmed by [24] who said it would promote economy and facilitated

skill development among the population. Unfortunately, the country went into hibernation for close to thirty-six (36) years up to 2008 [25] when the parliament enacted a legal framework under the BTVET act, 2008 which resulted in a well define scopes, levels of different programs as well as roles of different providers with main emphasis on skill development and the need to assess the quality of skill training and development resulted in the establishment of UBTEB, an assessment body for formal training categories in 2009 [26]. The Directorate of Industrial Training (DIT) granted the responsibility of standard development, assessment, training packages, and award certificates to successful candidates under the non-formal category [20].

The enactment of the BTVET act, of 2008 was followed by the subsequent development of the strategic plan, 2011 which has impacted positively the skill training provision where the organization and management have seen the establishment of different departments under MOES to improve internal efficiency and resource mobilization, the establishment of technical schools, institutes, colleges, and university by government in different parts of the country to provide equitable access to skill development. These have resulted in increased enrollment [27]. This report also identified about 1000 skill-providing institutions in Uganda by 2011 which are government aided while others are privately owned providing formal and non-formal technical and vocational training skills. The economic relevance of BTVET has risen since most graduates can get jobs after [28]. Continuous assessment by DIT and UBTEB has certainly played a great role in identifying the mismatch in the training process and increasing the quality of skill development in addition to certification which enhances job acquisition (Desire, 2020). These scholarly findings show that the government of Uganda is committed to making advanced progress in developing BTVET education training. However, the impact of the COVID-19 pandemic cannot be underestimated in the provision of this training because of its long-lasting effects.

## **2.2 Impacts of COVID-19 on the Provision of BTVET Education Training**

Globally, students and youth have been greatly impacted by the COVID-19 health issue.

Learning was altered by restrictions and social isolation. In the majority of nations, schools were closed. The impact of the COVID-19-crises reactions on educational systems and households is discussed in this paper, with a focus on gains and lost opportunities for children and lower-income families in Africa and Uganda being part. Schools, training centers, and higher education institutions were forced to close in most countries in the world due to lockdown and social isolation measures brought on by the COVID-19 pandemic [29] and the United Nations Educational, Scientific and Cultural Organization (UNESCO) report shows that even during temporary school closure, around 40% of low- and lower-middle-income countries did not assist vulnerable students as they further indicated that the education of over 195 countries was shuttered temporarily [30]. To prevent panic and the potential of quicker spread of new illnesses throughout the nation, the President of the Republic of Uganda announced the closure of all educational institutions on Wednesday, March 18, 2020 [31]. It was also argued that the Children's education will be disrupted, which would endanger not only their possibilities and dreams but also the country's long-term sustainability. In addition to teaching reading, writing, and math, schools also help kids with nutrition, health, and cleanliness as well as mental health and psychosocial support, all while lowering the incidence of child abuse, gender-based violence, and unplanned pregnancies. The most vulnerable kids were the hardest harmed with each day that schools were closed [32].

## **2.3 The Positive Gains in the Provision of BTVET Education Training during the COVID-19 Period**

Students developed 21<sup>st</sup>-century skills like independence as the schools were closed [33]. Some of the goal-oriented trainees were able to monitor and evaluate their training and skill development and they became motivated towards learning, creating their training at places of convenience like homes, nearby workshops, and training centers monitoring progress as they look for learning materials [34] Some of the learners who remained on the track were able to change to individual learning strategies as opposed to regular face to face which was used before the COVID-19 outbreak as well as constructing knowledge and skills [35]. According to the United Nations Children's Fund (UNICEF) report of 2020, the lockdown of educational institutions imposed stress on the life of learners

that some were getting out of it by engaging in musical activities helping them to discover their talent, get used to cooking food and developing personal reading skills since they were left with that as the only door out to utilize as well as becoming cognizant about their health by avoiding cruddy places [36]. To catch up with the learning strategies which were not possible, they had to undertake computer training, zoom lessons as well as get skills for remote learning [37]. Skill discovery during lockdown was quite reaching that shows the "Ghetto youths" innovate the hand washing equipment in the slums of Kampala to encourage hand washing within the population as a means of preventing COVID-19 [38].

A global learning platform launched by UNICEF and Microsoft provided online learning opportunities to the disadvantaged communities in less developed nations like Ghana, and Ukraine as the advantage nation's shift to digital technology like online or remote learning [39]. Following the closure of schools and all institutions as preventive measures to control the spread of coronavirus disease, the education system took a quick shift in instructional strategies from the regular face-to-face teaching approaches in an attempt to provide education via radio and television by Uganda's Ministry of Education and Sports (MoE) of which were unsuccessful since most families in rural areas were not having televisions and radio and to ensure that learning continued through educating the learners, a distant learning technique known as the TTE Sandbox was created and implemented involving tools like; screen-casting, podcasting, video conferencing and e-books or padlets [40] while others discovered the importance of smartphone "small computer" in teaching and learning because it was explored for sharing learning materials via group emails, whatapps groups and zooming to enhance remote learning [33].

Understanding the greater connection between home and school and using either environment to facilitate learning. When schools were closed in most parts of the world, most of the children stayed at their respective homes since it was seen as the only safe means to control the spread of the disease and while at home, they explored the links between home and school as some were observed engaged in activities like constructing their small house as they play, sewing clothes using local materials while others did skill training like tailoring, painting and

learning problem-solving technique [41]. Home staying as a result of lockdown also enable some children to acquire agribusiness skills since some were always involved in supporting their family, craft work skills like making mats, pots, chairs, and tables as some could move with their parents to their workshops, supporting their parents with domestic activities like grazing animals, tree planting projects [32].

The lockdown of schools for nearly two years exposed the students to real-world challenges that require flexibility, resilience, resourcefulness, and a certain degree of creativity to deal with them which activated innovativeness among the students that resulted in the discovery of skills for making hand washing equipment, sanitizers like ethanol, face sheal, and face mask while giving the justification for the need to have a diversity of skill training [42].

#### **2.4 The Negative Impacts of COVID-19 in the provision of BTVET education training.**

The sudden and unexpected closure of the vast majority of BTVET centers as a result of many countries' national lockdowns severely disrupted BTVET continuity. While some distance learning alternatives were explored and used, they were unable to replace the quality of face-to-face classes, especially given BTVET's exceptional emphasis on work-based learning and the acquisition of practical skills. The impact of the crisis has lasted beyond the physical lockdown period, as both households and BTVET centers found themselves in economically weaker positions than before, unable to continue with training activities, which are attributed to the following;

Inadequate general and technological infrastructure: power, internet, connectivity, and gadgets [43]. The lack of adequate infrastructure hampered the urgent need to shift to distance learning modalities. Problems with electricity supply, online connectivity, low bandwidth, and a lack of network capacity to handle increased data usage appeared to exacerbate the crisis's challenges in many countries. Students and teachers bore the majority of the additional data usage costs incurred for distance learning [15]. These certainly posed great challenges in the provision of alternative remote education as opposed to regular face-to-face. According to the findings, the most rural and socioeconomically disadvantaged students are the least likely to

have home broadband Internet access [44]. Only 47% of rural students have high-speed Internet access at home, compared to 77% of suburban students [44]. Thirty-six (36)% of those without home access live in a home without a computer, and 58% live on a farm or in another rural setting [44]. Many students in many countries including Uganda struggled to gain access to the internet and obtain the device [45].

There was a scarcity of effective and user-friendly distance-learning platforms [46]. The performance of virtual learning was significantly influenced by the capabilities of the learning platforms and tools used to deliver programs. The COVID-19 crisis has revealed that effective distance learning systems and high-quality instructional and learning resources to support remote instruction are generally lacking in vocational education and training systems, especially when they need to be implemented on a large basis [47]. This also stems from the fact in most African countries and Uganda inclusive, BTVET institutions are majorly using face-to-face instructional and learning strategies which also made it difficult for abrupt transition to remote learning during the lockdown [48].

Inadequate staff capabilities to sustain distance learning with high-quality pedagogical resources hindered BTVET teaching and learning in some areas during lockdown [49]. Due to limited ICT skills and an inadequate understanding of the purposes and functionality of specific components available both within and outside learning systems, staff are unprepared to implement technologically supported learning activities during teaching [50]. The crisis has highlighted the country's inadequacy of investment in teacher training, aspects such as improving the ability to operate online learning platforms efficiently and developing pedagogical resources for entirely remote training and learning [49].

It should not be a shock that the lockdown affected the global economy. The restrictive policies of many countries caused shifts and fluctuations in international trade, finance, and investments and this did not spare Uganda [51]. The emergence of the health crisis, followed by the lockdown, posed cash flow and financial viability challenges, especially to small BTVET services. This is due to the unexpected decrease in revenue from sources such as tuition fees and BTVET center income-generating activities [52]. Parents' inability to pay fees since the majority of

the institutions are privately owned resulted in young people dropping out of BTVET programs, and the Budget restrictions have restricted BTVET centers' ability to invest time and money in developing distance learning facilities, as well as pay educators' salaries in some cases and meet other costs like rent, maintenance and others because the only avenue for fees collection was by direct payment either to the back or study centers [53].

## 2.5 Strategies for improving the quality of BTVET education provision

There is a continuing need to find new and updated methods to apply to give students the opportunity to practice and display 21st-century abilities through regular teaching to enable them to develop critical thinking abilities and problem-solving techniques [54]. These would encourage innovativeness in the time of emergency like it was experienced during the lockdown and as a result teachers and learners would adapt to the abrupt changes and apply technological skills to the remote learning approach [54]. Some of the learners would have remained on track and able to change to individual learning strategies as opposed to regular face-to-face which was used before the COVID-19 outbreak as well as constructing knowledge and skills [35]. Which also identified the need for tasking students with items that they should discover on their own so that they can capitalise on creativity skills and become part of the regular learning approach as they will develop self-direction and self-assessment.

Other similar studies [36] further stress the importance of the need to learn skills that will help students in their personal and professional lives, character development, collaboration, communication, citizenship, critical thinking, and creativity are examples of these competencies which requires learning designed using a flipped classroom for its effectiveness and benefits to students. In addition to this, [37] highlights the need for ICT training including zoom lessons in preparation for a diverse form of learning and these as well stress the need to rethink the current strategies as the competencies were challenged by the pandemics. To understand how students can discover skills on their own, acknowledge the innovation that was made by the "Ghetto kids" where they were able to invent hand washing equipment to encourage hand washing during the COVID-19 crisis which is an indication that they can be better innovative than

one can think sighting the need for amplification [38].

Due to the closures of schools for nearly two years, the form of teaching and learning that was left was through the use of digital technology which gives the actual justification for the need of having a flexible pedagogy of instructions although it was not easy for most developing countries to adapt [39]. Some of the disadvantaged teachers and learners benefited from the support extended by Unicef and Microsoft in conjunction with Cambridge University justifying the need for massive investment in technological development to line with the global trend and postulate the need for the formulation and implementation of national ICT policies for the African context [55].

To recover the lost opportunities in the provision of BTVET education, the educational system, researchers, curriculum designers, education officers, and educational institutions should work together, with an emphasis on creating curricula, creating learning strategies and procedures for post-COVID-19, and changing the educational system itself so that it can remain vibrant during emergencies [56].

### 3. CONCLUSION

BTVET education training posed a positive impact on the socio-economic transformation of the nation and government involvement affects its growth however COVID-19 exposed the countries' preparedness for the provision of this education and some of the gains include; students developing 21<sup>st</sup>-skills of independence and being able to learn without teachers or instructors, exploiting others means of learning other than traditional face-to-face, teachers and learners being exposed to the real-world problems which require not obvious but innovative and creative solution [33].

The strategies suggested herein mitigate the lost opportunities and amplify the gains in the provision of BTVET education. BTVET education requires devotion from the stakeholders for the realization of the intended objectives. This would be in line with [13] who observed that in a bid to constantly respond to the world's emerging crises, then there is a need to always redesigned the technical and vocational education provision so that it can suit the changing trend of the world problem. Consideration should be given to assessing the trend of skill development and

comparing it with that of developed or other developing countries within the continent.

### 4. RECOMMENDATIONS

To enhance the effective provision of BTVET education training and realize the intended objectives, then there is a need for an increase in the use of digital technology by both teachers or instructors and the students as these will widen the scope of information and concentration as learning can go with or without the instructors' presence and these will seek the intervention of all the stakeholder involved to interest themselves so that the digital application in this training match with the global standard.

The exploration of different instruction methodologies suitable while observing social distancing as well as the lockdown was not an easy nut to crush which was sighted to be a result of either infrastructural challenges or pre-requisites skills which call for stakeholders' intervention in terms of funds to facilitate the acquisition of the equipment for the training centers as well as providing wage support to employ IT experts to install and maintain the remote innovation that could have been used during periods like lockdown.

It would also be prudent for the government to establish technical education centers/ schools in every district and equip them with the 21<sup>st</sup> century technology as this will be within the close proximity and easily accessible and would not been affected by the lockdown of transport system.

There is also a need to set aside funds to cater for techno-innovation activities like symposiums to identify, expose, and inspire the attitude of creativity and innovativeness as well as reward the best participant as this can encourage spirits of competitiveness and can foster getting a quicker solution to the world problem and with time can turn to be the culture.

Need to redesign the BTVET education training programs which are aimed at offering flexible skill training that can be sustainable to facilitate learning in times of emergency like it was experienced during the COVID-19 lockdown where most of the control measures that were implemented in Uganda could not sustain the continuation of education provision. Prioritization of the invention of flexible assessment strategies which can be utilized both physically as well as

using remote or online means since during lockdown there was no way of conducting both national and school base assessments which possess difficulties in tracing skill development which would have otherwise been used to mitigate the future skill challenges.

The hand washing innovation that was championed by the street children's living in the slums of Kampala ("Ghetto Kids") during Covid-19 lockdown shows that there are a lot more potential that are not explored in them which can be made more productive by establishing a rehabilitation and skill training centers for the street children.

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### COMPETING INTERESTS

Authors have declared that no competing interests exist.

### REFERENCES

1. Appleby Y, Bathmaker AM. The new skills agenda: increased lifelong learning or new sites of inequality? *Br Educ Res J*. 2006;32(5):703-17.
2. Transformation, A.C.f.E. The challenging problem of labour and youth education: A wake up call for Africa; 2018.
3. Sidhu WPS, Mehta PB, Jones BD. Shaping the emerging world: India and the multilateral order. Brookings Institution Press; 2013.
4. Wong JEL, Leo YS, Tan CC. COVID-19 in Singapore—current experience: critical global issues that require attention and action. *JAMA*. 2020;323(13):1243-4.
5. MUNIKANNAIAN R, UPENDRA RS, NAGAR SS. Significance of Insilco approaches in finding novel biomolecules challenging newly emerging, resurging, deliberately emerging global outbreaks. *EPSTEM*. 2022;20:134-41.
6. Daniel SJ. Education and the COVID-19 pandemic. *Prospects*. 2020;49(1-2):91-6.
7. Belani P, Schefflein J, Kihira S, Rigney B, Delman BN, Mahmoudi K, et al. COVID-19 is an independent risk factor for acute ischemic stroke. *AJNR Am J Neuroradiol*. 2020;41(8):1361-4.
8. African\_CDC. Africa identifies first case of coronavirus disease: statement by the director of Africa CDC; 2020.
9. Matovu JK, et al. COVID-19 awareness, adoption of COVID-19 preventive measures, and effects of COVID-19 lockdown among adolescent boys and young men in Kampala, Uganda. *J Community Health*. 2021;1-12.
10. Dasgupta S, Bowen VB, Leidner A, Fletcher K, Musial T, Rose C, et al. Association between social vulnerability and a county's risk for becoming a COVID-19 hotspot—United States, June 1-July 25, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(42):1535-41.
11. Katongole SP, Yaro P, Bukuluki P. The impact of COVID-19 on mental health of frontline health workers in Ghana and Uganda, in *Mental Health Effects of COVID-19*. Elsevier. 2021;37-68.
12. Onyema EM, et al. Impact of coronavirus pandemic on education. *J Educ Pract*. 2020;11(13):108-21.
13. Rojewski JW. A conceptual framework for technical and vocational education and training. *International handbook of education for the changing world of work*. 2009;1:19-39.
14. Sottolare RA, et al. Design recommendations for intelligent tutoring systems: Volume 4-domain modeling. US Army Research Laboratory. 2016;4.
15. Moses KM, Liu W-T. The role of TVET skill development in transformation of informal sector in developing countries: the case study of skilling Uganda program in Kampala urban area Uganda. In: *Proceedings. MDPI*; 2023.
16. Ling M. 'Bad students go to vocational schools!': education, social reproduction and migrant youth in urban China. *China J*. 2015;73:108-31.
17. Chewachong GM. Teacher quality and the quality of technical and vocational education and training courses: implications for sustainable development in Cameroon. *Policy*. 2021;12(2).
18. Yiga S. Assessment methodologies and determinants of employability and skills level among Technical and Vocational Education Training (TVET) graduates in Central Uganda. *Int J Vocat Tech Educ*. 2022;14(2):40-7.



19. Benson O. A paradigm shift of new wine in an old skin: analysis of the current BTVET status and prospects for sustainable development in Uganda. *Quality education for societal transformation* Nairobi, Kenya July 20-22, 2011. 2011;20:470.
20. Maswanku LM. Vocational education in Uganda, a reality unearthed: lessons from the technical and vocational education and training in Latin American (TVET). *Islamic Univ J Soc Sci.* 2022;3(1).
21. Pollock NC. Industrial development in East Africa. *Econ Geogr.* 1960;36(4):344-54.
22. Franz EH. Transactional analysis of the trainer. *Vocational training information bulletin* No. 2. 1974;1974.
23. Ayoki M. Uganda's emerging middle class and its potential economic opportunities; 2012.
24. Collins CS, Rhoads RA, *The World Bank*. The World Bank, support for universities, and asymmetrical power relations in international development. *Higher Educ.* 2010;59(2):181-205.
25. Nakabugo MG, Byamugisha A, Bithaghalire J. Future schooling in Uganda. *J Int Coop Educ.* 2008;11(1):55-69.
26. Okumu IM, Bbaale E. Technical and vocational education and training in Uganda: A critical analysis. *Dev Policy Rev.* 2019;37(6):735-49.
27. Sannerud AR. Vocational pedagogy. *Sharing knowledge transforming societies*, 2019.
28. Jjuuko R. Youth transition, agricultural education and employment in Uganda. Berlin: University of Groningen; 2021.
29. Briefing, T.S. Impact and implications of the COVID 19-crisis on educational systems and households. The Trade Union Advisory Committee (TUAC) to the OECD, 2020.
30. Unesco. *Global education monitoring (GEM) report.* 2020;2020.
31. Hamiza O. The impact of coronavirus lockdown on small scale businesses in arua municipality, Uganda. *Int J Sci Res.* 2020;9(8):1239-48.
32. Yang H. Appraisal environmental and social review summary (ESRS)-Uganda COVID-19 emergency education response (GPE) project-P174033; 2020.
33. Manyiraho D, Atibuni DZ. Adoption of technology enhanced teaching and learning innovations during Covid-19 lockdown in Rural Uganda. In: *IST-Africa Conference (IST-Africa)*. Vol. 2021. IEEE Publications; 2021.
34. Schleicher A. The impact of COVID-19 on education: insights from. *Education at a glance 2020*". OECD Publishing, 2020.
35. Agopian T. Online Instruction during the Covid-19 pandemic: creating a 21st century community of learners through social constructivism. *Clearing House J Educ Strateg Issues Ideas.* 2022;95(2):85-9.
36. Latorre-Coscolluela C, Suárez C, Quiroga S, Sobradie-Sierra N, Lozano-Blasco R, Rodríguez-Martínez A. Flipped Classroom model before and during COVID-19: using technology to develop 21st century skills. *Interact Technol Smart Educ.* 2021;18(2):189-204.
37. eifl, *EDUCATION RECOVERY during COVID-19: INNOVATION AWARD*; 2020.
38. OCHA. Ghetto Youths' innovates handwashing in Kampala slums; 2020.
39. Ting DSW, et al., Digital technology and COVID-19. *Nature medicine.* 2020; 26(4):459-461.
40. Issues G. COVID-19 Forced Ugandan Teachers to Go Digital, Teaching Them Important Lessons; 2022.
41. Unicef. Things we learned to appreciate more during COVID-19 lockdown; 2020.
42. Luna Scott C. The futures of learning 2: what kind of learning for the 21st century?; 2015.
43. Farrell G. Survey of ICT and education in Africa: Uganda country report; 2007.
44. Patrick SK, Grissom JA, Woods SC, Newsome UW. Broadband access, district policy, and student opportunities for remote learning during COVID-19 school closures. *AERA Open.* 2021;7.
45. Qekaj-Thaqi A, Thaqi L. The importance of information and communication technologies (ICT) during the COVID-19—pandemic in case of Kosovo (analytical approach of students perspective). *Open Access Libr J.* 2021;8(7):1-15.
46. Koper R, Tattersall C. *Learning design: A handbook on modelling and delivering networked education and training*; 2005.
47. Bojović Ž, Bojović PD, Vujošević D, Šuh J. Education in times of crisis: rapid transition to distance learning. *Comput Appl Eng Educ.* 2020;28(6):1467-89.
48. Patrick J, Ndawula S, Frances E. On-line quality management a precursor for improving e-learning adoption in midwifery

- schools in Uganda. *Int J Educ Methodol*. 2020;6(2):271-83.
49. Ferri F, Grifoni P, Guzzo T. Online learning and emergency remote teaching: opportunities and challenges in emergency situations. *Societies*. 2020;10(4):86.
50. Zapata-Garibay R, González-Fagoaga JE, González-Fagoaga CJ, Cauich-García JR, Plascencia-López I. Higher education teaching practices experience in Mexico, during the emergency remote teaching implementation due to COVID-19. *Front Educ*. 2021. *Frontiers Media SA*;6.
51. Ujunwa AI, Ujunwa A, Okoyeuzu CR. Rethinking African globalisation agenda: lessons from COVID-19. *Res Global*. 2021;3:100055.
52. Wills G, van der Berg S, Mpeti B, Mpeti B. Household resource flows and food poverty during South Africa's lockdown: short-term policy implications for three channels of social protection. Available at SSRN 4331504. *SSRN Journal*. 2023.
53. Onyeaka H, Anumudu CK, Al-Sharify ZT, Egele-Godswill E, Mbaegbu P. COVID-19 pandemic: a review of the global lockdown and its far-reaching effects. *Sci Prog*. 2021;104(2):368504211019854.
54. Sahlberg P. The fourth way of Finland. *J Educ Change*. 2011;12(2):173-85.
55. Hennessy S, et al. Developing the use of information and communication technology to enhance teaching and learning in East African schools: review of the literature. Centre for commonwealth education & Aga Khan University institute for educational development–eastern Africa [research report]. 2010;1:1-3.
56. Tadesse S, Muluye W. The impact of COVID-19 pandemic on education system in developing countries: a review. *Open J Soc Sci*. 2020;08(10):159-70.

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