

## Mapping Open Education: an analysis of the Open Educational Resources landscape in Brazil and South Africa

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### Abstract

Initiatives such as the Open Educational Resources (OER) World Map provide a systematic means towards recording activities, documents and individuals related to open education (OE). In this article – which is part of a larger effort to evaluate and extend this World Map – the entries on Brazil and South Africa were critically evaluated in terms of the existing scholarship on open education from these two countries. Clear trends were evident from the World Map and the usefulness of both the methodology and platform to inform gaps and challenges within and across countries in terms of open education, providing inputs that can aid in the design of strategies and international cooperation.

**KEYWORDS:** Open educational resources, Brazil, South Africa, OER World Map.

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### 1. Introduction

This article explores the nature of the open educational resources (OER) landscape in Brazil and the Republic of South Africa in terms of the OER World Map (2021). Even though Brazil and South Africa may be different culturally and geographically, they share similar colonial histories and are considered developing economies and in both OER are used and reported on in unique ways. As an introduction these two contexts are briefly described.

Brazil is the largest country in South America, covering 8 516 000 km<sup>2</sup>. With a population of approximately 211

million, it currently has 47 295 294 students in basic education, a number that has been steadily decreasing (from 48 796 512 in 2015). The overwhelming majority – more than 80% of students – are in the public system (INEP, 2021). An opposite trend can be seen in higher education, however, where 8 604 526 students are enrolled (up from 5 985 873 in 2019). Here, 75% of enrolment occurs in private universities pushed by a substantial increase in offerings in distance education. In 2019, 35% of enrolments was in distance education courses (INEP, 2020).

South Africa is located in the southern part of the African continent, and the country covers 1 219 602 km<sup>2</sup>. In 2019, the country had an estimated population of 58.78 million people, and the country is very diverse, with 11 official languages (Tibane, Mokoena & Honwane, 2019) with South African Sign Language being in the process of being added as a twelfth official language. In terms of education, South Africa had 12 408 755 students in schools in 2019 (Department of Basic Education [DBE], 2020) and 1 283 466 students in post-school education and training in 2018 (Department of Higher Education and Training [DHET], 2020).

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The shift towards openness more generally, and OER more specifically, has been a subject of great interest in promoting access and quality education for all (UNESCO, 2019). Arinto et al. (2017) posit that OER are particularly relevant to the Global South, as they can be used to address the following challenges: “unequal access to education; variable quality of educational resources, teaching and student performance; and increasing cost and concern about the sustainability of education” (p. 6). Both South Africa and Brazil have had great visibility as regards developments in the field of OER, with notable projects such as Siyavula (Lambert, 2019) and MEC-RED (Amiel, Gonsales & Sebriam, 2018) as well as policy developments and practices at institutions such as the Open University of Brazil (Amiel & Soares, 2020) and the University of Cape Town (Hodgkinson-Williams et al., 2013).

There is a general hope that a “growing inventory of openly available educational tools and resources, and with an increasingly engaged and connected community, transformative opportunities for education abound” (Iyoshi & Kumar, 2008, p. 2). However, many have warned that we must not simply see OER as a “social good” (Glennie et al., 2012) and that we must be critical and base our expectations on evidence.

This article presents a methodology used to collect data on countrywide developments in OER while creating a network of student researchers in Brazil and South Africa. We present this data to give insight into the development of the OER movement in both countries. The main research question that drives the research in this article is as follows: What is the nature of the OER landscape in Brazil and the Republic of South Africa, based on the categories of data available in the OER World Map? Secondly, we also ask: What are some contextual and historical developments in the OER landscape that might help understand the similarities and differences in the current state of OER development in each country based on these categories of data?

## 2. The OER movement in South Africa

Discussions around open education (OE) are often contextualized with South Africa’s historical legacy of unequal and differentiated access to education and resources (Mays, 2020). Specifically, after the Cape Town Open Education Declaration (2007), the idea of OE gained attention in the country. OER provide opportunities to translate resources into the country’s 11 official languages, as there is a constitutional obligation to provide primary education in all the official languages (Goodier, 2017). Furthermore, there is also much potential in using OER for the decolonization of the curriculum (Olivier, 2020), which is a great need within the South African context. The decolonization of the curriculum can be negotiated through OER through a

process of localization. OER are being incorporated into policies and governmental publications (Goodier, 2017). National policies support OE regarding open learning principles for higher education (DHET, 2014). In the wider sense of information and communication technologies (ICT), the National Integrated ICT Policy White Paper (Department of Telecommunications and Postal Services [DTPS], 2016) supports a core philosophy of openness in terms of “open access, open Internet and open Government” (p. 12). Although the South African government, through its national Department of Basic Education and provincial education departments, allocates funds for learning and teaching support materials, Goodier (2017) found that no data are publicly available on how much is spent on OER.

However, there is a strong movement towards promoting and using OER through different initiatives from higher education institutions (HEIs) and even organizations such as the South African Institute for Distance Education and OER Africa. Increasingly, institutions are also adopting OER policies and open practices. However, the use of OER in education at all levels in South Africa is not yet common, and often, commercial textbooks not using open licenses are still the norm.

## 3. The OER movement in Brazil

Discussions around the topic of OER in Brazil began as early as 2008 with the OER Brazil initiative. Conversations revolved around important and essential efforts to purchase equipment and build infrastructure, with the apparent lack of developments in the production of content (Rossini, 2010). Indeed, despite repeated national policy efforts focused on educational technology and more recent initiatives to foment educational resource production, the results have lacked a cohesive strategy. Multiple repositories were created; diverse sets of projects in different HEI were fomented, but there is a lack of alignment in resource creation, availability, teacher professional development and internet availability (Almeida & Valente, 2016).

Initial efforts in OER development focus on large-scale policy change, with some encouraging results. Early on (2011), the city of São Paulo approved a decree that mandates that all resources produced or subsidized by the Secretariat of Education must be open. A law was approved in the Federal District (2015), mandating that publicly funded educational resources must be open. Finally, a federal law proposal was put in motion (2011) to mandate that educational resources funded with public monies must be open. Despite these efforts, there was little change in practice.

In 2016, the movement took a new direction, away from large-scale, top-down policy changes to a more bottom-up or mixed approach (Miao et al., 2019). Efforts were made to work with specific organizations, particularly in the public sector, to push for change in collective efforts.

Examples of the success of this process include the approval of ordinances in the Ministry of Education in both the Secretariat of Basic Education (SEB) and Higher Education (CAPES) with a focus on OER, and the adoption of open licenses in the Open University of Brazil (Amiel & Soares, 2020). The OER movement in Brazil remains an effort of a small but growing group of academics, researchers, teachers and activists (Amiel, Gonsales & Sebriam, 2018).

#### 4. Methodology

This research followed a case study approach. For the purposes of this article, a case study is defined as “an in-depth description and analysis of a bounded system” (Merriam & Tisdell, 2015, p. 37). Then, a comparison between the two cases was conducted. The aim of this comparison was to better understand the development of OER in both countries, through the lense of the other. This is particularly useful as Brazil and South Africa are often seen as having similar economic challenges and are part of common group such as BRICS.

The project followed three phases throughout its development, using the OER World Map (originally available on [oerworldmap.org](http://oerworldmap.org)) platform. However, the OER World Map was unfortunately discontinued in April 2022. The map was a georeferenced database of user-generated and collected data related to OE and OER worldwide. It allowed one to visualize services, organizations, policies, people, projects, and other areas related to OE/OER. The map allowed editing and insertion of data, which required a simple user registration on the site.

The work pertaining to this research began with extracting existing data from the map. The data extracted were from three categories: organizations, services, and policies. Following the successful scheme devised during a pilot initiative aimed at mapping the data just for Brazil, online spreadsheets were prepared with the data used by the project teams to monitor and revise their respective countries.

The team comprised of a professor and an undergraduate student in each country, and a project coordinator. To broaden the scope and depth of the mapping, the project coordinator conducted webinars with the students. The project coordinator introduced some of the more complex aspects of OER, and their technical and conceptual aspects were discussed. Beyond just a data entry and extracting effort, the project aimed to promote

the professional development of the student participants and create a budding network of young researchers focused on OE/OER.

Phase one involved reviewing the projects already published on the OER World Map. Entries were supplemented with new metadata, where necessary, and in some cases (if a given project had inconsistent data or was duplicated), they were flagged for deletion. The project coordinators supervised each step of this first phase.

In phase two, new data were added to the map. The objective was twofold: on the one hand, the OER World Map would be updated and new projects would be discovered; on the other hand, by contacting experts in their countries, communities would be invited to get involved in the OER World Map project, establishing connections and strengthening OE networks both nationally and internationally.

Finally, the researchers in charge of the mapping were asked to review their experience and write a short report presenting their findings and a self-assessment. The data systematized through their reports can be found in the results presented below.

From this experience, new data on OER projects have been collected and added to the OER World Map, resulting in a better understanding of the mechanics of data collection and validation (including how to retrieve websites, analyze broken documentation [broken web links, databases with technical problems, inconsistent institutional information]).

The next sections begin with a presentation of the quantitative results based on the data that was present and included in the OER World Map. The analysis section contextualizes and attempts to interpret these results in light of the specificity of each country while also drawing comparisons. We finalize with implications of both the methods and the results of this research.

#### 5. Results

The mapping initiative in Brazil (BR) resulted in the insertion of 31 organizations, 29 services and 5 policies, which were the focus of this study (Table 1). As a result, in Brazil, the OER World Map had 8 actions, 3 articles, 5 events, 78 organizations, 104 people, 8 policies, 5 products, 58 services, and 6 web pages. In turn, the mapping task in South Africa (SA)

	Organizations			Services			Policies		
	Before	Added	Total	Before	Added	Total	Before	Added	Total
<b>SA</b>	18	1	<b>19</b>	5	1	<b>6</b>	5	2	<b>7</b>
<b>BR</b>	47	31	<b>78</b>	29	29	<b>58</b>	3	5	<b>8</b>

**Table 1** - Additions to the OER World Map by country.

led to the insertion of 1 organization, 1 service and 2 policies. An analysis of the OER World Map for the South African context reveals the presence of 19 organizations, 6 services, 7 policies, 15 persons, 14 projects, 3 events, 4 stories, and 22 publications.

Organizations that have activities or are responsible for specific actions around OE/OER can be included on the map. They are usually associated with specific services but can also be mapped for other reasons, such as an entity promoting OE/OER or association with policy initiatives. See Table 2 in this regard.

	Organizations	
	SA	BR
Community of practice	1	1
Government agency	2	28
Higher education institute	4	37
Other	1	2
Private agency	1	1
Research institute	1	1
Social enterprise/NGO	9	8
<b>Total</b>	<b>19</b>	<b>78</b>

Table 2 - Organizations by type and country.

In Brazil, there are many higher education (36) and government agencies (27) but also numerous social enterprises and NGOs (8). Following a somewhat similar pattern, in the context of South Africa, there are many higher education (4) and social enterprises, NGOs (9) and government agencies (2).

Various services can be offered, such as repositories (which store content) and referatories (which point to other repositories or websites). The map also allowed for categorization into content source, usually a web page, with no structure for metadata and standards used in repositories. Learning platforms also offer resources, but they are structured as training and not for the retrieval of specific content. Authoring tools categorize software and web services that allow for creating resources. In some cases, repositories allow people to create or remix existing resources on the platform itself. Finally, the community platform is a feature of some repositories that intentionally allows interaction between users. For example, they can follow a user and create communities of interest (Table 3).

For South Africa, the data generated for services showcase learning platforms (4) and repositories (2). For Brazil, there is a wider variety of offerings, predominantly a large number of repositories (41) and referatories (22) and a smaller number of learning platforms (8) and content sources (7). It is important to note that entries might be categorized in multiple categories (e.g., a repository might also be listed as a referatory).

Policies can be categorized into many different types, such as legislation, policy documents, and strategy documents (Table 4). The data gathered for policies revealed four strategy documents and three policy documents within the South African context. In Brazil, legislation is more prominent (5), followed by policy documents (3).

	Services	
	SA	BR
Authoring Tool	0	1
Community Platform	0	3
Content Source	0	7
Learning Management System	0	1
Learning Platform	4	8
Referatory	0	22
Repository	2	41
<b>Total</b>	<b>6</b>	<b>83</b>

Table 3 - Services by type and country.

	Policies	
	SA	BR
Legislation	0	5
Policy document	3	3
Strategy document	4	0
<b>Total</b>	<b>7</b>	<b>8</b>

Table 4 - Policies by type.

The map allowed for identifying the primary and secondary education sectors to which particular services are directed. The results of the analysis, when we were able to categorize them, can be seen in Table 5. Examples are mentioned in the analysis section.

## 6. Analysis

The data indicate that, in purely quantitative terms, the presence of OER-related initiatives in Brazil is substantially larger than in South Africa. Though both countries have a significant track record of activity in the field, there are significant differences in the size of the country, population and the overall number of institutions and organizations focused on education. In terms of the disparity of HEI, the sheer difference in numbers can explain. Data from 2019 (INEP, 2020) show that Brazil had a total of 2 309 HEI, of which 302 (13%) were public. Of these, 198 were universities, and 108 were public (55%). Furthermore, South Africa had

Primary educational sector	Organizations		Services		Policies	
	SA	BR	SA	BR	SA	BR
Higher education	5	43	2	19	4	4
School	5	24	3	32	0	3
Multisector	0	8	0	5	0	4
Cross-sector	2	0	0	0	3	0
Continued education	0	1	0	3	0	0
Professional education	0	0	0	1	0	0
<b>Total</b>						

**Table 5** - Primary sectors for organizations, services, and policies.

487 HEI in 2022, which included 26 public universities, 123 private universities, 50 Technical and Vocational Education and Training (TVET) colleges, 9 community education and training colleges, and 279 private colleges (DHET, 2019). In other cases, such as many government agencies present on the map, it can likely be attributed to the strong emphasis of the Brazilian OER movement in the public sphere (Amiel, Gonsales & Sebriam, 2018). Different federal government sectors, such as CAPES (Ministry of Education), have been involved in discussions around OER for more than a decade. As CAPES funds the Open University of Brazil, a number of HEI that have begun some activity around OER were present on the map. A working group for OER was formed at the federal level (no longer active), which brought together many government sectors. Additionally, and partially related to the ministry's emphasis on OER, almost all states have an OER-related service, which lead to the inclusion of State Secretariats of Education on the map. Data from Latin America indicate that services such as repositories and referatories are most often public/state initiatives (Amiel & Soares, 2016).

In South Africa, the two main governmental departments related to education were listed on the map, specifically, the DBE, which focuses on school-based education, and the DHET, which relates to a different part of post-school education. A significant resource is the government-supported platform Thutong, which provides some openly licensed content. In addition, some universities had a footprint on the map. However, there was a distinct lack of representation by other government agencies on the map, reflecting a broader lack of acceptance of OER.

Repositories and referatories compose most services in Brazil, and repositories present a significant part of services for South Africa. Both are important for OER because they are services where educational resources can be found more easily. Unlike search engines (such as DuckDuckGo and Google) that return material based on recommendation algorithms, educational repositories usually curate resources. They allow for greater organization of materials through metadata (many times aligned to curricula) and community participation (uploading, curation, rating, selection, commenting).

The three major repositories/referatories in Brazil, fomented at the federal level, are OER: eduCAPES (higher education), PROEDU (technical education), and MEC-RED (basic education). These were services created with OER in mind and have a significant reach. Additionally, through the Escola Digital initiative, all but seven states in Brazil (out of a total of 27, including the federal district) have an OER repository/referatory. The repositories and referatories from South Africa cover collections from other organizations. The presence of the repository from the University of Cape Town emphasizes the importance of higher education as the driver for OER initiatives in the country. However, the collection from OER Africa involves resources relevant to South Africa and the wider continent.

In terms of policy, Brazil has had a leading role worldwide. Many legislative documents have been approved (Federal District, City of São Paulo). Other decrees have been approved at sub-government levels (Ministry of Education at the basic education level). Some have been proposed and are moving forward (a Federal Law proposal, for example). Policy documents exist at the federal level (CAPES) and in institutions (e.g., Fiocruz, Federal University of Paraná; for a thorough review, see Duran, Amiel & Costa, 2018). There is no single national policy on OER or OE in South Africa. Many institution-specific policies were listed on the map, however. But there are significant gaps – such as the University of South Africa's ODL Policy (cf. Mays, 2020) – which were not listed on the map. These other policies that are listed are specifically related to HEI. The Policy for the Provision of Distance Education in South African Universities in the context of an integrated post-school system was also listed on the map and at least promotes the use of OER at the university level and significantly, OER Africa's OER Policy Review and Development Toolkit is also listed. This toolkit provides a means for other institutions to develop their own policies.

The adoption of OER is, in many respects, an easier prospect for higher education, which has a higher level of institutional autonomy compared to basic education. Still, there seems to be a reasonable balance of focus in organizations, services and policies between higher and basic education, with much less emphasis on other

sectors (e.g., technical education). In Brazil, though higher education has a pioneering role (through CAPES and the Open University of Brazil), there is still relatively little activity in OER at the institutional level (Soares & Amiel, 2017).

On the other hand, we have seen formal policy activity at the state and municipal levels (including the states of São Paulo, Paraná and the Federal District, and the city of São Paulo). As mentioned, a large number of states have OER repositories. At the technical level, the federal government has fomented the PROEDU platform. This OER repository unites the output of the Federal Professional and Technological Educational Network (Rede Federal de Educação Profissional, Científica e Tecnológica) which comprises over 40 federal degree-granting institutions (high school, undergraduate and graduate degrees). In South Africa, the prominence of HEI is clear. However, overall, in terms of national policies or governmental commitment to OER and openness, the map reflected reality.

Despite the strong narrative regarding the importance of fomenting remix and authorship in OER, there still seems to be a paucity of services related to authorship (see Ochoa, 2010). While this may be due to the nature of how people create and publish their content, there seems to be room for more services in both regions focused specifically on promoting the creation of content.

Despite some underrepresentation of some of the activities and bodies relevant to OER in the South African context, the map reflected the realities of the country's context. The prominence of some government-driven resources at school-level education and the emerging prominence of OER for universities in terms of the policy is clear. However, a large proportion of entries on the map specifically related to organizations focusing on OER. The map also showed evidence of what Mays (2020, p. 208) describes as follows: "OER is not yet a mainstream practice, and there remains some skepticism or even resistance to such engagement" in South Africa.

There is also a trend of repositories and resources listed as South African but have a continent-wide focus, such as OER Africa and the African Storybook. Apart from the latter resource, most resources from the listed entries are mainly in English, reflecting the de facto hegemonic position of English in South Africa. Although the country has 10 other recognized official languages, this is the reality.

Work on updating the map had been ongoing for Brazil since 2019, and the map portrayed an up-to-date picture of the major actors, organizations, services and policies focused on OER in the country. Government and public higher education seem to be the prominent actors and catalysts for OER in the country, as is the case in the region (Amiel & Soares, 2016). Notably, at the basic education level, a large network of state-level initiatives, which form part of a network (with support from private

foundations), makes up for most initiatives. While there is substantial activity in terms of government policy at all levels, there is still limited activity in terms of institutional policy, particularly for HEI – a major gap. Moreover, as with South Africa, minority languages are not well represented, particularly indigenous languages. This shows us not only a limitation in terms of reach, in the sense that many in the country might not be able to access these resources, but also outreach, in the sense of contributing to the larger global exchange of educational resources, particularly to Portuguese-speaking regions of the world. Finally, it might also underscore the importance of identifying and promoting OER so that these communities can produce and share content widely and openly in their own language.

## 7. Conclusions

This article explored the nature of OER in Brazil and South Africa in terms of OER World Map entries. To this end, this article started by contextualizing Brazil and South Africa broadly, and then also in terms of the OER movements in the respective contexts. From this discussion, the differences between the countries and OER were evident. After describing the methodology – which also provides a good foundation for future similar endeavors – some statistics and general trends were described.

The project demonstrated the viability of engaging students in the world of OER by taking "ownership" of a particular country on the map. By undergoing a process of data collection, validation and input in a small network, students were able to learn more about OER generally and become knowledgeable on the state of OER in their particular country and other parts of the world. As such, from this experience, the researchers were able to collect new data on OER projects and add them to the OER World Map. They also gained a better understanding of the mechanics of data gathering and validation (for example, how to retrieve websites, analyze broken documentation [broken web links, database with technical problems, inconsistent institutional information]).

Platforms such as the OER World Map can provide a highly appropriate means to explore the nature of OER activities in individual countries and for comparison purposes. To a large extent, the listings on the map reflect the realities on the ground. However, the importance of adding and updating entries in the database is evident.

By identifying strengths and gaps in each country, one could identify opportunities for engagement and exchange. Both countries, which have many spoken and written languages, have challenges in engaging these minority languages within the OER movement. Brazil can provide guidance and models for legislative policy implemented in different states and government

agencies. On the other hand, specific institutions in South Africa could be role models for implementing strategic documents or internal policies on OER. Finally, specific services, particularly those that are small scale, can be connected with opportunities to exchange resources (through federation, or metadata exchange, for example). OER also enable more intense forms of collaboration, including subtitling, translation, and remix.

In countries with limited funding and support for OER activity, the field's growth depends greatly on engaging younger actors and researchers. The project now includes researchers from many different countries in Latin America (Colombia, Uruguay, and Argentina) and South Africa, who are engaged in researching and promoting OER through webinars, articles, and online discussions (Soares et al., 2021). One can also consider that substantial number (either in terms of percentages or in absolute terms) of new entries added to both countries. Considering the ever-changing landscape of OE/OER services – either by the addition of new initiatives or the discontinuation of others – mapping the OE/OER landscape remains a substantial effort. While automatic data extraction and treatment may likely enhance and provide new tools for mapping these initiatives, we believe that engaging young researchers in such activities can provide valuable skills and networking opportunities beyond the mere technical aspects of data input.

Finally, the lack of a coordinated and national project or strategy in each country focused specifically on OE/OER indicates that much of what happens in this space is the product of organizations and individuals acting independently or, at times, in orchestrated consortia (such as the Open University of Brazil system). The lack of a systemic approach that considers the many aspects needed for policy or strategy implementation might lead to projects, even large-scale and government initiatives, which are ephemeral and not sustainable (Amiel & Soares, 2017; Miao et al., 2019). As such, large-scale data can provide additional elements to identify actors and initiatives within a country to join and promote OE/OER in each country through a stronger network and coordinated effort.

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