

# Informal Practices of Localizing Open Educational Resources in Ghana

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Article abstract

Research on the use of open educational resources (OER) has often noted the potential benefits for users to revise, reuse, and remix OER to localize it for specific learners. However, a gap in the literature exists in terms of research that explores how this localization occurs in practice. This is a significant gap, given the current flow of OER from higher-income countries in the Global North to lower-income countries in the Global South. This study explored how OER from one area of the world was localized when used in a different cultural context. Interviews from six facilitators of an OER human rights course in Ghana showed that without initial awareness of OER, localization happened largely informally. Practices included (a) technological workarounds and persistence; (b) spontaneous language translation; (c) cultural recontextualization through spontaneous adjustment, content substitutions, and discussion; and (d) social responsiveness. We found implications for designers to anticipate challenges related to dependence on technology, intentionally leave space for informal localization, and allow for linguistic flexibility.

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# Informal Practices of Localizing Open Educational Resources in Ghana

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## Abstract

Research on the use of open educational resources (OER) has often noted the potential benefits for users to revise, reuse, and remix OER to localize it for specific learners. However, a gap in the literature exists in terms of research that explores how this localization occurs in practice. This is a significant gap, given the current flow of OER from higher-income countries in the Global North to lower-income countries in the Global South. This study explored how OER from one area of the world was localized when used in a different cultural context. Interviews from six facilitators of an OER human rights course in Ghana showed that without initial awareness of OER, localization happened largely informally. Practices included (a) technological workarounds and persistence; (b) spontaneous language translation; (c) cultural recontextualization through spontaneous adjustment, content substitutions, and discussion; and (d) social responsiveness. We found implications for designers to anticipate challenges related to dependence on technology, intentionally leave space for informal localization, and allow for linguistic flexibility.

*Keywords:* localization, open educational resources, Ghana

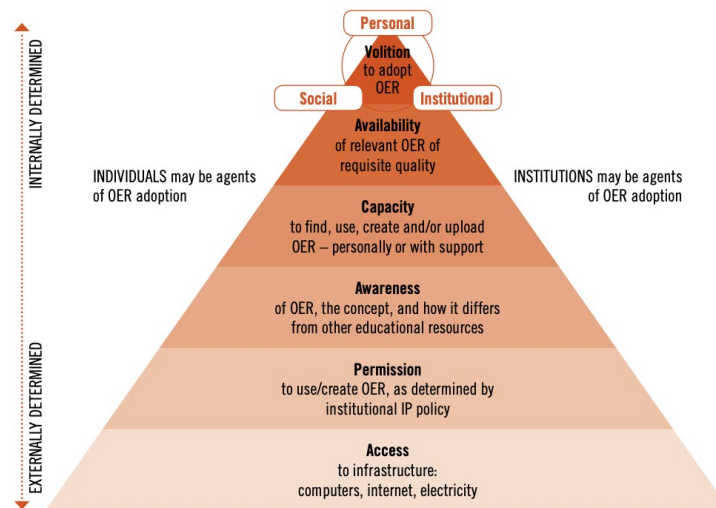
## Introduction

Over the past 20 years, research on open educational resources (OER) has touted the promise of OER to open the so-called lockbox of education with its potential to provide access to education for all people, everywhere (William and Flora Hewlett Foundation, 2013). While researchers have uncovered valuable insights concerning the development and use of OER (Cox & Trotter, 2017; Creative Commons, n.d.; Prinsloo & Roberts, 2022; Wiley. & Hilton, 2018) many questions remain unexplored as to how OER has been used in different global contexts. It is of particular importance that most research has focused on OER use in the Global North, but preliminary evidence suggests patterns of use have been different in the Global South. Recent studies have shown that in the Global South, most OER content has been used as is, or possibly translated into local languages. Fewer OER users were likely to engage in practices such as remixing or reusing for reasons including lack of bandwidth, language differences, or cultural mismatches (de los Arcos & Weller, 2018; de Oliveira Neto et al., 2017).

Cox and Trotter (2017, p. 301) presented a framework that detailed several factors impacting adoption of OER in South Africa; these factors varied regarding level of individual control (Figure 1).

**Figure 1**

*OER Adoption Pyramid*



*Note.* From “Factors shaping lecturers’ adoption of OER at three South African universities,” by G. Cox and H. Trotter, in C. Hodgkinson-Williams and P. B. Arinto (Eds.), *Adoption and impact of OER in the Global South* (pp. 287–347), 2017, International Development Research Centre and Research on Open Educational Resources for Development (<https://doi.org/10.5281/zenodo.601935>). Copyright 2017 by International Development Research Centre and Research on Open Educational Resources for Development. Reprinted with permission.

This framework illustrates that OER use, which would be located in the capacity section of the pyramid, is dependent on contextual factors out of the control of the OER user. Without access or awareness, for example, people’s use of OER is inhibited. While our study did not specifically address OER adoption, it

supported this model in that the practice of localization was greatly impacted by technological, linguistic, and cultural factors; these parts of the pyramid lead toward adoption. We further illuminated the practice of localization within a specific context, exploring the lived experiences of facilitators of a human rights course in Ghana as they localized content despite these barriers. We found that they used informal, in-the-moment practices to recontextualize content created in the United States for their learners. We explored these issues through semi-structured interviews with facilitators who developed an account of their informal localization practices and how those practices facilitated their use of OER materials.

## Literature Review

In the Global North, discussion on use of OER has centered on student use of the 5Rs (retain, reuse, revise, remix, and redistribute) in completing more creative assignments (Clinton-Lisell, 2021; DeRosa, 2016; Kimmons, 2016). However, different patterns of use may exist in the Global South, and a limited view of what constitutes OER use or how that is researched may have relied too heavily on assumptions based on students from higher income countries, their technology access, and their language use. A recent study of 7,700 faculty members in the Global South showed patterns of OER use around the world, indicating that faculty in the Global South were more likely to adapt OER content (usually through translation), but due to Internet connectivity and available data for uploading, less likely to share content than were faculty in the Global North (de los Arcos & Weller, 2018). These different patterns were based on different contextual factors (Prinsloo & Roberts, 2022) and barriers to the use of OER. Research on these factors has tended to align with a framework encompassing the areas of technology, language, and cultural contextualization (Figure 2).

### Figure 2

*Factors Influencing OER Adoption*



## Technology

Limited access to technology limits users' access to OER. "Internet user statistics in 2016 revealed penetration rates of 28.7% in Africa and 45.6% in Asia were below the world average of 50.1%, and well behind Europe (73.9%) and North America (89%)" (de los Arcos & Weller, 2018, p. 151). The reality of inconsistent power supply (Omoike, 2021), dilapidated tools, and the resulting lack of familiarity with technological tools among educators (Ezumah, 2020) suggest significant barriers to accessing and using OER in some parts of the Global South. Furthermore, these connectivity issues reinforce a top-down structure in which people from the Global North are the OER producers and those from the Global South are the OER consumers. Those with inadequate Internet connectivity are not as likely to upload and share content.

## Language

A key barrier to OER use is related to language access; research has shown significantly more production of OER in English (Cobo, 2013). Given this, those who use these OER must have some level of English or elite language proficiency (Aramide & Elaturoti, 2021) or must rely on translation (Amiel 2013). As most users of OER in the Global South use them as is, and only 23% of users create OER (de Oliveira Neto et al., 2017), the lack of availability of OER in many languages significantly limits users' access to OER in local languages. Furthermore, when technologies do not support multilingual interfaces, the remixing and creation of OER is limited for those in the Global South due to lack of linguistically flexible technological tools (West & Victor, 2011). Despite barriers to use of OER due to linguistic inflexibility, there have been recommendations for linguistic diversity in the production of OER from international groups (United Nations Educational, Scientific and Cultural organization [UNESCO], 2012). Additionally, case studies into multilingual OER production have begun to emerge (Oates & Hashimi, 2016).

In one study of OER localization in Nepal, parents rejected translation of OER in local languages, wanting their children to rise above and beyond local practices (and languages) to be citizens of the global world (Raj et al., 2019). In this case, true localization occurred when local people had control over what and how they learned, including the language in which content was presented.

## Cultural Recontextualization

In many accounts from the literature on localization, OER that travels from the North to the South may be culturally mismatched, even after linguistic translation. For instance, researchers have suggested that OER available in Nigeria is not adapted for local audiences (Adeyeye & Mason, 2020; Aramide & Elaturoti, 2021). A systematic review of research into the use of MOOCs and OER in the Global South identified inflexibility and decontextualization related to wholesale adoption of OER materials (King et al., 2018).

Some researchers have observed cultural recontextualization taking place through localization in specific settings. In Amiel's (2013) study of how OER is reused, he concluded that localization is an automatic practice, because whenever OER moves from the hands of one source to another, a new user will recontextualize it. Wolfenden and Adinolfi (2019) reported that this type of cultural recontextualization "involves drawing on the lived contexts and practices of teachers, learners, families and communities within their textual content and through the activities in which they are deployed" (p. 330). Three Nepalese

localizers from the Ivins (2011) study stressed the importance of contextualization being done by locals and added the benefit of community ownership developing as part of a participatory practice.

Despite the insights of these findings, more research is needed to understand how OER is localized and how decisions about localization are made in different parts of the world. In our study, the research question asked: what practices of facilitators localizing OER recontextualized it for learners in Ghana?

## Method

We conducted a qualitative study of the experiences of educators localizing OER in Ghana, using in-depth, semi-structured interviews. Our focus was on educators' practices themselves, not their beliefs about, or knowledge of, OER as a construct. Thus, we took a practice-oriented approach to our research, grounding our assumptions about those we interviewed and their practical involvement in the world as found in the writings of Dunne (1997) and Packer (2018). In this perspective:

humans are fully embodied, engaged agents . . . situated in a lived world of significance [which allows for theorizing into human activity that does not] invoke a more fundamental reality of causal forces assumed to control . . . human participation. (Yanchar & Slife, 2017, pp. 147–148)

### Research Context

This research grew out of work completed by an non-governmental organization (NGO) based in the United States, connecting people in low-bandwidth areas of the globe with educational resources. One of the first courses piloted in these gathering centers was a human rights course entitled *Human Dignity*, co-authored by this paper's first author in cooperation with the Geneva Office for Human Rights Education. Volunteer facilitators generally took turns organizing discussions, adapting materials for local needs, and supporting participants in the class. The course was licensed using a Creative Commons CC-BY license. Due to costs in time and travel, gatherings were mostly held via Zoom.

### Participants

The participants in this study were purposefully selected from available course facilitators at local community gathering centers in various cities in Kumasi, Accra, and Assin Foso, Ghana (Table 1). All of the participants used the same curriculum, and they had enough experience with the content to comment on localization.

**Table 1**

*Participant Backgrounds, Interests, and Group Dynamics*

Participants*	Background and interests	Group dynamics
Beth	Nurse. Volunteer teacher of the weekly course.	Over 30 participants; Beth was the only teacher.
Kate	Construction manager. Student at a local university. Led a project to create a localized manual.	Group of eight with rotating teaching.
John	Student in applied technology.	Group of five with rotating teaching.
Randall	Not from Ghana but has lived there over 10 years. Former member of John’s group.	Group of five with rotating teaching.
Rebecca	Master’s student at a local university.	Group of eight with rotating teaching.
Tobias	Working toward university education. Learning to be a mechanic and teaching professional driving.	Group of eight with rotating teaching.

\*Note. Participant names are by pseudonym.

**Data Collection**

To document the experiences of facilitators who localized content, the first author of this paper conducted two, 45-minute interviews with four participants, and, due to time constraints, a single 45-minute interview with the remaining two participants. Questions focused on what changes facilitators made to OER content. Due to the geographical separation between the participants and interviewer, interviews were conducted and recorded over Zoom. Interviews were initially transcribed using the Zoom transcription feature, and later edited for accuracy by the first author.

**Data Analysis**

Data analysis was conducted using steps outlined by Churchill (2022). First, each interview was read to provide researchers with a sense of the whole and to generate possible overarching themes that reflected major patterns in the data. Second, interviews were then read closely, with detailed themes being identified that summarized aspects of participants’ practices at the phrase, sentence, or paragraph level. Third, a comprehensive synthesis was undertaken, where initial themes were grouped into an initial structure. Fourth, the structure was clarified by comparing themes for opportunities to combine, break into smaller units, eliminate, or otherwise refine them. The intent was to develop an account of our participants’ comments that accurately reflected the experiences they described. Throughout this process, more granular themes were compared to the whole corpus of data. Themes generated from the whole were compared to

the line-by-line readings to check that the emerging structure reflected the details participants shared and patterns evident across interviews (Fleming et al., 2003).

### Trustworthiness and Rigor

To help ensure trustworthiness and rigor, we conducted a member check towards the end of the research process. This took place by sending participants a summary version of our analysis and asking if they thought it adequately represented what they said, as well as asking if anything else should be added so their experiences were related in an accurate manner. All participants responded that the themes were in line with their intended meanings and no adjustments were requested.

### Limitations

Like all research, this study had limitations. Our qualitative method did not allow for generalizability to larger samples, so we do not report findings as if they were generalizable to all groups. Also, our own position as researchers from another country than our participants affected our understanding. While we believe our member checking helped address this, we are sensitive to this issue. We hope future research conducted by cultural insiders can reveal additional insights that our report could not provide.

## Findings

The facilitators we interviewed described how they localized content in informal ways. Many of these practices aligned with the framework presented earlier (see Figure 1) and were used as major themes to report our findings: (a) technology, (b) language, and (c) cultural recontextualization. Additionally, facilitator practices suggested a fourth theme, (d) social responsiveness based on relationships (Table 2).

**Table 2**

### *Informal Localization Practices*

Type of adjustment	Description of localization practices
Technology	Creating workarounds for poor technology. Technology challenges included poor Internet connection, insufficient data, broken hardware. Students persisted and found workarounds.
Language	Translation happened spontaneously in response to student needs. With multiple languages used by locals, facilitators moved between languages seamlessly and based on the contours of the immediate conversation. Building literacy. Some facilitators used the OER to help build literacy, a kind of localization not anticipated by the OER designers.
Cultural recontextualization	Spontaneous adjustments occurred in the moment of teaching.



Some content switches happened in a moment of teacher inspiration. Discussion was the means for naturally adding local spice. Even if teachers went through the manual as written, learners' personal responses to discussion questions added content relevance.

Social responsiveness	Developed relationships with students to teach responsively. Facilitators based plans and adjustments on helping students understand and feel accepted.
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## Technology

All but one of the facilitators experienced problems with technology that led to them localizing the OER to work around these problems. For instance, issues with the Zoom platform often proved frustrating. Tobias shared, "Zoom was not working . . . I am trying to connect and connect and connect and connect [to the Internet]. I was like, forget about Zoom, so I thought I would send you a WhatsApp link." While this change allowed Tobias to communicate with his group, since the WhatsApp interface was different from Zoom it also meant he had to adjust how he used the OER content.

Rebecca's experience was similarly riddled with technological problems. She had adjusted the class to be offered online because of "transport issues, money, and even the time for the meeting wasn't really favorable for us to meet. . . . Online was convenient for most of us because . . . as long as you had a digital device like a phone or a laptop, you could still join." This choice led her to adjust in-person activities (e.g., the human knot game) into activities appropriate for the online setting. However, this localization invited other technological problems. "Internet connection at this part of our area is really poor. Some people live in very rural areas. In those places there are no Internet connections. Even if you have, it is very low." Rebecca's descriptions of frequent delays, disconnections, people dropping off, and people not joining because of lack of connection showed how technology called for the development of localized solutions to work around technology problems, and even then, remained a persistent inconvenience for the group.

## Language

### ***Translation Happened Spontaneously in Response to Student Needs***

One of the main ways the facilitators revised OER was through translation; however, translation occurred informally in conversation, as facilitators navigated the practical need for students to speak English as a common language but also to understand the concepts in their local language, Twi. While it seemed like much of the work of the class involved translation, it happened seamlessly, and none of the facilitators mentioned this aspect of localization until they were specifically asked about it. When asked what language they used in class, Kate explained:

We mostly used English. We just used English because . . . there was no reason. We sometimes used Twi. English is our official language. When people really wanted to express themselves, they would

use Twi. If they are explaining something and we are not getting it, they would switch the language and explain it in Twi.

Similarly, this type of switching happened for other facilitators, usually as spontaneously and responsively as Kate described it.

The realities of local language use meant these patterns of spontaneous translation were preferable to providing material in multiple languages. John described:

We are all about English, English, English. Unfortunately, our local language has been termed as vernacular. There has been a discouragement of speaking it, especially in schools. There has been insistence on speaking English. We have lost it. The literacy rate on our local dialect rate is super low. Almost 90% of people of every tribe can only speak it.

This reality meant formal translation into local dialects was impractical since local languages were not always written. John said that he can speak his native language, but he wouldn't be able to read it very well. Therefore, the practice of language localization meant facilitators needed to translate the manual, and, as Kate mentioned, for best understanding facilitators and students spoke Twi. Language switching was a spontaneous form of localization. John described the banter of his class as they got into a flow and mixed English and Twi: "we were very free with each other. We could speak in our boys' voice and tease each other. . . . People were laughing and we could say whatever they want to say. It's involuntary, spontaneous." This pidgin style—so important to the character of the class—demanded spontaneous emergence, further suggesting the importance of in-the-moment over formal translation.

### ***Building Literacy***

Another issue with language arose due to the emerging literacy levels of some class participants. According to Rebecca, just because a person could pronounce the words in the manual did not mean they could understand it. Some amount of translation was done to deal with lower literacy levels.

Almost all the classes you had to explain in the local language because some might say, "we understand," but when you ask them the question, they actually don't bring out anything. All the time, I had to translate it to the local language.

Similarly, John specifically mentioned that it was the role of the teacher to do the translation. "It's the responsibility of the facilitator to know how to break things down for the participants, not you [the designer] necessarily." This statement also reflected how language localization was key to better understanding by breaking things down for the learner. The lessons were taught in English, but the explaining and expression happened in participants' mother tongue. Responding to student literacy levels, the facilitators filled their role by "breaking it down" for students. In fact, there were language teaching moments during the course. Rebecca told us:

it was almost every time. There was an opportunity for them to learn new words, so that was how the language was used in a good way. To learn words and new vocabularies that they could use in their communication.

There was a positive effect in this instance of enhancing English literacy; however, as John mentioned, historically, learning English came at the expense of maintaining fluency in native languages.

## Cultural Recontextualization

### *Spontaneous Adjustments Occurred in the Moment of Teaching*

Several facilitators commented on localization of content occurring without thought or preparation. For instance, John told us that “preparation is important. However, there are still things that are going to happen in the moment. If you pay a lot of attention and catch clues, there will be things that make it better.” John further described a story of one class in which there were refreshments for after the session, and there were more than enough. While the lesson from the OER manual was on the topic of equality and had a picture of a child being left out for being different, John saw an opportunity to create a relevant activity with the refreshments and told the class that the extra refreshments would go to the oldest members of the class.

It was spontaneous. . . . We were talking about equality. With the extra [food], what is going to happen? Even it isn't going to be sufficient. What are we going to use to determine who gets the surplus? Suddenly I thought, “we can make something out of this.” . . . You had those who felt like they were not treated equally vented out their feelings. “Why? No! You can't.” . . . Even though it was a discussion, we were able to witness real-life feelings and concerns and displeasure of inequality.

John's example showed a major adjustment from what was in the manual based on the relevant context that happened in the natural, spontaneous flow of the course. He used the terms natural and real life to describe the reactions of the class, suggesting this natural learning emerged organically in a specific place and context.

Rebecca told about a class on freedom of religion where spontaneous localization grew out of a tricky emotional context. Some of the class members, who came from a variety of religious backgrounds, had been arguing during the class about which religion was true. This led to some class members becoming upset. Rebecca adjusted the original activity in the manual—sing a hymn—to include several common hymns not from the dominant religion.

About religion, we used some of our locally made Christian songs. That was what we sang. That brought some people relief, too. They actually realized that though we are from different sects of religions, but when it comes to these things, we are all involved in it.

In making this decision, Rebecca responded intuitively and inclusively to the students.

In a lesson on the right to be free, Beth pivoted in the lesson and substituted a song in the manual for one that was a better cultural fit for her students. In her situation, the original activity was to use a song about rights, but Beth made an adjustment that she knew her students would appreciate. “I got a song that talks about rights. I got them to listen to it, but for the activity, I used the song they would like to get them to dance. I had to improvise.” In all these descriptions, the facilitators did not have a process for localization or advice on how to localize, nor did they have a written plan or record. Even so, they created memorable

learning experiences local to the class environment and student needs, demonstrating the spontaneity of informal localization.

### ***Discussion was the Means for Naturally Adding Local Spice***

The OER human rights manual the facilitators used was a discussion-based curriculum, which was therefore open in structure and allowed for individual contributions, a central part of the experience of localization. The human rights lessons were designed to invite relevant discussion. Each one started with a discussion trigger such as a picture, activity, or video and led students through a series of questions, allowing participants to share their own experiences related to the specific right they were studying. About this, Kate told us, “I don’t think we changed anything [in the manual]. But we made our examples that we gave become more local . . . we used relatable stories that have been in our everyday lives. We asked relatable questions.” Beth appreciated that discussion would “spice the class up.” In these examples, the content was not changed, but the discussion around the content effectively localized it. As with Tobias’ class about personal heroes, localized via discussion. He had not physically changed the manual, but he said, “even though it’s not written, not documented, you have [localized it.]”

In another example Kate recounted how an image in the manual did not represent a student’s experience, but the group was able to make the content relevant to themselves through discussion.

We were talking about education. . . . There was a picture of a child watching a computer. She said growing up she didn’t have things like that. There weren’t so many computers. When she grew up, she came to appreciate education, and she came to realize that education was not just formal education. Learning things. . . . Learning how to be with people. Learning how to communicate with people.

Though the picture did not relate to the student’s experience growing up without computers, students supplied the cultural relevance, since the lesson did not. Even so, the lesson’s discussion format provided space for sharing individual perspectives.

### **Social Responsiveness**

For in-the-moment localization, facilitators were motivated by their knowledge of their students and the relationships they had with them. Decisions about how to adjust content were based on how to make students feel respected or how to help them understand, and it was important for facilitators to know their students well in order to localize. For instance, Tobias suggested, “you have to know the kind of people you are addressing at that moment.” For Randall, this meant knowing about them so he could tailor the content to his students. He recommended that facilitators should:

Know the people you are going to teach. Know their surroundings, whatever they are surrounded with, why, and relate the content to what they have will make an impact that will be meaningful to them, rather than making reference to things they can only just imagine.

Rebecca also described her experience where ideas occurred to her in the moment for her to help her students.

We get new ideas as we go through the manual. New ideas come. New thoughts come. New ways come to our minds on how we can best help people to understand these things that we are training them with so that it will be part of our lives forever and ever.

In this statement, Rebecca connected moments of creativity with deep learning that stays with the students and becomes “part of our lives forever.”

John experienced another type of social responsiveness important to localization: viewing his students as he viewed himself. That relationship was the impetus for inviting participation and making decisions that changed the course to suit his learners.

The moment I see you, I see you as me. . . . My main goal is to focus on everyone there and to bring out what they know because they all have something. Because I have thoughts and experiences, I feel that everybody does.

Localization here involved “bringing out what they know.” John’s advice to other facilitators on how to do this was to “focus on people and less on content.” The ability of facilitators to see their students as they saw themselves led to greater localization of the lesson, as students were invited to contribute.

## Discussion

The results of this study developed a picture of the many interrelated ways informal localization was significant for facilitators adopting OER. Indeed, our findings were consistent with prior research carried out in other educational settings, where informal practices have been found to be as, or even more, significant than formal processes (e.g., Mælan et al., 2020; Author, in press). As Dunne (1997) summarized, practices are characterized by “unpredictability [and] open-endedness” (p. 359) necessitating flexibility and responsiveness to the details of individual situations for the best chances of achieving desirable results. Consistent with this ideal, our findings also suggest several implications for OER designers about maintaining local responsiveness and flexibility. These center around the challenges of depending on technology to facilitate localization, the importance of OER designers intentionally leaving space for informal localization, as well as allowing for linguistic flexibility in translation and localization.

### Challenges with Depending on Technology

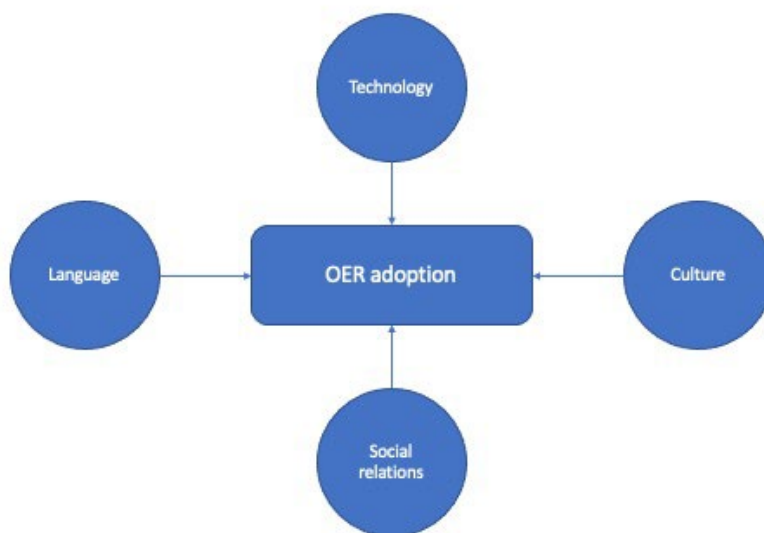
The findings of our study were consistent with prior research describing the challenges technology access can impose on those attempting to use OER (de los Arcos & Weller, 2018; Ezumah, 2020; Omoike, 2021). Some of our participants’ localization practices were even meant to overcome issues with technology. Participants also did not depend on technological tools or open platforms to localize content (as is often the case in the Global North, see DeRosa, 2016). This differing pattern of use suggests that OER producers should think critically about creating OER that depends upon technology, and not assume the benefits technology provides are self-evident or beyond dispute. Given the history of the Global North introducing educational practices into the Global South that had unintended effects (Ezumah, 2020), it may be short-sighted to depend wholly on similarly created, formal techniques of OER localization.

### Intentionally Leave Space for Informal Localization

One of the key findings of this study was that facilitators culturally localized the provided OER materials through informal practices (Amiel, 2013). Some of our participants' informal localization practices were undertaken to appeal to different learners, based mostly on their social relationships and shared cultural context. In fact, social relationships were such an important part of how our participant's localized OER that we added it to the other three components of the localization framework explored at the outset of this study (Figure 3). Localization also tended to take place through spontaneous decisions in the moment of teaching. Together, these observations question the value of tightly scripted content that teachers can use as is. Practically speaking, given the evidence that facilitators will exchange content and rearrange it to fit their context, efforts to fully script content could end up being counter-productive, as noted by Wiley (2021) in his blog post aptly titled, "The Localization Paradox."

**Figure 3**

*Updated Framework of OER Adoption Factors*



One of the ways designers can support the kinds of informal localization reported in this study is through the use of discussion elements in a course. Our participants noted that even if they went straight by the lesson in the original manual, the discussion format allowed them to add personal experiences, or to add their own spice, which they considered localization. The space created by discussion allowed local participants to add their own color and relevance, even if learners did not specifically relate to the content. Both our participants and (at least according to their report) their students found the highlights of a course coming through discussion, including the understanding, tolerance, and empowerment they thought they developed. In fact, less relevant content was rendered relevant as individuals added their personal applications. This is an important point because, the first author—as a designer from the United States—was initially cautioned by other US designers not to use a discussion format because the typical African

education experience followed a lecture model and students would not respond well to requests for discussion. Our study complicated that assumption and supported the practice recommendations of Arinto et al. (2017) to promote teachers' professional development and "participatory pedagogy" (p. 589) such as discussion as means of empowerment through OER.

One study of youth knowledge workers in Nepal suggested that localization must be done by locals (Ivins, 2011). As not every facilitator has the time, resources, or inclination to create OER, designers should make efforts to collaborate with learners somewhere along a spectrum of collaborative engagement. On the more engaged side would be close collaboration with shared decision-making, to mid-level consultation, to distant collaboration in which the designer creates explicit invitations in the content such as directing facilitators to insert a story or activity familiar to learners in order to illustrate a particular principle. This type of invitation could create space for informal localization.

### **Allow for Linguistic Flexibility**

Prior literature has indicated that most OER is created in English (Amiel, 2013), requiring translation for non-English speaking learners (and thus implying that the most common localization practice in countries outside of North America is translation; see de los Arcos & Weller, 2018). However, this study indicated the complexities of language needs. For example, a formal translation into Twi, our participants' most common native dialect, would be inappropriate because while they speak Twi, they read and write in the official language of Ghana, which is English. Informal translation by the teacher, therefore, was more appropriate for learners with whom our participants worked. While we recognized (and have advocated for) the need for OER producers to be sensitive to creating materials in local languages, we simultaneously recognized that ultimately even decisions of language should be made by locals—possibly even in-the-moment—because policies mandating translation into local dialects may still not meet learner needs.

## **Conclusion**

One of the major problems with current OER production is that it comes largely from the Global North and is written in English, rendering it linguistically, culturally, and even technologically inaccessible to learners in Ghana. This study explored the practice of localization by facilitators in Ghana who used an OER course designed in the United States and localized it for students in Ghana. Our project took place in context of everyday lives and larger complex social and economic systems, limited bandwidth and technological problems, linguistic differences related to colonial language imposition, and cultural mismatches. It provided a rich portrayal of how localization practices are influenced by several overlaying factors and how facilitators dealt with these challenges through informal localization. This informal localization happened dynamically in the classroom based on relationships and teacher intuition. Facilitators made informal adjustments based on issues of technology, language, the need for cultural recontextualization, and to be socially responsive. These informal practices have implications for designers of OER and how designers could create content with affordances for localization: (a) given challenges with OER technology, do not depend on technology for localization; (b) intentionally leave space for informal localization; and (c) design for linguistic flexibility, using multilingual platforms and acknowledging the benefits of spontaneous

translation to provide appropriate bridging between languages and dialects that fit the needs of students best.

This study indicated the value of informal practices as a first line of localization. In some cases where technological, language, and cultural contextualization present barriers to localization, informal practices were the sole means for facilitators to tailor content to their learners. This is critical to OER research. If OER is to be a valuable resource to users in the Global South, more is needed to understand the practice of using OER in global contexts.



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