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## **TESSA OPEN EDUCATION RESOURCES: A SPRINGBOARD FOR KENYA'S COMPETENCY BASED CURRICULUM**

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### **Abstract**

Low availability and access to quality educational materials are some of the likely impediments to implementation of a curriculum. This study explored Open Education Practices (OEP) and in particular the use of TESSA Open Educational Resources (OER) for modeling pedagogies for Kenya's learner centered Competency Based Curriculum. Eighty-six educators participated in the study. A literature review revealed that both CBC and TESSA OERs focus on the learner. The study revealed that some teachers had access to digital devices and Internet thus could easily access TESSA OERs. The majority (74.0%-100%) agreed that: TESSA OERs content was relevant, a core part of the curriculum, understandable and usable in teaching and modeling learner-centered pedagogy. Teachers also agreed that TESSA OERs promote students' engagement in learning, enabled teachers' account for learners' prior knowledge and appropriate for effecting changes proposed in CBC. Teachers finally indicated they were willing to advocate use of TESSA OERs among their peers. The study recommends policy changes by Kenya's Ministry of Education, Teacher Service Commission and Kenya Institute of Curriculum Development to open uptake of OEPs in the implementation of CBC and retraining of teacher educators to make meaningful change in teachers' instructional methodology.

**Key Words:** Open Education Practices, Learner Centered Education, Competency Based Curriculum

### **INTRODUCTION**

Kenyan's aspired a curriculum that would equip learners with necessary knowledge, skills and attitudes (UNESCO's International Bureau of Education [IBE-UNESCO], 2017) and proposed a Competency Based Curriculum (CBC) (KICD, 2017 and MoEST, 2015). This was further supported by Sustainable Development Goals No. 4 (United Nations [UN], 2016), which emphasized on quality of education. Low access to quality educational resources are a major challenge that Kenya will grapple with in her endeavors to implement CBC.

UNESCO (2013) in Schweisfurth (2015) defines quality education in terms of equipping learners with skills, knowledge and attitudes that enable them acquire decent work; co-exist nationally and globally; know their human rights and live in a world whose ability for sustainable living and livelihood support faces challenges from environmental degradation and climate change. It can therefore be argued that Kenya's CBC is influenced by drivers of quality education for the 21<sup>st</sup> Century.

Applied Education System [AES], (2018) discusses quality of education in terms of transferable skills and competencies needed by learners to succeed in the 21<sup>st</sup> Century's world of work and environment and identifies three categories of skills for the 21<sup>st</sup> Century. The first category is learning skills comprising of mental skills (creativity, collaboration and communication) needed by students to adapt and improve in the modern world of work. The second category is Literacy Skills (information literacy, media literacy and technology literacy). Literacy skills enable learners to understand how information is attained and processed for decision-making. The third category is life skills (flexibility, leadership, initiative, productivity and social), which are needed by students for an all rounded life. Kenya has integrated seven competencies in the curriculum namely: communication, collaboration, self-efficacy, critical thinking and problem solving, creativity and imagination, citizenship, digital literacy and learning to learn to align the curriculum with the skills for the 21<sup>st</sup> Century. Hence Kenya's CBC is anchored on tenets of quality education based on the skills for the 21<sup>st</sup> Century.

### **Kenya's Competency Based Curriculum Context**

Kenya's previous curriculum was said to focus on content and the teacher instead of competencies and the learner (IBE-UNESCO, 2017). It is against this backdrop that Kenya's CBC was borne which focuses on development of competencies by learners (KICD, 2017). The CBC is underpinned by several learning theories [Vygotsky's social-cultural development, Piaget's cognitive development, Bruner's cognitive development, John Hattie's Visible Learning and Dewey's social constructivism] (IBE-UNESCO, 2017 and KICD, 2017). These theories advocate a constructivist approach to teaching. The Kenya's CBC is therefore a paradigm shift from a teacher-focused education to Learner Centered Education (LCE). Tyler (1949) proposed that teachers as implementers of the curriculum should provide learning experiences geared towards attainment of expected curriculum outcomes. The expected outcome of a CBC is learners who are able to apply the competencies learned at schools. One of the challenges to be anticipated in the implementation of the CBC is access to quality educational resources to provide the envisaged learning experiences, teachers ability to apply learners centered pedagogies and teacher educators ability to make any meaningful change in teachers' instructional methodology.

Schweisfurth (2015) conceptualizes LCE in terms of seven minimum standards for understanding learner centered practices. The first minimum standard states that learner-centered lessons engages learners and motivates them to learn. This is in line with Dewey's social constructivism theory that advocated on the need to adopt learner-centered

approaches in teaching (IBE-UNESCO, 2017 and KICD, 2017). The second minimum standard contends for shared respect between teachers and learners and for a mutual atmosphere and interpersonal relationship while the third minimum standard argues that teachers should understand what is within the learning capacity of the learners, what Vygotsky referred as *Zone of Proximal Development [ZPD]* (Bates, 2016) while John Hattie's Visible Learning theory emphasizes the impact of the teaching approach adopted on students' learning (IBE-UNESCO, 2017 and KICD, 2017). The fourth minimum standard indicates that teachers should practice dialogic in their teaching. This standard aligns with the notion that knowledge is socially constructed, which is advocated by Dewey's social constructivism theory. The other minimum standards advocate that curriculum should be relevant to learners' present and future lives, emphasizes learning by doing and that assessment processes should improve learning (Schweisfurth, 2015). Schweisfurth concludes that LCE is a critical ingredient in achievement of quality education.

The foregoing literature review indicates that the theoretical underpinnings of Kenya's CBC aligns with Schweisfurth (2015) seven minimum standards for learner centered practices and anticipates availability of quality educational resources, teachers equipped with learner centered pedagogies and teacher educators able to make meaningful changes in teachers instructional methodologies for successful implementation of the CBC. The challenge however is that suitable educational resources and both teachers and teacher educators may not be familiar with learner centered instructional pedagogies, which may impede implementation of CBC. Against this backdrop, teachers need to learn how to access and adapt OERs to mediate the perennial low access to quality education resources in a cost effective manner. Teachers and teacher educators should further be retrained on learner centered instructional methodologies. To this end, OEPs would go a long way in accessing quality education resources and providing opportunities for retraining of teachers and teacher educators.

### **Challenges of Implementing Competency Based Curriculum**

Though East African Community partner states are at different levels in the implementation of CBC, they are relatively facing similar challenges. Mukunja (2015) and Mosha (2012) observe that in Tanzania schools lacked sufficient teaching and learning resources and teachers were ill trained on implementation of CBC. Mukunja further indicate learners resisted learner-centered teaching and learning approaches. In Rwanda, resistance by teachers and inadequate educational resources were also reported (Rwanda Education Board, 2018). Though Kenya is still in the initial stages of implementing CBC, the situation is not any different. Wanjohi (2018) indicates that inadequate teaching resources and teachers' limited knowledge of CBC was a challenge in implementation of CBC in Kenya.

Teachers perceive CBC to be disruptive since it calls for a shift from familiar teacher centered pedagogies to unfamiliar learner centered pedagogies. Effective implementation of CBC requires that teachers and teacher educators be able to apply learner centered pedagogies using appropriate educational resources. Kenya should learn from challenges faced by her East African Community partner states in implementing their CBC and mitigate the situation at the onset. To this end, OEPs specifically use of TESSA OERs to retrain teachers and teacher educators would be a springboard for sustainable implementation of Kenya CBC. "OEP are defined as practices which support the (re)use and production of OER through institutional policies, promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning path" (Andrade, Ehlers, Caine, Carneiro, Conole, Kairamo, & Holmberg, 2011, p. 12). Wolfenden (2008) observes that OERs are free (no technical or price barriers) hence easily accessible through the World Wide Web. Wolfenden concludes that teacher training challenges could be resolved if educators would embrace OEPs as alternative to conventional teacher training practices.

### **CONTEXT OF TESSA OPEN EDUCATION RESOURCES**

TESSA is a collaborative network that aims at improving teachers' and teacher educators' practice. TESSA provides a bank of OERs designed to support teachers in developing active approaches to teaching and learning hence they are learner centered and align with Kenya's CBC. TESSA subject resources are linked to the school curriculum with 75 units of work covering the whole primary curriculum (<http://www.tessafrica.net/tessa-teachers>). This implies that TESSA OERs covers the entire Kenya's primary school syllabus.

TESSA OERs comprises "a large bank of highly structured, activity based OER study units which teachers, either on formal programmes or through self-motivation, work through in their own classrooms with their pupils" (Wolfenden, Umar, Aguti, and Gafar, 2010) in Wamutitu, Keraro, Changeiywo, and Cullen (2011, p. 3). Wolfenden (2008) further assert that TESSA materials are constructed in a form that allows their contextualization or localization for use in different country contexts and environments and are available in audio and text format where text materials are available as html pages in pdf and word format.

However, TESSA OERs presents two challenges: 1. Access and 2. They are not prescriptive and require the user to adapt, re-frame, and apply to their own context. The paper argues that the OER movement has focused on issues around particular OER, access and contextualization. In fact there should be more emphasis on Open Educational Practices (OEP) – defined as: educational practices that “involve students in active, constructive engagement with content, tools and services in the learning process, and promote learners’ self-management, creativity and working in teams” (Geser, 2007, p. 37) in Suzan and Aras (2018). Furthermore, it was argued that OEPs “emphasizes learners’ own activities in developing competences, knowledge and skills” (p. 124). If TESSA is to be truly effective then teachers need to embrace the notion of OEP i.e. go beyond the TESSA OERs and become involved in the process of learning to be a better teacher through collaboration, reflection, trying out new approaches and learning from it. However, the challenge is pedagogical change takes time and requires support from all level of the system. To this end TESSA (2011) in Murphy and Wolfenden (2013) observes that embedment of TESSA OER by teachers in Kenya should be through a policy change by MoE, Teachers Service Commission and KICD.

## METHODOLOGY

A combination of quantitative and qualitative data analysis methods was used to address the following research questions:

- Do teachers have means to accessing TESSA OERs?
- How appropriate are TESSA OERs for implementing a CBC?

### Data Collection Procedure

Teachers, teacher educators and Ministry of Education officials (n=86) participated in TESSA OER mediation workshop whose objectives were to:

- To articulate the meaning, growth, adoption and potential of OER in Africa.
- Articulate the meaning of LCE.
- Familiarize teachers with TESSA materials.
- Demonstrate how TESSA materials may be integrated in teaching and learning.

A questionnaire was used to collect data from the participants. The first questions measured teachers’ access and experience with electronic devices and required the respondents to indicate how often they utilized selected electronic devices. The second question was a five point Likert scale that evaluated appropriateness of TESSA OERs in terms of promoting learner-centered approaches and modeling pedagogy for CBC. The last question measured participants’ access to Internet from their schools and if they had basic skills to accessing online information.

## RESULTS

### Teachers Access to TESSA Open Education Resources

The first research question sought to find out availability of digital devices that could be used by teachers to access TESSA OERs. The results are presented in table 1.

**Table 1:** Access to Digital Devices

E-Device	Frequency		
	Frequently (%)	Sometimes (%)	Never
Mobile Phone	82.2	16.4	0.1
Desktop Computer	91.8	0.4	0.4
Laptop Computer	97.9	0.3	0.0
Tablet Computer	97.3	0.0	0.0

The results revealed that digital devices used by teachers ranged from mobile phone (82.2%) to Tablet Computer (97.3%). Mobile phones though a common digital device, comparatively had lowest users. Computers (Desktop, Laptop and tablet) were used mostly hence they are easily available in schools. The study further sought to find out

teachers' access to Internet in their schools as a requirement for accessing TESSA OERs. The results are present in the next section.

### Teachers Access To Internet

The study sought to find out if teachers had access to Internet in their schools. Use of social media was used as an indicator of Internet access. The results are presented in table 2.

**Table 2:** Social Media Use by Teachers

Social Media	User (%)
Twitter	34.2
WhatsApp	28.8
Facebook	15.1
Email	13.7
Skype	11.0

The results revealed that the social media commonly used by teachers were twitter (34.2%) and WhatsApp (28.8%) [See table 2]. The low use of social media by teachers is attributable to poor Internet coverage combined with high cost of data bundles and lack of electricity connection in schools. The high use of digital devices by teachers implies teachers have electronic devices that could easily enable them access TESSA OERs in their schools. However, low Internet coverage and high cost of data bundles combined with lack of electricity connection in some schools would be an impediment in accessing TESSA OERs in Kenya. The other challenge to accessing TESSA material would be lack of digital skills among the teachers. Chege 2014 and Bonanno (2011) observe that teachers lacked sufficient knowledge and skills to integrate ICT in curriculum implementation.

TESSA materials are available in both audio and text, in memory sticks and also as hard copies (<http://www.tessafrica.net/tessa-teachers>). Wolfenden (2008) observes that high speed Internet access was expensive in developing countries and only few teachers had access to Internet. The situation is even worse in rural schools where most of the schools are located. That notwithstanding, Wolfenden asserts that the TESSA portal was designed for users with limited funds and bandwidth. Hence rural schools may use TESSA OERs in both audio and text, in memory sticks and as hard copies (<http://www.tessafrica.net/tessa-teachers>). Research question 2 focused on learner centeredness of TESSA OERs and suitability/quality in modeling pedagogies for CBC. The results are present in the next section.

### Quality of TESSA OERs In Modeling Learner Centered Pedagogies

Research question 2 evaluated the appropriateness of TESSA OERs in promoting LCE by modeling learner-centered pedagogies for implementing CBC. The results are presented in table 3.

**Table 3:** Appropriateness of TESSA Materials in Promoting LCE and Implementing CBC

Statement	Strongly Agree (%)	Not Sure (%)	Strongly Disagree (%)
1. The content is relevant and core part of the Curriculum.	94.5	0.1	0.0
2. Teachers are able to understand TESSA EORs.	83.8	0.0	0.0
3. I will be able to use TESSA OERs in my work with students and model pedagogy.	85.1	0.0	0.0
4. TESSA OER promotes students' engagement in learning.	89.1	0.0	0.0
5. TESSA OERs shows teachers how to treat students with respect and recognise what they know.	97.3	0.0	0.0
6. TESSA OERs show teachers how to take account of students' prior knowledge.	95.9	0.0	0.0
7. TESSA OERs show teachers how to help bring about the changes required in Kenya's Competency Based Curriculum.	100.0	0.0	0.0
8. I will be able to influence others in my institution to use TESSA OERs.	98.6	0.0	0.0

The result shows teachers agreed that TESSA OERs content was relevant and a core part of the current curriculum (94.5%) and they were able to understand them and use them in their work with students and in modeling pedagogies (83.8%-85.1%). Teachers further agreed that TESSA OERs promotes students' engagement in the learning process and showed them how: to treat students with respect and recognize what students know, to take account of students' prior knowledge and to help bring about the changes required in Kenya's CBC (89.1%-100.0%). Teacher finally agreed that they were willing and able to influence others in their schools to use TESSA OERs [98.6%] (see table 3).

Teachers therefore agreed TESSA OERs are learner-centered and aligned with Kenya's CBC (KICD, 2017). These assertions by teachers imply that TESSA OERs meet the quality thresholds for LCE and could be used in the implementation of the CBC. Schweisfurth (2015) argues that LCE is founded on the principles of respect for the rights of learners, and a focus on enhancement of their learning experiences and capabilities. IBE-UNESCO (2017) indicates that Kenya's CBC is underpinned by learner-centered approaches in teaching and learning. Wamutitu et al. (2011) posts that TESSA OERs are designed considering the Kenyan circumstances and are versioned for use in Kiswahili and English. Cullen, Keraro, and Wamutitu (2012) furthers assert that TESSA OERs were developed to map onto Kenya national primary curriculum as a source of innovative and active teaching and learning materials. This means they could be adopted, contextualized and reused in teaching most of the subjects in the entire Kenya's primary school curriculum. Wolfenden (2008) concludes that TESSA OERs are in a format that allows their contextualization or localization for use in different country's contexts and environments. Hence TESSA OERs are underpinned by dictates of LCE similar to Kenya's CBC. Hence they are ideal for implementation of the CBC.

Teachers' had also indicated that they were going to influence their peers to use TESSA OERs. Teachers who integrated TESSA OERs during their Bachelor of Education Primary Education programme were able to influence their peers to use of TESSA OERs (Murphy and Wolfenden, 2013 and Wamutitu et al., 2011). This implies that champion teachers could be identified trained on using TESSA OERs and thereafter used to advocate for use of TESSA OERs.

Schools in Kenya are subject to national educational policies by three key players. Ministry of Education (MoE), Teachers Service Commission (TSC) and KICD Practice in schools is monitored by Quality Assurance Officers working for the ministry while TSC register teachers who meet certain qualification to teach in public schools. KICD has the responsibility to develop curricular and learning resources. Thus it is critical that TESSA OERs are harmonized with the policy requirements of these key players.

## **DISCUSSION**

This study has succinctly demonstrated the potential of OEPs in modeling learner-centered pedagogies, which are ideal for implementing a CBC. Andrade et al. (2011) correlated OEPs with learner-centered teaching practices associated with use of OERs which supports the aspirations of Kenya's CBC. To this end, TESSA OERs meets the quality thresholds and would play a critical role in implementation of Kenya' CBC. However, evidence shows that OERs are yet to make the impact associated with OEPs for obvious reasons. One reason why TESSA OERs are not immediately snapped up is lack of policy guidelines on embedment of OEPs in the school curriculum.

Currently use of TESSA OERs in Kenyan schools is an initiative of self-motivated teachers, since it is not backed by specific policy guidelines. This being the case, the thrust for uptake of TESSA OERs may not go far. Secondly, institutions need to embrace OEPs rather than simply provide prescriptions of what to do; teachers should be able to contextualize accounts of classroom activities. Evidence from the study suggests that TESSA OERs can help teachers move beyond blindly following instructions to become co-constructors of knowledge and participants in OEPs (Suzan and Aras, 2018).

Thirdly, lack of ICT infrastructures (Internet and Electric power) in some schools is another challenge faced by TESSA OERs enthusiasts. This study found out that the cost of data bundles was beyond the reach of many teachers and some schools were not connected with electric power. Fourthly, some teachers may find it a challenge to identify suitable TESSA OERs aligning with the CBS confounded by the fact that some teachers are not ICT literate. These factors would be an impediment to accessing and using TESSA OERs and other OERs. Finally, teachers may lack knowledge on how to adapt, contextualize and use OER curtailing their uptake despite availability of all the other infrastructures.

The aspirations of Kenya's CBC are about quality education that focuses on the Skills for the 21<sup>st</sup> Century. The foregoing challenges shouldn't be allowed to impede the aspirations of the CBC. My "springboard" approach in the implementation of CBC is supported by much recent literature on OEPs; for example, Ehlers (2011a) in Suzan and Aras (2018) advocated that OERs should change focus from 'access' to 'process' to address quality and sustainability issues. According to Suzan and Aras (2018 p. 442) "sustainability meant a culture of openness within institutions nurtured by social and technical support" and concluded that the "processes and products of open education had value for both teaching staff and learners". Just as teachers need to change their attitudes to learners, Education officers and policy makers need to change their attitude to teachers, empowering and trusting them to make decisions about their own teaching and encouraging them to seek and adapt OER to support classroom teaching.

## Conclusion.

Based on the findings of the study and in the light of the extensive literature review on OEPs, I echo the need for Kenya to think how OEPs could accelerate achievement of the CBC through embedment of TESSA OERs, increasing their uptake and supporting their sustainability. The study further recommends training/retraining of teachers and teacher educators to make meaningful changes in teachers' instructional pedagogies. The study recommends a policy change by MoE, TSC and KICD on use of OEPs for curricula implementation and in-service training of teachers towards cutting cost on implementation of CBC without compromising on quality of education.

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