

Chapter 1

Research on Open Educational Resources for Development in the Global South: Project landscape

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Acronyms and abbreviations

DFID	Department for International Development
HEI	higher education institution
IDRC	International Development Research Centre
MOOCs	Massive Open Online Courses
OEP	Open Educational Practices
OER	Open Educational Resources
OSF	Open Society Foundations
PANdora	PAN Asia Networking Distance and Open Resources Access
ROER4D	Research on Open Educational Resources for Development
TESSA	Teacher Education in Sub Saharan Africa
UNESCO	United Nations Educational, Scientific and Cultural Organization
UCT	University of Cape Town
WOU	Wawasan Open University

Introduction

The Research on Open Educational Resources for Development (ROER4D) project was proposed to investigate in what ways and under what circumstances the adoption of Open Educational Resources (OER) could address the increasing demand for accessible, relevant, high-quality and affordable education in the Global South. The project was originally intended to focus on post-secondary education, but the scope was expanded to include basic education teachers and government funding when it launched in 2013. In 2014, the research agenda was further expanded to include the potential impact of OER adoption and associated Open Educational Practices (OEP).

ROER4D was funded by Canada's International Development Research Centre (IDRC), the UK's Department for International Development (DFID) and the Open Society Foundations (OSF), and built upon prior research undertaken by a previous IDRC-funded initiative, the PAN Asia Networking Distance and Open Resources Access (PANdora) project.

This chapter presents the overall context in which the ROER4D project was located and investigated, drawing attention to the key challenges confronting education in the Global South and citing related studies on how OER can help to address these issues. It provides an abbreviated history of the project and a snapshot of the geographic location of the studies it comprises, the constituent research agendas, the methodologies adopted and the research-participant profile. It also provides an overview of the other 15 chapters in this volume and explains the peer review process.

Open Educational Resources: Definitions and research

OER are “teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and/

or re-purposing by others”.¹ The term “Open Educational Resources” was coined during a United Nations Educational, Scientific and Cultural Organization (UNESCO) meeting in 2002 to optimise information sharing about what was then an emerging phenomenon (D’Antoni, 2008). Related terms used prior to 2002 include “open content”,² “learning objects” (Downes, 2007; Hodgins, 2004), “reusable learning objects” (Boyle, 2003), “reusable learning content” (Duval et al., 2001) and “open courseware” (Malloy, Jensen, Regan & Reddick, 2002). After 2002, the terms “open eLearning content” (Geser, 2007), “digital learning resources” (Margaryan & Littlejohn, 2008) and “reusable digital learning resources” (Leacock & Nesbit, 2007) were also used to refer to OER. In the popular media, OER are also referred to as “open-source materials” or “open-source textbooks”.³ Equivalent terms for OER in other languages which need to be taken into account when researching this phenomenon across countries in the Global South include “*recursos educativos abiertos*” (REA) (Betancourt, Celaya & Ramírez, 2014) or “*recursos educativos digitales abiertos*” (REDA) (Sáenz, Hernandez & Hernández, Chapter 5⁴) in Spanish; “*recursos educacionais abertos*” (REA) in Portuguese (Amiel, Orey & West, 2011); “*sumber pendidikan terbuka*” (SPT) in Indonesian (Abeywardena, 2015); and “*Боловсролын нээлттэй нөөц* (*Bolovsroliin neelttei nuuts*)” in Mongolian (Zagdragchaa & Trotter, Chapter 11).

The most often-cited feature of OER is Wiley’s “5Rs”⁵ framework which defines the five rights afforded in the exchange of open content, namely: “the right to make, own, and control copies of the content (Retain); the right to use the content in a wide range of ways (Reuse); the right to adapt, adjust, modify, or alter the content itself (Revise); the right to combine the original or revised content with other open content to create something new (Remix); and the right to share copies of the original content, your revisions, or your remixes with others (Redistribute)”.⁶ Alternative descriptions of OER have been put forward by White and Manton (2011), more detailed reuse steps by Okada, Mikroyannidis, Meister and Little (2012), and a more practice-inclusive Open Education cycle by Hodgkinson-Williams (2014). All explanations of OER include a clause stipulating open licensing – that is, use of a licence that explicitly describes the ways in which a particular resource may be legally reused, shared, modified and curated. The most commonly used form of open licensing is Creative Commons,⁷ although other forms of open licences (such as the GNU General Public Licence) offer similar functionality.

Since the early 2000s, there has been increasing interest in OER as a means of addressing key challenges in education and research in this area has grown significantly. Most OER research has, however, taken place in countries in the Global North. Within this context, the key educational issues raised by researchers centre around the rising costs of textbooks (Allen 2013; Hilton III, Robinson, Wiley & Ackerman, 2014; Levi, Hilton III, Robinson, Wiley & Ackerman, 2014; Wiley, Green & Soares, 2012) and, in some cases, the quality of student learning (Lovett, Meyer & Thille, 2008) or student outcomes (Feldstein et al., 2013).

1 Adapted from <http://www.hewlett.org/programs/education-program/open-educational-resources>.

2 <https://web.archive.org/web/19990128224600/http://www.opencontent.org/home.shtml>

3 <http://abcnews.go.com/US/wireStory/open-source-textbooks-gain-push-college-affordability-36864005>

4 Chapter cross-references in the in-text citations of Chapters 1, 2 and 16 refer to chapter numbers of the relevant chapters in this volume.

5 <https://opencontent.org/blog/archives/3221>

6 <https://opencontent.org/blog/archives/3221>

7 <https://creativecommons.org/>

In the Global South, unequal access to education, and more specifically to higher education, continues to be a major challenge (UNESCO, 2014). In better-resourced areas, universities often function in line with international standards, while in poorer regions educational systems tend to be dysfunctional on multiple levels. There are notable disparities in the level of access to the physical infrastructure and inputs needed for education (such as computer labs, classroom space and textbooks) as well as access to an enabling environment for educational innovation (such as policy and technical support). Digital interventions, including OER, risk reinforcing these inequalities. Hence the need for research that will provide a better understanding of the dynamics of OER use and its impact in the Global South.

Educational challenges facing the Global South

Education in the Global South faces several key interrelated challenges for which OER are seen to be part of the solution and against which use of OER might be evaluated. These challenges include: unequal access to education; variable quality of educational resources, teaching and student performance; and increasing cost and concern about the sustainability of education.

Unequal access to education

In contrast to the Global North, where student numbers are predicted to stagnate and even decrease as a result of demographic change (Vincent-Lancrin, 2008), student enrolments in the Global South have continued to grow, fuelled by population growth (World Bank, 2013). Many countries are reaching universal primary and secondary enrolment (Bold & Svensson, 2016; Kiamba, 2016), resulting in a massively increased demand for higher education (ADB, 2011; Teferra, 2013). In Sub-Saharan Africa, tertiary education enrolments increased by 8.7% every year from 1991 to 2005, which is double the global average (World Bank, 2009). In several countries in Asia, gross enrolment ratios in undergraduate programmes have increased more than tenfold over the last four decades, and the Asian region as a whole now accounts for almost half of higher education enrolment worldwide (UNESCO Institute for Statistics, 2014). Gross enrolment in tertiary education in Brazil has been rising steadily, but primarily amongst female students. In 2015, 59% of the enrolments were female.⁸ A similar pattern of an increasing female student (94%) gross enrolment ratio is evident in Chile (compared to 83% male students). Likewise, in Colombia, gross enrolment ratios of female students (60%) surpass those of male students (52%).⁹

While participation rates have increased dramatically, funding for higher education has stagnated. University budgets in Asia have not kept up with the growth in enrolments (UNESCO Institute for Statistics, 2014) and in many countries in Africa funding for higher education has been falling in real terms (Newman & Duwiejua, 2016). This has adverse impacts on access to quality resources for education. In Sub-Saharan Africa, textbook

⁸ <http://uis.unesco.org/en/country/br>

⁹ <http://uis.unesco.org/en/country/co>

scarcity has been noted as a problem since the 1980s (Fredriksen, Brar & Trucano, 2015). Even when a country's economy is sufficiently developed to support a successful local publishing industry, such as in South Africa, not all students have textbooks (DBE, 2011) or textbooks are not always delivered on time. In many developing countries, there is a general lack of pedagogical materials – particularly instructional materials and teachers' guides (Kanwar, Kodhandaraman & Umar, 2010; Nazari et al., 2016). This is often coupled with and compounded by shortages in classroom space and computer labs, unreliable internet connectivity and irregular power provision (DBE, 2011; Mtebe & Raisamo, 2014).

The lack of educational resources is often exacerbated along spatial, gender and class lines. Rural communities generally have poorer physical infrastructure and internet connectivity (Hernandez & Benavides, 2012; Narváez & Calderón, 2016) and fewer schools and teachers.¹⁰ Rural students also often face higher costs in accessing higher education opportunities due to their need to travel or relocate to urban areas where educational institutions are concentrated (Bray, Davaa, Spaulding & Weidman, 1994). By contrast, urban residents have better access to educational institutions and thus tend to have higher levels of educational attainment across all levels (primary, secondary and tertiary), which leads to improved socioeconomic outcomes over time (Xhang, Li & Xue, 2015). Teachers in urban areas also have more opportunities for teacher professional development (Robinson, 2008) and are thus better placed to develop new pedagogical knowledge and skills. They are also more likely to have access to personal digital devices and computer labs in which to practise technologically enabled educational innovation.

Gender remains a factor in access to education in the Global South. Despite significant gains in gender parity in primary and secondary education across the globe (UNESCO, 2016), female access to higher education remains constrained by traditional gender norms in Africa and Asia in particular. In Asia, while significant improvements in female participation in higher education over the last decade have led to females outnumbering and academically outperforming males in about a third of countries, there are proportionally fewer women in higher levels of education (UNESCO Institute for Statistics, 2014). Also, females are often still relatively disempowered within the education system due to a number of factors, such as sociocultural pressures placing women into more “feminine” but less prestigious and less economically rewarding fields of study (UNESCO, 2007). While primary and secondary teachers are more likely to be female (UNESCO, 2015), males hold the majority of academic posts in higher education, particularly in upper management.¹¹ In some contexts, the increased burden of childcare and housework may inhibit female teachers from accessing professional development opportunities, particularly if these opportunities incur time and travel costs.

Finally, in the Global South there is a wide disparity in terms of the educational opportunities afforded to the rich and the poor. In many countries in Asia, the disparity expands at each stage of schooling from primary to higher education (UNESCO Institute for Statistics, 2014). For example, in Vietnam 52% of young adults from the richest households have attended higher education institutions (HEIs), compared to only 4% of young adults from the poorest

10 <https://www.brookings.edu/blog/techtank/2016/08/23/classroom-technologies-narrow-education-gap-in-developing-countries/>

11 <https://www.daad.de/veranstaltungen/en/52839-female-leadership-and-higher-education-management-in-developing-countries/>

households. More generally, in middle- and low-income South and Southeast Asian countries, less than 7% of young adults from the poorest 20% of households have ever enrolled in higher education (UNESCO Institute for Statistics, 2014). In general, educational opportunities tend to favour young people from wealthier households – not only in terms of access to schooling, but also in terms of the types of schools that they attend and the quality of education they receive.

Variable quality of education

Aside from questions regarding adequacy of provision for rapidly increasing student numbers, education systems in the Global South face heightened concern about the quality of instruction, as increased access to education does not always result in improved learner performance. The results of international testing show that students in developing countries generally lag behind their peers in more developed countries, especially in science, mathematics and reading. Common problems across the Global South include poor skills development; persistent differences in urban–rural student attendance and performance; considerable inter- and intraregional variation in performance and outcomes (OREALC, 2008); low retention rates; and generally poor performance in key competencies (Dundar, Béteille, Riboud & Deolalikar, 2014; UNESCO–IICBA, 2016). For example, in Sub-Saharan Africa, deficiencies in primary education manifest in low levels of basic skills for large numbers of pupils after several years of schooling (Bold & Svensson, 2016). In India and Afghanistan, studies have found that students lack basic reading and comprehension skills (ACER, 2013; Magid, 2013).

One aspect of quality of instruction relates to instructional materials, which in the Global South are deficient not only in quantity, but also in quality. Teachers in developing countries often only have access to outdated, proprietary textbooks (Moon & Villet, 2016), and where textbooks have been updated they may be of low quality (Tani, 2014). Moreover, there is the problem of relevance and appropriateness of textbooks and instructional materials imported from the North, which are widely used in many developing countries. As Richter and McPherson (2012) have noted, uncertainty regarding the contextual appropriateness in developing countries of resources produced in the Global North is to be expected, particularly given that there are issues with adopting these resources even in their countries of origin where institutions have similar pedagogic strategies, curricular frameworks and cultural and linguistic norms.

As many OER are adapted from existing teaching and learning materials and contain specific sociocultural examples, users in developing contexts can experience dissatisfaction with topics, assumptions or illustrative examples designed for more developed or more resourced contexts. Language is also a key issue. Because the majority of currently available OER are in English (Krelja Kurelovic, 2016), speakers of less-used languages run the risk of being “linguistically and culturally marginalised” (Bradley & Vigmo, 2014, p.4). In addition to linguistic diversity, the presence of strong oral traditions, as is the case in Colombia (Sáenz et al., Chapter 5), can also hinder teachers’ engagement with OER adaptation, as those teachers favour knowledge-sharing through personal interaction over formal and academic writing (Castro, Catebiel & Hernandez, 2005; Hernández, 2015).

The quality of teacher pedagogy is also a major concern in countries in the Global South. In resource-constrained areas, teachers may lack adequate qualifications and support – a

situation compounded by poor physical infrastructure and overcrowding. In Asian HEIs, there are shortages of qualified instructors because staff recruitment has not kept pace with rapidly increasing enrolments (ADB, 2011). Teacher professional development is also in short supply in many parts of the Global South, such as India (PROBE, 1998) and Latin America (UNESCO, 2012b; 2012c). As noted by Burns and Lawrie (2015, p.7): “In many parts of the globe – particularly in the world’s poorest and most fragile contexts where the need for quality teaching is greatest – the frequency of professional development is episodic, its quality variable, its duration limited and support or follow-up for teachers almost non-existent.”

The need to meet increasing student demand places further pressure on educators and institutions to address the quality of education. Large numbers of enrolments in public institutions and the proliferation of private HEIs have drawn attention to the need for quality assurance in education in India (Varghese, 2015), Mongolia (ADB, 2011) and Chile (Fundación La Fuente/Adimark GFK, 2010), among others. There are considerable disparities in quality within single countries, resulting in low retention and throughput rates (MINEDC, 2012), which in turn gives rise to social problems for students and economic problems for institutions. Expansion occurring in conjunction with curricular reform and pedagogical change can result in a disordered educational system where practice is not supported by policy or is inhibited by an environment organised around a more traditional educational model.

Increasing costs and concerns about the sustainability of education

The expansion of the higher education system and increasing privatisation have resulted in increased higher education-related costs in many countries. Often these costs are borne by students, whether due to institutions beginning to charge fees where tuition had previously been free (such as in Mongolia), decreased public spending on higher education as a percentage of GDP (as in South Africa), or an increase in privatisation and for-profit tuition (as in Brazil and Chile). Even where tuition is free, students still need to cover the cost of textbooks and, where online resources are used to replace or supplement textbooks, fees for use of facilities to access these resources, such as devices and connectivity.

In many developing countries, college textbooks are sourced from the US and other Global North countries, which makes them expensive. In Brazil and other parts of South America, the average annual cost of textbooks to students is over 50% of the annual minimum wage (Frango, Ochoa, Pérez Casas & Rodés, 2013). In the Philippines, where the price of imported textbooks is prohibitive, there is widespread photocopying of textbooks by college students.¹² In public primary and secondary schools where textbooks are usually provided free of charge, the increasingly large numbers of students mean that the cost to government of providing textbooks sourced from proprietary publishers is substantial. In addition, there are costs incurred by problems associated with procurement and delivery, as has been reported in Afghanistan (Oates, Goger, Hashimi & Farahmand, Chapter 15), the Philippines¹³ (Lontoc, 2007) and South Africa (SAHRC, 2014). In the Philippines, “[s]ustainability is also an issue as books may be lost, at times on a large scale, due to natural calamities” (Arinto & Cantada, 2013, p.144) and due to the destruction of schools in areas where there is armed conflict.

¹² <http://charles-tan.blogspot.co.za/2011/01/essay-ebook-piracy-and-copyright-in.html>

¹³ <http://www.gmanetwork.com/news/news/specialreports/98684/deped-adopts-textbook-walk/story/>

OER as a response to educational challenges in the Global South

The adoption of OER as a response to educational challenges in the Global South has garnered support from intergovernmental agencies such as UNESCO and the Commonwealth of Learning, and attracted substantial funding from philanthropic organisations such as the Hewlett Foundation. Bliss and Smith (2017) estimate that the Hewlett Foundation has donated over USD 170 million to the Open Education movement over the past 15 years. UNESCO hosted the 1st World OER Congress in 2012, which issued the Paris OER Declaration (UNESCO, 2012a), and the 2nd World OER Congress in 2017, which produced the Ljubljana OER Action Plan (UNESCO, 2017). These calls to action build upon earlier initiatives such as the 2007 Cape Town Open Education Declaration.¹⁴ This community- and funder-driven activity has recently been matched by initiatives in the private sector, as traditional publishers such as Cengage have announced that they are creating a new product line based on OER.¹⁵ There has, therefore, been concrete, global support for OER as a potential response to pressing educational challenges. The three main value propositions that are raised in favour of OER adoption are that they can widen access to education, improve the quality of education and reduce the cost of education (Daniel, Kanwar & Uvalić-Trumbić, 2009).

Researchers have, however, cautioned that access to OER without the support structures and cultural practices that promote its use, is insufficient. Ehlers (2011) points out how the initial focus of the OER community on creating content and improving access to it through infrastructure, repositories and software tools has not resulted in the predicted increase in use, due largely to the lack of attention to practices supporting OER uptake, use and reuse. Similarly, Knox (2013, p.22) questions whether free access to information is sufficient to “realise the goals of universal education and economic prosperity often promised by the open education movement”.

With regard to the potential of OER to improve the quality of education, at least three broad subsidiary categories can be distinguished, namely: how OER can improve the quality of learning materials; how OER can improve the quality of teaching practice; and how OER can influence student outcomes. In their seminal OER report, Atkins, Brown and Hammond (2007) posited that OER can foster high-quality content development. Kanwar et al. (2010) also highlight the potential of OER to improve the quality of education, particularly in developing countries where there is a dearth of quality materials. What constitutes OER quality has been the subject of a number of studies (Yuan & Becker, 2015) and reports (Camilleri, Ehlers & Pawlowski, 2014; Kawachi, 2014), and it continues to be a closely scrutinised topic, as evidenced by the current UNESCO project to determine a set of indicators to measure OER adoption and impact (Miao et al., 2017). The debates around OER as a “quality” product have included discussions around the value of a range of reuse activities, perhaps most comprehensively described by Okada et al. (2012), which include repurposing, contextualisation and translation, amongst others. The value of peer review

¹⁴ <http://www.capetowndeclaration.org/>

¹⁵ <https://www.cengage.com/oer>

and/or public scrutiny of OER (Weller, 2012) as well as trust in the organisations that produce OER (Clements & Pawlowski, 2012) are also aspects in the determination of OER quality.

Research on the role of OER in improving pedagogical practice (Casserly & Smith, 2009) points to collaborative development of materials and the shift in focus “from materials production to mentorship and facilitation” (Ossianniilsson & Creelman, 2012, p.3.) as enabling factors. There has been some research on how exposure to OER resources and tools can support collaboration among teachers and encourage new conversations about teaching practices (Petrides, Jimes, Middleton-Detzner & Howell, 2010). More recently, the role of OER adoption in improving the quality of teacher professional development has also been investigated (Wolfenden, Buckler & Keraro, 2012). In comparing two Global South teacher education programmes (Teacher Education in Sub Saharan Africa [TESSA] and Teacher Education through School-based Support in India [TESS-India]), Buckler, Perryman, Seal and Musafir (2014, p.221) highlight how these projects have prompted localisation of OER, “contribut[ing] to more equal knowledge partnerships in the pursuit of education quality”. Studies in Zambia and South Africa have shown that use of OER within a school-based teacher professional development programme encouraged teachers to try out new pedagogical strategies, raised their expectations of their pupils, and helped them to adapt to their learners’ level of understanding and adopt more learner-centred strategies (Hennessy, HaBler & Hofman, 2016).

The potential and/or actual influence of the use of OER on student outcomes has stimulated some research in this area (Feldstein et al., 2013; Fischer, Hilton III, Robinson & Wiley, 2015), despite the fact that it is very difficult to isolate OER as a single variable in educational settings, which are inherently complex and context-specific. In their study of the OER4Schools professional development programme, Hennessy et al. (2016, p.399) conclude that primary school students “built deeper understanding of subject matter, were actively engaged, worked collaboratively and used digital technologies for problem-solving”. What needs to be taken into account in this finding is that this was a year-long programme with weekly teacher workshops; it is not clear whether this activity would be sustained when teachers are operating outside of the initiative. Students’ perceptions of OER suggest that they like using open textbooks compared to traditional textbooks (Lindshield & Koushik, 2013), but it is not easy to ascertain whether this is a result of the format and design of the materials, rather than of the “openness” of the materials *per se*.

Finally, with regard to the proposition that OER can help to reduce cost and foster the sustainability of education, a great deal of attention has been paid to investigating cost savings arising from the use of OER, especially in the form of open textbooks (Allen, 2013; Wiley, Hilton III, Ellington & Hall, 2012). Other initiatives have explored the co-authoring (Okada et al., 2012) or collaborative development of OER in schools (Marcus-Quinn, Diggins, Griffin & Hinchion, 2012) and in higher education (Lane, 2012) as a way of lowering course development costs. Some researchers have pointed out that while there are obvious cost savings that accrue from use of learning resources that are “free”, there are aspects of OER-based course development that could entail significant costs, such as the time spent on locating, evaluating and adapting OER, and the technical infrastructure required for production and dissemination of OER-based courses (Annand, 2015). The need for sustainable funding for institutional OER initiatives has also been pointed out (Annand, 2015; Annand & Jensen, 2017; de Langen, 2013; Mulder, 2013).

The ROER4D project

The ROER4D project sought to build on and contribute to the body of research on how OER can help to improve access, enhance quality and reduce the cost of education in the Global South. By examining various aspects of OER use and OER-related practices in secondary education, tertiary education and teacher training in a range of countries in South America, Sub-Saharan Africa and South and Southeast Asia, the ROER4D studies aim to help improve Open Education policy, practice and research in developing countries. The overarching research question that the studies as a group address is: In what ways and under what circumstances can the adoption of OER and OEP address the increasing demand for accessible, relevant, high-quality and affordable education in the Global South?

The next section provides a brief overview of the project's main activities, processes, participants and outputs.

Project formulation

Phase 0: Inception

Following on the IDRC-supported second phase of the PANdora project, which initiated mapping exercises to establish the nature, practice and challenges relating to the production and use of OER in Asia, it was proposed that a more extensive, long-term, multidimensional and multifaceted research project be developed to “explore the potential of OER for further educational development and to determine their value under present and forward practices in the ‘Global South’ (Asia, Sub-Saharan Africa, the Arab world and Latin America/Caribbean)” (Dhanarajan & Ng, 2011, p.8). To this end, a group of OER scholars was identified to form a Planning Group to devise a South–South collaborative OER research agenda (Dhanarajan & Ng, 2011) at a meeting in May 2012 in Chiang Mai, Thailand. It was at this roundtable meeting that the ROER4D project was conceived.

In July 2012, research proposals were solicited from those “who have already been developing OER so that they [can] focus on research generating evidence to motivate policy making” and from developing countries where assistance could serve to “influence educational policy change through applied research and development” (Dhanarajan & Ng, 2011, p.14). The independently-scoped proposals were evaluated by the Planning Group in October 2012 and those demonstrating high probability of research operationalisation were invited to present their proposals at a face-to-face meeting in Jakarta, Indonesia, in January 2013. A final set of 12 research proposals from all regions except the so-called Arab world¹⁶ and a meta-synthesis proposal were submitted to the IDRC in May 2013.

Phase 1: Adoption studies

The main project grant was awarded by the IDRC to the University of Cape Town (UCT) as the ROER4D host institution in August 2013, with additional funding from the OSF for one project in Latin America. The first ROER4D workshop, held in Cape Town in December 2013, provided an opportunity for sub-project researchers to meet, refine their proposals

¹⁶ Political tensions precluded the involvement of the Middle East and North African regions at the time.

and participate in a gender-awareness workshop. Most of the ROER4D adoption studies, as this first cohort of 12 sub-projects was referred to, conducted their research from January 2014 until December 2015.

Phase 2: Impact studies

Funding from DFID through the Information and Networks in Asia and Sub-Saharan Africa programme made a second set of sub-projects possible and the proposal for a set of OER impact studies was submitted to the IDRC in January 2014. In April 2014, IDRC awarded the additional funds from DFID to Wawasan Open University (WOU), Malaysia, in its capacity as host of the second cohort of six impact studies – bringing the final number of ROER4D sub-projects to 18. The research proposals were solicited via an open call in August 2014, and between September and October 2014 these proposals were evaluated by a panel of jurors, including members from IDRC, the original Planning Group, an external expert and members of the ROER4D project management teams at UCT and WOU. In December 2014, shortlisted candidates were invited to present at a face-to-face meeting in Penang, Malaysia. Most of the ROER4D impact studies, which were independently scoped to suit their contexts, commenced their research in March 2015 and concluded in February 2017 (Figure 1).

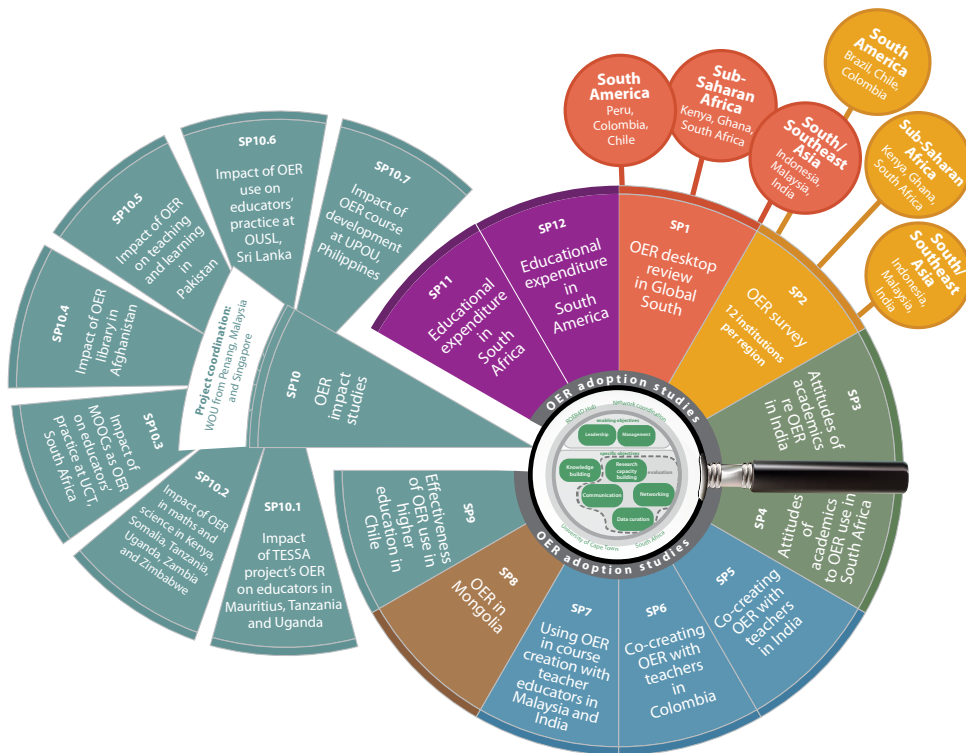


Figure 1: Snapshot summary of ROER4D adoption and impact studies

Figure 2 provides a global snapshot of the location of the 18 ROER4D sub-projects in 21 countries. A total of 103 research team members from 19 countries worked on these sub-projects: 18 lead researchers, 39 researchers, 27 local coordinators of a cross-regional survey, 14 research assistants and five meta-synthesis researchers from the Network Hub.¹⁷

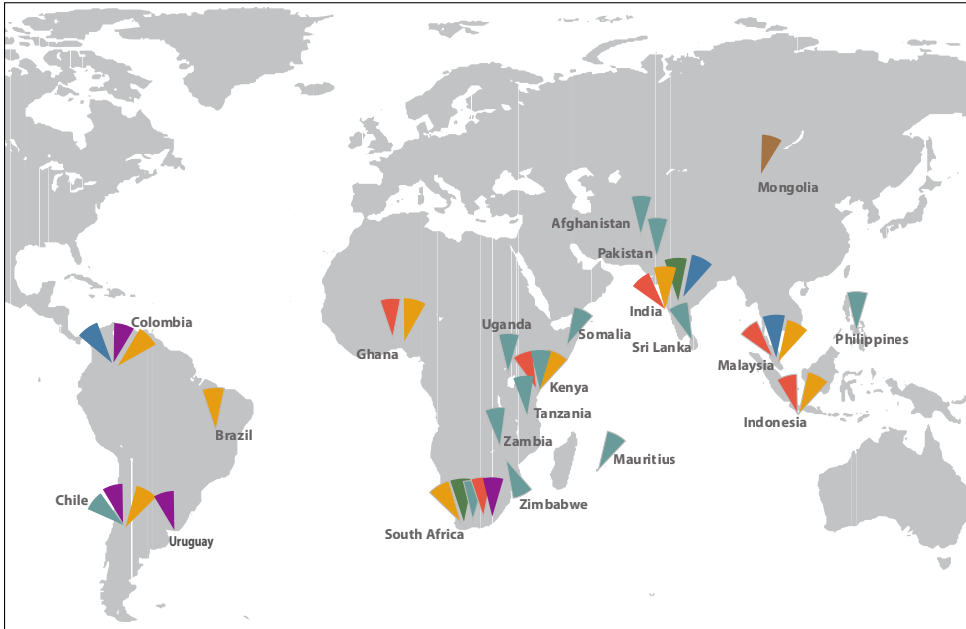


Figure 2: Geographic overview of ROER4D sub-project locations

The ROER4D researcher network was supported by a Network Hub of 12 people at two centres:

- UCT Network Hub, Cape Town, South Africa
 - Principal Investigator, Project Manager, Curation and Publishing Manager, Project Curator, Associate Editor, Communications Advisor and Evaluation Consultant
 - Deputy Principal Investigator from the University of the Philippines Open University
- WOU Network Hub, Penang, Malaysia
 - Project Leader/Coordinator and Research Assistant
 - Coordinator and Research Assistant

Methodological approach and participant profile

The ROER4D sub-projects employed a wide variety of data collection methods: survey questionnaires, interviews, focus group discussions, document analysis, workshops,

¹⁷ <http://dx.doi.org/10.5281/zenodo.1036247>

observations, logs and desktop reviews. In the course of conducting the studies, researchers produced chat records, concept maps, a database of student data, a lesson plan assessment tool, literature reviews, narratives, online interactions and self-reflections.¹⁸ Ten sub-projects generated both quantitative and qualitative data in their research, six generated only qualitative data and two generated only quantitative data.

The sub-projects mainly focused on education in general, with mathematics (in five sub-projects) and science (in four sub-projects) being more prominent than other sub-disciplines.¹⁹ Sub-projects also investigated OER use in a variety of disciplines, including educational research methodology, health and management, Islamiyat and Pakistan studies, languages, social science and teaching with technology. Nine sub-projects covered the higher education or university sector, six focused on in-service teacher education, one on pre-service teacher education, and two examined OER-related activity at governmental level.

The number of participants across the sub-projects reported on in the edited volume is as follows:

- **396 school teachers** from four countries: Afghanistan (51), Colombia (48), India (62) and Sri Lanka (230)
- **69 teacher educators** from four countries: Colombia (11), India (5), Mauritius (9), Tanzania (18) and Uganda (31)
- **701 university lecturers** from 15 countries: Brazil (17), Chile (33), Colombia (9), Ghana (38), India (250), Indonesia (44), Kenya (53), Malaysia (54), Malaysia and India (49), Mongolia (42), Somalia (1), South Africa (96), Tanzania (6), Uganda (5), Zambia (3) and Zimbabwe (1)
- **4 985 university students** from nine countries: Brazil (287), Chile (451), Colombia (170), Ghana (817), India (437), Indonesia (645), Kenya (798), Malaysia (716), Malaysia and India (43) and South Africa (621)²⁰

Edited volume overview

The ROER4D project builds on previous Open Education research in the Global South, but is the first project of its kind in terms of the scope and scale of the study. The aim of this research endeavour has been to generate an empirical baseline upon which further OER research, advocacy and uptake work can be built.

Apart from this 16-chapter edited volume and the companion datasets for six sub-project studies,²¹ ROER4D outputs²² to date include at least 10 journal articles, three book chapters, two monographs, five keynote addresses, 10 conference papers, 75 conference presentations, 64 blogs and a number of teaching sessions with postgraduate students and staff. Further communication and dissemination activities are planned to leverage the work conducted in the project.

18 <http://dx.doi.org/10.5281/zenodo.1036247>

19 <http://dx.doi.org/10.5281/zenodo.1036247>

20 <http://dx.doi.org/10.5281/zenodo.1036247>

21 <https://www.datafirst.uct.ac.za/dataportal/index.php/catalog/ROER4D>

22 For a full list of ROER4D outputs, see goo.gl/r4PQfE.

In order to capture synthesised contributions of the various sub-projects and promote access to the Global South empirical contribution on Open Education research, the ROER4D Network Hub has published this edited volume in collaboration with the IDRC and African Minds Open Access publishers. The Network Hub decision to function as a co-publisher of the research produced was largely informed by the project's Open Research agenda, which enables a more self-determined approach in terms of advance online release and peer-review strategy. The peer-review process was administered by ROER4D in collaboration with African Minds publishers, with each chapter being reviewed by at least two external peer reviewers in an open and collaborative peer-review model.

The edited volume is composed of 16 chapters – 13 are based on the research reports of 13 ROER4D sub-projects, and three (Chapters 1, 2 and 16) are synthesis and overview chapters. The chapters are organised into five main sections: Overview, South America, Sub-Saharan Africa, South and Southeast Asia, and Conclusion. Within these broader sections, chapters are presented in sequence according to whether the research addresses basic or higher education.

Section 1 – Overview – includes this introduction and a meta-synthesis chapter, **“Factors influencing Open Educational Practices and OER in the Global South: Meta-synthesis of the ROER4D project”** by Cheryl Hodgkinson-Williams, Patricia Arinto, Tess Cartmill and Thomas King, as well as the chapter **“OER use in the Global South: A baseline survey of higher education instructors”** by José Dutra de Oliveira Neto, Judith Pete, Daryono and Tess Cartmill on the findings from the cross-regional quantitative survey of 295 instructors at 28 HEIs in nine countries (Brazil, Chile, Colombia; Ghana, Kenya, South Africa; India, Indonesia and Malaysia).

Section 2 – South America – presents research from Chile, Colombia and Uruguay. The first chapter in this section, **“Open Access and OER in Latin America: A survey of the policy landscape in Chile, Colombia and Uruguay”** by Amalia Toledo, provides valuable insight into the South American “open” policy landscape. It is followed by a chapter addressing **“Collaborative co-creation of OER by teachers and teacher educators in Colombia”**, written by María del Pilar Sáenz Rodríguez, Ulises Hernandez Pino and Yoli Marcela Hernández, which describes a study conducted with public school teachers in southwestern Colombia by members of the Collaborative Co-Creation of Open Educational Resources by Teachers and Teacher Educators in Colombia (coKREA) project. The final chapter in this section, by Werner Westermann Juárez and Juan Ignacio Venegas Muggli, is an investigation into the impact of OER on learning outcomes in a Chilean university, titled **“Effectiveness of OER use in first-year higher education students’ mathematical course performance: A case study”**.

Section 3 – Sub-Saharan Africa – features research from South Africa, Mauritius, Uganda and Tanzania. The first of the chapters in this section, **“Tracking the money for Open Educational Resources in South African basic education: What we don’t know”**, is a desk review and document analysis of publicly available information on expenditure in South African basic education by Sarah Goodier which aims to better understand government influence on the cost-saving dimension of OER. It is followed by the chapter **“Teacher educators and OER in East Africa: Interrogating pedagogic change”** by Freda Wolfenden, Pritee Auckloo and Jane Cullen, which examines the use of OER in six teacher education institutions in three contrasting East African settings. The fourth chapter in this section,

“Factors shaping lecturers’ adoption of OER at three South African universities” by Glenda Cox and Henry Trotter, focuses on understanding the obstacles, opportunities and practices associated with OER adoption. South Africa is also the focus of the final chapter in this section, **“OER in and as MOOCs”** by Laura Czerniewicz, Andrew Deacon, Sukaina Walji and Michael Glover. It reports on an investigation into the production and rollout of four Massive Open Online Courses (MOOCs) at UCT, and on how MOOC-making with OER influences educators’ OEP.

Section 4 – South and Southeast Asia – presents research from Mongolia, India, Sri Lanka and Afghanistan. The first of the chapters in this section, **“Cultural-historical factors influencing OER adoption in Mongolia’s higher education sector”** by Batbold Zagdragchaa and Henry Trotter, is a landmark study in terms of Open Education in the Mongolian context, investigating the strategies and practices of educators from six Mongolian HEIs in order to understand the role of OER in their work. The focus on use of OER by higher education faculty is also a central theme in the next chapter, **“Higher education faculty attitude, motivation, perception of quality and barriers towards OER in India”** by Sanjaya Mishra and Alka Singh, which compares data across four institutions in order to identify the issues that influence OER uptake in India. The next chapter, **“Impact of integrating OER in teacher education at the Open University of Sri Lanka”** by Shironica P. Karunanayaka and Som Naidu, reports on a research project implemented among secondary school teachers enrolled in a postgraduate programme at the Open University of Sri Lanka in order to investigate the impact of integrating OER in the teaching-learning process. This is followed by a chapter examining enabling and constraining techno-social, techno-pedagogical and sociocultural factors surrounding OER adoption in a teacher professional development context by Gurumurthy Kasinathan and Sriranjani Ranganathan titled, **“Teacher professional learning communities: A collaborative OER adoption approach in Karnataka, India”**. The final chapter in this section, **“An early-stage impact study of localised OER in Afghanistan”** by Lauryn Oates, Letha Kay Goger, Jamshid Hashimi and Mubarak Farahmand, evaluates a group of Afghan school teachers’ use of OER from the digital Darakht-e Danesh Library, and is also a landmark study in terms of investigation into Open Education in the Afghan context.

Section 5 – **“OER and OEP in the Global South: Implications and recommendations for social inclusion”** by Patricia Arinto, Cheryl Hodgkinson-Williams and Henry Trotter – provides a summary statement on the findings from the ROER4D project and reflects on the extent to which the use of OER by educators and students is contributing to social inclusion in the Global South.

Conclusion

Each of the chapters in this edited volume seeks to identify the key educational challenges in specific contexts in the Global South to which OER and educators’ associated OEP may be a useful response. Although these challenges are often similar to those experienced in the Global North, additional or more nuanced perspectives have surfaced in the ROER4D studies. These include the need to support teachers in war-torn countries such as Afghanistan (Oates et al., Chapter 15) or in post-war areas such as northern Sri Lanka (Karunanayaka & Naidu, Chapter 13); support equity of student access to higher education in a largely privatised system in Chile (Westermann Juárez & Venegas Muggli, Chapter 6);

and enhance the quality of educational materials for basic education in India (Kasinathan & Ranganathan, Chapter 14). Each chapter presented explores the degree to which OER and the underlying OEP have emerged as ways to address context-specific educational problems, and which factors might account for their variable adoption and nascent impact. The hope is that these empirical studies establish a baseline of Global South OER and OEP adoption and impact research that will stimulate more targeted advocacy, implementation and research.

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How to cite this chapter

Arinto, P. B., Hodgkinson-Williams, C., King, T., Cartmill, T. & Willmers, M. (2017). Research on Open Educational Resources for Development in the Global South: Project landscape. In C. Hodgkinson-Williams & P. B. Arinto (Eds.), *Adoption and impact of OER in the Global South* (pp. 3–26). Retrieved from <https://doi.org/10.5281/zenodo.1038980>

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This work is licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) licence. It was carried out with the aid of a grant from the International Development Research Centre, Ottawa, Canada.