



The Role of Learners as Co-Creators of Knowledge in Community-Led Open Education

Okumu JW. ODHIAMBO

Friends National Polytechnic, Kaimosi (FNPk), P.O. Box 150, Tiriki, 50309, Kenya

Tel: +254 721609188, Email: 23msingh.e@gmail.com

Atieno MARY

Langata Technical and Vocational College, P. O. BOX 5665 - 0506, Kenya

Tel: +254 725557784, Email: atienomary7593@gmail.com

Abstract: The increased uptake of open education has transformed traditional models of learning by encouraging collaborative knowledge creation and learner-generated content. This study investigated the role of learners as co-creators of knowledge in community-led open education, focusing on Technical and Vocational Education and Training institutions in Kenya that implement open education practices. The study examined learner contributions to Open Educational Resources, the effect of learner-generated content on knowledge retention, and barriers faced by learners in co-creating knowledge within learning communities. A mixed-methods research design was adopted, combining quantitative surveys with qualitative interviews and focus group discussions to collect data from students, educators, and institutional administrators. The stratified random sampling used in data collection involved selecting a sample size of 150 participants comprising 100 students, 30 educators, and 20 administrators. Quantitative data from the survey instrument were analyzed using descriptive and inferential statistics, while qualitative responses were analyzed thematically. Findings indicated that, whereas over 70% of the students expressed willingness to contribute to Open Educational Resources, only about 40% actively participated due to gaps in digital literacy, institutional support, and incentives. Students who participated in knowledge co-creation tended to demonstrate higher retention of knowledge, supported by constructivist learning theories. However, institutional resistance to learner-generated content and concerns over academic accuracy remained significant barriers. The study recommended policy reforms towards integrating learner-generated content into the formal curricula, digital skill training for students, faculty and departmental development programs, and incentive mechanisms like digital badges and certifications to motivate participation. Addressing these challenges can widen the scope for knowledge democratization, lifelong learning, and sustainable educational ecosystem.

Keywords: Knowledge Co-Creation, Community-Led Open Education, Open Educational Resources

1. Introduction

The open education movement has gained significant momentum worldwide, with organizations such as UNESCO, the Commonwealth of Learning (COL), and the World Bank advocating for the adoption of Open Educational Resources (OER) and community-led knowledge sharing (UNESCO, 2019; World Bank, 2021; Bovill 2020)). Open education shifts the traditional learning model by empowering learners to actively participate in knowledge co-creation, rather than being passive recipients of content delivered by educators.



Proceedings Of the 11th Pan-Commonwealth International Forum on Innovative Open Education: Fostering Resilient Societies for Sustainable Economic Development, 10th – 12th September 2025, in Gaborone, Botswana.

This approach promotes collaboration, innovation, and inclusivity, making education more accessible and sustainable (Mishra, 2020). Several global initiatives support this transition. The 2019 UNESCO Recommendation on OER encourages countries to adopt policies that allow learners to contribute to open knowledge (UNESCO, 2019). Digital platforms such as Wikipedia, OpenStax, Coursera, edX, and Peer 2 Peer University (P2PU) have also created interactive spaces where learners can create, share, and refine educational materials (Kaminskiene et al. 2020). However, despite these advances, challenges remain, particularly regarding the credibility of learner-generated content, institutional resistance, and varying levels of digital literacy. The effectiveness of learner-driven knowledge production in enhancing engagement, knowledge retention, and sustainable learning communities is still an area that requires more research (Giri et al. 2025).

In Africa, open education has the potential to bridge educational inequalities by providing learning resources to underserved populations. Initiatives such as OER Africa, the African Virtual University (AVU), and the African Digital Campus are working to promote knowledge-sharing and community-driven learning (Akindele 2025). Many universities and Technical and Vocational Education and Training (TVET) institutions in Africa are integrating open educational practices, allowing students to create digital content, engage in peer learning, and contribute to OER repositories (Omland 2025). However, digital infrastructure challenges, low internet penetration, and lack of institutional recognition for learner-generated content hinder the full adoption of community-led open education (Curtin & Sarju 2021). In East Africa, organizations like the Association for African Universities (AAU) and the East African Open Science Platform advocate for open education models, but many institutions still rely on traditional, instructor-led learning, limiting learner participation in knowledge creation.

In Kenya, the government has embraced open education through policies such as the National ICT Policy (2019) and the Digital Economy Blueprint (2019), which encourage the integration of technology-driven learning solutions (Ministry of ICT, 2019a; Ministry of ICT, 2019b). Several TVET institutions have adopted OER and online learning platforms to support community-driven education.



Proceedings Of the 11th Pan-Commonwealth International Forum on Innovative Open Education: Fostering Resilient Societies for Sustainable Economic Development, 10th – 12th September 2025, in Gaborone, Botswana.

The open education movement has gained robust momentum worldwide, with organizations such as UNESCO; the Commonwealth of Learning (COL; Iniesto et al. 2021), and the World Bank endorsing the application of Open Educational Resources (OER) and community-led knowledge sharing (UNESCO, 2019; COL, 2020; World Bank, 2021). Open education shatters the traditional model of learning by transforming learners into proactive agents of knowledge co-creation, rather than passive receivers of content disseminated by teachers. This transition amplifies collaboration, innovation, and inclusion and makes learning more accessible and sustainable (Piazza & Guevara 2023). There are numerous global initiatives that enable this transition. The 2019 UNESCO Recommendation on OER invites states to adopt policies that allow learners to create open knowledge (UNESCO, 2019). Online sites such as Wikipedia, OpenStax, Coursera, edX, and Peer 2 Peer University (P2PU) have further created interactive spaces where students can create, share, and evaluate learning content (Huang et al. 2020). However, despite these advances, problems still exist, the most significant of which is the authenticity of student-made content, resistance at the organizational level, and variations in digital literacy. The effectiveness of student-led knowledge construction when it comes to maximizing involvement, retaining knowledge, and learning communities over time remains an area requiring more studies (Mthabela 2024).

In Africa, open education has the potential to bridge learning inequalities by providing learning resources to marginalized groups. Initiatives such as OER Africa, the African Virtual University (AVU), and the African Digital Campus are making knowledge sharing and community learning a reality (OER Africa, 2023). A majority of African universities and Technical and Vocational Education and Training (TVET) centers are adopting open education practices, which allow learners to create digital content, peer learn, and contribute to OER repositories (Magistrado 2020). However, digital infrastructure challenges, poor internet penetration, and institutional disregard for learner-created content hinder universal adoption of community-led open education (Iniesto et al. 2021). In East Africa, associations like the Association for African Universities (AAU) and the East African Open Science Platform facilitate open education models but majority of institutions still apply traditional instructor-led learning, limiting learners' involvement in knowledge creation.



Proceedings Of the 11th Pan-Commonwealth International Forum on Innovative Open Education: Fostering Resilient Societies for Sustainable Economic Development, 10th – 12th September 2025, in Gaborone, Botswana.

In Kenya, the government has embraced open education through policies like the National ICT Policy (2019) and the Digital Economy Blueprint (2019), which encourage the utilization of technology-enabled learning solutions (Ministry of ICT, 2019a; Ministry of ICT, 2019b). Several TVET colleges have employed OER and online-based learning platforms to ensure community-based learning.

There are institutions like the Kenya School of Technical and Vocational Education and Training. (KsTVET) that have adopted blended learning approaches, MOOCs, and peer-learning strategies (Badawi & Drăgoicea 2023). But with increasing open education uptake, challenges remain. There are many learners who do not have sufficient digital competencies to meaningfully participate in knowledge co-creation (Magistrado 2020). Second, TVET institutions, which are predominantly skills and practice-based, have been less inclined to embrace community-led models of knowledge production than universities. Institutionally, there is also skepticism regarding the quality and legitimacy of learning content produced by learners, which has limited its widespread application in Kenya's higher education (Badawi & Drăgoicea 2023). Against this backdrop, there is a need for research to look into the level at which Kenyan university and TVET students engage in co-creation of knowledge, the impact of learner-generated content in knowledge retention, and the obstacles that hinder involvement in open education community-led effectively (Aldogheret al. 2025).

Traditional Kenyan university and TVET business models of education have a tendency to position learners in passive roles as receivers of knowledge, with institutions and instructors in control of content distribution. Community-based open education, however, presents a transformative potential by allowing learners to jointly create, modify, and distribute educational content (Mthabela 2024). Although open educational practices have been adopted by some Kenyan universities and TVET institutions, the extent to which learners contribute to OER and the effectiveness of learner-generated content in facilitating knowledge recall remains an under-studied area (Stamatakis et al. 2025). A primary worry is the validity and scholarly quality of learner-generated content. Educators and policymakers are not confident in the validity and reliability of knowledge generated by learners, and this makes them hold back from full integration of learner-generated content into formal curricula



Proceedings Of the 11th Pan-Commonwealth International Forum on Innovative Open Education: Fostering Resilient Societies for Sustainable Economic Development, 10th – 12th September 2025, in Gaborone, Botswana.

(Jeri 2023). Further, there is no standard mechanism through which the contributions of learners in online learning communities can be assessed, recognized, or certified (Dabula & Hodgkinson-Williams 2024.) The other main concern is the impact of learner-generated content on knowledge retention. While literature suggests that active learning enhances retention and understanding, empirical research on the effects of co-creation of knowledge on long-term learning outcomes in Kenyan universities is scant (Traxler et al. 2020). TVET institutions, in particular, have not adequately explored opportunities for learner-generated content in technical and vocational fields.

In Kenya, effective implementation of knowledge co-creation in community-based open education is faced with some persisting challenges. Low digital literacy among teachers and students is one of the predominant challenges, which discourages active participation in the creation and sharing of educational content (Magistrado 2020). In addition, unequal access to stable internet and digital technologies—especially in rural and marginalized areas—remains a factor in increasing the digital divide, narrowing opportunities for many to use open educational platforms (Ministry of ICT, 2019a; OER Africa, 2023). Institutional resistance to non-traditional learning models is also a significant challenge, as academic credibility issues, quality assurance, and deviation from conventional pedagogy make many institutions hesitant to use learner-generated content (Owoko 2024). Also, there remains limited awareness and policy support to guide the integration of learner contributions into formal curricula and recognition systems (UNESCO, 2019; Stamatakis, 2025). Inadequate response to these challenges can derail the transformative potential of community-led open education in Kenya.

This would limit opportunities for students to participate actively in the co-construction of knowledge, diminish the quality of learning together, and hinder the development of a sustainable and equitable education ecosystem that supports lifelong learning for all (World Bank, 2021; Commonwealth of Learning, 2020). The findings of the research will provide policymakers, educators, and open education practitioners with valuable information on how to enhance community-based learning in Kenya's institutions of higher learning.



2. Objectives

2.1 Main Objective

To investigate the role of learners as active co-creators of knowledge in community-led open education in Technical and Vocational Education and Training in Kenya.

2.2 Specific Objectives

1. To examine contribution of learners to the creation of open educational resources (OER) in digital learning communities.
2. To assess the effect of learner-generated content on knowledge retention in open education within learning communities.
3. To identify barriers faced by learners in co-creating knowledge within learning communities

3. Materials and Methods

3.1 Research Design

The study employed a mixed-methods design, where quantitative questionnaires and qualitative interviews were utilized to explore learners as co-creators of open education led by communities. Quantitative data gathered participation rates, engagement levels, and retention rates, and qualitative approaches provided richer descriptions of learner experiences and challenges. A descriptive research method allowed for in-depth exploration of contributions, retention outcomes, and institutional hindrances within the selected Kenyan TVET institutions with open education.

3.2 Study Participants

Participants were primarily aged between 18 and 25 years, reflecting the typical demographic of students in Kenyan TVET institutions. The learner-generated content fields included Electrical Engineering, Automotive Engineering, Building Construction, Hospitality, Business Administration, and Information Technology.



Proceedings Of the 11th Pan-Commonwealth International Forum on Innovative Open Education: Fostering Resilient Societies for Sustainable Economic Development, 10th – 12th September 2025, in Gaborone, Botswana.

Three key groups—students, educators, and institutional policymakers—participated in the research to get a holistic representation of learner-driven knowledge co-creation. Students gave firsthand accounts of their experience working on it, drivers, and challenges in creating OER. Educators offered insights into the pedagogical value and institutional procedures related to student-created content. Policymakers and administrators situated these results in broader policy environments and institutional readiness. Together, these opinions highlighted open education fueled by communities' nuances, benefits, and barriers.

3.3 Sampling Techniques

A stratified random sampling technique was used in selecting participants from three broad strata of students, educators, and administrators. Each stratum offered specific experience-based understanding of learner engagement, content validity, and policy matters in advancing community-led open education. Participants from each stratum were selected using random sampling to ensure a representative mix across different academic programs and levels. A selection of 150 participants consisting of 100 students, 30 educators and 20 administrators was obtained.

3.4 Data Collection Procedure

Both primary and secondary data collection methods were adopted in the study. Quantitative data on students', educators and administrators' learner contributions towards knowledge creation, knowledge preservation, and challenges encountered were collected through structured questionnaires. Likert-scale questions, multiple-choice questions, and open-ended questions were included in the questionnaires to capture numerical data as well as personal opinions. Additionally, semi-structured interviews were conducted with teachers and administrators to gain more refined insights into institutional perspectives on open education, learner participation, and related policy matters. More in-depth, two focus group discussions (FGDs) were done with students to gain an understanding of their experience, extent of participation, and self-assessed advantages and disadvantages of knowledge co-creation. For the secondary data, the study involved document analysis of relevant institutional policies, OER reports, and available literature on open education practices within selected TVET institutions, providing background and context to interpret findings.



3.5 Data Presentation and Analysis

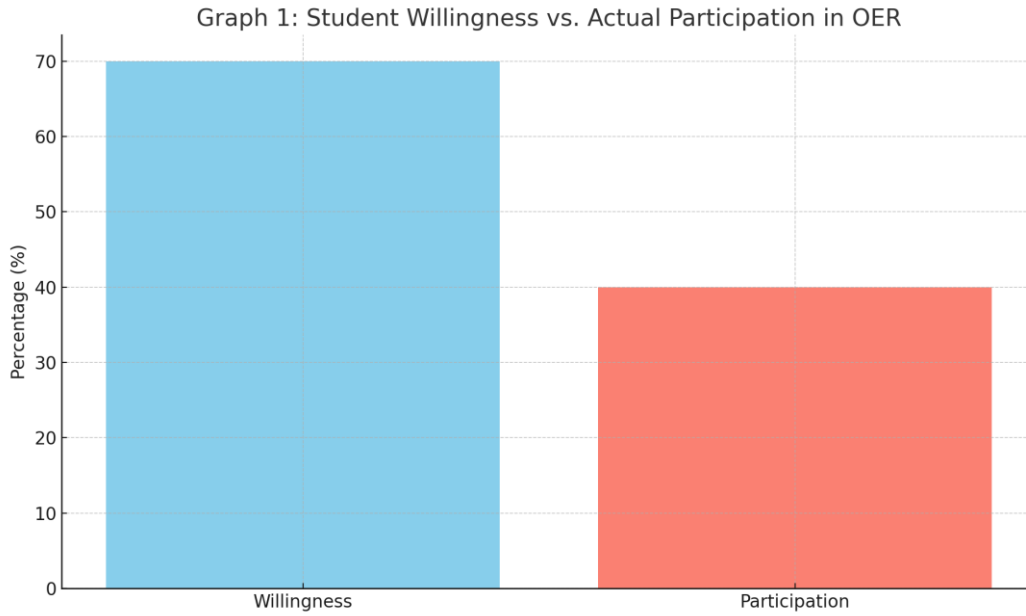
Mixed-methods were used to evaluate survey data, interviews, FGDs, and document analysis. Quantitative data were managed with SPSS and Excel, and descriptive and inferential statistics were used to identify patterns between learner contributions, participation, and persistence. Qualitative data from interviews and FGDs were examined with NVivo or manual coding, and content analysis of institution documents identified issues and trends. Triangulation provided validity for findings, and results were reported by means of graphs, tables, and summary narratives.

4. Results

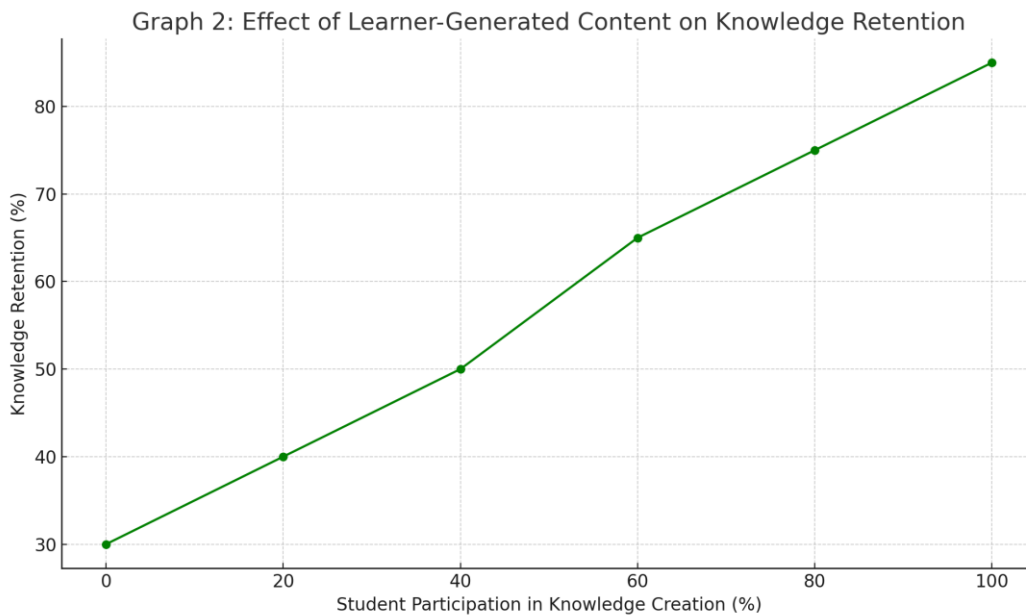
Table 1: Summary of Key Findings

Research Objective	Findings
Learner Contribution to OER	High willingness (70%), but low participation (40%) due to institutional barriers.
Effect of Learner-Generated Content on Knowledge Retention	High engagement (65%) and better retention, but limited formal recognition (30%).
Barriers to Knowledge Co-Creation	Key barriers: digital literacy gaps (50%), institutional resistance (60%), lack of incentives (40%).

Graph 1: Student Willingness vs. Actual Participation in OER



Graph 2: Effect of Learner-Generated Content on Knowledge Retention





5. Discussion and Interpretation of Findings

A. Learners' Role in Open Educational Resources (OER) Development

The findings of this study underscore the keen interest among learners to engage in creating Open Educational Resources (OER) as observed closely mirrored in global research trends. Approximately 70% of the respondents reported having a keen intent to engage in knowledge co-creation processes. However, in practice, only approximately 40% engage in these processes. This discrepancy is reflective of deep-seated systemic and institutional issues. To begin with, it appears that although Kenya has adopted national policies that support open education, the same has not been practically implemented at the institutional level. Most of the universities and the TVET institutions lack adequate frameworks or support systems to facilitate the participation of the students in OER creation. Second, the statistics identify a significant digital skills gap among the students, particularly in less-resourced institutions. This lack of digital literacy not only hinders participation but also intrudes upon the ability and confidence with which students can provide content. Second, faculty attitudes about student-generated materials remain ambivalent. Academic rigor, misinformation, and concerns for quality control limit the use of such content in formal academic settings. These findings highlight the imperative need for institutional change. Faculties' focused professional development initiatives, program-based student digital literacy efforts, and open education support departments may do much to bridge the current gap between learner intent and actual OER development involvement.

B. Knowledge Retention and Engagement in Community-Led Open Education

The study also identifies that students who get engaged in the creation of learning material have higher retention of knowledge. Approximately 65% of such students experienced greater participation in class and improved learning process. Such results find the perfect support from constructivist models of learning, which presume that the construction of knowledge through active participation will improve understanding and recall from memory. One major disadvantage, however, is the lack of official recognition for student efforts. Less than 30% of the respondents indicated that recognition for their effort at creating and disseminating study materials was ever awarded in any meaningful way.



Proceedings Of the 11th Pan-Commonwealth International Forum on Innovative Open Education: Fostering Resilient Societies for Sustainable Economic Development, 10th – 12th September 2025, in Gaborone, Botswana.

Such a lack of reward can undermine motivation in the long term, particularly in structured learning settings where grades and certifications are consequential variables that dictate students' priorities and behaviors. To address this challenge, incorporating learner-created content into formal course tests and syllabuses is essential. Beyond that, new vehicles such as micro-credentials, digital badges, or peer-vetted digital portfolios might offer more enduring reward. These would not only validate students' work but also legitimize knowledge co-creation as an accepted and rewarded intellectual practice. Additional empirical studies are also required to determine the pedagogical implications of such participatory strategies, especially in TVET institutions where applied and practical learning is given prominence.

C. Barriers to Knowledge Co-Creation in Open Education

Three principal barriers to effective knowledge co-creation in open education were identified in the study:

1. **Technological Constraints:** Inadequate access to stable internet connection and appropriate digital devices remains a major constraint, particularly for students in TVET institutions and rural areas. These technological constraints have the immediate impact of hindering learners from contributing to and accessing OER platforms.
2. **Institutional Resistance:** Despite the potential benefits, some institutional leaders and educators are wary of learner-generated content. Loss of academic control, potential misinformation, and perceived challenges to traditional hierarchies in content dissemination are a few of the bases of resistance.
3. **Lack of Incentives:** Another common thread throughout the responses was the lack of perceived academic or professional incentives for OER involvement. Without specific rewards like academic credits, acknowledgment in courses, or even publication opportunities, students tend to prioritize other things over content creation.

The study speculates that these issues can be resolved by strategic institutional interventions. Investment in students' and teachers' digital literacies, policy change to formally recognize learner contributions, and incentive mechanism design are essential.



Proceedings Of the 11th Pan-Commonwealth International Forum on Innovative Open Education: Fostering Resilient Societies for Sustainable Economic Development, 10th – 12th September 2025, in Gaborone, Botswana.

Offering students co-authorship of open textbooks, publication within institutional repositories, or certification for community contributions can dramatically raise the levels of participation.

6. Conclusion and Recommendations

6.1 Conclusion

The outcomes indicate that even though students are ready to co-create knowledge, contribution is low because of organizational limitations, technology hindrances, and anonymity. Learner-generated content, however, impacts participation and memorability significantly and therefore demands institutional facilitation, investments in digital tools, and policy reforms to establish open education as community-led in Kenya.

6.2 Recommendations for Further Study

- 6.2.1** Assess Long-Term Academic Impact - Research should quantify the long-term effect of student participation in OER creation on academic performance based on longitudinal studies.
- 6.2.2** Develop Institutional Validation Frameworks - Research should determine effective institutional policies and peer-review mechanisms to formally recognize and integrate student-generated content into courses.
- 6.2.3** Determine Successful Incentive Models - There needs to be further research into how varying schemes of recognition and reward (e.g., badges, credits, certificates) affect the motivation and interest levels of students in open education.



Proceedings Of the 11th Pan-Commonwealth International Forum on Innovative Open Education: Fostering Resilient Societies for Sustainable Economic Development, 10th – 12th September 2025, in Gaborone, Botswana.

References

- Akindele, B. O. (2025). Application of Design-Based Research in Innovative Education: Western African Education Perspectives. In *Global Perspectives and Implementations of Design-Based Research* (pp. 101-134). IGI Global Scientific Publishing.
- Aldogihier, A., Halim, Y. T., El-Deeb, M. S., Maree, A. M., & Kamel, E. M. (2025). The Impact of Digital Teaching Technologies (DTTs) in Saudi and Egyptian Universities on Institutional Sustainability: The Mediating Role of Change Management and the Moderating Role of Culture, Technology, and Economics. *Sustainability*, 17(5), 2062.
- Badawi, S., & Drăgoicea, M. (2023). Towards a value co-creation process in collaborative environments for TVET education. *Sustainability*, 15(3), 1792.
- Bovill, C. (2020). Co-creation in learning and teaching: the case for a whole-class approach in higher education. *Higher education*, 79(6), 1023-1037.
- Curtin, A. L., & Sarju, J. P. (2021). Students as partners: Co-creation of online learning to deliver high quality, personalized content. In *Advances in online chemistry education* (pp. 135-163). American Chemical Society.
- Dabula, A., Cox, G., & Hodgkinson-Williams, C. A. (2024). Insights on OER adoption models to inform ways of opening up learning materials to address economic, cultural and political injustices in South African education. *Open Learning as a Means of Advancing Social Justice*, 199.
- Giri, R. B. (2025). Impact of Technical and Vocational Education and Training on ABCD Approach in Nepal. *Journal of Training and Development*, 7, 45-52.
- Huang, R., Liu, D., Tlili, A., Knyazeva, S., Chang, T. W., Zhang, X., ... & Holotescu, C. (2020). Guidance on open educational practices during school closures: Utilizing OER under



Proceedings Of the 11th Pan-Commonwealth International Forum on Innovative Open Education: Fostering Resilient Societies for Sustainable Economic Development, 10th – 12th September 2025, in Gaborone, Botswana.

COVID-19 pandemic in line with UNESCO OER recommendation. *Beijing: Smart Learning Institute of Beijing Normal University.*

Iniesto, F., Tabuenca, B., Rodrigo, C., & Tovar, E. (2021). Challenges to achieving a more inclusive and sustainable open education. *Journal of Interactive Media in Education, 2021*(1).

Jeri, S. (2023). EXPLORING TEACHERS' AND STUDENTS' PERCEPTIONS ON ASSESSMENT FOR LEARNING IN SCIENCE: HOW CAN STUDENTS' SELF-DIRECTED LEARNING? Ministry of ICT, Innovation and Youth Affairs. (2019b). Kenya Digital Economy Blueprint. Retrieved from <https://ict.go.ke/digital-economy-blueprint/>

Kaminskiene, L., Žydžiunaite, V., Jurgile, V., & Ponomarenko, T. (2020). Co-creation of learning: A concept analysis. *European Journal of Contemporary Education, 9*(2), 337-349.

Lepistö, T., & Hytti, U. (2021). Developing an executive learning community: Focus on collective creation. *Academy of Management Learning & Education, 20*(4), 514-538.

Magistrado, D. V. (2020). *Embedding Social Innovation Tools in UNIDO's Technical and Vocational Education and Training Interventions (An Exploratory Research)* (Doctoral dissertation, Wien).

Ministry of ICT, Kenya. (2019a). *National ICT Policy*. <https://ict.go.ke/national-ict-policy/>

Ministry of ICT, Kenya. (2019a). *National ICT Policy*. Retrieved from <https://ict.go.ke/national-ict-policy/>

Mthabela, S. M. (2024). Exploring the role of Technical Vocational Education and Training college management in utilising Learning Management Systems.

OER Africa. (2023). *Building Sustainable OER Ecosystems in African Higher Education*. <https://www.oerafrica.org/>

OER Africa. (2023). *Building Sustainable OER Ecosystems in African Higher Education*. Retrieved from <https://www.oerafrica.org/>



Proceedings Of the 11th Pan-Commonwealth International Forum on Innovative Open Education: Fostering Resilient Societies for Sustainable Economic Development, 10th – 12th September 2025, in Gaborone, Botswana.

Omland, M., Hontvedt, M., Siddiq, F., Amundrud, A., Hermansen, H., Mathisen, M. A., ... & Reiersen, F. (2025). Co-creation in higher education: a conceptual systematic review. *Higher Education*, 1-31.

Owoko, W. (2024). The Influence of Online Resources on Skill Development in Technical and Vocational Education and Training (TVET). *THE KENYA JOURNAL OF TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING VOL: 7*, 146.

Piazza, R., & Guevara, R. (2023). Curriculum Innovation in Higher Education in our Interconnected World: Collaborative Learning for a more Equitable and Sustainable Future. *Pedagogia oggi*, 21(2), 026-032.

Stamatakis, M., Berger, J., Wartena, C., Ewerth, R., & Hoppe, A. (2025). Enhancing the Learning Experience: Using Vision-Language Models to Generate Questions for Educational Videos. *arXiv preprint arXiv:2505.01790*.

Traxler, J., Scott, H., Smith, M., & Hayes, S. L. (2020). Learning through the crisis: Helping decision-makers around the world use digital technology to combat the educational challenges produced by the current COVID-19 pandemic.

UNESCO. (2019). *Recommendation on Open Educational Resources (OER)*.

<https://unesdoc.unesco.org/ark:/48223/pf0000370936>

UNESCO. (2019). Recommendation on Open Educational Resources (OER). Paris: United Nations Educational, Scientific and Cultural Organization. Retrieved from <https://unesdoc.unesco.org/ark:/48223/pf0000370936>

World Bank. (2021). *Open Knowledge: Knowledge for Development*.

<https://www.worldbank.org/en/topic/education/brief/open-knowledge>

World Bank. (2021). Open Knowledge: Knowledge for Development. Retrieved from

<https://www.worldbank.org/en/topic/education/brief/open-knowledge>.