

## **When the Trainer is Untrained: Stakeholder Incapacitation in Implementation and Utilisation of Open Educational Resources in Kenya**

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### **Abstract**

Open Education Resources (OER) are geared towards promoting accessibility to education and to help overcome certain constraints to education associated with traditional ways of learning. However, these OERs can only be successfully rolled out and utilised in environments already enjoying certain infrastructural empowerments, including teacher-preparedness, availability of equipment to allow use of OERs and learner exposure and knowhow. This poses a major hurdle in many public and private schools in Kenya, which are in far-flung areas without electricity, mobile-phone connectivity, internet services and serviceable roads that allow movement to a cyber cafe where internet services may be accessed at a fee. These difficulties are encountered by both teachers and their learners. This paper seeks to discuss the challenges faced in implementation of OERs especially by the teachers who are expected to sensitise learners on the availability and utilisation of the OERs, while they themselves are either unaware of them, poorly trained to handle them or are under-facilitated to carry out their mandate. The study was carried out in Tharaka- Nithi County, Kenya. The County was chosen because challenges related to OER have been reported there. The county has 104 secondary schools. A sample size of 45 representing 20% of the respondents was considered sufficient for the study. A questionnaire was used to obtain data on the teacher ICT competencies, their awareness of and attitudes towards OER and the challenges they teachers faced in implementation of OER. The study found that utilisation of OER stands at about 3% as a result of ignorance regarding OER or a negative attitude towards them, poor ICT skills amongst the teachers and poor or inadequate resources within and around the schools.

**Keywords:** Open Education Resources (OER), educational infrastructure, teacher competence.

### **1. Introduction**

As part of youth empowerment programmes in the country, the government of Kenya through the Communications Commission of Kenya (CCK) has aggressively set out to improve digital communications structures countrywide. This has especially been emphasized in education institutions. As a necessary support, the government, through the Last Mile initiative, has also made efforts to increase electricity connectivity countrywide so as to increase access to electronic devices, especially for the youth. As a matter of policy there are efforts to light up primary and secondary schools even in the remotest parts of Kenya. In the last two years alone, the government has ensured that nearly 70% of Kenyan public primary schools, up from about 20%, are connected to electricity, thereby, facilitating the laying and use of ICT networks and other infrastructure (Orwenjo & Erastus, 2018). The Kenya Institute of Curriculum development (KICD) has embraced OER in instruction and in conjunction with the Ministry of Education is in the process of rolling out a new Competence Based Curriculum (CBC) which advocates for critical thinking, creativity and digital literacy. By policy secondary schools are required have mandatory computer classes for all learners and funds have been provided to ensure internet connectivity at least within the school compound, with a view to creating avenues for use of OER. The Cape Town Open Education Declaration exalts the availability of OER, free for all to use in a world where each and every person on earth can access and contribute to the sum of all human knowledge. However, the declaration goes on to acknowledge that there are hurdles in utilisation of OER resources and their integration in promoting instruction and learning. This paper discusses these and other barriers that have hampered the utilisation of OERs in educational institutions in Tharaka-Nithi County.

Tharaka-Nithi County is one of the 47 administrative counties in Kenya introduced with the promulgation of a new constitution in 2010. It is in the eastern parts of Kenya. Geographically the county features extremes in land and climatic conditions: zones with fertile, arable lands with conducive climatic conditions for agriculture on one hand and zones with arid or semi-arid lands with hostile climatic conditions. However in all these zones we have primary and secondary schools with students competing for the same opportunities.

In Kenya schools are categorized as National, Extra-county, County or Sub-County schools. National schools are the top schools; they enrol students who score the highest marks in Kenya Certificate of Primary (KCPE), the Kenya national exam taken at the end of primary school learning. They have to admit students from all parts

of the country, following some spelt out guidelines.<sup>1</sup> All of them are boarding schools and usually they are pumped with human and physical resources and have enough infrastructural facilities, either through direct government funding or through stakeholder participation.<sup>2</sup> There are only two national schools in Tharaka-Nithi County, Ikuu Boys and Chogoria Girls national schools.

Extra-county schools admit above-average same sex students from within the county and the neighbouring counties, again according to a quota system. They have large student populations and usually enjoy sensible infrastructural support including enough classrooms, well equipped science laboratories, learning materials and boarding facilities. There are 23 extra-county schools in Tharaka-Nithi County.

County schools admit students from within the county only. Majority of them are boarding schools but in recent years some have admitted day scholars. Depending on the locality and stakeholder support these schools enjoy poor to fairly good learning support facilities, but teacher numbers have to be supplemented through BOM<sup>3</sup>-employed teachers who take up teaching as a part-time job as they wait for a “better” job. A good number of them admit both boys and girls. There are 32 county schools in Tharaka-Nithi.

Sub-county schools are lowest in the ranks: apart from enrolling students who do not post very impressive marks in KCPE, they are also home to bright but needy students who cannot afford the higher cost of being in far away extra-county and national schools. Many of them emerged as community initiatives in response to Free Tuition Secondary Education (FSTE) initiative introduced by the government in 2008 to address high cost of education and poor transition rates from primary to secondary school (Ohba, 2009). Through FTSE the government pays KES 10265 per student while parents meet costs like uniform, lunch, transport and boarding fees for those in boarding schools. Subcounty schools accommodate many learners who cannot attend schools far away from home due to the attendant costs. They are generally poorly funded and being day schools are “mixed”; they lack amenities like running water or electricity. Being far flung and oftentimes infrastructurally difficult to access, they also suffer a constant shortage of teachers, despite a hardship allowance paid out monthly to teachers who serve in the remote areas of the county, and many times learners have to settle for inexperienced, often times untrained BOM-employed teachers. These schools mostly have semi-permanent shelters for classrooms and administration offices and have the barest minimum in the name of science laboratories, though they are an absolute necessity for preparation for the final course exam, Kenya Certificate of Secondary Examination (KCSE) which has practical exams in Biology, Chemistry and Physics. There are 47 sub-county schools in the county.

## **2. Theoretical Framework**

Data analysis for this paper was done against the background of two theories: Human Capital theory, (Schultz, 1981) and Educational Production Functions (Coleman, 1965). Human Capital theory posits that human capital consists of knowledge, skills and abilities of the people employed in an organisation. Bontis et. al. (2001) define human capital as the individual knowledge stock of an organisation as represented by its employees-the human factor in the organisation; the combined intelligence, skills and expertise that give the organisation its distinctive character. Competence includes skills and education, while attitude covers the behavioural component of the employees’ work. Intellectual agility enables one to change practices and to think of innovative solutions to problems. Human capital therefore signifies any stock of knowledge or characteristics the worker has, either innate or acquired, that contribute to his or her productivity. This theory has been employed in this paper in commentaries on the abilities of teachers to utilise and implement OERs in instruction. The Education Production Function theory as applied in education examines the relationship among the different inputs into the educational process and outcomes of the process. It relates various inputs affecting a student’s learning, for example schools, families, peers and neighbourhoods to measured outputs including subsequent labour market success, college attendance, graduation rates, and, most frequently, standardized test scores. This theory has been applied in this paper with regard to data related to availability of teaching/learning resources and the infrastructural support within and around the school.

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<sup>1</sup> The quota system was enacted in 1978 to promote the admission of students from disadvantaged areas to Kenya's secondary schools. Students selected from these areas may have specified lower marks to gain admission into the national schools.

<sup>2</sup> Main stakeholders will be the sponsoring denomination and the alumni association.

<sup>3</sup> School management in Kenya are overseen by Boards of Management (BOM) which from time to time approve local employment of teachers and support staff when there are none forthcoming from the government.

### **3. Methodology**

The study was located in Tharaka-Nithi County, Kenya. Descriptive research design was used for the study because the study variables were not being manipulated during data collection. The study targeted all the 104 secondary schools in the county. However, the two national schools in the county were purposively sampled. Through proportionate random sampling, four extra county schools, five county schools and six sub county schools were selected for the study. From each school, four teachers (each from the four forms) were randomly selected. Data was collected using questionnaires which were detailed enough to obtain information on teachers' levels of education, their ICT competencies, adequacy and state of facilities within the school and supporting infrastructure in the schools. The questionnaires were validated. To improve on its reliability, the questionnaires were piloted in the neighbouring Embu County which has similar characteristics as Tharaka-Nithi County. The questionnaires were personally administered to the respondents.

### **4. Findings**

The study's findings are presented and discussed under teacher-based challenges and resource-based challenges in the implementation of OER in Tharaka Nithi County.

#### **4.1 Teacher- related challenges**

##### **4.1.1 Lack of awareness**

An overwhelming majority (92.4%) of the teachers were unaware of OER. Having not been beneficiaries of such resources themselves they came into the field with a fixated mindset of traditional texts as the only source of educational learning. They admitted to knowing that there is a lot of information on just about everything on the internet but they were not aware that part of that information could actually help them in delivering their subject content to their learners. These findings are similar to those of a study by Bateman (2006) amongst university students and lecturers whereby nearly every respondent was 'unfamiliar' with the concept of OER.

##### **4.1.2 Teachers' ICT skills**

Slightly more than half (52%) of the respondents had basic computer skills and rated their computer skills as either good or fair. Almost half (48%) of the respondents admitted to having very poor ICT skills. However, they could operate their smart mobile phones. Out of the computer literate teachers, 88% of them were self-taught, especially out of necessity when pursuing higher education. Teachers who had pursued post-graduate studies had better ICT skills because it was a necessary skill in the pursuit of their studies. As a result, their ICT abilities were selective, based on what was relevant in the course of their studies. While some were proficient at Microsoft Word applications, they were incompetent at MS Excel or MS Powerpoint.

##### **4.1.3 Negative Attitudes**

One hurdle to the implementation of OER is the poor attitude some teachers had towards the resources. Even in the schools with operational computers and internet, 63% of the teachers reported viewing the setting up of classes for OER utilisation as an unnecessary bother because they had to make prior arrangements to access the inadequate computer rooms and move their students from their regular classrooms. Sometimes, they reported, the computer room attendant was not co-operative. In addition, 38% of teachers who made an effort to use OER reported being victims of negative attitudes from their colleagues. This came, especially from the older colleagues with poor ICT skills, who equated use OER as a show-off of their skills.

##### **4.1.4 Incompatibility with KCSE Syllabus**

Although 33% of the respondents were aware of OER, more than three quarters of them rarely or never used them at all. When asked why she did not use OER in spite of being aware of them, one, a teacher of English and Literature, and also a beneficiary of Open Resources for English Language Teaching (ORELT) training said, "No time. I am always trying to cover the syllabus using the prescribed texts from the Ministry of Education." The Ministry of Education through the Kenya Institute of Education (KIE) approves course books and syllabus content for all subjects taught in primary and secondary schools. In turn, the Kenya National Examination Council (KNEC) is mandated to set national exams based on this content. The points of emphasis in the KCSE syllabus are different from those in the OER materials and therefore this incompatibility discourages teachers from using OER because they might view them as a waste of precious time.<sup>4</sup> This problem has been escalated by the current score-based syllabus that has seen instruction and learning in Kenyan schools reduced to a drill to pass the national exams, a problem that is hoped to be remedied by the introduction of the Competence Based Curriculum, CBC.<sup>5</sup> Teachers who had exposure to ORELT materials judged the materials as being shallow in content as compared to the KIE approved text-books.

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<sup>4</sup> In Orwenjo & Erastus (2018) teachers cited difficulties in preparation of lesson plans based on ORELT materials because of incompatibility of learning activities whereby those in the OER had no direct socio-cultural and pedagogical relevance to the local situations in the Kenyan schools.

## **4.2 Infrastructural Challenges**

Online Education Resources are supported by relevant infrastructure. As Bateman (2006) observed OERs are open and free only theoretically because in reality, especially in the developing world, these resources are neither open nor free to those unable to access the basic yet necessary infrastructure: electricity, computers with affordable software and the internet. Challenges encountered in the implementation of OERs in Tharaka-Nithi County are discussed hereunder:

### **4.2.1 Lack of Power Connectivity**

Despite efforts to improve electricity connectivity countrywide, this has not been realized in many parts of the country. More than a fifth (22%) of the schools was not connected to the national grid. This is especially the case in the arid Tharaka subcounty. All the schools without electricity in the county are in this area. The lack of electricity meant that schools could not buy computers as indicated by 89% of the teachers. 13% of the schools use generators as a power source, but these are switched on at particular times, mainly for 2-3 hours for evening preps and for two hours just before dawn. The respondents cited the impossibility of using generators to run computers for any OER classes, and so many of these schools do not have computer classes. The lack of reliable power supply also means teachers used their mobile phones sparingly because teachers usually have to pay for recharging fees in the nearest facility where power is available. This discouraged any OER interactions using their mobile phones.

### **4.2.2 Inadequate School Facilities**

As afore-mentioned, subcounty schools are poorly funded and under-facilitated day schools which have the bare minimum in terms of basic school amenities. Many of these schools have semi-permanent structures for classrooms, staffroom and administrative offices. Many are in areas that have no electricity which means that teachers and students have no access even to a cyber cafe. Kamacabi secondary school in Tharaka, for example, is 21km away from the nearest market that enjoys electricity services, Gaciongo. Gaciongo secondary school has electricity and teachers admitted to having a computer room with a few computers which only the computer lessons teacher has access to. Teachers from certain county and sub-county schools declared that they had some government issue computers which are, however, in a store because their schools were yet to build permanent rooms where they can be placed for access. This was a common problem because out of security concerns permanent and customised facilities were needed for placement of the computers yet there were no resources to build these facilities. In both of the national schools, where we expect resources to be adequate or near-adequate, the ratio of computer to students is 1:40. In another girls' extra-county school in a semi-urban area and which enjoys internet connectivity, there is an average of 55 students per class, but there is only one computer room with 17 working computers. This means that at least three students have to share one computer whenever they have computers lessons, reducing the individual interaction and therefore learning effectiveness, one reason the teachers cited for their reluctance to take students to the computer laboratory. With such a state of affairs computer accessories like overhead projectors, video and audio players and cassettes, all of which are meant to aid and promote use of OER, are obviously out of reach for these schools.

### **4.2.3 Poor ICT Connectivity**

Over 70% of the teacher respondents admitted to having both power and some computers in their schools. However, in many schools in Tharaka area there was no mobile phone signal or internet connectivity as government efforts of laying of an underwater fibre optic cable that has subsequently seen increased internet connectivity and speed to 15Mbps throughout the country were yet to reach these extremely remote areas. Even in schools that have computer facilities and internet service another major hurdle was that internet connectivity was limited only to the administrative offices. Some innovative teachers used their private modems for data access but used them only sparingly because they were expensive to fund. Some teachers in schools with limited connectivity cited uncooperative staff as a reason they will be reluctant to seek out OER in such environments where only the school secretary's computer, for example, is internet-serviced.

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<sup>5</sup> The Kenyan CBC is a new system of education designed by the Kenya Institute of Curriculum Development (KICD) team and launched by the ministry of education in 2017. The CBC is designed to emphasize the significance of developing skills and knowledge and also applying those competencies to real life situations. However, its implementation is facing a lot of opposition from quarters that complain that there was no proper stake-holder engagement before its implementation.

#### 4.2.4 Poor Institutional Support

While discussing the use of OER in universities, Bateman (2006) laments the lack of concrete structures to see to their implementation. This is replicated in high schools: while the Ministry of Education through the KICD had embraced the use of OER it has, however, not set a framework for their utilisation, not in empowering staff through focused training, in timetabling nor in serious resource mobilisation. Often it is individual institutions or teachers who work out a criterion for their use and often with little regard to the consistent use, sustainability or future role of OERs. On the ground, individual institutions also fail to offer teachers the requisite support for use of OER in classroom instruction. Some science teachers who had used their modems and mobile phones for certain practical demonstrations to the students said it was too expensive to be done regularly as the schools did not refund the cost of the internet bundles used. Seven language teachers who had attempted to use OERLT were also frustrated by the requirement to teach harmonized content across the stream even when the other streams might be being handled by teachers who are not aware of OER or have no competence to handle them. Computer teachers also complained that they were able to achieve very little learning during the stipulated 40 minutes lesson especially with such few computers but requests to have computer classes during extra but paid hours (for example weekends) were not usually supported by the management. While some schools had extended internet services to the staffroom many school managements were reluctant to do this, citing costs, and yet many teachers felt that this would make access to OER and other information easier, and it would enable them to enrich their lesson content.

#### Discussion of findings

One thing that was very clear from the findings of this paper is that over 90% of teachers out in the field in Tharaka- Nithi County are ignorant of the concept of OER. Furthermore, some teachers who are aware of the OER lack ICT skills to be able to effectively use them. In the light of Human Capital theory this is a pointer towards less productivity owing to lack of knowledge and expertise of the teachers, which calls for action on the part of the education managers: firstly, there is a need to do in-service training to sensitise the teachers on the existence and importance of OER. Secondly, it is imperative that this in-service training extends to equipping all teachers with a measure of ICT competence that would ensure their participation in utilisation of OERs. This in the long run will update the workforce for more productivity.

The Education Production Function theory relates the different inputs into the educational process and outcomes of the process. The findings of this study reveal that in order to promote learning in secondary schools in Tharaka- Nithi County there is real need to update facilities in and around the school to give the teachers and students an opportunity to use OER. United Nations Sustainable Development Goal No. 4<sup>6</sup> cites reasons for lack of quality education as lack of adequately trained teachers, poor conditions of schools and equity issues related to opportunities provided to rural children. (UNDP, 2016) Kenya being a member state should show commitment to this ideal by ending the tokenism mentality evident in policy without implementation follow-up. Apart from ensuring electricity and internet connectivity throughout the country, specifically in the extremely remote parts of Tharaka-Nithi, funding of schools should be done equitably to ensure that every school in the county has proper tuition and boarding facilities, including functional science laboratories and computer rooms. This tokenism is evident in equipping of schools: even in schools with internet connectivity, very little learning by way of OER can take place in an environment where 1300 students share 30 computers as individual learner' interaction with these computers is minimal.

#### Conclusion

By embracing the use of OER the Ministry of Education in Kenya through KICD has taken a step in the right direction. However, there is need to follow up policy with implementation: the KICD should work out a policy framework for the implementation of OER and not just leave it to individual institutions or teachers to apply them in accordance with their respective means or abilities. This should include in-service training to promote teachers' ICT skills, developing curricula that integrate OER resources and equipping schools with resources for utilisation of OER. In their turn teachers and other instructors should recognise and appreciate OER as a useful supplement to their traditional teaching resources and be willing to align themselves in the direction the educational world is going by actively updating their ICT skills and making efforts to integrate OER resources in imparting knowledge to their learners. Apart from steering the country in the direction of shared knowledge worldwide, this will also ensure equity of opportunities for learners countrywide, who are competing for the same opportunities regardless of the category of school they are in or the locality in which the school is situated.

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<sup>6</sup> The 17 Sustainable Development Goals (SDGs) are the world's best plan to build a better world for people and our planet by 2030. Adopted by all United Nations Member States in 2015, the SDGs are a call for action by all countries - poor, rich and middle-income - to promote prosperity while protecting the environment. (<https://sustainabledevelopment.un.org/>)

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