Journal of Learning for Development – JL4D

ISSN: 2311-1550

Vol. 5, No. 2, pp. 87-100

# Learning for Development in the Context of South Africa: Considerations for Open Education Resources in Improving Higher Education Outcomes

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**Abstract**: Education is at the core of South Africa's national development. The National Development Plan recognizes the potential of education to transform individuals and drive attainment of other development goals. The country's higher education system is characterized by low participation and high attrition. This presents challenges for the attainment of targets set by the NDP. A number of Open Education Resources initiatives implemented around the world have shown that, when combined with Open Educational Practices, such approaches have potential to address some of the challenges facing the South African higher education sector. This paper explores these initiatives and elements that would need to be considered to ensure an environment that is conducive to their sustainable adoption.

**Keywords:** OER, access, higher education, student success

## Introduction

Whilst South Africa has made great strides towards achieving universal access to basic education, this has not translated into improved educational outcomes in higher education. The country's higher education sector is characterized by low participation and high attrition rates. Open Education Resources (OER) are widely believed to have potential to widen access and promote student success although there is acknowledgement that this has yet to happen on a significant scale (Cannell, 2015). This paper explores OER-related initiatives globally with a view to drawing lessons for South Africa. The paper begins with a look at the socio-economic context of the country and its development aspirations as outlined in the National Development Plan (NDP), 2030. In particular, the positioning of education in the NDP and targets for the higher education sector are outlined. Some challenges facing the higher education sector are also considered. The paper then goes on to consider advances in Information and Communication Technology (ICT) and OER. Possibilities for using OER to address key challenges in higher education are also explored. The paper closes with a consideration of preconditions for success amongst various stakeholders.

## South Africa's Socio-Economic Context

The socio-economic context defines the parameters in large measure for the realistic growth and development possibilities of the country. South Africa is classified as an upper middle-income country by the World Bank and is also recognized as one of the fastest growing economies in Africa (STATSSA, 2018). The gross domestic product (GDP) for 2016 was estimated at US$295,456 billion, down from US$426,878 billion in 2011 (World Bank Group, 2018). The slower growth recorded since

2011 has been ascribed to constraints on the supply side, mainly in the form of electricity shortages and falling commodity prices, among others. This has resulted in the stagnation of the GDP per capita compared to other fast-growing economies (OECD, 2017).

Another key feature of the socio-economic context is high levels of poverty along with low literacy levels, skewed towards rural black communities. This trend has its roots in the legacy of apartheid, which had the effect of embedding inequalities and poverty along race and gender lines. In addition to impacting the delivery of services, such as water and sanitation, these inequalities also impacted the country's education system, resulting in poor quality education, especially amongst black rural communities; limited access to higher education opportunities for blacks; and led to general under-development of blacks over a sustained period under apartheid rule. Unemployment is high at about 27%, with youth being the most badly affected at 53% in 2016 (OECD, 2017).

## South Africa's Development Aspirations

The main aspiration of the NDP is to eliminate poverty and reduce inequality by 2030. It aims to achieve this goal by drawing on the energies of the country's people, growing an inclusive economy, enhancing capacities of people as well as the capability of the State (National Planning Commission, 2012). The NDP notes that too many of the country's youth "feel that the odds are stacked against them" (National Planning Commission, 2012, p. 24). As a result, enhancing opportunities for young people, together with promoting gender equality, are common themes throughout the NDP.

The NDP acknowledges education as a critical factor that underpins the attainment of other development goals outlined therein. Chapter 9 on Education, Training and Innovation identifies education as central to South Africa's long-term development. The chapter further suggests that education is a core element in the elimination of poverty and the reduction of inequality, while laying the foundations for an inclusive society (National Planning Commission, 2012). The transformational power of education, at both individual and societal levels, receives prominent recognition, with the principle of lifelong learning receiving emphasis.

The positioning of education at the centre of South Africa's development agenda is noteworthy, given its recognition as a fundamental human right, and as a prerequisite for the exercise of all other human rights under the United Nations. In the knowledge economy that South Africa is striving to build, education is vital for the development of basic skills, development of new knowledge, and innovation, as well as being the engine for socio-economic development (Butcher & Hoosen, 2012).

The NDP sets ambitious targets for the improvement of Higher Education by 2030. These include:

1) Increasing university mathematics and science entrants to 450,000 and increasing the number of people entering careers in maths and science to three times the current levels
2) Increasing graduation rates to 25% by 2030
3) Increasing participation rates from 950,000 in 2010 to 1,620,000 by 2030, representing a 70% increase
4) Producing more than 100 doctoral graduates per million per year by 2030.

## Key Challenges in South Africa's Higher Education Sector

As of 2015, South Africa's higher education sector was comprised of 26 public universities and 120 private higher education institutions (HEIs), with 985,212 and 147,210 students enrolled in the public universities and private HEIs, respectively. Of the students enrolled in private HEIs, 605,480 (representing 61.5%) were enrolled for contact education, while the remaining 379,732 (38.5%) were studying by distance. Of the distance-learning students, females accounted for (65.2%) while males accounted for the remaining 34.8% (Department of Higher Education and Training, 2017a).

Like other developing countries, South Africa's higher education sector faces challenges in providing high-quality education that is also relevant to the demands of the 21st Century world of work, while at the same time dealing with the consequences of under-development, and driving a transformation towards a knowledge society. This requires that education programmes, from basic to vocational and higher education, be updated continually in order to respond to global changes and local needs while also equipping students with the appropriate skills for participating in the knowledge economy. The central challenge is to achieve all these demanding goals when the numbers of students are increasing disproportionately in relation to the available teaching and learning infrastructure and other necessary resources. In short, the South African higher education system faces the challenge of maintaining quality and relevance against a backdrop of increasing demand for access (Butcher & Hoosen, 2012).

The NDP characterises the South African higher-education system as one of low participation and high attrition. This is evidenced in cohort studies conducted by the Department of Higher Education (DHET) for students entering higher education for the first time through public HEIs for the period 2000-2014. The study revealed that only 54.4% of the 2006 cohort had graduated after 10 years whilst 55.2% of the 2009 cohort graduated after seven years. While there was slight improvement over the period under analysis, it is still a huge concern that about 45% of young people who enter undergraduate degrees in both contact and distance education never graduate (Department of Higher Education and Training, 2017b).

The country has made notable strides in universal access to basic education. Primary and early secondary school are characterised by high progression rates but the quality of education in these segments is widely questioned by most of the populace. The final year of schooling presents a major obstacle as many learners drop out prior to the examination. There is also a relatively high failure rate among those who sit for the final examinations. The poor quality of education is particularly skewed towards blacks, translating into lower wages for this sector of the population (Taylor *&* Servaas van der Berg, 2011). The evidence at hand suggests that instead of ameliorating inequality, the schooling system is reproducing it. A devastating consequence is that the basic education system does not sufficiently prepare school leavers for higher education.

It follows therefore that addressing student success challenges in higher education requires improvements in basic education. This needs to be complemented by other interventions at the higher education level to ensure that students are better prepared. The Council on Higher Education (CHE) (2013) previously proposed a flexible undergraduate curriculum that can be completed by students in four (4) years, and thus extending the normal study period of three (3) years for most undergraduate programmes (Council on Higher Education, 2013; Ramarathan, 2016). It is further argued that

achieving the NDP's output targets for higher education, cited earlier, will require a multi-pronged strategy that combines cost effective use of the country's HEIs while harnessing the potential of OER.

## ICTs and OER

ICTs refer to technologies and applications used in communication and the electronic manipulation, storage, and conveyance of data. They have revolutionised distance learning by enabling the delivery of education to geographically marginalised regions and students, while allowing each to learn at a self-determined pace, and increasing support options for students in unprecedented ways. They have also empowered both educators and students by widening access to information (Butcher & Hoosen, 2012). Within education, ICTs hold the promise of giving anyone with a suitable device and connectivity access to a huge range of educational material (Cannell *et al*., 2015). ICTs also have the potential to enable learning to be more learner-centred (Lane & Van-Dorp, 2011).

OER are defined as "teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions" (UNESCO, 2012, p. 1) or simply, "an educational resource that incorporates a licence that facilitates reuse, and potentially adaptation, without first requesting permission from the copyright holder" (Butcher, 2015, p. 5). OER Africa (2014, p 4) defines OER use as 'technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes". Notwithstanding the various definitions, OER include three core areas of activity, namely, "creation of open source software and development tools, the creation and provision of open course content, and the development of standards and licensing tools" (Albright, 2005, p. 1).

The value of OER as an educational resource lies in their potential for use as an integral method of communication of curriculum in educational courses (OER Africa, 2014). OER go beyond just making access open but, as a principle, require users to modify the resources to suit their context, thus giving both students and educators freedom to access them as and when the need arises, to alter the resources for different purposes, and to leave them in control of how they use them in teaching or learning (Lane & Van-Dorp, 2011).

OER also have the potential to advance the principle of the right to education for all (Lane, 2016) by making context-specific and relevant knowledge accessible (Butcher, 2011; 2015; Butcher & Hoosen, 2012). They offer potential for enhancing the capacity of educators at all levels to develop and produce high-quality educational material that can enhance the quality of learning programmes at relatively low cost. Existing material can also be adapted with ease to suit the context within which it will be used (Butcher & Hoosen, 2012).

The rapidly growing number of OER globally bears witness to their potential to transform education (de Hart *et al*., 2015). OER are widely advocated as a tool for addressing broad inequalities as well as for supporting the development needs of societies and nations globally. They also provide an opportunity to engage higher education faculties, academics, and teachers in structured processes that build capacity to design and deliver high-quality education programmes without increasing cost (Butcher, 2011).

## Open Educational Practices

In order to realise the full potential of OER, it is important to consider not just the resources but the practices that enable educators to share approaches, exchange ideas and promote novel pedagogies. The term 'Open Educational Practices' (OEPs) is used to refer to all of these (Connell et al., 2015; Shuttleworth Foundation/ Open Society Foundations; 2007). OEPs are defined as "practices which support the production, use and reuse of high quality Open Educational Resources (OER) through institutional policies which promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning path" (Ehlers, 2011, p 3). Another definition is "a broad descriptor of practices that include the creation, use, and reuse of open educational resources (OER) as well as open pedagogies and open sharing of teaching practices" (Cronin, 2017). Increasingly, academics are required to engage not only with the traditional classroom technologies but also with a wide array of digital, open and social practices (Atenas et al., 2014).

### Ways in Which OER May Assist in Addressing Key Higher Education Development Challenges

OER, combined with OEPs, can be leveraged to address, at least in part, some of the important challenges facing the higher education sector. These include improving preparedness of students for, and widening, access. Another way is to improve success and retention through reduced costs.

### Enhancing Preparedness of Students for Higher Education, Widening Access and Increasing Participation

The poor preparedness of entrants into higher education in South Africa is a matter of serious concern to all stakeholders in the sector. It is generally agreed that strategies to help students make the transition effectively need to be explored. So should ways of ensuring their success in their study programmes. Only then will they realise their full potential and lead productive and fulfilled lives.

OER offer opportunities for novel approaches to bridge the articulation gap between basic education and higher education. The Bridge to Success Project jointly implemented by the Open University (UK), Massachusetts Institute of Technology (MIT), Anne Arundel Community College (AACC), and University of Maryland University College (UMUC) has demonstrated how OER can facilitate the transition into higher education. The project was conceptualised as a response strategy to the challenge that, despite 60% of new community college students being offered at least one developmental course, the great majority fail to successfully complete their studies within eight years. The project thus sought to address learning barriers faced by students. As part of the project, an iterative and collaborative process was used to rework existing courses to develop two courses namely, "Learning to Succeed", and "Learning to Succeed with Math" based on OER. These OER courses helped improve the preparedness of entrants into higher education and hence success rates (Pitt *et al*., 2013).

Similar approaches can be adopted by targeting students who do not, based at matric results[i], meet the requirements for entrance into higher education. These students may then require deeper thought into how they can be provided with additional support not only to cope with the material they would be working with but to also help them develop the skills for independent study required in higher education.

## Improving Retention, Progression and Success Rates

A number of initiatives worldwide have reported improved completion rates with the adoption of OER. These initiatives have also reported significant improvement in financial benefits to students through introduction of OER. An example here is Tidewater Community College's Z-degree programme. The programme earned its name from "zero costs" for text books, as a result of the College adopting OER for its Business Administration programmes. The adoption of OER enabled faculty to enhance the effectiveness of their teaching by focusing on adapting learning materials to desired learning outcomes. The project resulted in the saving of as much as US$3679 per student within a year and improved performance by students (Palmedo, 2014). Of 303 students enrolled in Z-section courses, eight (2.64%) students dropped out, while 468 (3.72%) of 12,574 non-Z-section student dropped out (Wiley *et al*. 2016).

Z-programmes are being piloted in other community colleges and have been described as a "*growing national movement"* (Lerner, 2018). At the core of the Z-project is the focus of educational material on the expected outcomes. Another benefit is that from day one, students have access to the material they require. The benefits of adopting OER in education have been described as transforming teaching and learning in ways that can improve engagement for both staff and faculty through personalised learning (Stout, 2016).

Other similar initiatives include the Affordable Learning Georgia Initiative supported through the University System of Georgia initiative. An analysis of the results from 21 projects showed that at the very least, OER reduce costs of study without compromising learning outcomes. While slight improvements were observed in some attributes, declines in some were also reported (Croteau, 2017).

### Creating a Conducive Environment for Development, Sharing and Meaningful Use of OER in South Africa

In line with the goal of reducing inequality in higher education, and within the context of OER, the required environment for the use of OER to respond to the needs and contexts of previously disadvantaged learners from rural marginalised communities needs to be purposefully put in place. In developing interventions, the special needs of the less-advantaged sectors of the population must be taken into account to prevent entrenching inequalities further (Prepelita-Raileanu, 2008). A number of factors would need to be considered to enhance accessibility, as discussed below:

### Policy

The South African policy environment is generally supportive of OER. The White Paper for Post School Education and Training (PSET) System (DHET, 2013) adopted open learning as a strategy to increase access to education and training opportunities, with a view to furthering the country's transformation goals. It recognises the importance and need for all education providers to "construct quality learning environments which take account of learners' context and use the most appropriate and cost-effective methods and technologies". The White Paper expressed the intent to forge networks of institutions and learner support centres, and to further promote innovation and opportunities for lifelong learning (DHET, 2013). The White Paper thus created space for OER to complement the campus-based delivery of education throughout the PSET system. In particular, the White Paper sought to leverage the potential for development of well-researched and high-quality learning resources, as well as the inherent advantages of collaboration and enhancing efficiency of use of

existing infrastructure. Another important consideration is the increasing emphasis on independent study as preparation for life-long learning (DHET, 2013).

The DHET has also developed an Open Learning Policy Framework for Post-School Education and Training (DHET, 2017c) which affirms the commitment of the government to open the doors of learning and remove unnecessary barriers to education and training for all, with particular emphasis on those who have been marginalised in the past, by using open-learning approaches in PSET as one of the strategies. The view of open learning as an integral part of the PSET system is significant given that one of the important conditions of success for OER is the positioning of open education in the education system as this influences the perception of society and potential end users on its value.

Other policy related considerations include the environment to promote sharing and use of OER including open licensing regimes and ensuring an understanding by all partners and stakeholders. Linked to this are possibilities of establishing and/or leveraging strategic partnerships outside the country as appropriate, for both HEIs and government. At the institutional level, the range of policies that will need to be developed include, in addition to an ICT strategy (which many institutions already have) a policy on e-learning. Linked with this should also be consideration of how the curriculum will be developed, financial support for initiatives, and the institutional culture of sharing. Others include Intellectual Property, assessment and accreditation, Quality Assurance, staff development and support, and student support (Yuan, *et al.*, n.d.).

## Connectivity

The International Telecommunications Union (2017) ranked South Africa 92nd with an ICT development index of 4.96. The world average for 2017 was 5.11. Clearly enormous progress still needs to be made. A recent report suggests that there were 21 million Internet users in South Africa. This figure was projected to reach 22.5 million by the end of 2017. The report also indicated that the majority of Internet users were using smartphones, which totalled 29 million. This led to the conclusion that one of the limitations is the considerable cost of data. This was confirmed by an observation of increased use coinciding with periods of data cost reduction. The report also noted that the priority for upper-end users was faster bandwidth, while lower-end users were more concerned with affordability (Shapshak, 2017).

To enhance the accessibility of OER, concerted efforts should be made to bridge "the digital divide" (Lane & van-Dorp, 2011; Cannell, 2017) that exists between the privileged and the poor and marginalised rural students who are also the most vulnerable. One of the first considerations for this is to enhance access to the Internet and affordable broadband, especially for previously disadvantaged learners from rural marginalized communities and other special needs groups (Prepelita-Raileanu, 2008; Lane & von-Dorp, 2011; Cannell, 2017). Another possibility is to consider providing learners from disadvantaged backgrounds with access to inexpensive and rapid network connections from educational institutions and other suitable infrastructure close to their places of residence (Prepelita-Raileanu, 2008) where possible and appropriate.

Another consideration for poor students is access to suitable technology which can also be an insurmountable barrier. Although the majority of South Africans now have access to mobile phones, these may not be suitable for downloading and viewing some of the educational resources.

## Access to Suitable and Context-Relevant OER

Beyond the issues of bandwidth and technology, which are generally acknowledged and reflected in national policy documents and research, it is important to realize that the same social, cultural and material barriers to participation in learning that have been observed with traditional campus-based education may still be present (Cannell *et al.*, 2015) and may even, perhaps, entrench inequalities still deeper with the use of OER. There are three types of barriers to access:

- Situational barriers are linked with the learner and include educational experience and qualifications, disability, geographical location and socio-economic disadvantage
- Institutional barriers include support systems, curriculum design and processes that are not aligned to the needs of the learner
- Dispositional barriers, which are a result of prior experiences of the learner, and include lack of self-confidence, dropping out, etc. (Cannell, 2017).

Specific barriers that Post School Education and Training in South Africa seeks to address are summarised in Figure 1.


**Figure 1: Barriers to access in South Africa's higher education sector**

Addressing these challenges calls for innovative thinking in order to truly leverage the potential of OER to address the identified challenges effectively. The next consideration is that of development and access to a comprehensive supply of quality educational material (Prepelita-Raileanu, 2008).

Development of ICT-based teaching programmes and materials, which can support learning processes, would need to be done continuously in an iterative process allowing for feedback loops as lessons and best practice in each context emerge.

## Availability of Educators Who are Able and Willing to Engage with OER

Even if institutions are willing to embrace OER, the uptake and use is largely dependent on the availability of academics who are able and willing to engage (Lane & van-Dorp, 2011). As a result, the ICT skills of academics must be updated to enable them to develop personal mastery of both the tools and the possibilities they present as an integrated teaching tool as well as other aspects of their work to free time to engage in the teaching and learning experience. Academics also require new skills to enable them to develop digital resources and to understand the pedagogical opportunities afforded by OER (Atenas *et al*., 2014; Wiley *et al*., 2016). This implies a need for capacity building and support.

It is also necessary to ensure an environment that facilitates sharing of materials and even encourages its adaptation and reuse in line with the core principles of OER. An understanding of the barriers to engagement in OER would need to be understood, both at the sector- and institutional-level, to enable development of suitable strategies to respond to them. Work done through other OER initiatives in the country, including de Hart (2015) and Cox (2017), may provide some insights.

## Ability and Willingness of Students to Engage with OER

The massive increase in the generation and development of knowledge globally, combined with the speed with which it can be transmitted through ICT, means learners at all levels are exposed to massive and unprecedented volumes of content of variable quality and credibility. This impels the need for cultivating the ability of students to access, select, process and use the great amount of information made available by ICT effectively and credibly. This is particularly important to enable learners to take more responsibility for their own learning as well as developing independent learning skills (Prepelita-Raileanu, 2008) in line with the demands of the digital 21st Century. Apart from access to affordable connectivity and suitable technology mentioned earlier, students need to be skilled in ICT as well as in independent learning and information processing techniques. They must also be willing to engage in the processes of informing development and reshaping of material.

## Quality Assurance Issues

The proliferation of educational material and resources on the Internet raises a need for bespoke quality assurance mechanisms (Cannell *et al., 2015*) to ensure that standards are not compromised. Cannell *et al*., 2015 suggest that these are best based on a mix of professional, peer and user reviews. These are student-centred quality frameworks. Mechanisms to ensure quality must be addressed early on to ensure respect for and recognition of open learning. DHET and the quality councils may consider taking the same approach to quality learning as the Commonwealth of Learning (COL), which is one of influencing policy at both national and institutional levels, development of resources and enhancing the capacity of institutions and individuals working with open learning QA (Mishra & Kanwar, 2015). There may be a need to reflect on quality assurance regimes to enable consideration of the environment within which interaction for the development of OER and learning take place. With the world and the higher education sector becoming increasingly globalised, there is also an increased

need and perhaps even urgency for strengthening regional and international partnerships for quality assurance.

## Recognition of OER

Along with the quality assurance considerations, there is a need to consider mechanisms for recognition in some form of the knowledge gained through for example, for consideration towards gaining access into formal education in an institution, and for recognition of achievement by employers etc. (Lane & van Dorp, 2011; Cannell *et al.*, 2015). For this reason, Lane & van Dorp (2011) suggest that institutional policies need to reflect how institutions intend to bridge between non-formal and formal study. This is particularly important in OER that are aimed at opening access to students who do not meet standard entry requirements.

### Sustaining OER and OEPs

Consideration will need to be given to measures to ensure sustainability of both the resources and their adoption. The initial development of OER has some associated costs and, as such, institutions must be ready to find or mobilise the necessary resources. Thereafter, there will be a need to promote their adoption and support the associated processes. Wiley (*et al.*, 2016) present the **IN**creased **T**uition **R**evenue through **O**ER (INTRO) model, in which increased revenue is generated from increased tuition which results from increasing numbers of students as one of the barriers—high costs of textbooks—is removed.

Figure 2 shows the role of various stakeholders in ensuring this supportive environment.

## Conclusion

A number of initiatives implemented in various countries have demonstrated that OER, combined with the promotion of OEPs, have the potential to contribute towards widening access and success rates in South African higher education, in line with development targets as elaborated in the NDP. Adoption and use of OER will, however, require some investments — primarily monetary and capacity development—by all stakeholders. It will also require closer collaboration between various stakeholders in the sector to optimise resources and capacities and create synergies. It will also be important to ensure that enabling policies are developed at all levels. Collectively these efforts are anticipated to contribute to learning development objectives and the sustainability of both OER and OEPs.

#### Acknowledgement

The contributions of staff in the office of the CEO at the Council on Higher Education, South Africa, in sourcing some of the information that was used in preparing this paper are gratefully acknowledged. Special thanks are due to Dr Phumzile Dlamini and Dr Amani Saidi.

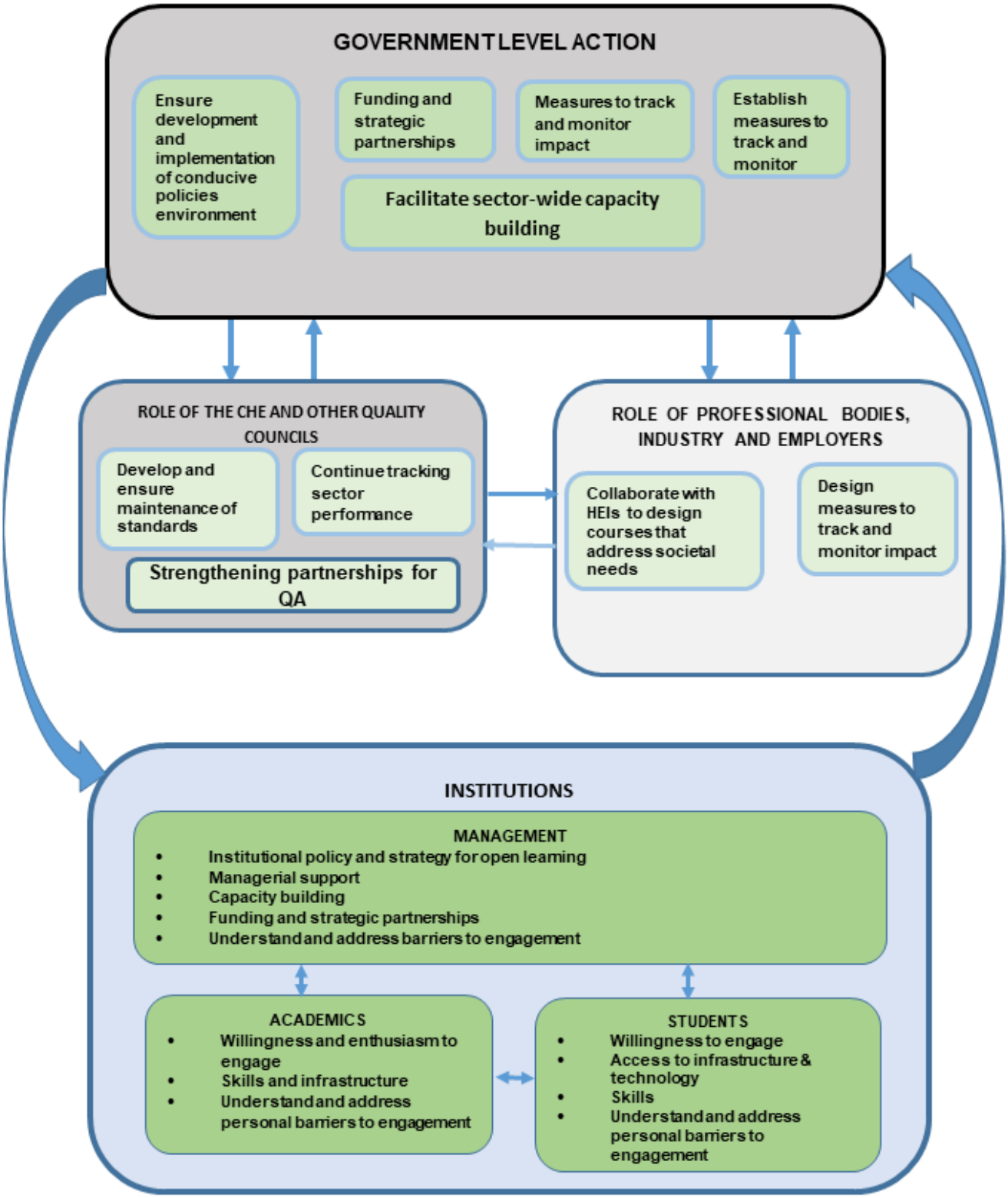


**Figure 2: Requirements for successful development and uptake of OER**

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Cite this paper as: Baijnath, N. (2018). Learning for Development in the Context of South Africa: Considerations for Open Education Resources in Improving Higher Education Outcomes. *Journal of Learning for Development*, *5*(2), 87-100.

**Note**

[i] The matric examination is the ultimate examination in the Basic Education system, marking the end of schooling.