

Differentiation in Access to, and the Use and Sharing of (Open) Educational Resources among Students and Lecturers at Kenyan Universities

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Abstract

In order to obtain a fair ‘OER picture’ for the Global South a large-scale study has been carried out for a series of countries, including Kenya. In this paper we report on the Kenya study, run at four universities that have been selected with randomly sampled students and lecturers. Empirical data have been generated by the use of a student and a lecturer questionnaire to which in total 798 students and 43 lecturers have responded. Selected from the very rich source two major outcomes are: (i) there is a significant digital differentiation among lecturers and students at urban versus rural universities in terms of their proficiency and internet accessibility; and (ii) the awareness and appreciation of the OER concept and open licensing is low but from the actual processing by respondents of educational resources (not necessarily open) a ‘preparedness for openness’ can be derived that promises well for the future.

Keywords: Educational Resources; Open Educational Resources; OER; ICT; differentiation; access; sharing; Kenyan universities; students; lecturers

Introduction

In the African traditional setting, the elderly men and women share their practical wisdom and indigenous knowledge with the younger generation for purposes of continuity and cultural enrichment. This exercise by nature is free and open, with no exchange of payment for services (Mosha, 2000). This culture of open sharing is virtually absent in modern forms of education in Africa. Institutional education, largely introduced in Africa by the Global North, generally overruled the principle of free sharing of knowledge. However, since the last two decades of far-reaching digitization of knowledge and content in a broad sense, having led to Open Access of knowledge and to Open Educational Resources (OER), it seems plausible to restore the traditional African principle of free and open sharing.

According to UNESCO/COL (2012), OER are, “teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions.” Because of this ‘open’ view on educational resources, OER bear the huge potential of a simultaneous improvement on the access to education and the quality as well as the efficiency of

education (Daniel, 2009; 2010, 2013). This is an attractive perspective to all countries around the globe, but it holds a fortiori for countries in the Global South.

Since we are witnessing a lot of confusion and claims regarding what 'open' means, Wiley has recently restated clearly that 'open' is not identical to 'free' (of charge) access. 'Open' stands for free access indeed plus, however, some formal rights and permissions to be granted to the users. These can be adopted according to an 'open licensing' scheme as offered, for example, by Creative Commons (Wiley, 2016). In Wiley's terminology, 'open licensing' provides users with free and perpetual permission to engage in five 'R' activities: reuse, revise, remix, redistribute, later completed with retain (Wiley, 2007, 2014). The relevance is evident: this really goes beyond providers just giving access to their online content. And, it offers a fair regulation of the 'jungle' where people wrongfully feel free to take from the Internet whatever they want. With this notion we will refer to (O)ER rather than OER except when its meaning is evident from the context. This is leaving space for considering Educational Resources in general, not being 'Open', which is useful in its own right.

The worldwide OER collection, although in principle giving online access for free to all, may not be equally accessible to all independent of location on the globe or in a country. This situation is technically referred to as OER differentiation which represents the gap between the centre and the periphery, between the literate and the illiterate, between the urban and the rural, between the haves and the have-nots, in their opportunities and capabilities to access and use OER. In this paper (O)ER differentiation is more precisely defined as the existing inequalities in the use of (O)ER in society, that involves not only unequal access to (O)ER, but goes further to include the inequalities that exist between groups of people in their ability and capability to actually create, use or re-use, repurpose, and holistically utilize (O)ER for individual and common good (ROER4D, 2017).

There is a need to get a better picture of whether and how introductions of OER have been aligned with a reduction of the (O)ER differentiation, especially in Sub-Saharan Africa. Underlying (O)ER differentiation there is digital differentiation (often called the digital divide) which concerns physical access to new ICT technologies (like internet). Accordingly we can allocate different levels of digital proficiency and of (O)ER proficiency to the key actors in education, students and lecturers.

In this paper the focus is on Kenya as a country in the Global South, where we could expect a digital and (O)ER differentiation pattern which will deviate from countries in the Global North. We report on a quantitative survey study among Kenyan university students and lecturers. In the following section the context is described in relation to the study being part of a bigger project and with respect to the university landscape and the state of affairs in ICT in education and in OER in Kenya. Next, the research questions are presented, and the methodology is described. The main body of the paper is a comprehensive section containing per research question the major results and findings. The paper closes with the leading conclusions and recommendations.

Context

The study is part of a larger project on digital and (O)ER differentiation in three regions around the world: Sub-Saharan Africa (including also Ghana and South Africa), South America (with Brazil, Chile, and Colombia), and Southeast Asia (represented by India, Indonesia, and Malaysia) (ROER4D, 2017). This cross-regional and comparative survey project in turn is part of an overarching research initiative called ROER4D, which stands for "Research on Open Educational Resources for Development" (Hodgkinson-Williams, 2013; ROER4D, 2017).

Kenya has a population of around 47.4 million people occupying a total land area of 569,295 square kilometers. 26% of the total population is urban. After independence, Buchmann (1999) points out, Kenyans have expressed deeper faith and high hopes in education. The government promoted education as one of the key issues to social, political and economic development. Rikers (2017) underlines that successes mainly apply to the primary school level, while moreover access still requires full attention.

Kenya has 22 public universities, 14 chartered private universities, and 13 universities with a Letter of Interim Authority (4ICU web ranking, 2016). Most Kenyan universities are to some extent involved in innovative learning programs that seek to take advantage of the use of ICT (Adala, 2016). A fair number offers some form of open, distance and e-learning. Examples include Africa Nazarene University (Ooko & Mays, 2015), Egerton University (Adala, 2016), Kenyatta University (KU, 2014), and University of Nairobi. No doubt that such models will increase accessibility to tertiary level education, but they also call for improved IT literacy and enhanced Internet connectivity throughout the country.

In 2006 the first ever Kenya National ICT policy was presented. Its mission was to improve the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable and affordable ICT services (MIC, 2006; ICT Authority, 2014). The promulgation of the 2010 Kenya constitution, the government's blueprint for further development and its Vision 2030 (2007) give rise to significant implications for the role of ICT in Kenyan society (Adala, 2016). The ambitions in Vision 2030 are "Strengthening the foundation for a knowledge-based economy" (ICT Authority, 2014, p. 12) and "Kenya as an ICT hub and globally competitive digital economy" (*ibid*, p. 39). The Ministry of Education, Science and Technology describes the possibilities that open, distance and e-learning can offer to expand access to, quality of, and equity in education, as well as aiding the achievement of the constitution of Kenya and Vision 2030 (MOEST, 2012). These new modes of learning potentially are viable alternatives to respond to the challenges of nomadic populations, migrations, limited opportunities in mainstream education, et cetera. To this end the government plans to adopt open and distance learning supported by an overall ODL policy with the intention to mainstream ODL in the educational system, to establish partnerships with national and international ODL providers, and to enhance the development and dissemination of educational content at curriculum development centres (*ibid*, p. 63).

Hatakka (2009) has noted that in developing countries open content is not widely used. We currently see, however, some interesting developments to further open up education, also in Kenya. In collaboration with UNESCO and the Commonwealth of Learning, for example, Kenya has held workshops on OER across the country; see, for instance, UNESCO (2013). And Kenya organized a National Implementation Strategy Workshop on OER guided by UNESCO's ICT Competency Framework for Teachers Toolkit. Nevertheless, OER is still in its infancy in Kenya and it would require substantial additional effort from different stakeholders, including the government, to further mature the OER movement in the country.

Methodology

These are the research questions (RQs):

- 1 What is the state of connectivity and digital proficiency among lecturers and students?
- 2 What kind and level of use, re-use, creation, and sharing of educational resources (ER) is common among lecturers and students (*but for the latter not including re-use and creation*)?

- 3 What is the level of awareness of licensing related to open educational resources (OER) among lecturers and students?
- 4 How do lecturers and students perceive the value of openness in educational resources (ER), its implementation opportunities, and its institutional context (*the latter item only for the lecturers*)?

Note that RQ1 relates to digital differentiation, RQ2 to ER differentiation, and RQ3 and RQ4 to OER differentiation.

In order to test both questionnaires before their large-scale use we have run a pilot. It became evident that both the student and lecturer populations are generally not very knowledgeable nor understanding of the OER concept. It turned out that even with the explanation of OER in the information part of the questionnaire, some responses were overall uncontestedly inconsistent. This could only be understood with our assumption that respondents had not really internalized the OER concept, in particular the associated open licensing approach. Which - one could say - was eclipsing their perceptions and would generate an unintended validity failure in the results for the questions concerned. We therefore decided to change the reference from OER to ER in the questions connected to this failure. As a consequence, we had to slightly adapt the wording of our original research questions, in which we had not (yet) been anticipating this possible 'perception eclipse'. This has resulted in the set of RQs presented above. RQ2, for example, shows the difference by using the term ER instead of OER. And we rephrased RQ3 and RQ4 a little so that we could or simply had to stick to OER, whatever the results would be. The phenomenon described here is not to blame on the respondents being from Sub-Saharan Africa. And our survey certainly is not the only OER study which is bothered by the perception eclipse. It can easily happen with a concept like OER which in its abstraction appears to be difficult to fully grasp. We have noted it explicitly, and have taken measures to circumvent its consequences as much as possible.

The lecturers' questionnaire includes 30 items, the students' version 26. Both questionnaires contain 4 items on RQ1 and 2 items on RQ3. For RQ2 the lecturers' version addresses 5 items, the students' version 3. And, RQ4 is being covered by 7 items (for the lecturers), and by 6 items (for the students). The remaining items (12, respectively 11) are either demographic or not relevant for this study. The items in the questionnaires offer multiple-choice answers from which the respondents should tick the relevant ones. Some of the questions can have more than one answer.

The research has an exploratory character and is based on the quantitative descriptive data provided by the two questionnaires. There is no qualitative part such as additional in-depth interviews. The sampled lecturers and students were invited to fill in the questionnaires available on SurveyMonkey. Some used the online SurveyMonkey, but the majority used the printed version of the questionnaires, which were later keyed into the SurveyMonkey by the local coordinators at the participating universities. Respondents were offered incentives in the form of flash disks.

Data have been collected from four universities in Kenya which were purposively selected. They are representing the overall Kenyan university variety. First of all this applies to the classification as private or public, where the public ones are funded by the government. Secondly, there is equal representation of the universities in urban areas - in this case basically being located in Nairobi - and in rural areas. These are the ones:

- [private,urban] Tangaza University College
- [public, urban] Jomo Kenyatta University of Agriculture and Technology
- [public,rural] Maseno University
- [private, rural] Great Lakes University.

The second level of sampling consisted in collating the course modules being delivered in a particular semester in each of the four universities. Out of this list, 30 modules for each university were randomised. From the randomised set, the local coordinators at the four participating universities were to identify at least 10 modules with more than 30 students, while its lecturers were willing to cooperate with the data collection. The aim was to sample at least 200 students and 10 lecturers from each university. The participants were invited based on the random selection. The sample contains 43 lecturers (60% male, 40% female), and 798 students (54% male, 46% female). The male/female distribution is representative both for the lecturers and the students in Kenya (Wainaina, 2011), but note the interesting exception at 'Tangaza' where the majority of the students is female: 62% (which is a representative share). This is because Tangaza University's mission is to promote women's education and the majority of the students are sponsored by the Catholic Church.

The average age of the lecturers is 44.5, the youngest being 34 and the oldest 67 years old, which is a pretty common picture. For the students the average age is 24.5 with a range from 18 to 67 years old. Again, 'Tangaza' is an exception with a large share of around half of the students being older than 29 (which is representative for that university). Most of the lecturers (60%) have a moderate teaching experience, ranging from 4 to 10 years. Only a small fraction (5%) is very experienced (with more than 20 years). This represents the regular picture. In terms of the lecturers' highest educational qualifications we count the quality you would like to see in a questionnaire like this: 12 Doctorates, 24 Masters, and 7 Bachelors. With respect to their current positions we observe an anticipated variety, most of them being a lecturer (20x), researcher (9), senior lecturer (7), or junior lecturer (7). There is also a broad spectrum in the areas of teaching among the lecturers which naturally is reflected in the students' areas of study.

Results and findings

The two questionnaires have generated an abundance of data and information. Because of space limitations we can only report on a small fraction of the outcomes in this paper. In terms of differences we have decided to focus on 'urban' versus 'rural', not on 'public' versus 'private'. The discussion on the results presented is arranged along the four research questions.

RQ1: What is the state of connectivity and digital proficiency among lecturers and students?

Figures 1a and 1b show how the students at rural and urban universities score their digital proficiency. What one would expect is indeed that the 'advanced' share is larger at urban than at rural universities: 16 versus 2%. But it seems a bit surprising that this also holds for the 'basic' share: 52 versus 20%, and that - as a consequence - the 'intermediate' share is much larger at the rural universities: 78 versus 32%. An explanation for this remarkable scores could be that students at urban universities are more modest about their digital skills. But it could also be that the rural-based students are more serious on the Kenyan education system requirement that all newly enrolled university students should have basic computer skills (KICD, 2016; MICT, 2016).

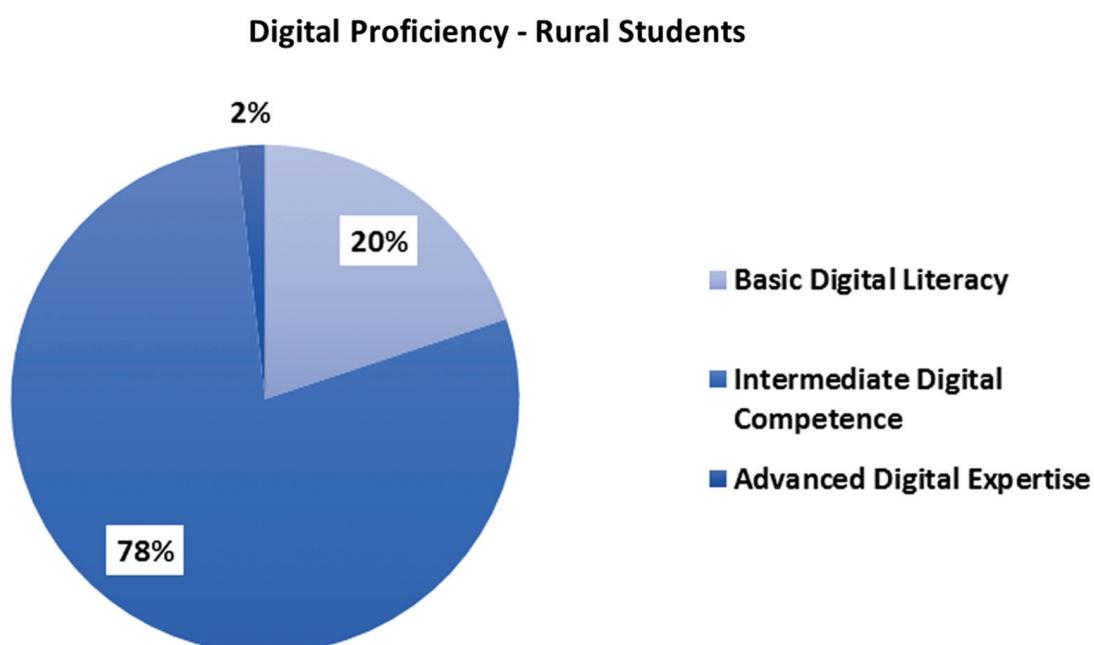


Figure 1a: Digital proficiency rural-based students

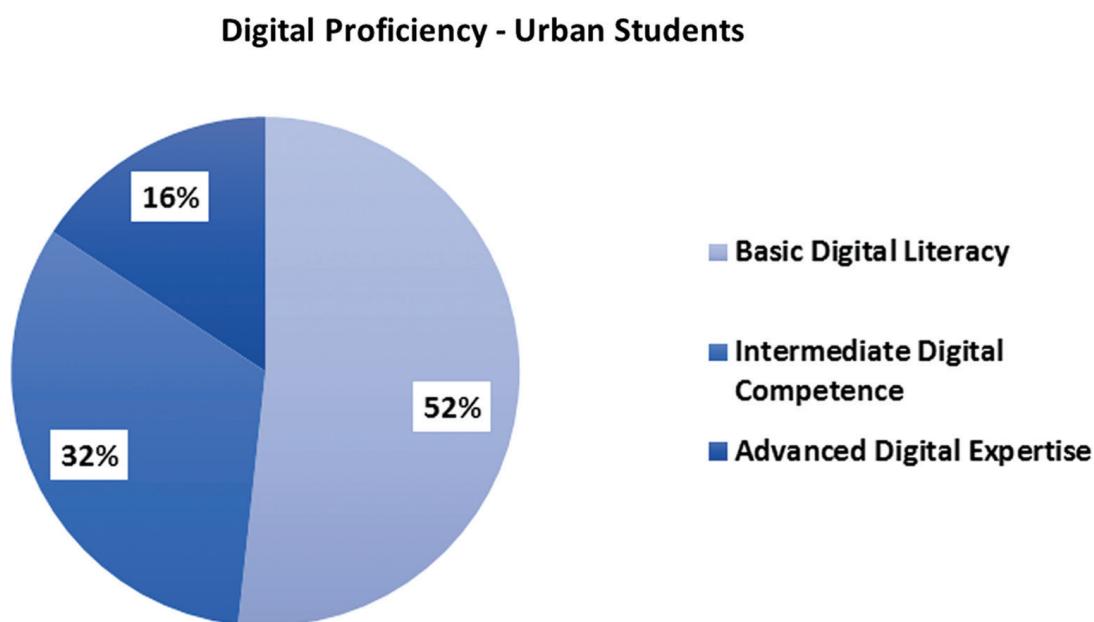


Figure 1b: Digital proficiency urban-based students

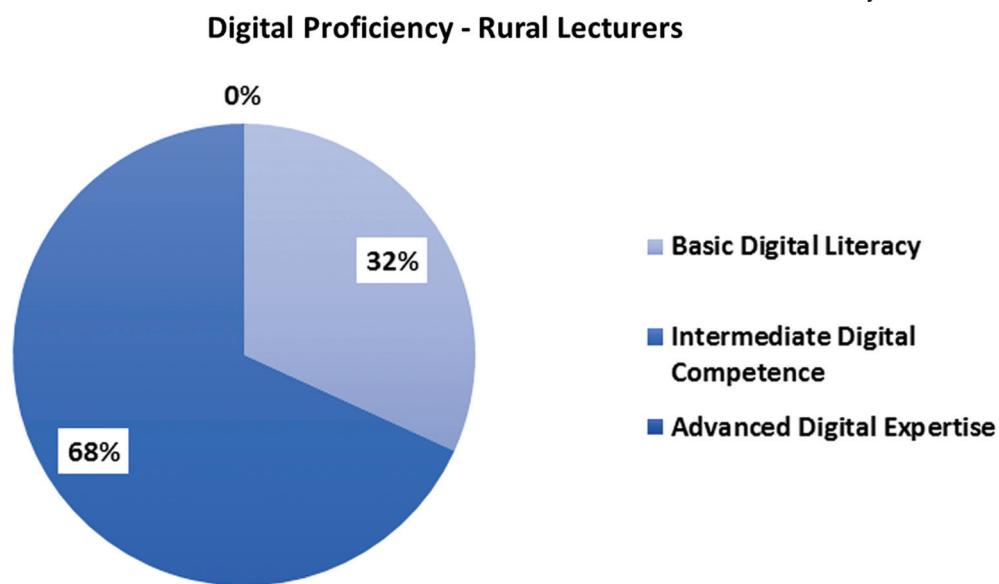


Figure 2a: Digital proficiency rural-based lecturers

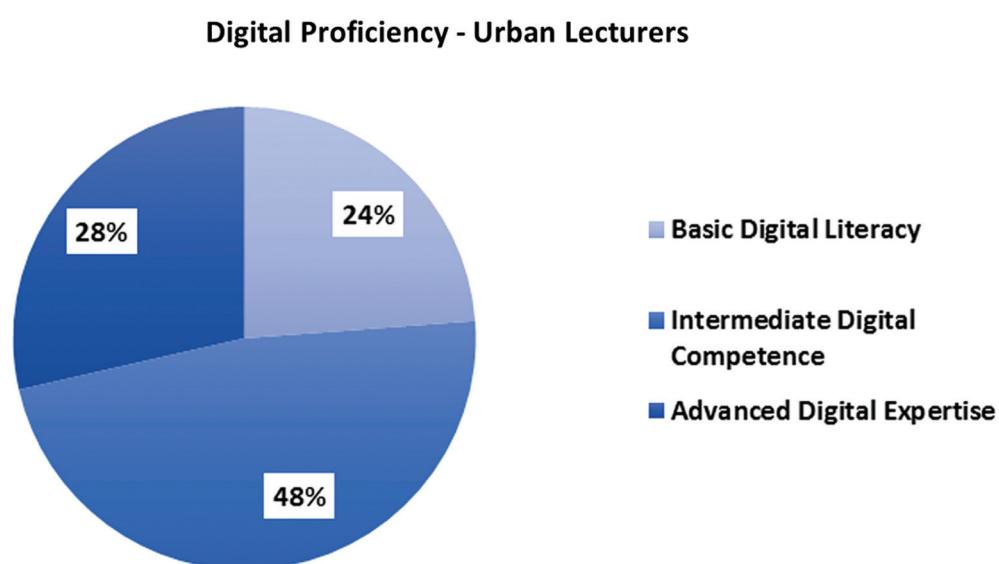


Figure 2b: Digital proficiency urban-based lecturers

In Figures 2a and 2b we can see that the majority of the lecturers at both urban and rural universities score their digital proficiency at an intermediate level. A big difference, however, is that none of the rural university lecturers rate themselves at an advanced level while their urban-based colleagues score 28% to be advanced. From Figures 1 and 2 it can be concluded that the lecturers at the urban universities rate themselves more digitally proficient than the students, whereas at the rural universities this is the opposite. Generally, we can observe that a significant part of the lecturers do not yet have the required ICT competencies, which is a concern after ten years of implementing the National ICT Policy. This is in line with official reporting (ICT Authority, 2014).

Next we can conclude from Figures 3a and 3b that both students and lecturers score highest for the location where they do access the Internet at their school, university, or workplace. The

lower scores show a slightly different pattern. For example, 'Home' is number 2 in the ranking of the lecturers but a clearly lower number 5 for the students. Conversely, 'Family member or friend's home' is ranked number 3 for the students but not more than number 6 for the lecturers. The 'Public library' is in the top-3 for both students and lecturers. Most prominent for the students is that for almost 90% they rely on public services, low rate commercial public provision, or family/friends. This underlines that as a result of the poverty in Kenya, many families cannot afford internet connectivity at home, and hence the children rely on what is elsewhere being provided for free or relatively cheap (Aguayo, 2010).

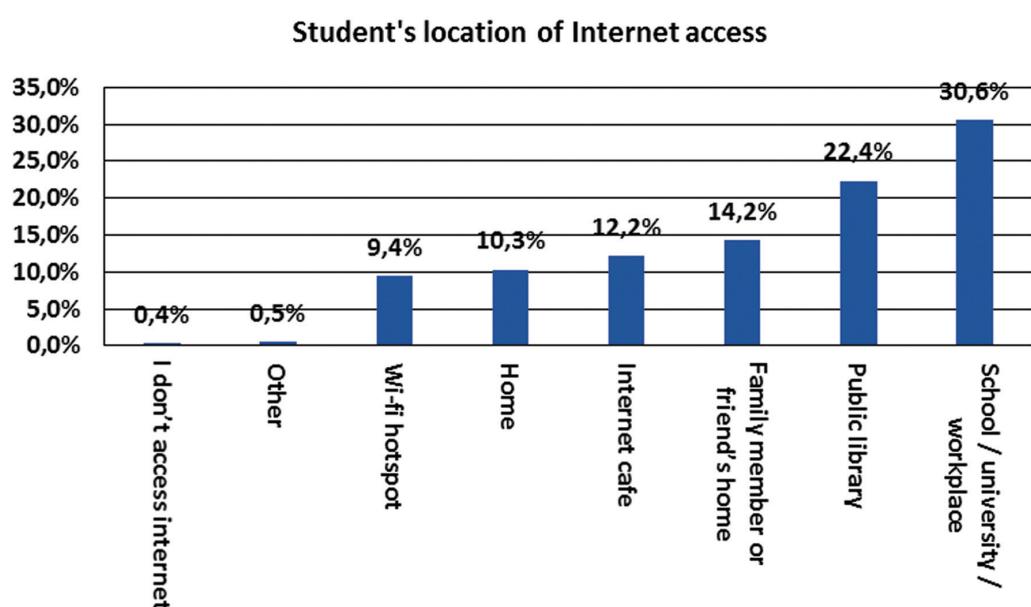


Figure 3a: Student's location of internet access

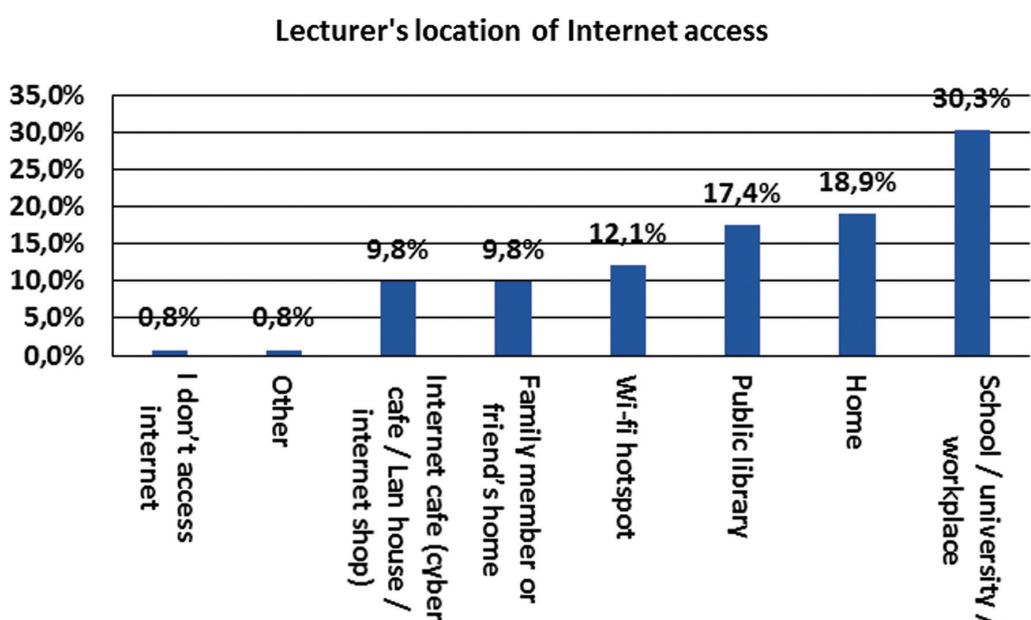


Figure 3b: Lecturer's location of internet access

For the devices used, Figures 4a and 4b show slightly different patterns for students and lecturers in their top-2 preferences. For the lecturers numbers 1 and 2 are a laptop and a desktop computer, for the students this is just the other way around. Upon closer inspection this difference in students' preferences appears to be due to the rural-based students who by 60% are in favour of a desktop computer, with only 23% for a laptop (plus 17% for mobile and close to 0% for a tablet). In the urban universities the popularity among students of a desktop computer is down to 26%, with a higher 31% for a laptop (plus 26% for mobile and 16% for a tablet). As a result the pattern for the urban students closely resembles the lecturer's pattern. The very high score for desktop computers among rural-based students suggests that they are going for the cheaper option in their use of desktop computers at their educational institutions (see also Laaria, 2013; Aguyo, 2010).

Student's devices for Internet access

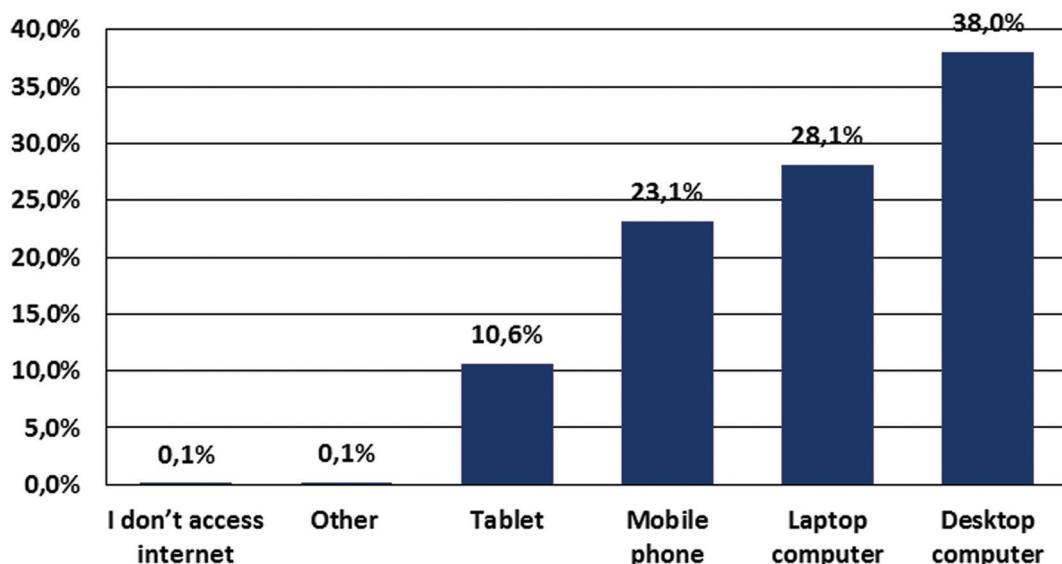


Figure 4a: Devices used by students

Lecturer's devices for Internet access

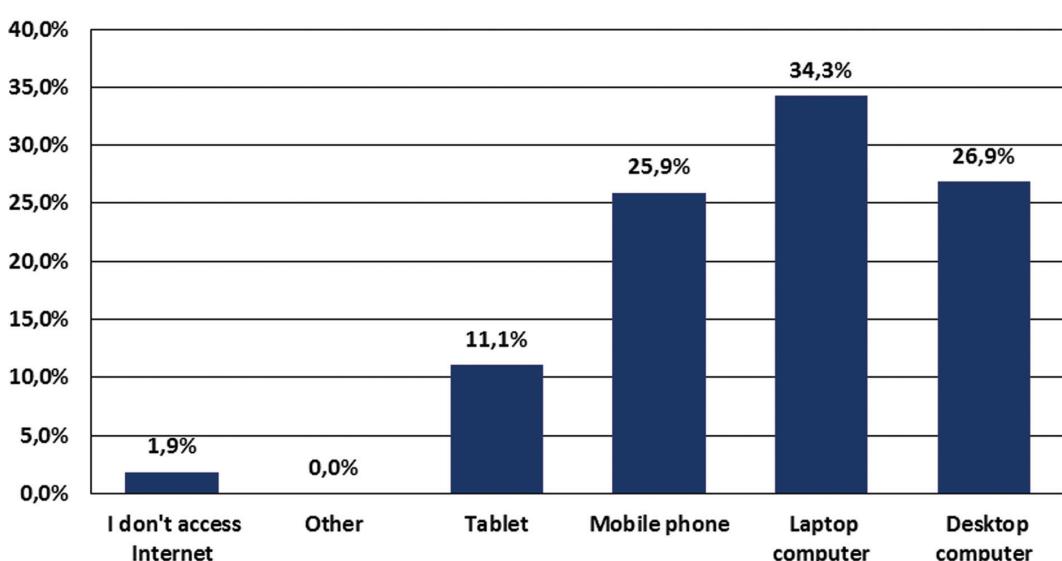


Figure 4b: Devices used by lecturers

Figures 5a/5b and 6a/6b address the level of satisfaction that students and lecturers express to have with the Internet connection where they most frequently access it. This relates to three aspects: cost, speed, and stability. We see very diverse pictures when we compare 'rural' with 'urban'. For both students and lecturers the dissatisfaction at the rural universities is very pronounced (for all three: cost, speed, and stability) while at the urban universities the overall appreciation is pretty positive. It can be concluded that there is a substantial digital divide or differentiation between rural and urban universities, in terms of Internet access and accessibility. This very unfortunate inequality is a serious challenge for Kenya.

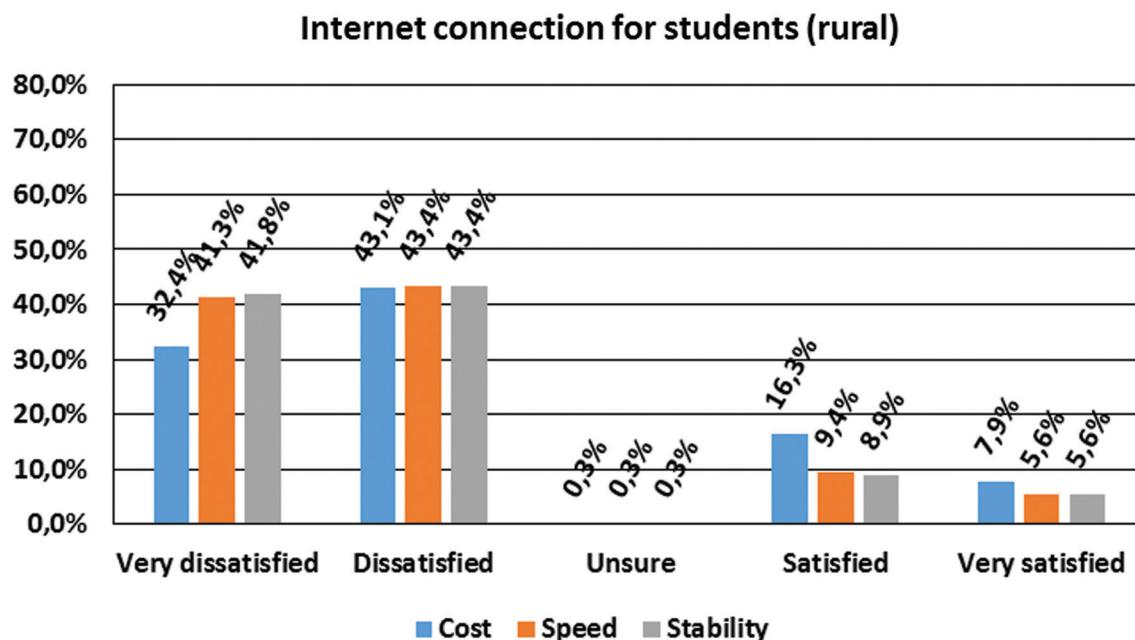


Figure 5a: Internet connection rural-based students

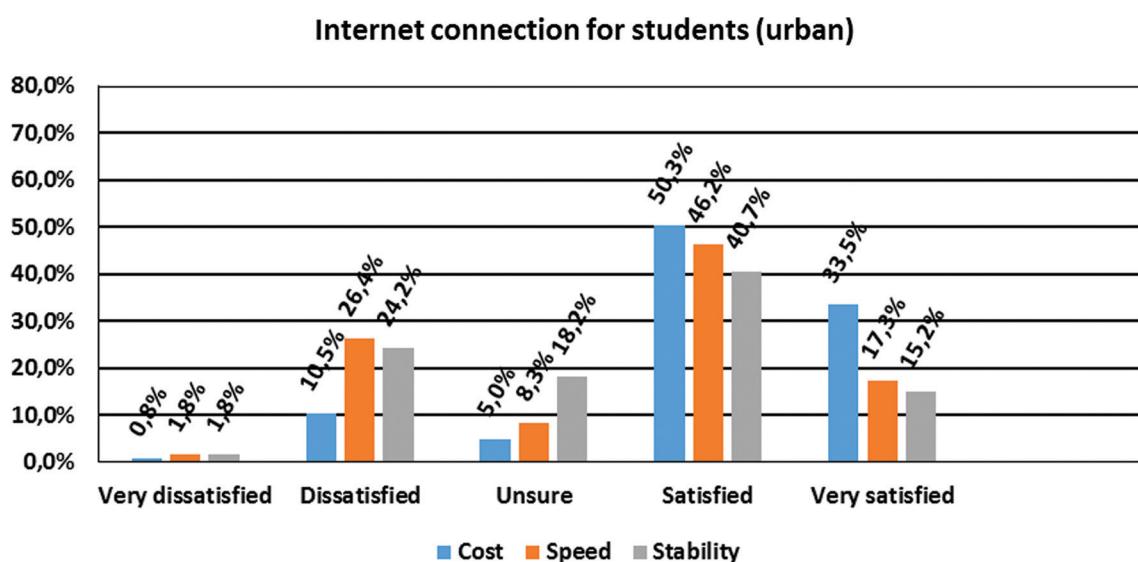


Figure 5b: Internet connection urban-based students

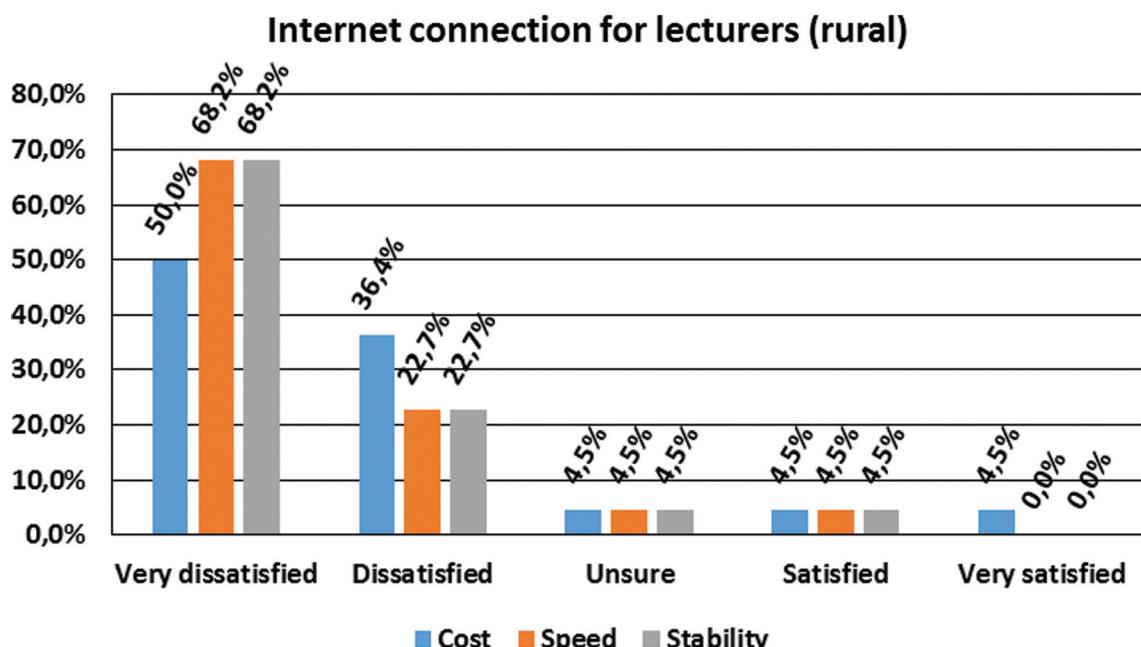


Figure 6a: Internet connection rural-based lecturers

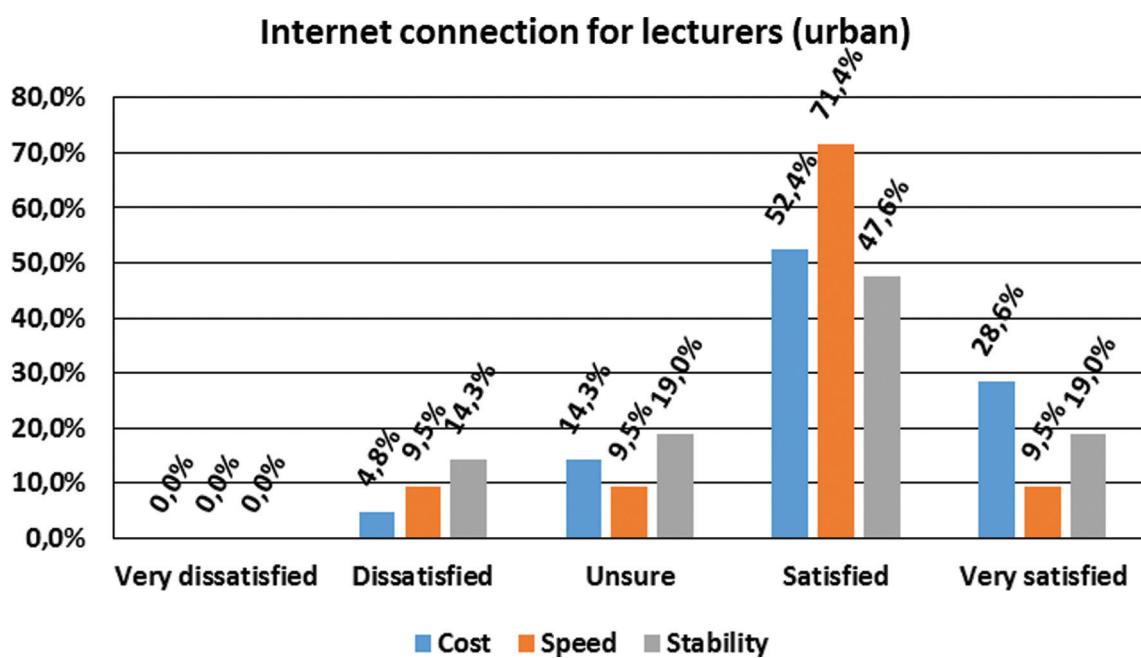


Figure 6b: Internet connection urban-based lecturers

RQ2: What kind and level of use, re-use, creation, and sharing of educational resources (ER) is common among lecturers and students (but for the latter not including re-use and creation)?

Let us consider here the processing and behaviour of both lecturers and students with respect to different categories of educational resources. Indeed we start with surveying their actual practice rather than getting directly to the OER proposition, on the argument of the perception eclipse discussed before.

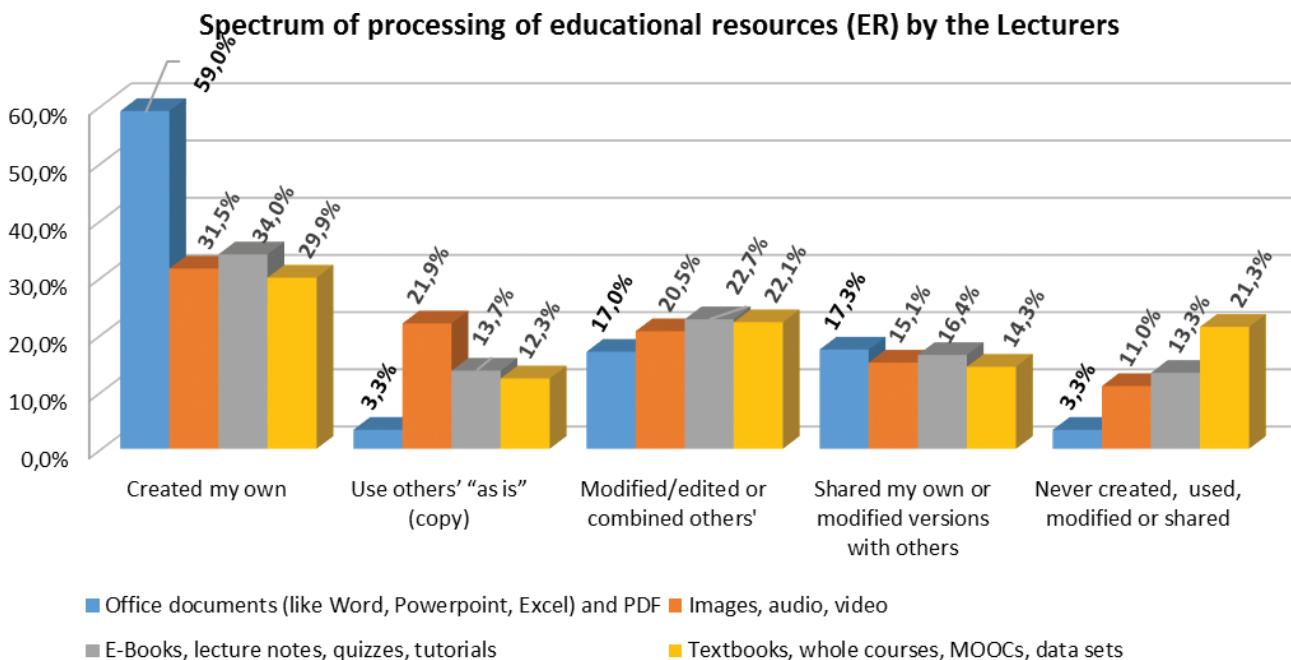


Figure 7a: Spectrum of processing of educational resources (ER) by the lecturers

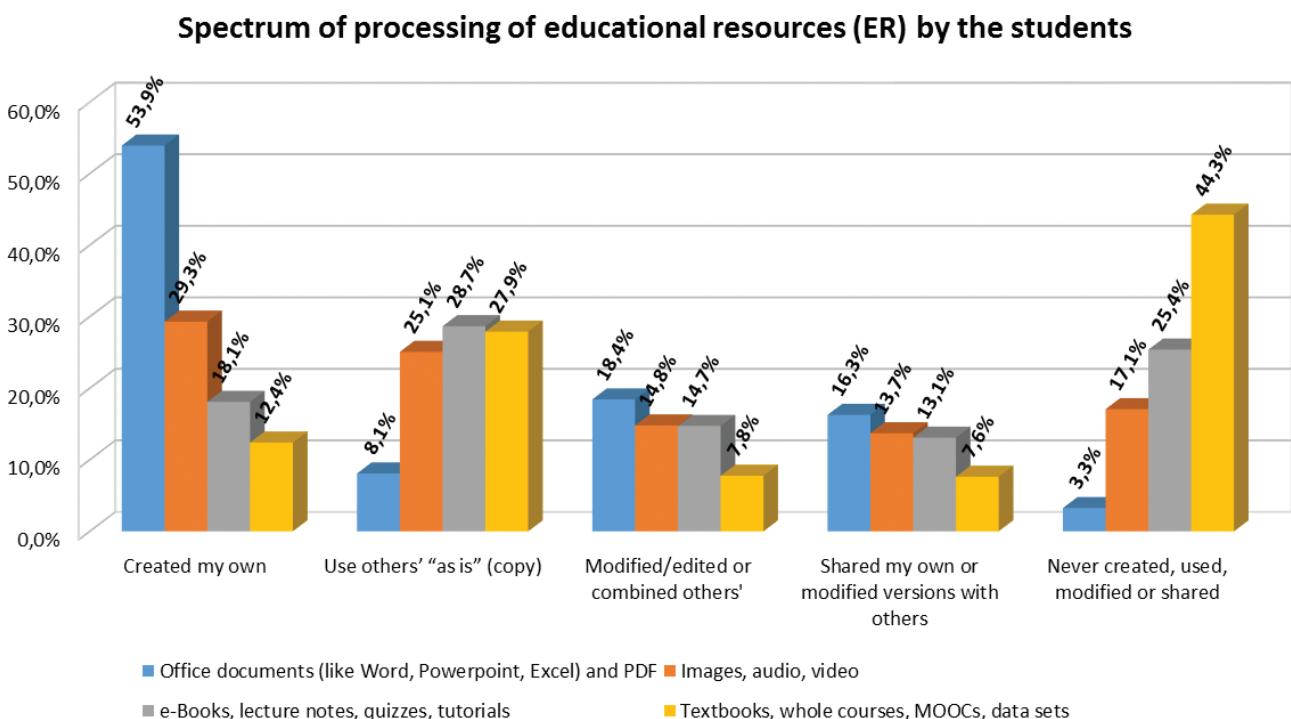


Figure 7b: Spectrum of processing of educational resources (ER) by the students

Figures 7a and 7b show interesting patterns for the lecturers and the students in their processing of four ER categories:

- (a) Office documents (like Word, Powerpoint, Excel) and PDF
- (b) Images, audio, video
- (c) e-Books, lecture notes, quizzes, tutorials
- (d) Textbooks, whole courses, MOOCs, data sets.

In the spectrum of five different modes of processing the three in the middle are the most relevant for this paper, representing respectively the 'use' (mode 2), 're-use' (mode 3), and 'sharing' (mode 4) of ER, referred to in the above research questions. In their response both lecturers and students seem to show an attitude and behaviour of embracing those key attributes of openness in educational resources. A measure for this can be found in the sum of the scores for modes 2, 3, and 4, averaged over the four ER categories, which amounts to:

- for the lecturers: 50% as compared to 38% for mode 1 ('create') and 12% for mode 5 (—).
- for the students: 49% as compared to 33% for mode 1 ('create') and 18% for mode 5 (—).

This 'preparedness for openness' may apply merely on pragmatic grounds and without a solid understanding of the OER concept, but it could anyway comprehend a promise towards real appreciation of what OER and open licensing can offer. Figures 7a and 7b provide more specific information as well, such as the observation that for the lecturers mode 1 ('create') has the largest share of all modes for each of the four ER categories. This holds for the students as well, except in case of ER category (d), where - quite understandable - the 'no activity' mode 5 scores higher. It is - by the way - remarkable indeed that the 'create' mode 1 overall has such a high score also for the students. This can only be explained on the assumption that students consider their assignments, reports, essays, project outcomes and the like as contributions in terms of educational resources.

For the lecturers we show their response to the question from what sources they would feel free to use resources for their teaching in Figure 8. At first glance the picture seems to present overall relatively responsible lecturers with a top-3 of preferences 'on the right side' in terms of adopting regulations. The three options 'fair use' (23%), 'acknowledgement' (20%), and 'open licensing' (16%) add up to 59%. This, however, still leaves 41% in an actually unregulated, shady area. Moreover, we can have serious doubt on the validity of the top-3 response, realizing the lack of knowledge and understanding of the option of 'open licensing' which actually also might apply to the other two options. So, it's fair to say that most of the lecturers seem to take too much liberty in their use of others' ER.

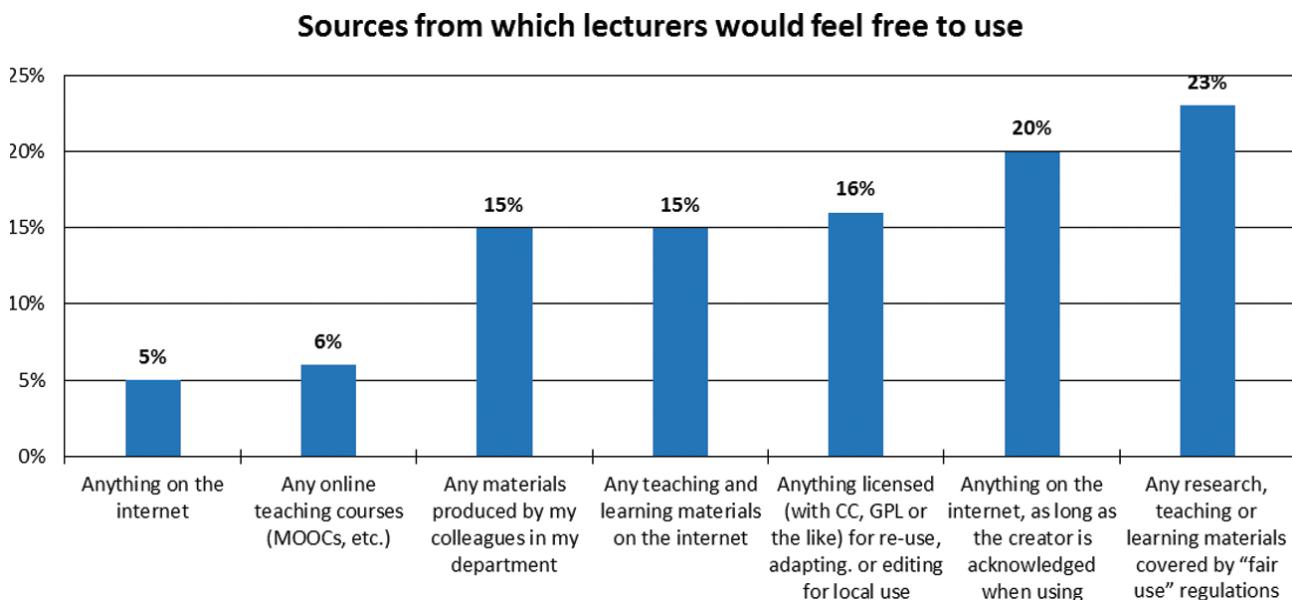


Figure 8: Sources from which lecturers would feel free to use ER for their teaching

Table 1 shows the top-5 (out of 13 options) of activities that lecturers say to undertake if they use educational resources from others. We see a broad variety of use. In all cases except for the last one in the top-5 (which is plain use) three of the five 'Rs' in David Wiley's terminology (reuse, revise, and remix - referred to in the Introduction section) are typical for the lecturer's activities as indicated. Again, what it shows is that the lecturer's operational behaviour is pretty close to the open philosophy.

Table 1: Lecturer's activities undertaken when using educational resources from others

USE of ER: lecturer's activities (top-5 in percentages)	
Summarize the essential ideas	16
Integrate the content with other content in order to develop a module or new unit	13
Change the content or add locally relevant information, examples and scenarios	13
Transform the content by adding an interpretation, reflection or practice	12
Copy the content and use it unaltered	9

Similarly, in Table 2 the top-5 (out of 11 options) is presented for activities that students say to undertake when using educational resources from others. A distinction is made between students from rural and urban universities where we see differences. Number 1 is not the same for the two categories, while the rural-based students - deviating from their urban-based colleagues - score two rather basic activities at numbers 3 and 4. Again, except for the latter two, all indicated activities can be qualified as associated with the open philosophy. Note that all lecturer's top-5 activities from Table 1 return in the list of activities for the students in Table 2, albeit not necessarily in the same positions.

Table 2: Student's activities undertaken when using educational resources from others

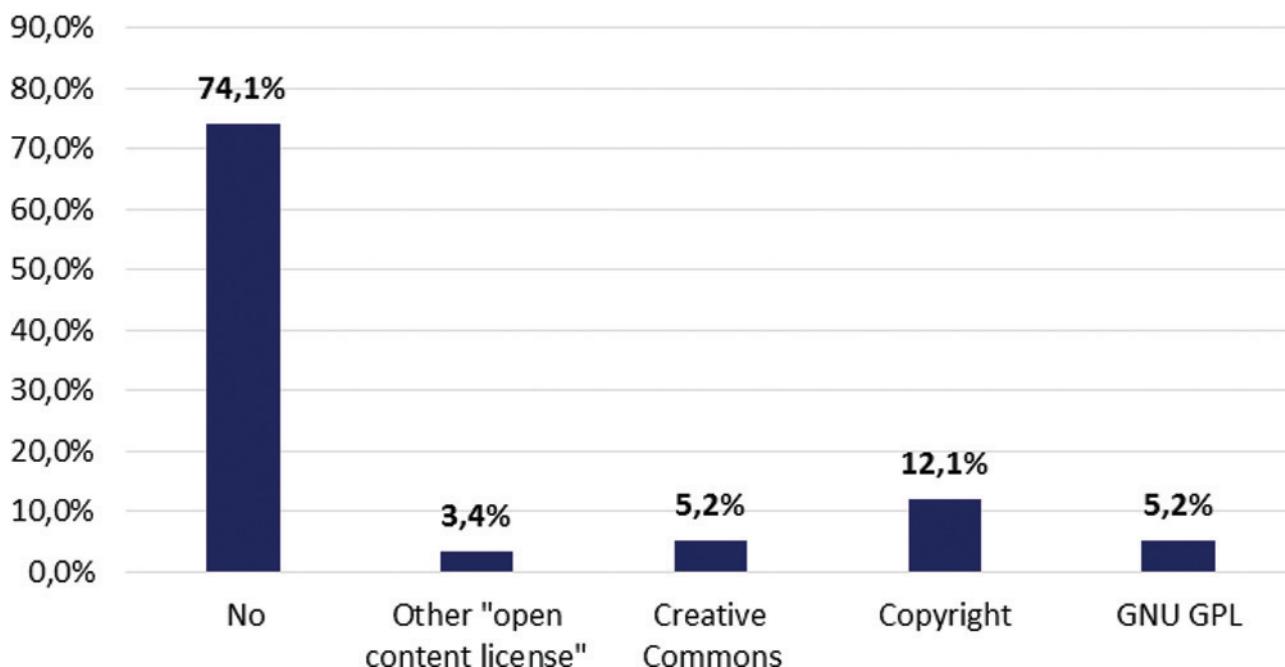
USE of ER: student's activities (top-5 in percentages)		
	Rural	Urban
Summarize the essential ideas	—	17
Transform the content by adding an interpretation, reflection or practice	27	14
Change the content or add locally relevant information, examples and scenarios	24	12
Copy the content and use it unaltered	11	—
Convert the content from one form to another	10	—
Implement changes to update the resource	—	12
Integrate the content with other content in order to develop a module or new unit	9	11

Similar results for the sharing and creation of ER are not presented here because of space limitations. There appears to be a strong engagement with sharing, even though this may not be based on full awareness of the fundamental sharing principle.

RQ3: What is the level of awareness of licensing related to open educational resources (OER) among lecturers and students?

In Figures 9a and 9b responses are collected to the question whether lecturers, respectively students have used any licenses to express the rights others have to use the materials they have processed (created, edited, modified, or combined).

Lecturer's assignment of licenses

**Figure 9a: Lecturer's assignment of licenses to use materials they have processed**

Student's assignment of licenses

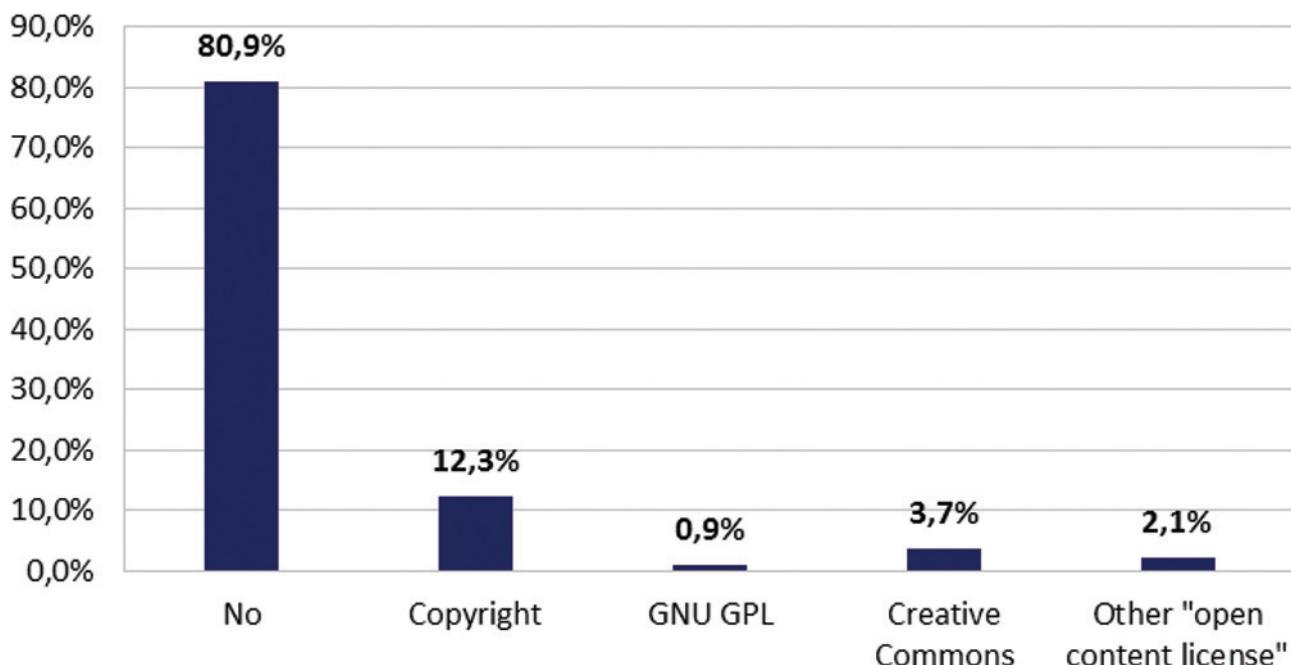


Figure 9b: Student's assignment of licenses to use materials they have processed

The dominant option in both figures is that no license is assigned: 74% for the lecturers, and 81% for the students. Traditional copyright assignment scores 12% (lecturers) and 12% (students), and various open licensing schemes rate in total 14% (lecturers) and 7% (students). Between rural and urban universities the differences are negligible.

The response to the reverse question, whether lecturers and students themselves have ever used OER that are available in the public domain or have an open license, shows a fair share with 'Yes', but yet about 60% of both lecturers and students responds with 'No' or 'Don't know'. We conclude that overall the awareness and appreciation of open licensing, let alone commitment to this approach, is not very high. More positively judged, however, it is not absent either, which may provide a fruitful basis to further embrace the open licensing policy.

RQ4: How do lecturers and students perceive the value of openness in educational resources (ER), its implementation opportunities, and its institutional context (the latter item only for the lecturers)?

Next we are addressing the OER concept per se, giving the response the deserved treatment but at the same time being cautious and in some cases even reserved in our conclusions when the results are raising doubts. One cause for this could be the perception eclipse that easily may have interfered with the response in this 'getting-to-OER' part of the survey. Another reason could be fatigue with the respondents when filling out the last couple of questions in the overall laborious questionnaire. And of course it could be a combination. We start in Table 3 with the top-4 (out of 6 options) of identified potential motivators for the use and reuse of ER which actually might be considered to represent a stimulating gate to convert to OER.

Table 3: Potential motivators for the use and reuse of ER among lecturers and students

Potential motivators for the use and reuse of ER (top-4) > from 'very unimportant' to 'very important' < (average on a 5 pt. Likert scale)	Lecturers	Students
Bringing down costs for students	4.7	4.4
Helping other educators/students	4.6	4.4
Bringing down costs for course development for the institution	4.6	4.2
Knowing that other educators/students may use my materials, improves the quality of my materials	4.6	4.2

The table shows a pretty even picture with all four motivators rated close to 'very important' (4.6-4.7) by the lecturers and no more than 0.2-0.4 less by the students. The other two motivators, regarding 'normal practice' and 'reputation' (not shown), score lower. Table 4 is presenting the top-6 (out of 12 options) of potential barriers for the use and reuse of ER. Where the ER motivators can be viewed as stimuli for a conversion to OER, the ER barriers likewise can be inhibitors in a development process towards OER.

Table 4: Potential barriers for the use and reuse of ER among lecturers and students

Potential barriers for the use and reuse of ER (top-6) > from 'not at all' to 'extremely' < (average on a 5 pt. Likert scale)	Lecturers	Students
Lack of access to the internet	3.6	3.7
Lack of time	3.6	3.4
Lack of training	3.6	3.4
Lack of hardware	3.5	3.4
Lack of software	3.3	3.4
I worry about the quality of OER	3.3	3.4

This table shows substantially lower scores as compared to Table 3, around a full 1.0 for almost all entries. Almost all barriers are expressed in terms of 'lack of ...', except for 'quality worries', and the two lowest scoring barriers: 'no reward system' and 'no compensation' (at 3.1, not shown).

Table 5 collects the top-5 (out of 10 statements about OER as applied to their educational institution) for which the lecturers indicate their level of agreement.

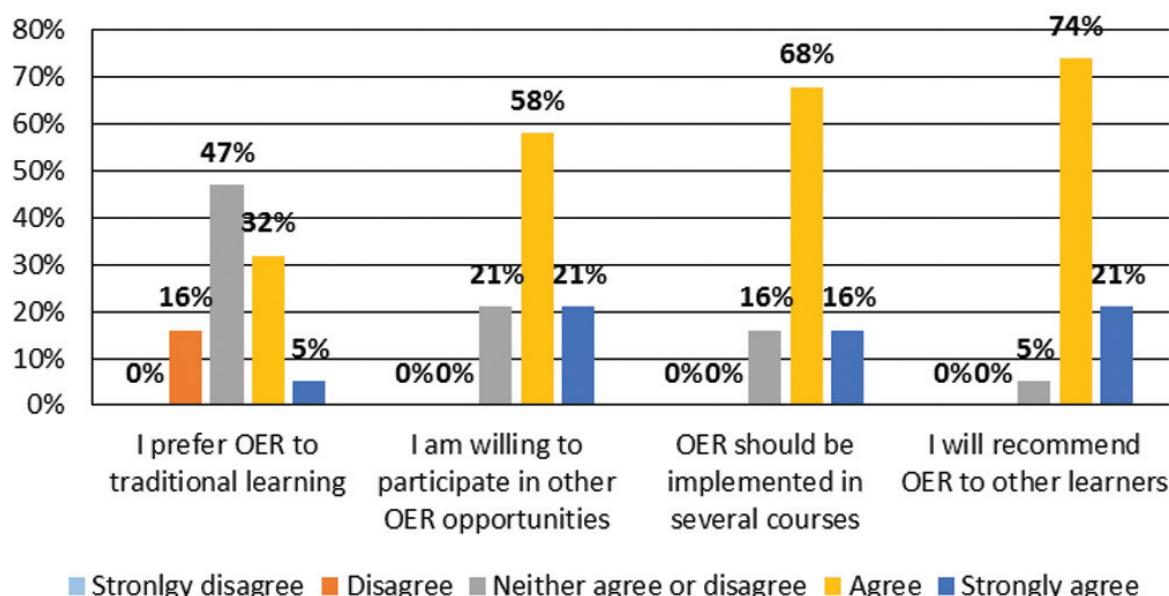
Table 5: Lecturer's opinions on OER in their educational institution

Lecturer's opinions on OER in their educational institution (top-5) > from 'strongly disagree' to 'strongly agree' (average on a 5 pt. Likert scale) <	
Policies adopted by my institution support the use of OER	3.6
My institution has reliable infrastructure to store and preserve access to teaching and learning materials (OER)	3.6
The OER initiative in my institution provides equal access to educational materials to anyone	3.6
The OER initiative in my institution is able to sustain the maintenance through internal funding and/or external contributions	3.4
There are ways for handling and utilizing OER in my institution as the main or supplemental materials to support our courses	3.4

The top-3 in Table 10 has a score of 3.6, and even the bottom-5 (referring to 'instructors attitudes', 'diversity', 'support services', 'quality assurance', 'credentialing') is rating 3.2 or more. So all ratings are on the positive side. Clearly, any educational institution, be it in the Global South or in the Global North, would love such a relatively positive and optimistic picture among its lecturers. But we have serious doubts with respect to these outcomes. They seem to be really unrealistic and hard to believe. This goes back to our earlier warnings. We have no firm explanation for this relatively positive picture among the lecturers, but - again - it could be due to the perception eclipse or fatigue with the respondents, or even an expression of loyalty with their educational institution.

Finally we consider the lecturer's and student's intention to use OER in Figures 10a/b. Note that only those are included whose response is 'Yes' to the item of having used OER with an open license or in the public domain. Therefore the number of respondents is reduced, for the lecturers from 43 to a pretty low 18, and for the students from 798 to a still considerable 316. This limits the validity and reliability of the outcomes, in particular for the lecturers.

Intention to use OER - Lecturers

**Figure 10a: Lecturer's intention to use OER**

Intention to use OER - Students

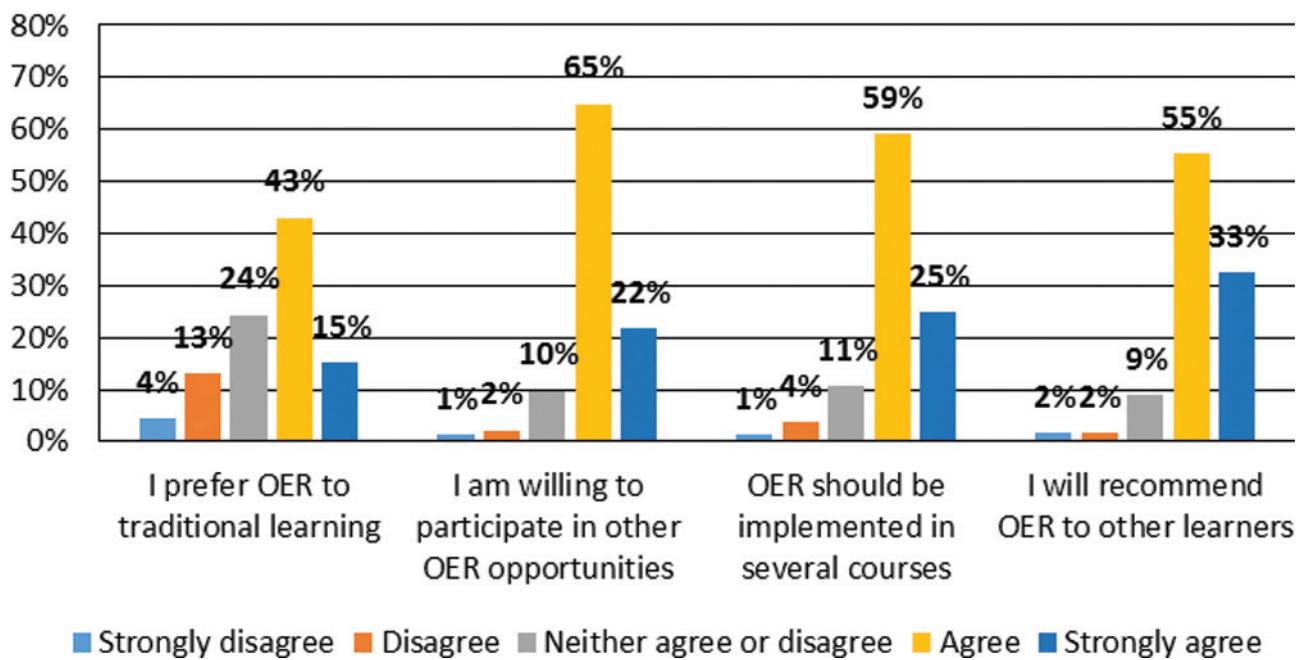


Figure 10b: Student's intention to use OER

Figures 10a and 10b show high scores, around 80–90% for 'agree' + 'strongly agree', by both lecturers and students for all four statements shown except for the most left one. That looks very promising, while the lower scores on 'I prefer OER to traditional learning' (37% for the lecturers and 58% for the students) do not really alter this positive perspective since that can easily be understood. For this issue the lecturer's response is most relevant. Having underlined that with the low number of respondents (18) we can question the validity and reliability of these outcomes, and taking into account the reservations expressed before, we cannot do much better than say that if this picture would be representative it could spearhead the implementation of Kenya's Vision 2030.

Final reflections, conclusions, and recommendations

Kenya is a country on the move in the global developments with respect to online learning as well as towards opening up education through OER. The country faces the challenging confrontation between reality and practice versus ambitions and perspectives. Fighting poverty is still a high priority. And the divide between urban and rural areas is huge. As described in the Context section, education is considered to be a crucial driver for social, political and economic development. Educational innovation may well contribute to Kenya's mission, expressed in its 2006 National ICT policy and in Kenya's Vision 2030. Online and open learning are viewed to be of high potential for Kenya in order to expand access to, quality of, and equity in education. There are promising initiatives to create a better ICT environment and infrastructure. For example, the lifting of duties on imported computers and related equipment has resulted in many more Internet cafes in rural areas. Moreover, the initiation of digital innovation hubs in Kenya's 290 constituencies will ensure a much better distribution of ICT facilities aiming for free Wi-Fi in all regions across the country. But significant barriers remain, at least for the time being and in particular in the rural areas, in terms of cost of internet access, lack of or

interrupted electricity supply, dominance of English, low literacy levels, and a poor telephone and travelling infrastructure. Alongside providing an adequate ICT infrastructure, Kenya is also becoming more engaged in educational innovations as we see occurring worldwide in online and open learning. For developing countries the big challenge in the 'ICT in education journey' is to balance educational ambitions and perspectives with economic realities and opportunities. It makes a study like this - to our knowledge the first empirical OER study in Kenya on such a large scale - important since it can contribute to a better OER picture for Kenya.

Let us finally summarize the major conclusions and recommendations:

- A. Because a significant part of the lecturers at Kenyan universities does not yet have the required ICT competencies as foreseen in the National ICT Policy, and because there is a significant digital proficiency differentiation among lecturers and students at urban and rural universities, the implementation of that National ICT Policy (which started in 2006) is at stake and needs a strong government boost.
- B. The alarmingly substantial digital differentiation in terms of internet accessibility and the extremely low level of satisfaction with the internet connection at the rural universities as compared to the urban universities, puts a serious challenge on Kenya, in order to countrywide realize the ambition of the 2010 Kenyan constitution and Kenya's Vision 2030 (that is to create new forms of open and online learning and to provide access to education for marginalized and hard-to-reach populations). Proper and persistent government initiatives are required to tackle this challenge and move from dream to reality.
- C. The overall awareness and appreciation of open licensing, let alone commitment to this approach, is low and therefore a hindrance in the adoption of the OER philosophy. More positively judged, however, it is not absent either, which may provide a fruitful basis to further increase the lecturer's, institutional and national awareness and understanding of OER and open licensing.
- D. The 'preparedness for openness' that appears from this study by focusing on the processing and behaviour of respondents with respect to educational resources (ER) without explicitly referring to the open philosophy with OER and its sharing principle, may apply merely on pragmatic grounds, without a solid understanding of the OER concept and without bothering about proper licensing. But the result counts and makes a promise towards real appreciation of what OER and open licensing can offer on the condition that lecturers should become more aware that they generally take too much liberty in their use of resources for their teaching.
- E. The potential motivator and barrier sets, formulated for ER and scored by both lecturers and students, also represent stimuli and inhibitors for furthering OER and can therefore be useful in the context of how to most effectively develop the OER approach in Kenya and its educational institutions.
- F. This study shows a picture of strong intentions with respect to OER among lecturers (and students) and of positive lecturers' judgments on their institutional support for OER. If that would be representative indeed, albeit all reservations that we have expressed, then that should be cherished by all stakeholders in education so that it could spearhead the implementation of Kenya's Vision 2030.
- G. The decision to change reference from OER to ER in collecting data on the actual processing and behaviour of respondents with respect to different ER categories rather than gathering their perceptions of the value of openness in ER, has worked out well. So our attempt to avoid the perception eclipse seems to have been pretty adequate. We call upon the OER research community not to hesitate to be equally explicit on cautioning with respect to the outcomes of similar empirical OER studies, in particular when a perception eclipse might apply.

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Conflict of interest

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