

Quality Education in Rwanda: A Critical Analysis of Quality Indicators

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Abstract

Background: Quality education produces substantial values for money, as people are educated, earnings grow, so do savings, so does investment, and in turn, so does the well-being of all. As such, human capital consists of the knowledge, skills, and health that people accumulate over their lives, enabling them to realize their potential as productive members of society. It has large payoffs for individuals, societies, and countries. These facts mark the contribution of quality education to the production of effective human capital as a cornerstone of knowledge-based economy.

Materials and methods: The purpose of this study was to scrutinise what is currently known about Rwandan quality education, its remaining challenges and to suggest solutions upon the identified obstructions for the country to achieve its pre-determined long-term goals. External Desk research method was used to collect relevant information already published online, published reports and policies, Government and related International education based organisations' published data, from different Rwandan government & ministerial websites, United Nations (UN) Agencies websites, World Bank (WB) website to enhance the overall effectiveness of this current research in light of education quality indicators in Rwanda namely: government spending in education, internal efficiency, access, equity, relevance, literacy and teachers' motivation.

Results: The study established that expenditure on education as % of total government GNI & public expenditure remains insufficient. Internal efficiency discloses a weak cohort survival, low transition and completion rates. Access to education was revealed inadequate when it comes to proximity of schools, pre-school education, health & nutrition services, language of instruction as it has been changing overtime, and inadequate access to current educational technology- high speed internet connection, adequate hardware & software, digital and online learning opportunities. The study also established an inadequate equity in distributing available scarce resources like professionally trained and qualified teachers, classrooms, desks, textbooks, computers, toilets, particularly in rural areas. Relevance of education was also revealed poor, for education to respond to the societal needs and labour market demands like provision of competent human resources on either national or international market as evidenced by Human Capital Index (HCI) of 0.36/1. As such, literacy rate keeps growing slowly i.e., 0.96% within 10years. At last, teachers' motivation was found insufficient enough to cover teachers' basic daily expenses since their pay falls far less than country' GDP/capital & purchasing power parity.

Conclusion: A conclusion upon such findings was therefore drawn that the expected long-term goals-transformation of Rwandan citizens into skilled human capital for social economic development of the country, achievement of access to quality, equitable and effective education for all and provision of human resource useful for the socio-economic development through the education system, remain unfinished business by the year 2020. To this end, in regard to this conclusion, suggested solutions for the main identified obstructions were asserted in line of achieving the expected quality education for all.

Key words: *quality education, challenges, spending in education, internal efficiency, access, equity, relevance, literacy, motivation.*

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I. INTRODUCTION

The extent to which a nation can provide quality education to all of its citizens depends on its ability to attract, recruit, train and support competent, caring and committed teachers. In this perspective, Education is strongest in those societies which value and support their teachers and public education systems and in which the status and morale of teachers is high (Power, 2015). In so doing, teachers' education, ability and experience along with small schools and lower-pupil ratios are associated with significant increases in students' achievement, so does quality education (Darling-Hammond, 1998).

Quality education refers to a set of factors (direct resources to schools, pedagogical support, supportive school climate, effective management and administration) within the education system that are believed to produce effective students' achievement, including measurable dimensions of students learning (UNCEF, 2000). In a similar vein, MINEDUC (2009) expresses a concern of quality education as the students' achievement when all school leavers are equipped with all skills, knowledge, attitudes and values needed for Rwanda's economic and social development and for their own further educational and social development.

To support the advancement of meaning assigned to quality education, The Common wealth (2017) bolstered quality education as a system or product that has passed a certain set of criteria or principles which implies that quality can always be further improved and maintenance & improvement of standards which are objective and continuously changing. Thus maintain the application of the principles of Effective, Empowering, Equity, Sustainable, Appropriate and well-being & safety-*EEESAW*.

Having a closer look on the aforementioned definition upon quality education, the current researchers postulate that Quality education refers to an effective end result of any level of education system attained from a combination of various factors count in education process including necessary input resources i.e. financial, human, material & time resources; pedagogical factors, environmental factors; as well as school management and administration factors; which is expected from everybody, everywhere so as to stay healthy in a better society. Quality education in this study is therefore explored by looking at factors such as spending in education, internal efficiency, access, equity, relevance, literacy, and teachers' motivation.

The current global educational goal is to achieve the sustainable development goal 4 (SDG4) which aims at ensuring inclusive and equitable quality education and promote life-long learning opportunities for all by 2030 (UN, 2015a). It is important to remind at the same time that this goal was set in 2015 after realising that the former educational goal described in Millennium Development Goals- achieving universal primary education & promote gender equality and empower women, set in 2000 under millennium development goals have been uneven (UN, 2015b).

Along the same lines, Rwandan education aims at transforming Rwandan citizens into skilled human capital for socio-economic development of the country by ensuring equitable access to quality education focusing on combating illiteracy, promotion of science and technology, critical thinking and positive values. In the same vein, the Purpose of Rwandan Education Sector ensures access to quality, equitable and effective education for all Rwandans (MINEDUC, 2010). While the government of Rwanda aims at combating ignorance and illiteracy and providing human resources useful for the socio-economic development through the education system in line of achieving a global goal of poverty reduction and improvement of well-being of the population (MINEDUC, 2003a), the recent one published in National strategy for transformation (NST1), stresses the development of knowledge based economy (Republic of Rwanda, 2017).

In a similar light, UNESCO (2015a) ascertains that it is a must for the education system of a certain country to possess the ability of quickly and effectively respond to the challenges arising from the rapid evolving nature of socio-economic trends. Thus, a raising demand for education and the pressures to improve its relevance and quality stands as a fact indicating the paramount effect of education for individuals, households and nation as well.

Of a particular concern, Rwanda has been working hard to achieve its pre-determined ambitious goals as well as millennium/sustainable development goals and indeed, some have almost been achieved like Universal Primary Education and Gender Parity in primary education as well as empowering women by 2015 (MINEDUC, 2016 p.24).

Besides, Rwanda has also made a remarkable trend in improving education since the beginning of the new millennium whereby the country managed the school fees abolition to expand access in 2003 (Joseph, Annet & Pieter, 2012), empowering Special Educational Needs & Inclusive Education in 2007 (MINEDUC, 2018a), Adult Education (MINEDUC, 2014), Technical and Vocational Education and Training-TVET (MINEDUC, 2008), introduction of fee free and compulsory nine years basic education 9YBE in 2009 and Its extension to free and compulsory Twelve Years Basic Education 12YBE in 2012 with related additional classroom construction significantly supported by community involvement through Umuganda, as well as the transition from traditional knowledge based curriculum-KBC to Competency based curriculum-CBC which provides the students with more solid foundation of core literacy and numeracy skills (The Commonwealth Education Hub, 2021).

However, Rwandan education system particularly in the areas of government spending on education as % of total government expenditure & GNI, internal efficiency, access, equity, relevance of education, literacy, teachers' motivation, remains a frequent debatable issue. In essence, the total government expenditure on education as % of total government expenditure & GDP in 2019/2020- 10.8% and 3.4% respectively, remains below the overall international recommended government spending in education: 15-20% of total public expenditure and 4-6% of the countries' GDP (UNESCO, 2019).

Concerning internal efficiency, in 2017 gross enrolment rate was reaching 139%, repetition rate 16% especially in P6 85% repeat this grade at least once before shifting to secondary schools (UNESCO, 2018). Drop-out rate of 7.8 %, 9.1%, & 5.1% in primary, lower secondary and upper secondary respectively. Cohort survival, 68% of the P1 intake complete P6, and 38% reach S3 (WB, 2019a). Transition from p6 to S1 remains 42% and 37% for boys and girls respectively.

Considering access to proximity of schools, students are still walking more than 30minutes to the nearest schools especially in the south and western provinces (WB, 2019a). In terms of access to electricity and technology, only 32% and 51% were connected to national electrical grid in 2016 for primary and secondary school respectively, while only 13% of secondary schools had internet connection.

In relation to fair distribution of scarce resources, pupil-trained teacher ratio remains 60:1 (MINEDUC, 2018b). Pupil-classroom ratio in 2018 averaged 82:1 in public schools, particularly 95:1 in grade one. Even though double shifts was initiated to address over-crowded classrooms, the class size exceeds 65 and 100 in some extreme cases.

Literacy and numeracy remain at 45.3% and 32.9% in P2 literacy and numeracy respectively while 44.1% and 38.3% in P5 literacy and numeracy respectively in 2016 (MINEDUC, 2018b). The overall concern of learning outcomes, Rwanda scored 358 on scale out of 300 and 625 minimum and maximum scale respectively in global assessment of learning for the human capital project (WB, 2018). Additional concern could be the evidence suggested by WB (2019b) substantiating that among the other countries categorised in the same income, Rwanda falls back in the progress of providing quality education. While teachers are still being paid salary far less than purchasing power party.

Consequently, quality of education in Rwanda remains poor, with inadequate ability to effectively compete on national and international market for the concerned graduates. Economically, the full achievement of growing to middle-income country has been uneven by 2020, increase of unemployment rate, and citizen's well-being remain unanswered issues. This current study therefore scrutinized what is currently known about the Rwandan quality education, its remaining challenges and suggested solutions upon the identified hindrances for the country to achieve its pre-determined long term-goals towards quality education and economic development.

II. Materials and Methods

This Critical analysis review of quality indicators in Rwanda was conducted by using External desk research method adopted to increase the overall effectiveness of the research (Mangal & Shubhra, 2013). For the purpose of this study, a comprehensive search was carried out to retrieve related policies, reports, legal framework, and other related documents and articles. For the purpose of ensuring validity and reliability, the researchers included the research articles or reports providing data from census or other scientific data collection methods. For the sake of avoiding personal bias, information and data collected from personal diaries, newspapers and magazines were excluded from this study.

Consistently, in light of preventing the assumptions concerning availability of required data, the authors ensured that the required data is available before undertaking further stages of this study. The search strategy expressed in research key words was undertaken from seven websites namely: www.unesco.org, www.worldbank.org, www.internetsociety.org, www.minecofin.gov.rw, www.mineduc.gov.org, www.statistics.gov.rw. www.unicef.org. Therefore, the aforementioned English-written documents contained required data and information were retrieved to be made use of data collection in this study.

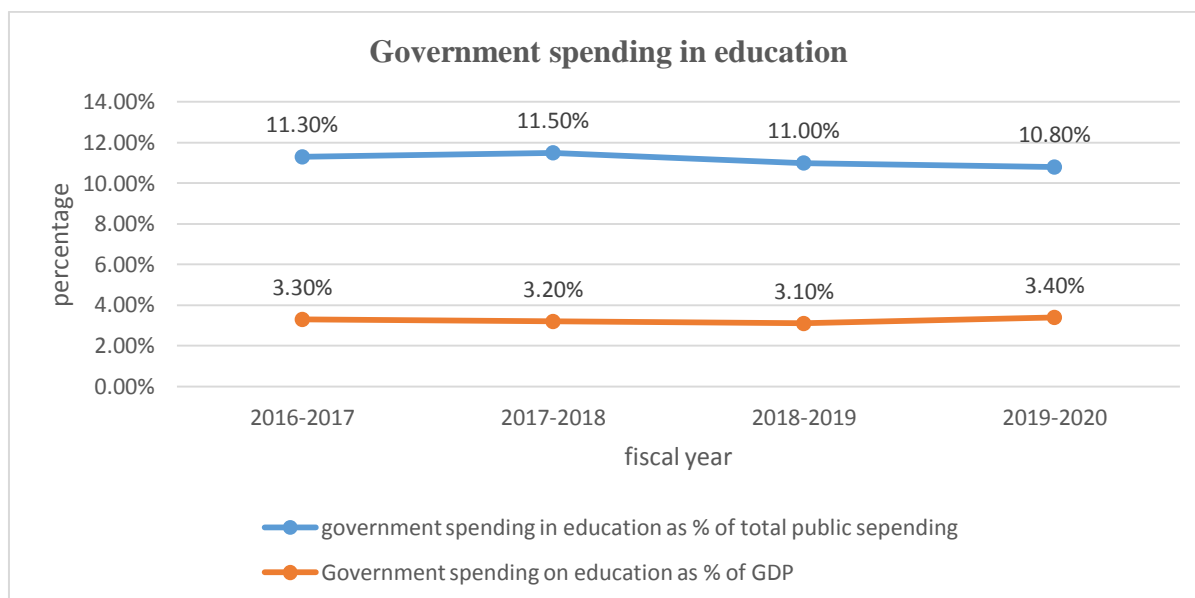
III. Results and discussions

3.1 The challenges of quality education in Rwanda

3.1.1 Insufficient budget allocation to education

Budget allocation to education system refers to the amount of money government spends in overall public education to cover all financial matters such as remuneration of both teaching and non-teaching staff, provision of infrastructures, purchasing of instructional materials and equipment, holding continuous professional development (CPD), field trip, etc. to ensure smooth running of educational institutions resulting in effective human resources able to significantly contribute to the social economic development of a nation. It is in this context that UNESCO recommends governments of nations to spend at least 15-20% of total public expenditure and 4-6% of Gross Domestic Product (GDP) in education system (Global Education Monitoring

Report, 2017/2018). Yet, government spending in education is still below this recommended international standard. Figure 1 shows the Rwandan government spending in education within the last four years 2016-2020.



Source: (MINEDUC, 2019b)

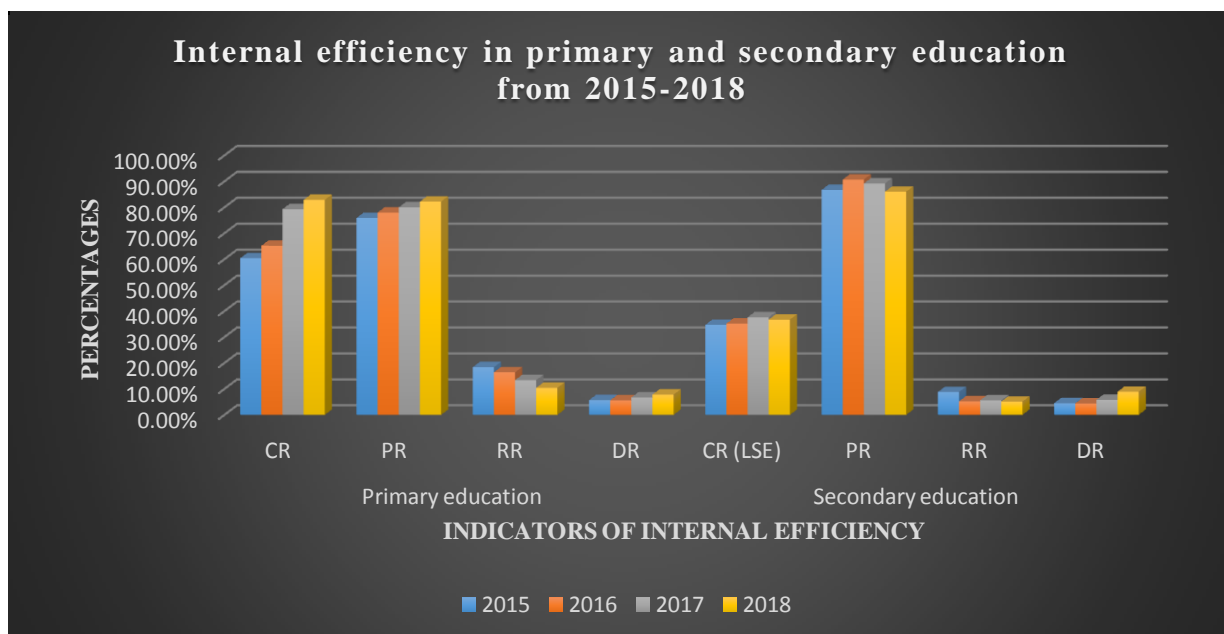
Figure 1 Government spending in education

Figure 1 shows government spending in education both as % of total public spending and GDP within the last four years chronologically. it shows that from fiscal year 2016/2017 to 2019/2020 the government spending was 11.3%, 11.5%, 11.0% 10.8% & 3.3%, 3.2%, 3.1%, 3.4% on total public expenditure and GDP respectively (UNICEF, 2019). It is without doubt that this educational budget deficit decelerates the Rwandan journey towards quality of education, and sustainable development as well. The issue to note is with regard to education spending and its great implication in sustainable development. In their study conducted from 83 countries, Acosta-Ormaechea & Morozumi (2017) about whether to allocate budget priority in infrastructure (like roads) or in education to accelerate development, the study established that spending in education is the best choice in case a country aims at a sustainable development despite the fact that infrastructure looks emergency. In a similar vein, Atolia *et. al.* (2017) elucidate that prioritizing infrastructure investment might assist economic growth in a short run. On account of this evidences, it is clear that a country with ambitious development vision in long run like Rwanda needs to invest in education. Much however still need to be done.

3.1.2 Internal inefficiency

According to UNESCO IIEP (n/d), internal efficiency of an educational system concerns the optimal use of resources (inputs) in producing its outputs. Assessments of internal efficiency are typically done for a specific level of education, say primary education, and the simplest indicator of internal efficiency is the unit cost of producing one unit of educational output, which may be a graduate of that level of education, or a student who has attained some minimum level of knowledge. In measuring this educational output, most developing countries used counts of students in terms of enrolment, continuation or drop-out, repetition or completion rates which actually measure the flow of students through schools.

In this regard, this study established gross enrolment rate, cohort survival rate, drop-out rate, promotion/transition rate and completion rate in Rwanda. By the nature of the concern, Rwanda experienced 139% gross enrolment rate; while cohort survival rate remain 68% of P1 reaches P6, and 38% reaches S3; drop out remains 7.8%, 9.1% and 5.1% in primary, lower secondary and upper secondary respectively; transition from P6 to S1 was 42% of boys and 37% of girls; then 60.4% of completion rate (UNESCO, 2018; ESSP, 20018/2019-2023/2024; WB, 2019a). **Figure 2** shows trend in various indicators of internal efficiency in both primary and secondary education from 2015-2018.



Source: NISR (2019; 2020), World Bank (2020)

CR: Completion rate, PR: Promotion rate, RR: Repetition rate, DR: Dropout rate, LSE: Lower secondary education

Figure 2 internal efficiency in primary and secondary education from 2015-2018

Rwanda is ranked first country with highest gross enrolment rate 131.3% in primary and 44.3% in secondary schools compared to East African Community countries. UNESCO, 2018 explains a recent history of rapid expansion which is consistent with the reduced out of school rate, this assertion was bolstered with the findings of World Bank (2010) reports Rwanda as the first country with lowest out of school rate 121,348 among East Africa Community countries.

Concerning completion rate, Rwanda has made a tremendous improvement in these two last decades. For instance, the completion rate in primary schools was 53% in 2014 but in 2016 it has been raised to 78% (UNESCO (UIS) 2018). Nevertheless, completion rate in secondary education particularly in lower secondary education remains low i.e. under 50% since the highest degree of completion was 42.4 achieved in school year 2019. In a similar light, data of World Development Indicators 2018 reports that completion rate remains 61% , 34% & 18% in Primary, lower & upper secondary education respectively. This evidence marks a fact indicating that Rwandan basic education remains below the average level of the all countries in the same income category since it was at least 66%, 37% in Primary and lower secondary schools respectively. Of a particular concern, WB (2019b) suggest that it will be impossible for Rwanda to achieve upper-middle income status in case it doesn't make a significant increase in school completion rate.

With respect to repetition rate particularly in early years of schooling, there is still a need to make a dramatic stride in curbing repetition in primary schools. In essence, the study conducted by United States Agency for The International Development (USAID) (2017) point out that at least 14% of the students in grade P1-P4 repeat grades of which 23% i.e. 1 in 4 learners were repeating grade P1. Another emerging issue of repetition in early years of primary education is with regard to the students who repeat grade not only once but several times. To bring this issue to light, MINEDUC/UNICEF (2017) clarified that 18.0% & 12.1% of the students aged 18years old in 2017 have repeated grade three and four times respectively. Of a particular concern, estimated 56% of primary six (P6) students in 2017 had repeated P6 at least twice, while 30% experienced three times and more of repetition in P6. A fact reflecting some of the reasons discouraging primary completion rate.

So far as transition rate is taken into account, Rwanda has marked a significant trend since the beginning of this 21st century whereby transition rate in 2000 was 48% which has been exponentially increasing to 73% in 2017 (UNESCO (UIS), 2020b). Although this may be a good step, there is a need to handle all the challenges hinder the rest of almost 30% who are denied access to secondary education.

As far as cohort survival rate is considered, Rwanda has significantly increased cohort survival rate within the last two decades. In the essence, only 45% reached P5, 28% reached P6, while only 15% reached S1 in 2008 (World Bank, 2011). But this rate has been increasing in primary school from 28% reached P6 in 2008 to 66.2% in 2018. According to WB (2019a) Cohort survival has reached 68% of the P1 intake complete P6, and 38% reach S3 (WB, 2019a). Despite the progress made from the year 2000, this cohort survival rate marks a fact

indicating that few students are reaching and completing tertiary education in Rwanda, which also raise up a concern of fragile research based economy.

From the aforementioned existing literature, it is clear that Rwanda has achieved a remarkable progress toward improving education in terms of internal efficiency within these last two decades from 2000. Yet, Rwandan pre-determined goal of education in this area of internal efficiency to be achieved by 2020 has not been effectively achieved since for instance primary, lower secondary, higher secondary schools' completion rate might have been increased to 100%; 40%; 16% respectively (Republic of Rwanda, 2007). It is important to note however that much still need to be done under internal efficiency in Rwanda.

3.1.3 Inadequate access of education

Access to education includes: on-schedule enrolment and progression at an appropriate age, regular attendance, learning consistent with national achievement norms, a learning environment that is safe enough to allow learning to take place, and opportunities to learn that are equitably distributed (Lewin, 2015: 29).

In this paper, access to proximity of schools, access to nutritional services, access to pre-school (kindergarten/nursery), access to intensive instruction in the language of instruction, access to technology (high-speed internet connections and adequate hardware (computers, laptops, tablets), and software (particularly learning applications))ensuring equitable access to the same digital and online learning opportunities were both determined.

a. Access to proximity of schools

In the first instance, the international recommendation for accessible school localisation norm suggest at least 30-minutes' walk ¹from living home to the nearest school for children of primary school age (World Bank, 2019a). However, NISR (2018) asserted that primary school-aged children who walk more than 30minutes to the nearest school from their living home fall in 46% across the country, particularly in rural areas of southern and western districts whereby the evidence indicates more than a fifth of middle school children living at least an hour walk away from school.

From these evidences, it is important to note at the same time that such distant schools hinders the opportunity to access on education which obviously leads to poor quality of education due to the fact that concerned students reach schools late, tired, hungry and ultimately fail to attend at all on account of bad weather. Provision of more other schools however needs to be done.

b. Access to school health and nutritional services

On the next occasion, is the access to school health and nutritional services. Not long ago, MINEDUC (2014b) indicates that food insecurity and chronic malnutrition in Rwanda have a main underlying cause in common: poverty. While developing national school healthy policy, its vision was to achieve full development potential, study in a healthy environment in a child-friendly schools, free from diseases, prejudice and violence for all Rwandan school-aged children (MINEDUC, 2014b). Equally important Guy (2006) argues that one of the aim of school feeding is to improve basic education particularly in the ways of increasing attendance and enrolment hence academic performance and ultimately alleviate drop-out rate in areas plagued with high food insecurity. Figure 3 shows the capacity of school feeding programs in nursery, primary and secondary education.

It is in this regard that school nutrition was one of eight key strategic areas to achieve this vision of school health policy operating under three school feeding programs namely including two (one cup of milk, boarding schools) funded by government and one funded by World Food Program (WFP). Despite the initiation of such school feeding programs, it doesn't serve the needy at all.

¹ **30-minute walk**; refers to a walking time equivalent to 2km for primary school-aged children while equivalent to 3km for middle school-aged children

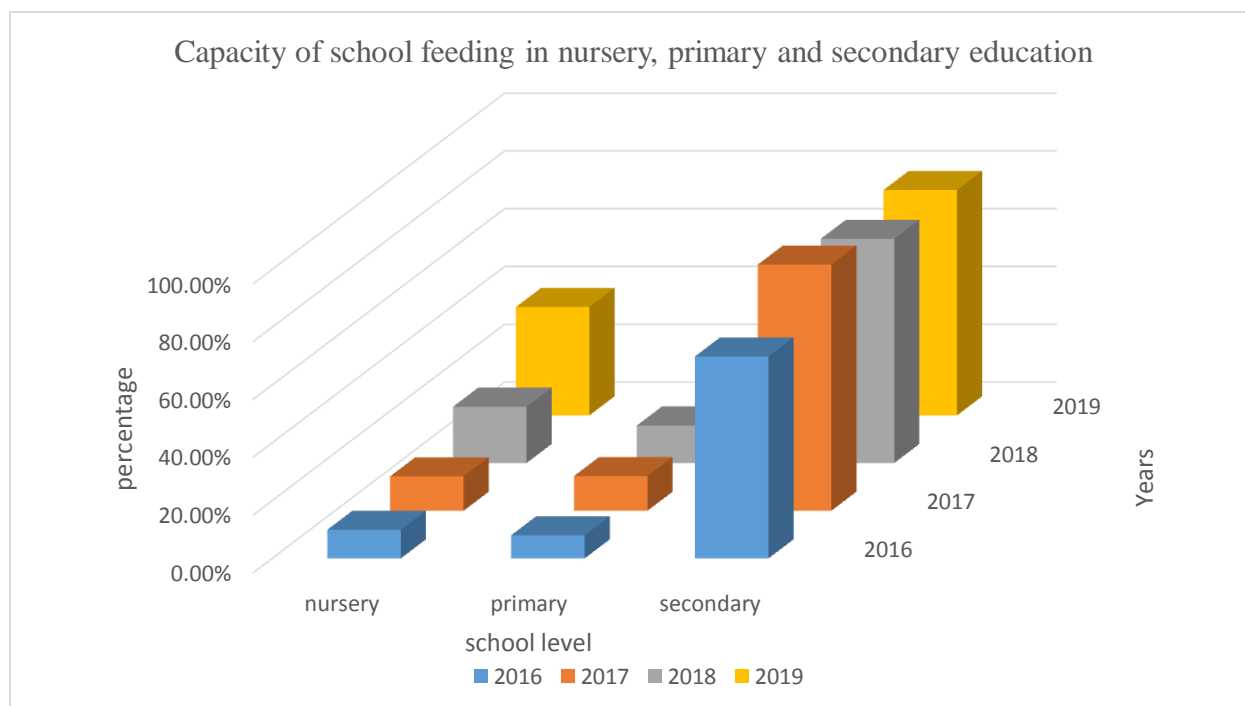


Figure 3 Capacity of school feeding in nursery, primary and secondary education

As a matter of fact, the Demographic & Health Survey (DHS), conducted by National Institute of Statistics Rwanda (NISR) Ministry of Health (MoH), ICF International (2015) report that 38% equivalent to 661,200 children under 5 years suffer from chronic malnutrition (stunting or low height-for-age) particularly in Rutsiro, Nyamagabe, Nyabihu, Nyaruguru, Rusizi, Karongi and Nyamasheke. A supportive view of this finding was expressed by World Bank (2019b) which contends that almost 40% of Rwandan households are classified under food insecure.

Unfortunately, the evidence suggests that these three school feeding programs cover only 10% (MINEDUC, 2014b, P15). Consistently, figure 3 indicates that students from nursery schools which are at the same time falling under the age of 4-6 years exposed to malnutrition effects like stunting, are less accessing this school feeding programs. Consequently, attendance level of students in these districts actually found in southern and western provinces is reported low just 19% (MINEDUC, 2018b). From the aforementioned situation of nutrition services in schools of Rwanda, it is worthwhile for somebody to claim that educational achievement in this pre-school level remains critical.

c. Access to pre-school services

So far as access to preschool is concerned, various positive outcomes have been associated with a quality pre-primary school's enrolment. In this specific instance, the international bank for reconstruction and development/ the World Bank (2019a) substantiates that a quality preschool contributes much in strengthening the children's executive functions², launching the children on higher learning trajectories and gain much future society benefits like low crime and incarceration rate. See the number of nursery school and their staff in table 1.

In this regard, the government of Rwanda aims at increasing net enrolment rate in preschool from 17.5% in 2016 to 45% by 2024 (MINECOFIN, 2017). Notwithstanding this ambitious goal of Rwandan Government to be achieved within 5 years, the evidence notes inadequate provision of preschools across the country. By the nature of concern, World Bank (2019a) reports that by 2017 the provision of preschool in Rwanda was 21%.

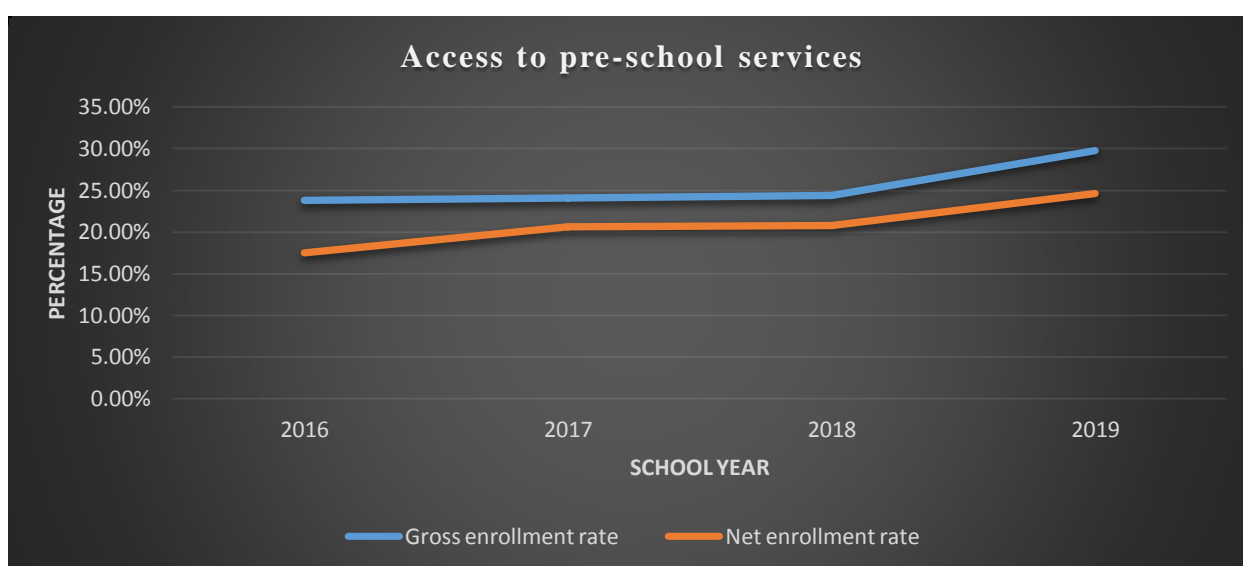
Table 1 Number of Nursery schools and their staff

² **Executive function:** the functions that help to execute thinking and cognition, including planning and organisation, shifting tasks and knowledge, manipulating information held in working memory, inhibiting inappropriate responses, and using context to evaluate the appropriateness of responses (stevens,2020).

School year	Number of schools			School staff ratio		
	Public	Government aided	Private	Pupil-teacher	Pupil-qualified teacher	Pupil-trained teacher
2016	527	947	1,283	32:1	45:1	90:1
2017	455	1,484	1,247	37:1	43:1	88:1
2018	455	1,632	1,123	32:1	36:1	67:1
2019	508	1,555	1,338	36:1	40:1	71:1

Source: MINEDUC (2019b)

In fact, MINEDUC (2003b) elucidated that only 257 nursery schools, 2 of which owned by government were serving only 18,399 out of high demand of two million i.e. below 1%. Accordingly, these two government preschools have exponentially increased to 1,474 preschools by 2016 which raised the gross enrolment rate from 12.9% to 23.7% and net enrolment rate from 14.2% to 17.5 in 2012-2016 respectively (MINEDUC, 2018b). Figure 4 shows access to pre-school services in Rwanda in form of Gross enrolment rate and net enrolment rate for the last four years.



Source: MINEDUC (2019b)

Figure 4 Access to pre-school services

This is a fact which indicates that more than 80% of preschool-aged children were missing access to preschool enrolment and relevant associated direct-executive function and future society outcomes by 2016 which marks a slight change by 2019 as showed by figure 4. Having discussed this preschool matter in Rwanda, it is worth sounding a note of caution in line of providing access to all pre-school-aged children across the country.

d. Access to intensive instruction in the language of instruction

On the next occasion, is the access to intensive instruction in the language of instruction. According to Power (2015, p109) “Language is the taproot of every culture. No tree can survive if its taproot is destroyed. If a language is lost, a culture is also in danger of being lost. It is language that connects and carries traditional wisdom and knowledge from one generation to the next”. In a similar vein, Power (Ibid) bolstered that the study of languages both Mother tongue, National and foreign languages is considered an image of a full development of the human personality. Most important of all, is his suggestion that development of an expert in his/her mother tongue serves as a passport to life in his/her native community while more additional language(s) serves as passport to the world of tomorrow.

On the other hand, UNESCO, (2003) defines language of instruction as the language used for teaching the basic curriculum of the education system be in or out of school. It is also important to note at the same time that UNESCO is an advocate of the policy of mother tongue based multilingual education. That is, basic curriculum instruction begins in children’ mother tongues and gradually introduce second language to instil student’s confidence in both languages.

The related existing literature has established benefits of starting basic education in mother tongue as a medium of instruction, a case in point, Dutcher & Tucker (1997) argued that instruction in mother tongue is

beneficial to language competencies in both first language, achievement in the other subject areas, and second language learning. A support from this assertion, was articulated by Power (2015) that failure of mother tongue as an initial medium of instruction significantly increases the risks of grades repetition and early drop-out of schools.

In the context of Rwanda, education has been experiencing instructional language reforms. To this specific instance, French was previously language of instruction from the early grades of primary education from 1948 to 1962, later on, it has changed to Kinyarwanda as a language of instruction in lower level of primary school and French or English in upper primary school (from 1962 to 2008) (King, 2014), not long afterwards in 2008, it has changed to English in both upper and lower primary schools which came into effect since 2009 academic year (American Association of Collegiate Registrars and Admissions Officers, AACRAO, 2013).

While language of instruction in Rwanda switched to English, by 2011, 8 out of 10 primary teachers were proven with lower (beginner) level of English proficiency which led government of Rwanda to modify this policy to Kinyarwanda as language of instruction in lower primary level (Williams, 2020; Nsubuga, 1999). After 8 years, on 2nd December 2019, ministry of education launched another shift of using English as a medium of instruction in lower primary education and onwards (MINEDUC, 2019a). It is also important to remind that foreign language used from upper primary is the one remains under use in secondary levels of education and tertiary education under all those reforms respectively. Of a little difference, such several language changes in Rwandan education have been applicable in government schools while private schools normally use foreign languages (French and English) as an instructional languages from preschool onwards.

Consequently, some evidence suggest that using foreign languages especially English which is currently in use as language of instruction, is one of the main causes of increase in grades repetition (from 12.7% to 18.4% in 2012-2016) and decrease in completion rate (from 72.7% to 65.2% in 2012-2016) in Rwanda due to the fact that teachers were suddenly requested to shift from French to English without adequate preparation for teachers to achieve the ability to teach in English (MINEDUC, 2018b). Of particular concern, A study of over 600 primary and secondary school teachers found that most teachers had a competency of English considered to be at “elementary” (41.8 percent) or “intermediate” (43.4 percent) stages (British Council, 2015). In light of drawbacks from low level of instructing in English for teachers in Rwanda, WB (2019b) elucidated that this English gap affect both acquisition of reading, writing, speaking and listening skills and the rest of other subjects supposed to be taught in English. So a need to direct much attention in enhancing teachers’ fluency in this language of instruction. At the time, advocacy is also needed for the government of Rwanda to realize the use of mother tongue as language of instruction in initial pre-primary and primary schools.

e. Access to ICT (high-speed internet connection, adequate hardware, & software, digital and online learning opportunities)

With respect the ongoing issue of access to education in Rwanda, it is important for somebody to note that access to Information communication & technology (ICT) in education including high-speed internet connections and adequate hardware (Computers, laptops, tablets) and software ultimately learning applications so as for the students to experience equitable access to the same digital and online learning opportunities irrespective to their families income level or ability to pay these technologies. (See the provision of energy supply, computer and internet connectivity in primary and secondary schools within the last 4 school years from 2016-2019 in table 2).

For the Rwandan ministry of education to achieve its predetermined overall ambitious mission which is in line of Rwandan vision 2020, ICT was placed not only at the heart of education but also at the heart of the transformation of all sectors with a hope that ICT will be on the front line in achieving the three main strategic goals (to expand access to education at all levels, to improve the quality of education and training, and to strengthen the relevance of education and training to the labour market including the insertion of 21st century skills³) with an end goal of a device for every child in a smart classrooms available and accessible in all schools at 100% by 2019 (MINEDUC, 2016).

Table 2 the provision of energy supply, computer and internet connectivity in primary and secondary schools

³ **21st century skills:** learning and innovation skills, digital literacy skills, career & life skills (Trilling & Fadel, 2009).

Year	Energy supply								Pupil-Computer ratio		Internet connectivity	
	Primary				Secondary				Primary	Secondary	Primary	Secondary
	Grid	Solar	Generator	Biogas	Grid	Solar	Generator	Biogas				
2016	30.0%	22.4%	4.5%	0.4%	46.1%	19.1%	26.8%	6.0%	13:1	27:1	9.8%	35.4%
2017	55.8%	24.6%	4.8%	0.2%	71.2%	19.4%	23.1%	4.2%	11:1	9:1	25.1%	41.3%
2018	58.2%	20.8%	5.5%	0.4%	74.2%	18.3%	25.0%	2.8%	10:1	8:1	30.0%	52.9%
2019	60.8%	19.0%	5.7%	0.2%	76.6%	16.8%	24.4%	2.9%	10:1	8:1	34.8%	61.1%

Source: MINEDUC, (2019b)

However, overall Rwandan education system is still facing inadequate technological infrastructure i.e. inadequate access to electricity (34.72 % of households electricity, 55% and 70% in primary & secondary schools respectively), equipment (computer to students ratio 10:1 and 8:1 in primary and secondary schools respectively), and connectivity (34.8%, 61.1 % & 2.4% of internet connection in primary & secondary schools and households respectively); technophobia, inadequate teachers’ digital literacy⁴ (less than 10% of the entire population) (MINEDUC, 2019b; World Bank, 2021a; Daniel, 2019). Consequently, quality education in Rwanda remains poor, unable to meet the pre-determined mission of transforming Rwandan citizen into skilled human capital for socio-economic development of the country.

Despite the remaining gap Rwanda has to fill so as to effectively integrate ICT in education at all levels, when considering the integration of ICT in education in sub-Saharan Africa particularly in East African Community country members, Rwanda is among the countries which made a remarkable step in this integration. To this specific instance, in its analysis, UNESCO institute for statistics UIS (2015b) argued that Rwanda is the only country maintained equity distribution of computers (leaner-to-computer ratio) in both primary and secondary levels (40:1) while most of the others focus on secondary levels.

Balanced against, when it comes to allocation of internet in those level of education, Rwanda didn’t maintain equity distribution since it remains 6% and 18% in primary and secondary respectively. Increasingly, the Global Competitiveness Index quotes that no more than 20% of Rwandan population access internet connection and its speed has been reported to be slow at the extent of 7.5 kilobytes per second despite the figure presented in table 2 indicating the level of internet connection in secondary schools 50s-60s % in from 2018-2019 respectively (World Economic Forum, 2017-2018). It is therefore worthwhile to express a concern that technological infrastructure to support ICT integration in education of Rwanda needs to be addressed.

To this end, it is clear that access to education in different aspect or attributes of access to education in Rwanda remains in its infancy. From this perspective, the most obvious and important issue to note is the fact that that education is impossible to become accessible for all in case reduction or eradication of all educational costs including incidental fees/hidden costs remain largely absent across the country. It is therefore worthy important to stress at this time that eradication of all costs and enhancement of quality of frontline agents in providing education, will improve access to and quality education.

3.1.4 Inadequate equity

Equity refers to the quest for fairness in accessing educational opportunities, resources and outcomes by gender, social class, race, language origins and geographical location of students (Belfield & Levin, 2002:46). Subsequently, UNESCO (2008) defines equity as the extent to which access and opportunities for children and adults are just and fair which implies the reduction of disparities based on gender, poverty, residence, ethnicity, language and other characteristics.

The overall purpose of education sector was to promote access to quality, equitable and effective education for all Rwandans (MINEDUC, 2010). Consistently, one of the high level objectives of EDPRS for education was to improve and increase equity in education at all levels (Ibid). Nevertheless, equitable distribution of the available resources in all levels of schools across the country, remains an unfinished business. Table 3 presents the examples of various resource distribution in different levels of education in Rwanda.

⁴ **Digital literacy:** the ability to access, manage, understand, integrate, communicate, evaluate, and create information safely and appropriately through digital devices and networked technologies for participation in economic and social life (UNESCO, 2019).

Table 3 distribution of resources (inputs) in rwandan education 2019

School level	Pupil-teacher ratio	Pupil-qualified teacher ratio	Pupil-trained teacher ratio	Pupil-classroom ratio			Pupil-desk ratio			Pupil-textbook ratio	Pupil-computer ratio	Pupil-toilet ratio
				1	2	3	1	2	3			
Nursery	36:1	40:1	71:1	62	61	36	2	3	2	13:1	—	25:1
Primary	57:1	58:1	60:1	82	75	32	5	5	2	5:1	10:1	52:1
Secondary	24:1	30:1	38:1	—	—	—	3	3	2	3:1	8:1	—
TVET	22:1	—	—	27	27	28	2	2	2	—	—	—

Source: (MINEDUC, 2019b)

1: Public schools 2: Government aided schools 3: Private schools

Table 3 shows the data concerning the distribution of resources (Human & Material) as part of input factors provided in different Rwandan education levels namely: nursery, primary, general secondary and Technical & Vocational Education and Training (TVET).

Considering all indicators presented in table 3, primary school level marks the highest records among others. As a matter of concern, pupil-teacher ratio 57:1, pupil-qualified teacher ratio 58:1, pupil-trained teacher ratio 60:1, but this is slightly lesser than 71:1 in nursery schools, pupil-classroom ratio 82:1 in public schools, pupil-desk ratio 5:1 in public and government aided primary schools, pupil-textbook ratio 5:1 also this indicator is lesser than 13:1 in nursery schools, pupil-computer ratio 10:1, then pupil-toilet ratio 52:1. This data is running against Post-2015 agendas and education for all (EFA) which recommend governments to ensure that all learners are taught by qualified, professionally trained teachers (Power, 2015).

This data indicates inadequate number of required resources in primary and nursery schools like qualified & trained teachers, classrooms, desks, textbooks, computer and toilets, a fact which indicates inequitable distribution of resources in different educational levels. Consistently, MINEDUC (2020) claims a gap of 22,000 classrooms and 31,000 latrines, a challenge which enforces overcrowding as well as long distance covered by students to reach schools.

Geographically, equitable distribution of available resources remains an unanswered issue. For instance, Glory and Ange (2020) reported that Eastern province (G.S. Paysannat) mostly face overcrowding whereby pupil classroom ratio varies between 90-100:1 for both two shifts in primary schools, scarcity of desks which leads to 5:1 while the remaining sit on the floor, and insufficient textbooks as well as few computers compared to the total number of student to the extent that 24,000 students share only 45 computers.

To support the advancement of inadequate equity while considering urban and rural schools, MINEDUC (2014b) pointed out a high pupil-teacher ratio in rural areas like in Kirehe District whereby it reaches 70:1 while it drops to 23:1 in some schools located in districts of Kigali city. Besides, Republic of Rwanda (2012) claims a scarcity of material resources in schools located in rural areas such as textbooks, desks, computers and electricity as well. Consequently, MC-Gowen (2007) established that inadequate provision of necessary material resources comes at the first reason of high teachers' turnover in rural areas. Such a teachers' turnover, pushes the schools to recruit non-trained teachers to fill in the gap.

To clarify, the study conducted by Bennell & Ntagaramba (2008) ascertained that more than 80% of teachers working in Kirehe & Nyaruguru districts were classified underqualified in relation to the level under which they were teaching, whereas the same issue was found lesser than 25% in Kigali city. The issue to note from the aforementioned literature is with regard to the quality of education being provided by a big number of teachers in rural part of the country who are classified under-trained and experienced, teaching a big number of students (Overcrowded classrooms), under a scarce instructional resources and materials, working many hours, and less paid in terms of PTA (Paxton & MUTESI, 2012).

It is undebatable that the results of such students remain poor. A case in point, word Bank (2011a) reports transition of 63 students from rural primary schools to secondary schools out of their 100 counterparts in Kigali city and 37 students from rural areas completing secondary out of 100 students in Kigali. A fact indicating inadequate equity in distribution of educational scarce resources (input) across the country.

3.1.5 Inadequate relevance

Relevance of education seeks to answer the question of whether school leavers are meeting the corresponding societal needs. In this regard, relevance has been explained as learning experiences that are either directly applicable to the personal aspirations, interests, or actual experiences of students (personal relevance) or that are connected in some way to real-world issues, problems and contexts (life relevance) (The Glossary of Education Reform, 2013). To support the view advanced by the glossary of education reform, Braswell (2007) strengthens the assertion of relevance of education as creating human capital rather than enriching one's life.

Another emerging feature of relevance, is the contention that education of any country should serve their economic needs. In this light, Gibbons (1998) maintains the insight of considering relevance of education in terms of its output, i.e. the contribution of schools to the national and international economic performance. Similarly, it was ascertained within fifteen years of literature that Learning outcomes, as well as years of schooling, matter substantially for growth (World Bank, 2018; Hanushek & Kimko, 2020; Pritchett, 2001; Hanushek & Woessmann 2008, 2012).

In this light, the overall mission of Rwandan education is to transform Rwandan citizens into skilled human capital for social-economic development of the country (MINEDUC, 2010). This mission was consonant with the Rwandan development agenda existed since 1998 aiming at transforming Rwanda into a middle-income country by 2020, transformation from agrarian-based to an industrial upper middle-income country by 2035 and a high-income country by 2050. Thus becoming competitive in the global economy since the citizens possess sufficient and appropriate skills, competences, knowledge and attitudes to drive the continued social & economic transformation of the country (MINEDUC, 2018b).

Unfortunately, the production of large cohort of primary and secondary school leavers with inadequate possession of basic set of skills as well as the ability to speak English remains an unanswered issue (Abbott *et al.* 2015). After all, the pre-determined educational outcomes in Rwanda remains largely absent (Williams, 2017).

In this specific instance, Rwanda is classified in the bottom quartile from the World Bank’s project conducted in year 2018 to assess learning for the human capital⁵, (see table 4). On a related note, the study conducted by EDC (2017) reveals that 85% of students completing primary grade three were rated under comprehension level. Subsequently, 85% of P1Grade were also classified below comprehension (Idem). It is important for the education policy makers and related implementers as well as evaluators to note that P1 instruction has a great implication within the whole journey of education. That is, students should not understand the rest of subject in case s/he doesn’t achieve the ability to fluently read and comprehend mother language text. To this end, the pre-set objective of economic transformation of Rwanda into middle-income nation remains unsuccessful.

Table 4 global assessment of learning for the human capital project

Country	Expected years of schooling (0-14)	of Harmonised test score(300-625)	test Human capital index HCI (0-1)	Income group
Rwanda	6.9	358	0.36	Low-income

Source: The World Bank IBRD. IDA/World Bank Group, (2020)

Table 4 shows the data from global assessment of learning for the human capital project, especially showing the expected years of schooling, harmonised test score, human capital index as well as income group of Rwanda. For the expected years of schooling varied between (0-14) i.e. 2 years of nursery school, 6years of primary schools and 6years of secondary school, it is clear that Rwandan citizen stay 6.9/14 years in school.

With respect to harmonised test score is concerned which shows the learning outcomes for the human capital, Rwanda scored 358/625 whereby 300 is considered minimum point. This is a fact indicating that Rwandan citizens’ contribution to productivity as future workers remains in its infancy.

Directing attention to Human Capital Index (HCI), Rwanda obtained 0.36/1. A fact determining that the combination of both *knowledge, skills and health* of citizens from Rwanda are far less to meet their full potential as productive members of their society and global society as well. It is therefore worth sounding a note of caution upon Rwanda to add more effort in all these HCI measures especially in education when it is provided that becoming a competitive nation in the global economy remains a single objective.

3.1.6 Illiteracy rate

Another emerging challenge of quality education is adult illiteracy⁶ rate. Before discussing the literacy situation in Rwanda, it is worthwhile for the authors to remind that the aim of Rwandan education system in the context of achieving a global goal of poverty reduction and improvement of well-being of the population, is to combat ignorance and illiteracy and to provide human resources useful for the socio-economic development of Rwanda through the education system.

In this regard of combating ignorance and illiteracy, the government of Rwanda aimed at lifting literacy rate which was at 64.89% in 2000 to 85% by 2010 (MINEDUC, 2003a). Unfortunately, this target proven

⁵ **Human capital:** the knowledge, skills and health that people accumulate throughout their lives, enabling them to realize their potential as productive members of the society (World Bank, 2021b)

⁶ **Adult literacy:** percentage of the population aged 15years old and above that can read and write. It is typically measured according to the ability to comprehend a simple short statement on everyday life, it also encompasses numeracy whereby measurement incorporates the assessment of arithmetic ability (UNESCO-UIS, 2021)

uneven until 2018 which is reported to be at 73.22% (UNESCO-UIS), 2021). To this specific instance, Macrotrends (2021) argues that Rwandan literacy rate was 65.85% by 2010 i.e. only increased by 0.96% within 10years. To this end, it is worthy important to convey that 26.78% of the Rwandan population lacks literacy as a tool which is giving great access to information and knowledge particularly within this current digital era. Thus, one of the reasons for Rwanda not to be qualified a middle income country by 2020 as it was predetermined in 2000.

From the aforementioned discussion, it is clear that much however needs to be done in light of increasing literacy rate in Rwanda, as it has been determined that 100% literacy level will have been achieved by 2020 (Republic of Rwanda, 2007).

3.1.7 Teachers’ motivation

According to IIEP-UNESCO (n/d) Motivation refers to a desire or willingness to have something. Therefore, a motivated teacher takes action that leads to the satisfaction of a need or desire in teaching and learning process. When asked the motivating factors, teachers themselves suggest development opportunities, recognition, social status and remuneration aspects as factors affecting their motivation (Raudonyte, Chimier, Tournier, n/d). A low status profession of teaching is suggested to affect recruitment and retention of teachers. More importantly, is the view articulated by UNESO (2015c) which elucidates that such low status of teaching can substantially reduces retention and performance of teachers and ultimately student learning.

On a related note, quality education has been associated with teachers’ salary by IIEP-UNESCO (2021) which argues that an effective salary significantly contributes in not only motivating teachers but also the attraction and retention of the most qualified graduates in the education system overtime. In contrast, inadequate salary is associated with negative effect on teachers’ motivation and their attraction in a profession, indeed affects quality of teaching (Nickel & Quintini, 2002; McKinsey and Company, 2007). Yet, the evidence suggest that teaching career is currently facing a challenge of low salaries, flat pay structure, lack of promotion opportunities, which in turn affect motivation once in a service (Raudonyte, Chimier, Tournier, n/d).

Concerning the context of Rwanda, a new primary teacher with A2 certificate earns 48,400rwf equivalent to \$49.13 while a new secondary teacher with A1 diploma and the one with A0 degree earns 99,000rwf and 132,000rwf equivalent to \$100.50 & \$134.01 respectively (Emmanuel, 2020).

Table 5 illustrates the situation of Rwanda with global economic indicators. Besides, this salary structure is neither academic based nor competence based rather school level (Primary or Secondary) based i.e. whatever additional education level achieved is not considered in terms of salary upgrade unless a teacher shifts to next levels of education.

In relation to international poverty line \$1.90/day, a new primary teacher will need more \$7.87 to pull up from poverty category.

Consequently, education system faces shortage of competent and qualified teachers and high teachers turn-over across the country. For instance, 20% of the teachers annually leave teaching profession of which 11% leave from the public institutions (Zeitlin, 2020). Additionally, teachers with school administration put much interests in collecting PTA contribution and coaching fees (out-of- school coaching) to increase their income supplementing their inadequate salary whereby failing to meet all those costs for the students results in exclusion from schools, thus experience repeating a grade, or dropout of schools (Timothy et.al 2015).

Table 5 Teachers' basic salary with global economic indicators

Country	Monthly net salary (\$)	Annually net salary (\$)	GDP/ Capita (\$)	Purchasing power parity (PPP) (\$)	Rate of annual salary/ GDP/Capita
Rwanda	48.68	584.16	820.0	2,325.408	0.71

Source: Ntirenganya (2020)

Data from table 3 shows teachers’ basic monthly & annually net salary with comparison to GDP/Capital and purchasing power parity (PPP) which have been considered to find out rate of annual salary per country’s GDP/Capital.

For a teacher to stay stable enough to cover his/her necessary daily expenses and to effectively teach and retain in a career, s/he is supposed to earn at least 3.4-4.0 times GDP/Capita of any country (UNESCO-IIEP, 2021; UNESCO, 2003). Nevertheless, Rwanda is still paying far less this rate. As a matter of fact, Rwandese teachers earn below 1 that is 0.71. Before drawing a conclusion, it is worthy sounding a note of caution in relation to this teachers’ motivation,

IV. Suggested solutions to the aforementioned challenges of quality education in Rwanda

4.1 Financing education

Since education is the axis toward the whole development of a country and humanity as well, there is a need for the government of Rwanda to prioritize such a domain from the government spending at least 4-6% of the countries GNI % 15-20% of its total public expenditure within the next fiscal year just to support educational inputs and related delivery for effective output which are in line of pre-set Rwandan educational goals.

Additional concern should be the consideration of Income generating projects at school level whereby for example school land be effectively exploited for the sake of increasing the financial means assisting to provision of necessary inputs contributing to quality education.

4.2 Internal efficiency (gross enrolment rate, completion rate, transition rate, cohort survival rate).

Tendency of improving internal efficiency through adjusting quantitative output measures (counting students) like enrolment rates, dropout rate, repetition rate, completion rate, transition rate, and cohort survival rate is not effective enough to enhance an internal efficiency of a certain educational system since none of these measures is appropriate in judging the internal efficiency unless there a precise standard of the knowledge acquired for any grade comparison. Internal efficiency should therefore be improved by- MINEDUC, MINECOFIN, RBE, HEC, Policy makers and other educational stakeholders by reallocating resources from inputs that have smaller impact on learning to the ones that have greater effects on learning i.e. increasing outputs associated with given levels of resources & by reducing overall resources while maintaining existing levels of learning from the next academic year. This will even promote literacy rate in a country.

4.3 Access (proximity of schools, health & nutritional services, pre-school, language of instruction, ICT (infrastructure, digital literacy))

For all Rwandan students to meet access to proximity of schools at least \leq to 2km away from their home, the government of Rwanda should with its partners and other educational stakeholders figure out the project of building more schools close to the centres and towns where students live across the country. along the same lines, such schools should include even rooms reserved for nursery students in line of solving the problem of pre-schools students who don't have access to this important level of education. It is worth mentioning at this point that provision of these proximal & nursery schools need additional trained teachers. The government should therefore put much effort in Teacher Training Colleges (TTCs) to produce qualified and competent teachers to teach in those schools. Although pre-service training of teachers is recognised herein, it is not quite enough to maintain desired quality education but direct attention also to continuous professional training not only in English language but also in teaching methodology, ICT and other necessary concepts.

Concerning instructional language, the government of Rwanda should be consistent in maintaining the language of instruction particularly allowing nursery and lower level of primary school students to be taught in mother language but learn foreign languages as subjects. Due to the aforementioned challenges of English language for the teachers, the government doesn't need to provide ongoing training in English only but also to provide necessary printed and digital English based resources to support learners to cope up with English system.

To promote access to ICT, the government of Rwanda needs to allocate required technological infrastructure and devices like electricity, computers, internet connection, and various other technological tools depending on major courses of the students in their respective schools.

Access to health and nutrition services in all Rwandan schools requires the government to direct much attention to the provision of school feeding programs in its two forms namely in-school feeding and take-home ratios programs around the country particularly in the mentioned poor districts of western and southern provinces. Equally important in maintaining healthy is the provision of clean water in all schools as well as latrines appropriately available by gender and population number of a given school.

4.4 Equity

The government of Rwanda with its all educational bodies and stakeholders should direct attention to fair distribution of the available scarce resources in all educational levels, in all provinces of Rwanda, among all genders, in all social economic groups, and all age groups so as to provide equitable access and opportunity for all. Another suggestion which deserves much attention, is the Provision of infrastructures across the country particularly in rural areas (inside schools and community as well) of the country including technological infrastructures, roads, sports and recreational sites since such a development could curb the number of trained and qualified teachers leaving schools towards schools located in urban areas mostly equipped with such an infrastructure.

4.5 Relevance

For Rwandan education to be relevant to the national and international societal needs, the ministry in charge of education and its bodies should conduct a needs assessment which allows them to adjust the curriculum to the current needs of the society like-21st century skills. And creating a strong learning environment equipped with all necessary equipment which could train and offer graduates skills/knowledge enough to respond to the current problems of the society. Equally important, the government of Rwanda should strengthen the establishment of career guidance (career advisory centres) in schools to help students make a relevant choice fitting their ability for their further studies enable them to contribute to national and international economic performance and needs. Another emerging feature of relevance, is a suggestion that Rwanda needs to enhance the probability of survival to age 5, expected years of schooling & harmonized test scores, and both fraction of children under 5years not stunted and fraction of 45years old who survive to age 60 in line of increasing Human Capital Index records of Rwanda.

4.6 Literacy

To curb the number of illiteracy rate, the government of Rwanda needs to control all the reasons make students not to effectively complete basic schools including serious attendance problems or drop-out at all, achievement gap, over-aged students and hunger. Secondly, the ministry of education with its all bodies, partners and stakeholders should add on effort in provision of catch-up schools which are serving adults with necessary literacies. Lastly, is a need to shift from the Rwandan traditional culture of story-telling to story-reading. In so doing, the government of Rwanda should allocate more public libraries across the country particularly at cell or sector levels for the citizens to read. This initiative will indeed, push the government to raise awareness of the citizens about the importance of reading and preparing much reading and writing yearly contests across the country.

4.7 Teachers motivation

Salary as an important source of motivation and a stimulating factor in attracting & retaining highly trained and qualified teachers which in turn enhance quality education, needs to be carefully addressed in case a country aims at achieving ambitious goals like those of Rwanda. The first alternative suggested by UNESCO-IIEP (2021) for African countries to maintain up to 75% of completion rate a teachers' salary needs to be 3.4-4.0 times GDP per capita of Rwanda.

The second alternative should be providing free education, accommodation and health services in all public education and health institutions for teachers' families throughout life i.e. children of teacher to freely enter any school level in which they are allocated after fulfilling the necessary admission requirements needed for selecting candidates for next level of schooling while a concern of parents here should remain the provision of the rest of schools materials needed.

To the same likeness in health, direct family (Father, Mother & direct children or legal adopted children) of teachers to be provided free health services from all public health institutions across the country. More important, families of teachers should be accommodated (housed) in public buildings, indeed reserved for accommodating teachers near the place of work (schools). Provision of transport assistance for teachers working in remote or difficult areas is also vital.

Most important of all in line of motivating teachers so as to attract, recruit, and retain competent teachers and of course promote teachers social status and conditions of work of teachers as a fact which could improve quality education in Rwanda, the government needs to remove taxes deducted to teachers' gross salary so as to enhance teachers' purchasing power.

The last but not the least could be a teachers shop which supplies teachers with needed goods against a slightly low prices compared to normal market, in case the government of Rwanda arranges such a teachers' shop across the country by next fiscal year, this could assist teachers to afford prices of daily basic needs from their salary which has been proved insufficient.

V. Conclusion

The purpose of this study was to scrutinise what is currently known about Rwandan education quality, its remaining challenges and to suggest solutions upon the identified obstructions for the country to achieve its pre-determined long term goals. A variety of such obstructions was explored in quality indicators like government spending in education, internal efficiency, access, equity, relevancy, literacy, and teachers' motivation as well. It was revealed that both expenditure on education as % of total government GNI & public expenditure— 3.3%, 3.2%, 3.1%, 3.4% and 11.3%, 11.5%, 11.0% 10.8% respectively from 2016/17-2019/20 fall less than international standards 4-6% and 15-20%. It was found that provision of necessary inputs-*financial, human & material resources* in Rwandan education is still too balanced to match with the expected level of outputs. As such, cohort survival rate 68% of P1 reach P6, 38% reach S3; drop-out falls in 7.8%, 9.1%, 5.1% in

primary, lower secondary, and upper secondary schools respectively; transition from P6-S1 counts to 42% of boys and 37% of girls; then 60.4% of completion rate. Instead, such a provision of necessary input, keeps gap in provision of access whereby 46% of students across the country still walk more than 30minutes to reach schools; 38% of children under 5years suffer from chronic malnutrition; only 21% of preschools already provided across the country; various instructional language reforms overtime; inadequate technological infrastructures: 55% & 70% of electricity, 10:1 & 8:1 of pupils-computer ratio, 34.8% & 61.1% of internet connectivity in primary and secondary schools respectively. And equity in distribution of available resources whereby primary schools particularly in rural areas face shortage of human resources 57:1 of pupils-teacher ratio, 58:1 pupil qualified-teacher ratio, 60:1 pupil-trained teacher ratio; material resources- 82:1 pupils-classroom ratio, 5:1 pupil-desk & textbook ratio, and 10:1 pupils-computer ratio. The study also ascertained an inadequate literacy rate 73.22% and relevance 0.36/1 of human capital index which in turn discloses poor leaning outcomes whether on national or international standards. The issue also noted was with regard to teachers' motivation whereby teachers' salary-\$584 were found unable to cover basic daily expenses in relation to the rate of country's GDP/capita-\$820 and purchasing power parity-\$2,325.408. Basing on the aforementioned findings, the conclusion was therefore drawn that transformation of Rwandan citizen into skilled human capital for social economic development of the country, achievement of access to quality, equitable and effective education for all, as well as the provision of human resources useful for the socio-economic development through the education system, remain unfinished business. To this end, in regard to this conclusion, suggested solutions for the existing obstructions identified, have been asserted in line of delivering the expected quality education for all.

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