



Education for enterprise and empowerment:
The importance of cognitive skills for
sustainable livelihoods and better futures

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Abstract

Education systems face mounting pressures to equip their learners with the right combination of knowledge, aptitudes and competencies. Higher-order cognitive skills as identified in Bloom's taxonomy of learning objectives appear to confer a range of economic and social benefits, for both individuals and their community. Through quality education, these skills can nurture increased enterprise and innovation to generate sustainable livelihoods, meet customer needs and exploit emerging opportunities. Similarly, cognitive development can assist learners, their families and societies to understand and tolerate difference, and empower them to participate more effectively and plan more proactively towards a better future.

This paper therefore contends that cognitive skills need to be prioritised within curricula for basic schooling in addition to more advanced levels of education and training. To this end, it draws on qualitative research conducted in 2012 to examine attitudes towards children's cognitive development among major donors and agencies in Rwanda. Through a series of semi-structured interviews and applying a human capital framework, the study explores how schooling prepares learners to think creatively and critically to engage with ideas and solve problems. The findings identify system features and initiatives that appear to foster cognitive skills, as well as many complex political, cultural and educational factors that are likely to impede their development in Rwanda and elsewhere.

The paper concludes with recommendations to promote increased higher-order cognitive skills for sustainable futures, and reflects on implications for curriculum design, teacher training, assessment practices and early childhood interventions.

1 Introduction

Education systems face mounting pressures to equip their learners with the right combination of knowledge, aptitudes and competencies. In an ever-globalised economy, governments vie to secure a competitive advantage over their commercial rivals with innovative and adaptable workforces to meet evolving economic and social needs (Jeffrey and Craft, 2001). Schools must therefore lay appropriate foundations to ensure that learners gain valuable skills to achieve sustainable livelihoods and pursue a worthwhile collective future (UNESCO, 2012).

The challenge is particularly pronounced in Rwanda, not least given the huge loss of human life and capacity during the 1994 genocide. Despite impressive subsequent growth, the country still ranks low in terms of broader human development (151 out of 187 countries) (UNDP, 2014). With limited export opportunities and few natural resources, Rwanda now attempts to strike a balance between initiatives that support poverty reduction and those that attract foreign investment for an African hub in information technology (Rugabiza *et al.*, 2011). Human capital arguably represents the country's most valuable asset, which must be nurtured and developed effectively to ensure Rwanda's continued progress (Straus and Waldorf, 2011).

Educational outcomes, and cognitive development in particular, could play a key role in these efforts. This paper therefore explores the potential economic and social benefits of higher-order cognitive skills for individuals and communities, both in Rwanda and elsewhere. The paper also outlines the findings of qualitative research conducted in 2012 to examine perceptions of cognitive skills in Rwanda and the different political, cultural and educational factors that appear to support and impede their development.

Consequently, the first section explores the meaning of cognitive skills and their possible role in building livelihoods and cohesive societies. The second section examines Rwanda's political and educational context, while the third section sets out a human capital framework and methodology for the research. The fourth section summarises and analyses key findings from the study, with the concluding sections describing Rwandan progress since 2012, arguments for embedding cognitive development within basic schooling and the implications for curricula and education systems going forward.

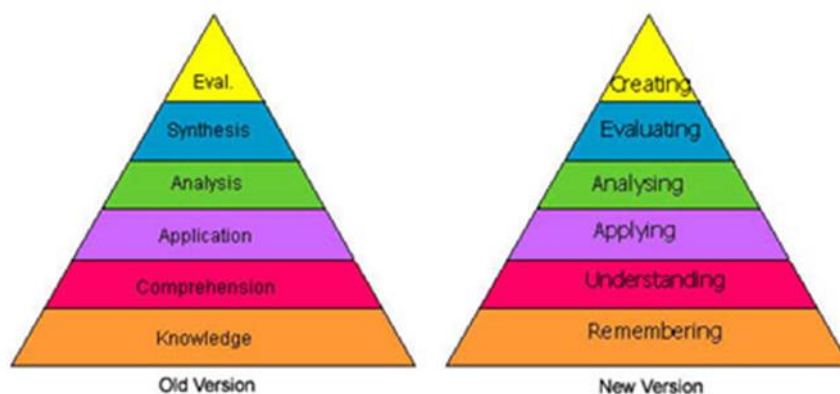
2 Understanding cognitive skills

2.1 Conceptions of cognitive skills

The notion of a ‘skill’ is a notoriously nebulous concept. While common interpretations import a sense of competence, expertise and ability, the precise meaning appears to differ with the particular context, from education to psychology, from recruitment to neuroscience (Brown *et al.*, 2001; Abadzi, 2006). The challenge is compounded by the number of different types of skill, with mental capacities being categorised as cognitive, non-cognitive, core, catalytic, soft, transferable or even a combination of the above (UNESCO, 2003; World Bank, 2005). Indeed, the boundaries between such classifications are often blurred and any given skill may fall into a number of groups.

Notwithstanding these difficulties, Bloom and other psychologists (1969) analysed learning outcomes to create a taxonomy of educational objectives. Within the cognitive domain, they codified a hierarchy of six interrelated classes comprising knowledge, comprehension, application, analysis, synthesis and evaluation. Recognising the limitations of schooling for mere information transmission, Bloom *et al.* advocated curricula that facilitate learners beyond knowledge reproduction and repetition and towards an advanced level of consciousness. In recent years, however, the taxonomy has been revised and restructured around the following updated classes: remembering, understanding, applying, analysing, evaluating, and creating (Krathwohl, 2002). Figure 1 shows the two versions.

Figure 1. Bloom’s taxonomy of educational objectives and the revised version (Overbaugh and Schultz, n.d.)



Further interpretations have emphasised similar cognitive functions. These include how children think independently, process information and solve problems (LMTF, 2013). In contrast to affective skills, which focus on behaviours, preferences and attitudes, cognitive competencies concern the ability to perform certain mental operations. They include creativity and imagination, also elusive concepts, but which suggest an original configuration of thoughts and draw on ‘knowledge, control of materials and command of ideas’ (NACCCE, 1999, p.6).

In each case, this understanding presumes that a skill is individually-constructed, transferable and capable of existing outside a particular social context. In reality, competencies are nurtured, refined and used within collective cultural and political settings (Tikly *et al.*, 2003; Kraak *et al.*, 2006). The prevailing context will no doubt influence how a skill is perceived and valued, and govern the parameters for its application. However, the international mobility of workers and evidence from cognitive neuroscience support a universal and decontextualised conception of skills and human capital. The ease with which labour

requirements can be outsourced to distant factories or immigrants with little knowledge of customs undermines arguments on the embedded worth of skills. Similarly, neurological research indicates that:

Human brains process information in much the same way, and similarities may be more important than individual or cultural differences (Abadzi, 2006, p.8).

This paper therefore focuses on higher-order cognitive skills across the two versions of Bloom's taxonomy. Recognising the significance of cultural context, the study nevertheless explores their value and contribution as transferable between different settings, and in particular examines their role in helping learners to think critically and creatively, engage with abstract ideas and solve practical problems.

2.2 Benefits of cognitive skills

Traditional economic approaches to quantifying the benefits of education sought to establish a link between years of schooling and rates of financial return (Mincer, 1974). However, Hanushek and Woessmann (2008, 2011) argue that the *quality* and not the *quantity* of education plays a critical role. More specifically, they identify the development of cognitive skills as a key component within the human capital debate, and suggest a strong positive correlation between such skills, individual earnings and overall economic growth. Using performance in mathematics, science and reading assessments as proxy indicators for cognitive development, they claim that skill levels within a population may also affect its distribution of incomes and that the typical focus on enrolment and completion in low-income countries masks a significant skills deficit. They acknowledge the challenge of proving a causal relationship and the influence of external factors but nevertheless contend that schooling that fails to nurture such skills will yield lower returns in the longer term.

The Learning Metrics Task Force (2013) also identified cognition and learning approaches as critical objectives among its seven domains for education outcomes. In addition to children's physical, social and emotional development, and more traditional focuses like literacy and numeracy, cognitive capacities can have a wider range of applications and catalyse more holistic growth. Arguably, they provide individuals with *'the tools with which technical and life skills are acquired'* (Adams, 2011, p.2), with critical thinking and creativity helping learners to evaluate information and adapt it as valuable knowledge relevant to their lives.

In particular, cognitive skills appear to confer practical benefits in terms of sustainable economic prosperity and inclusive social development. Independent thinking to assess a situation and the creative capacity to identify appropriate solutions can support more productive and effective citizens, able to initiate positive change across different aspects of their life (NACCCE, 1999; LMTF, 2013).

Regarding livelihoods and enterprise, cognitive skills can manifest themselves in several ways. Critical analysis can help workers adapt to an evolving labour market, while increased creativity can enable them to innovate for greater competitiveness and efficiency (Craft *et al.*, 2001). Beyond employment, improved imagination can stimulate wider job-creation and entrepreneurship. Indeed, Duening (2010) explores the interplay between higher-order capabilities that emphasise the evaluation and creation of ideas in his model of *Five Minds for the Entrepreneurial Future*. He discusses the importance of critical and innovative thinking, and highlights skills such as problem-solving and planning as crucial to any successful business venture.

Within a nascent enterprise, cognitive skills can support a range of essential functions. Through evaluating patterns and understanding the gap between current and possible realities, entrepreneurs can recognise

emerging opportunities and the factors necessary to exploit them effectively (World Bank, 2009; Duening, 2010). Imagination to better appreciate customers' perspectives and needs can help businesses deliver responsive services and tailored solutions. Similarly, critical awareness can sensitise entrepreneurs, from street traders to corporate executives, to appreciate the market forces and other influences that affect them. For instance, an analytical and imaginative reflection on operating conditions can enable businesses to anticipate the impact of regulatory reforms or environmental changes, and map out the steps required to address them.

Increased job opportunities and improved livelihoods can go some way towards easing the pressures that give rise to poverty, social unrest and conflict. However, higher-order cognitive skills also appear to lay foundations for more direct and sustainable societal transformation (Nenty *et al.*, 2007).

Freire (1972) commented on the catalytic role of education to examine structures within a society as a first step towards improved collective consciousness. Within this, cognitive competencies that support critical reflection and creative visioning can enable communities to not just 'read' the world, but also rewrite reality for a better future. Through education that equips all learners with analytical and problem-solving skills, societies can become empowered to participate more effectively, make more informed decisions and defend their own rights, and the rights of others (Sen *et al.*, 2007).

Cognitive skills, in particular creativity and imagination, underpin trends towards greater tolerance, inclusion and social cohesion. The ability to imagine an alternative perspective or empathise with 'the other', whether from the opposite gender, a different religious group or a rival ethnic background, can foster acceptance and reduce a propensity for violence (Greene, 1995; NACCCE, 1999). Education that nurtures empathy can help to reduce stigmatisation, respect indigenous practices and lifestyles, and prepare young minds for a world of pluralisms (Sen *et al.*, 2007). Similarly, critical thinking can encourage more reasoned analysis and protect against the threats of radicalisation and fundamentalism.

Higher-order cognitive competencies further enable individuals, their families and societies to plan more proactively and to manage the risks in their lives. Again, imagination assists people to visualise their approach in advance and determine the steps involved in a particular process (LMTF, 2013). Such creative faculties can also help in identifying and mitigating emerging risks (Duffy, 2006). These could include climate change and natural disasters, threats to food security or water supply, or health risks pertaining to particular activities or behaviours.

Cognitive skills therefore purport to offer a range of economic and social benefits, for individuals and communities alike. However, as noted above and despite their apparent transferability, such capacities exist and operate within a particular cultural and political context. To better understand the factors perceived to nurture or impede their development in Rwanda and elsewhere, the next section examines the Rwandan setting in further detail.

3 The Rwandan context

Since the late 1950s, Rwanda has experienced ethnic tensions and violent conflict between the Tutsi minority and the Hutu majority that culminated in the 1994 genocide, which left nearly a million dead in just three months (Gourevitch, 1998). In recent years, the country has attracted attention from the international community for very different reasons. With a clear vision for economic growth and social progress, Rwanda has been praised as a success in post-conflict reconstruction and a beacon of hope for African development (Straus and Waldorf, 2011). Gross domestic product has soared and exports of tea and coffee have provided external revenues for much-needed infrastructure projects (MINECOFIN, 2007).

However, for all the supposed accomplishments, Rwanda's ongoing prosperity seems far from assured. The country has owed much of its rapid success to factors including high levels of foreign aid (Straus and Waldorf, 2011), and remains widely unequal with the seventh largest Gini coefficient of income inequality in sub-Saharan Africa (UNDP, 2014), and questions around the reality of a shared Rwandan identity (Longman, 2011). With high levels of underemployment across a young workforce, the growth of business and the promise of skills for new jobs hold particular hope for the country's future.

Enterprise plays an instrumental role within plans for Rwanda's development. Traditional livelihoods that rely on subsistence farming are becoming less financially and environmentally viable as the size of land holdings decreases and soil fertility declines (Straus and Waldorf, 2011). With no real natural resources, high transport costs and a ballooning population, the Government needs a strategy to support its people and recognises the need for modernisation. National policies emphasise the role of technology within Rwanda's future and describe ambitious aspirations to become a knowledge-based economy by 2020 (Tikly *et al.*, 2003).

Beyond the macro-level economy, government strategies appear designed to build capacity *and* accelerate poverty alleviation. Through pro-poor components of national growth, initiatives claim to stimulate enterprise at all levels of Rwandan business (MINECOFIN, 2007), with skills for entrepreneurship, and not just employment, holding special significance. Indeed, rising rates of school completion and a youthful population require that the national economy adapt to create new jobs and absorb the expanding workforce (REB, 2012). Neither the public nor development sectors will be able to accommodate the surge of potential candidates as they reach the job market and new areas for gainful employment will need to be found (UNESCO, 2011).

In terms of basic education, Rwanda reports net primary enrolment at 99 percent and claims to have achieved gender parity, with equal numbers of girls and boys attending school ahead of the 2015 deadline (UNESCO, 2015). The value of education to reduce poverty and meet labour market needs is acknowledged at all levels (MINEDUC, 2010; REB, 2012). However, inside the classroom, *'[t]he low quality of schools remains a common concern in Rwanda and many feel that educational quality has declined in the post-genocide period as quantity has risen'* (King, 2011, p.148). Teachers employ so-called 'traditional methods' of instruction that emphasise rote memorisation and develop only the lower-order skills in Bloom's taxonomy (Freedman *et al.*, 2008; Adams, 2011).

Regarding cognitive competencies, imagination for empathy and critical thinking hold particular significance given Rwanda's history of genocide. The 1994 slaughter of men, women and children by their own countrymen displayed little value for human life. Also, while it is impossible to draw causal links, historians have often portrayed the perpetrators as obedient, unquestioning and conformist, suggesting that the widespread lack of critical skills enabled the ruling party to manipulate and mobilise so many killers with such little opposition (Hodgkin, 2006; Walker-Keleher, 2006; McLean Hilker, 2011). Nevertheless,

research on cognitive competencies in Rwandan schooling remains limited, hence this qualitative study to examine perceptions around their development.

4 Research methodology

As indicated above, cognitive skills are difficult to define and even harder to measure (Brown *et al.*, 2001). This research therefore explores *perceptions* and *attitudes* around their status and development to answer the following questions:

How well does Rwandan basic education appear to nurture cognitive skills?

What factors appear to enable or impede the development of such skills?

The study employs a human capital framework and focuses on basic schooling generally, and primary education in particular. Notwithstanding the importance of cognitive skills for social transformation, Rwandan policy documents highlight economic growth and workforce development as drivers for educational investment (MINECOFIN, 2007). The emphasis on primary reflects the country's near universal enrolment, the high rates of social return on primary relative to secondary and tertiary, and the importance of primary education in laying the foundation for all subsequent learning experiences (Psacharopoulos and Patrinos, 2004).

Qualitative data was collected in 2012 by means of semi-structured interviews with education specialists across a range of bilateral donors, multilateral agencies and major non-governmental organisations (NGOs) operating in Rwanda. Such organisations were chosen as significant stakeholders in and advocates for Rwandan education, offering a degree of externality and mediating between policy discussions and grass-root interventions. In total, ten respondents across eight organisations were interviewed, with a mix of men and women, Rwandans and expatriates. Interviewees typically assumed an 'upper' position in the exchange and agreed to be audio-recorded. Each recording was then transcribed verbatim and analysed by cross-sectional coding to draw out trends and themes common across the interviews, and to answer the research questions (Lichman, 2006). The following section sets out key findings from the interviews and their relevance to the research questions.

5 Key findings

The research exposed a range of different perceptions towards skills in Rwandan education. Across the sample group, respondents shared their perspectives on the status of cognitive skill development, specific factors that supported and impeded their growth, and opportunities for progress going forward. The following sections explore each of these aspects in turn.

5.1 Perceptions of cognitive skills

Many of the respondents observed an important relationship between educational quality and skills development. On the one hand, pillars of learning quality, curriculum, classroom materials and pedagogy, nurture children's intellectual competencies and cognitive aptitudes. On the other hand, the acquisition of specific skills could serve as a legitimate learning outcome and indicator of academic quality. According to several participants, both may also impact school access and completion where parents need to discern a minimum standard of teaching and relevance to justify the financial and opportunity costs of their children's continuing attendance.

Overall, respondents described low levels of quality and cognitive skill development across Rwandan schools, although certain interviewees refuted any alleged deterioration, given the absence of baseline data. Participants acknowledged the limitations of current basic education and highlighted the prevalence of teacher-centred methodologies that encourage rote memorisation over participatory learning and independent problem-solving. In particular, they suggested a lack of genuine creativity, both in terms of artistic expression and innovative thinking, and while opinions on the exact state of Rwandan cognitive development diverged between interviewees, they agreed on the need for improvement, and perceived quality and skills as growing priorities on national and international education agendas.

5.2 Enablers of cognitive skills

Respondents reported several key factors that they viewed as supporting the development of cognitive skills within Rwandan schools. Given the relationship between skills and quality, many such factors would appear to promote skills through improvements in general learning, and can be broadly classified as political, educational and cultural.

Some of the participants commended the Government for its dynamism and commitment to rebuilding Rwanda's human capital. They cited the country's proven track record, alluding to impressive enrolment statistics, and reported their perception of government motivation to further bolster the existing system. Respondents also referred to the rising profile of educational quality and the establishment of the Rwanda Education Board (REB) as evidence of dedication to improve learning, and thereby develop cognitive skills in basic schooling. They celebrated advances through the Quality Implementation Working Group and the creation of the REB as an umbrella body to unify previously discrete departments for more consistent coordination around learning quality.

Regarding more direct educational factors, participants referred to the Government's stated preference for learner-centred teaching as a more participatory style of pedagogy to nurture skills among its students. Several respondents also discussed the greater availability of learning aids, particularly textbooks and, increasingly, technology, which they perceived as raising quality and potentially skills. One participant described a new decentralised system that enables school managers to select grade-appropriate readers, which the publishers then deliver directly to the individual institution. Such developments were viewed as

enabling staff to plan their lessons in advance and encouraging them to move away from 'chalk and talk' methodologies, with improved scope for learning by discovery.

For one respondent, the universal reach of the national language, Kinyarwanda, represented a cultural factor that supported cognitive skills in basic education. Unlike countries with multiple local vernaculars, Rwanda avoids particularly difficult decisions over language of instruction with children learning in their mother tongue during early years and in English from Primary 4. Use of Kinyarwanda up to that point was viewed as enabling children to learn in their first language as they master basic literacy and associated skills.

5.3 Impediments for cognitive skills

Interviewees similarly detailed a wide range of challenges that they felt impeded skills development in Rwanda, and elsewhere. Again, such factors can be categorised as political, educational or cultural, and in many cases also obstructed wider learning quality.

According to participant responses, cognitive skill development struggled in the political climate at the time of interview for two key reasons. First, and with implications beyond Rwanda, the inherently vague nature of such skills appears to preclude them from effective high-level discussions and discourages their growth. Secondly, the Rwandan Ministry of Education (MINEDUC), like ministries in similar low-income countries, faces resource constraints that force it to prioritise some educational outcomes over others.

As noted above, defining skills presents challenges in many contexts (Brown *et al.*, 2001). During interviews, reference to 'cognitive skills' was rarely enough and respondents usually required additional clarification. Many interviewees identified this ambiguity and difficulties in agreeing clear terminology as serious weaknesses in the skills discourse and a major hurdle for their inclusion in policy debates and educational planning.

Participants explained that traditional skills discussions focus on technical and vocational training, or upper secondary schooling, as students prepare to enter the workforce. They suggested that cognitive skills among primary-level children were harder to understand, in terms of practical value and specific application. Respondents also indicated that policymakers lacked appreciation of their importance in basic education and might continue to overlook their value without improved consensus or evidence. Further, interviewees commented on the difficulties of measuring cognitive competencies and monitoring their immediate impact.

Beyond conceptual ambiguity, participants identified resource constraints, both human and financial, as further challenges for skills in the Rwandan and comparable systems. They queried technical capacity across key institutions to implement effective initiatives and, in a couple of cases, reflected on the high turnover of critical personnel, even at the highest levels. They also alluded to the need for more diverse actors within the sector, for example think tanks, to help make policies practical on implementation.

Limited financial resources for an overstretched and growing system created further difficulties. Respondents expressed concerns around funds for learning and opportunities for cognitive development. As one interviewee described:

[t]here is more pressure because schools are expanding, they have to cater for higher numbers of students...and there's often little money left for actually working on the improvement of quality (Expatriate female, multilateral agency).

Against this backdrop, several participants highlighted a perceived preference for tangible investments and outcomes, such as school infrastructure over ‘softer’ programmes like teacher training. They speculated that choices might be driven by the relative ease of delivering and measuring such concrete outputs, compared with the intangible impact of teacher development.

More particular to the Rwandan context, several respondents highlighted the reintroduction of double shifting by teachers as evidence of insufficient resources to meet the demands of the nine-year basic education. Competing priorities for educational reform also appeared to exacerbate pressure on teachers and finances. Nearly every interviewee cited the change to English as the language of instruction from Primary 4 as a major impediment for skills and pedagogical quality. Similarly, plans for a twelve-year basic education were expected to place further strain on resources, as well as the sheer pace and frequency of reforms, concerned to deliver quick, quantifiable results.

In terms of educational factors, participants perceived several practical impediments as limiting the development of cognitive skills in Rwanda and elsewhere. First, they described the challenge of effective coordination across the sector to advance core competencies through integrated curriculum reform and simultaneous training for teachers to use the new content. Secondly, respondents suggested a global lack of understanding about how cognitive skills really develop and the key influences, at home or at school, that shape them. Within resource-poor environments, the low level of teaching capacity, working conditions and incentives appeared to present further hurdles. In particular, interviewees observed that few Rwandan teachers had been able to cultivate their own creative and critical skills and without such basic aptitudes might struggle to impart similar abilities to their students.

Many participants reported an over-reliance on teacher-centred methodologies which could hinder children’s skill development. Despite efforts to instil more participatory approaches, changing teachers’ pedagogy would take time and many resisted relinquishing classroom control. In addition, one respondent argued that the use of subject specialists instead of classroom teachers from Grade 1 focused attention on learning thematic content rather than skill acquisition. Numerous interviewees also described a tendency to teach to the test:

If this is not something that can be captured in an examination then it will be a wasted skill and maybe teachers and children will think that it’s not worth wasting time learning (Rwandan female, NGO).

Finally, several participants described the hierarchical nature of Rwandan society as a potential cultural barrier to cognitive skill development. They referred to nationwide deference to higher powers for guidance and decision-making, with a preference for conformity, uniformity, behaving correctly and staying in one’s place. Such practices could thereby undermine proactive problem-solving, stifle creativity and limit public space for critical thinking, reflection and dissent. Cultural norms in Rwanda and similar contexts could therefore devalue the prospective role of skills, teaching children to be amenable and subservient, rather than analytical and inquisitive.

In summary, respondents described a range of complex factors that they perceived to impede cognitive skill development. Of interest, none of the interviewees commented on the politically sensitive nature of such skills, or the values inherent in their propagation. Specifically, widespread critical thinking could encourage the population to question the incumbent Government or challenge existing power structures (Straus and Waldorf, 2011). Similarly, Tabulawa (2003) doubts the neutrality of learner-centred pedagogies to increase quality and skills, suggesting that they rather represent the transmission of Western values to promote democracy and participation.

5.4 Opportunities

Notwithstanding the challenges, participants recognised several opportunities for improvements around Rwandan children's cognitive development. At a high level, they identified negotiations to revise the *Economic Development and Poverty Reduction Strategy* and *Education Sector Strategic Plan* as a chance to clarify learning objectives. They described the potential role of the REB to coordinate parallel reforms around curriculum design, teacher training and student assessment, and initiatives to improve pre-service instruction and school-based mentoring for teachers. Further, respondents highlighted the forthcoming launch of Rwanda Reads, a nationwide programme to promote early literacy, as key to nurturing creativity and exposing young minds to new ideas. Finally, they reflected on growing efforts to encourage early childhood care and education, for example around mental stimulation, nutrition for cerebral development and school readiness, as initial but important progress.

6 Rwanda Today

In characteristic fashion, Rwandan education has witnessed considerable progress since the interviews were conducted in 2012. In particular, a new *Education Sector Strategic Plan* was published in 2013 which, as expected, makes provision for a twelve-year basic education (MINEDUC, 2013). Rwanda Reads has now been running for three years and appears to be addressing the earlier dearth of community libraries and books in Kinyarwanda.

Critically, the national curriculum has been revised by the REB with an increased focus on pre-primary learning and greater recognition for the importance of higher-order cognitive skills (MINEDUC, 2015). In particular, critical thinking, creativity and problem-solving are identified as valuable generic competencies that apply across the curriculum, which also covers empathy, peace and environmental content. However, the success of the reform and its impact on cognitive development remains to be seen. As noted by interviewees, MINEDUC and the REB will need to ensure a comprehensive approach to align pedagogical practices, teacher training, classroom materials and learning assessment with the new and enhanced curriculum.

Recent research has also revealed ongoing challenges in the achievement of even basic competencies. A countrywide survey of Primary 4 and 6 children highlighted continuing difficulties in early grade reading and mathematics (RTI, 2012). Shortcomings in literacy bear particular significance, given its critical role in fostering cognitive capacities, through exposure to new ideas and different points of view (Abadzi, 2006). In which case, Rwanda is moving in the right direction, but still has far to go.

7 Conclusions

This paper has explored the importance of higher-order cognitive skills and the complex factors that facilitate and impede their development. Such skills appear to offer a broad range of economic and social benefits, stimulating innovation and enterprise for sustainable livelihoods, while promoting participation and empowerment for inclusive communities. More fundamentally, cognitive competencies offer catalytic advantages that underpin the achievement of other learning outcomes and the acquisition of wider life skills, for example, the ability to imagine and empathise with another person's perspective to communicate and work with them more effectively. For this reason, cognitive development should arguably enjoy greater prominence in educational policies and planning going forward, not least given its relevance and application towards so many of the new Sustainable Development Goals.

Traditionally, the acquisition of higher-order transferable skills has been emphasised as part of secondary schooling or training within the workplace (UNESCO, 2012). However, despite gains in primary attendance, many children still struggle to access secondary education. Across sub-Saharan Africa, an average primary *net* enrolment rate of 79 percent contrasts with *gross* secondary enrolment of 41 percent (UNESCO, 2015). In Rwanda, the gap is even more stark, 99 percent compared with 32 percent. Similarly, school systems need to equip their learners with appropriate skills *before* they reach the labour market, to increase employment opportunities and enable the workforce to adapt to an ever-evolving environment. In addition to building quality and expanding secondary access, ministries of education therefore need to embed cognitive skills within primary-level curricula to maximise their development and unlock the population's potential.

The qualitative research identified perceived deficiencies in Rwandan basic education around the treatment of children's cognitive skills, and outlined likely reasons for those shortcomings. Notwithstanding the significant challenges, the country is now moving ahead with a progressive competency-based curriculum that emphasises capabilities over content. To ensure impact and success, Rwanda will need to complement its curricular reform with teacher training that nurtures children's creativity, materials that facilitate independent inquiry, and assessments that measure skills above mere factual recollection.

Beyond basic schooling, greater attention to effective pre-primary care and education could yield considerable gains in children's mental development, given the multiplier effect of early investment (Heckman, 2006). Even before children reach the classroom, their parents as first educators could be sensitised to take more active and informed steps to cultivate their cognitive capacities through adequate nutrition and imaginative play. Through coordinated and comprehensive strategies, Rwanda may thereby offer lessons and examples for other countries as it moves forward to enrich its children's minds.

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