

Rwanda's competence-based curriculum has promoted environmental sustainability and gender equity.

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ABSTRACT

In 2015, the Rwandan Ministry of Education revolutionized the national curriculum to meet global standards. The core curriculum was refined to encompass a vast range of skills extending beyond the existing emphasis on isolated knowledge acquisition to better complement modern interdisciplinary studies. Following ten years of implementation of the Competence-Based Curriculum (CBC), this research paper assessed the holistic nature of the CBC and investigates its efficacy in promoting environmental sustainability and gender equity practices among graduating high school students. A survey was conducted in which two distinct groups of volunteers participated: recent high-school graduates who were exclusively taught in Rwanda's newly adopted learner-centered curriculum, and older graduates who were exclusively taught in Rwanda's previous content-centered curriculum. Concomitantly, a comparative study between the existing and previous curricula in terms of their content and focus was conducted. The mixed-methods data analysis revealed that CBC graduates are more aware of sustainability practices than the older graduates. Similarly, it was found that the Rwandan new curriculum promoted and instilled a considerable awareness of gender equity, unlike its predecessor. The analysis also pinpointed that there are prevalent gaps in knowledge between the younger and older generations. These gaps should not be overlooked, and specific programs should be employed by the Rwandan government to overcome this imbalance.

INTRODUCTION

Like many other sectors comprising modern society, education is interconnected with multiple facets of today's communities. By informing, training, and equipping members of society with the knowledge and skills necessary for transforming society at large, education plays a unique role in shaping and bridging society's standards. From environmental sustainability to gender equity, education imbues and embeds a community's key principles. As society's tastes, preferences, and standards evolve, there is a need to refine the education system. In 2015, Rwanda refined the core high-school curriculum from a traditional content-centered approach to a progressive learner-centered curriculum that provokes discovery and enhances experiential learning (REB 2015). Although in recent years much has been discussed about this new curriculum (Ndikuryayo et al. 2018), the extent to which it has promoted environmental

sustainability and gender equity skills among students compared to its predecessor remains underexplored.

This research therefore seeks to reveal the effectiveness of Rwanda's newly adopted curriculum in promoting environmental sustainability and gender equity awareness amongst its learners, and to compare its effectiveness to the previous content-centered curriculum. The study examines how the new curriculum enhances the integration of environmental sustainability and gender equity principles in the school environment through a comparison of the two in terms of their content and focus. Subsequently, the research pinpoints the extent to which graduates of the respective curricula apply gender equity and sustainability practices in their daily lives, based on collated survey data. The research gathers insights from recent and older high school graduates, some of whom hold education-related jobs in their communities, in order to identify existing gaps that need to be addressed. Revealing the successes of Rwanda's education reforms from this angle can contribute to informing future policy decisions, by demonstrating whether those reforms are achieving their intended goal of long-term societal transformation. The next section reviews relevant literature to contextualize this study by exploring previous findings on the Rwandan curriculum design and how gender equity and environmental sustainability are integral parts of it.

LITERATURE REVIEW

Rwanda, a small landlocked country located in Central East Africa, is famous for its abrupt and remarkable socio-economic development. It has maintained a rate of economic growth of about 7.4% annually for the past two decades (Ruburika & Muthembwa 2024), and it strives to become a climate-resilient economy by 2050 (Ministry of Environment 2023). In the words of Nelson Mandela (1990) education is the most powerful weapon that one can use to change the world, and is accordingly viewed by Rwandan leaders as Africa's primary route to prosperity (KT Press 2020). In this regard, subsequent to Vision 2020, Rwanda's Vision 2050 is grounded in a modernized, market-driven education system that will lay a strong foundation for Rwanda to join advanced economies by 2050 (Republic of Rwanda 2015).

In 2015, the Rwandan Ministry of Education (MINEDUC) announced the introduction of a well-rounded Competence-Based Curriculum (CBC) that encourages creativity and the application of knowledge and skills (Antoine et al. 2017). Unlike its predecessor, the learner-centered CBC incorporates a vast range of skills and addresses the learner's individual needs, interests, and abilities (REB 2015). The adoption of a new curriculum plays a ubiquitous role in raising well-informed learners and shaping national societal standards that align with international ones, such as fostering environmental sustainability and embracing gender equity. Herein, this literature review explores existing scholarly work on the Rwandan curricula, with a particular focus on assessing how the new curriculum embeds environmental sustainability and gender equity skills for its learners in comparison to its predecessor—the Knowledge-Based Curriculum (KBC). The first subsection recounts key information on the development of the modern Rwandan

curriculum, while the following two subsections synthesize the major themes and findings from existing literature on environmental sustainability and gender equity in education.

Overview of Rwandan curriculum design

In the aftermath of the 1994 genocide against the Tutsi, the Rwandan government worked intensively to reconstruct the education sector and meet its Millennium Development Goals (MDGs). A particular emphasis was placed on MDG 2, which focuses on achieving universal primary education (MDGMONITOR 2017). Policies that ensured inclusive basic education for all were introduced, and considerable efforts were applied to ensure their effectiveness. In 2006, for instance, the MINEDUC introduced the Nine Years Basic Education (9YBE) policy, which allowed students to study for nine years—comprising six years of primary education and three years of secondary education—for free (MINEDUC 2006).

Evidently, a few years after the implementation of the 9YBE policy, its success spoke volumes. The gross enrolment ratio¹ soared in primary schools, and the national literacy rate increased significantly. For example, in 2003, shortly before the enforcement of the 9YBE policy, Rwanda's gross enrolment ratio was 123, yet following the introduction and implementation of 9YBE, this rose to 157 by 2009 (Ruburika & Muthembwa 2024). On the same grounds, the literacy rate in adults increased by 3% (a relatively high increase) between the years 2000 and 2012 (Ruburika & Muthembwa 2024). Later, in 2012, MINEDUC revised the 9YBE policy and made it a 12 Years Basic Education (12YBE) policy, encompassing both the six years of primary education and the whole six years of secondary education (Japan International Cooperation Agency 2012). This remarkable progress signifies the efficacy of the modern Rwandan curriculum in meeting its intended goals, and reveals its societal outcomes.

At the time of writing, the 12YBE is the benchmark for the level of education that every Rwandan school student should complete. It is divided into different stages, and upon the completion of each stage, the learner is expected to have acquired a certain set of standard skills, which are regularly tested through nation-wide assessments administered by the National Examination and School Inspection Authority (NESA 2022). Generally, a child is expected to begin their education journey at the age of seven. The first three years of primary education are exclusively taught in Kinyarwanda (the national language of Rwanda), and from P4 (the fourth year of primary school) through university, courses are exclusively taught in English (US Embassy 2019). In P6, learners sit for their first national examinations in the courses of Mathematics, English, Social Studies, Kinyarwanda, and Elementary Science and Technology. When students pass, they receive a Primary Leaving Certificate, which provides them access to lower secondary education (N. a., 2015), while if a student fails, they have the chance to retake the year.

¹Gross enrolment ratio (GER) refers to the proportion of all enrolled students (regardless of actual age) at a given level of education compared to the population of that age group. GER of over 100 means that there are students outside the official corresponding age group enrolled in that level.

In the three-year-long lower secondary education, learners are exposed to a wide range of subjects that cover humanities, languages, science, mathematics, and technology. Students get a glimpse of what each course is like, providing them a chance to explore their academic abilities and interests. This allows them to discover their interests and prepares them to think about their career goals and to seek guidance from their educators (Akinboye 1983, cited in Guidance and Counseling Module 1, p.3). In the third year of this stage, from a vast pool of courses that they study, the learners must choose a combination of three principal subjects to focus on in the senior years of education, which also lasts for three years. There are also opportunities to apply to technical schools or Teacher Training Centers (REB 2015).

In the final three years of secondary education, students engage in a rigorous studying process, especially in their chosen courses of principal focus, which prepares them to join tertiary education institutions. The curriculum ensures that secondary school graduates have relevant skills that align with their courses of specialization, and that they acquire skills that make them competent for certain kinds of jobs. High school graduates who specialize in sciences are specifically expected to graduate with a solid understanding of scientific concepts, including experimentation, data collection, evaluation, interpretation, and presentation in a logical and coherent form (REB 2015). On the other hand, besides language proficiency and public-speaking abilities, humanities and language graduates are expected to demonstrate a strong understanding of ethics and of the sustainable development of the country (REB 2015).

As a nation that seeks fast-paced socio-economic development, Rwanda has integrated numerous educational philosophies into its newly adopted curriculum. In the CBC, students are equipped with a strong foundation in mathematics, science, and literature. The teaching and learning process is also centered around the project-based learning approach, where learners sharpen their creativity and challenge their problem-solving skills. In turn, this boosts their personal growth and encourages them to work on real and pressing societal issues, simultaneously equipping them with hands-on experience. This evidences how the Rwandan curriculum integrates a range of educational philosophies such as perennialism, essentialism, progressivism, and reconstructionism to ensure maximum efficacy (Bentayao 2008, pp. 9-10).

Moreover, as the teaching and learning process is learner-centered and creativity-provoking, the assessment and evaluation process is designed in the same light. Teachers are often encouraged to use specific words in setting tests and exams that encourage students to think creatively and to apply their existing knowledge to solve problems and scenarios. Words like *apply*, *carry out*, *investigate*, *evaluate*, *show concern for*, and similar are often preferred (REB 2015). This equips students with strong analytical skills and influences the way in which they approach societal issues when attempting to solve them.

The intricacy of the nation's core curriculum and its links to societal development merit further exploration. Society evolves every day, and the curriculum can be perceived as a dynamic guide that projects a trajectory for the teaching and learning process to follow (Bentayao 2008, p.5). Curriculum planning should therefore be conducted scrupulously, for the manner in which a curriculum is planned is a

critical determinant of the success of its implementation (SU 2012). Moreover, political influence also has a role that cannot be neglected. For example, due to its relative political stability, Rwanda has achieved the MDG2 (UNICEF 2024) of ensuring that all children have access to primary education (UN 2000). Again, Rwanda has also ensured continuous professional development of teachers and was able to reduce the pupil-to-teacher ratio from 66:1 in 2017 to 44:1 in 2021 (UNICEF 2024). This underscores Rwanda's political influence in the success of its curriculum-building.

In the remaining subsections of this literature review, I hone my focus on two specific dimensions of curriculum design—environmental sustainability and gender equity. These are the areas of education that I will subsequently explore through my survey, which is designed to elicit data on the relative extents to which students of the current and previous Rwandan curricula have incorporated the relevant skills into their daily lives.

Environmental sustainability in education

Education is a very broad domain, and there is hardly one conclusive definition that can be ascribed to it. That said, it relates to the transfer and acquisition of skills, knowledge, values, and attitudes through various forms of learning which in one way or another lead to individual and societal development (Aman et al. 2023). Education facilitates the development of critical thinking abilities, boosts problem-solving skills, and nurtures learners' decision-making and communication skills. Most importantly, education directs them in a path of continuous learning and personal development. Education is a cornerstone of all sectors, including environmental sustainability, which encompasses practices of interacting with the natural environment responsibly by keeping in mind the needs of future generations. As in other countries, environmental sustainability promotes long-term resource availability, concurrently fostering sustainable economic growth and conserving biodiversity in Rwanda. (Micheal 2012). Embracing environmental sustainability within the context of education is therefore a direct route for communities to achieve the UN's (2015) Sustainability Development Goals.

Beyond promoting awareness and driving social change, education thus shapes the future leaders of the planet (Kakungulu 2024). This is achieved by instilling a sense of responsibility among learners and equipping them with essential skills that enable them to develop pioneering ideas to help society cope with sustainability issues. Environmental education is interdisciplinary in nature (Samuel 2024), and infuses with many other domains such as ecology, climate science, diplomacy, and circular economy, among others. This renders integrating environment-related subjects into a particular nation's existing curriculum a holistic process.

A key distinction can be made here between formal and informal education. Formal education is considered systematic, whereby learners are certified upon the completion of a certain stage. In most cases, the learning process is guided by a prepared document called a curriculum (Aman et al. 2023). Responsible institutions, such as schools and colleges, are common places where this type of education is offered. Non-formal education differs from formal education in that it is delivered not in schools but in

places like workshops and community programs. Both of these forms of education, by some means, contribute to the advancement of environmental sustainability in society. Although all forms of education play a crucial role in shaping environmental-sustainability-sensitive communities, formal education is the most prominent. Depending on the taught curriculum, formal education offers a student-centered learning experience (Samuel 2024), which develops students' problem-solving skills. Formal education also tends to cover a high volume of content, with learners becoming relatively well exposed to key subject areas, ranging in the context of environmental sustainability from waste management to water conservation and plastic avoidance.

In addition, teachers play an invaluable role in promoting environmental education. They not only prompt learners to think creatively and to integrate sustainability concepts in the subjects that they teach (Bhat 2022), but they can also act as role models by encouraging learners to participate in community environmental initiatives such as tree planting. However, in doing so, they also face significant challenges such as large student-to-teacher ratios and lack of administrative support (Benjamin 2019), that hinder the quality of environmental education they deliver. Moreover, insufficient teaching materials and the potential lack of teachers' continuous professional development can notably limit their skills and inhibit the progress of environmental education.

In the remaining subsection of this literature review, I synthesize the key themes from existing literature on how gender equity is embedded in modern curricula.

Gender equity in education

In the modern world, gender equity is an important societal factor that characterizes well-educated populations, and in most cases, is highly correlated with the living standards of community members. It is among the critical criteria that international bodies use to assess the level of development of a society and its sophistication. In a broad sense, gender equity refers to fairness and the treatment of individuals based on their needs. According to Ismail (2015), it entails providing impartial and fair opportunities to all members of society. However, it should not be confused with its counterpart—gender equality—, which is generally seen as equal treatment of individuals regardless of their gender (The Impact Investor 2024). In this view, gender equality has substantial shortcomings as it overlooks the perspective of the specific needs of individuals.

Gender equity is an important social aspect which is greatly tied to the development of society. To Rwandans, gender equity strengthens community development and significantly minimizes gender-based violence (Eleanor et al. 2014). Any community that longs for growth must first ensure the empowerment and fair treatment of its members according to their specific needs. It is equity that fosters education for all and promotes respect for human rights. Specifically, for the education sector, gender equity promotes value, cohesion, and reduces gender-based violence and discrimination. It has been argued (Elsma 2014) that the integration of gender equity in education is responsible for reduced domestic abuse and violence. This underscores the invaluable benefits that a society gains when it ensures the integration of gender equity in the taught curriculum.

Furthermore, in recent decades, non-profit organizations and governments have worked to embed gender equity into taught curricula, and global societies have accordingly seen significant strides in its promotion. For example, on a global average scale, for every dollar a man earned in 2015, a woman with the same qualifications and position earned 0.75 dollars (Statista 2024). By comparison, in 2024, the gap shrunk with the average woman earning about 0.83 dollars for every dollar earned by the average man (Statista 2024). This decrease in the gender pay gap can be attributed to the efforts that have been put in place to address gender-equity issues. On the academic level, effective measures have been implemented globally to address gender disparities. These include the gradual erosion of traditional and rigid gender expectations. In traditional societies, for example, families are more commonly encouraged than previously to enroll their daughters in schools for them to attain formal education, and course books are more commonly screened for sexually-discriminatory content (Elmas 2013). However, these measures alone cannot overcome the pressing and persistent issue of gender inequity in education. For example, Akpakwu and Bua (2014) have revealed that assuming what is right for boys and girls is still a common practice in many education settings, thus undermining girls' potential and depriving them of the same opportunities as their male peers.

Moreover, although most countries in the world have given all genders equal access to schooling, this does not necessarily mean equal access to the taught curriculum. This is because, in a class setting, it has been found that some teachers are more likely to engage with boys, preventing girls from expressing their ideas publicly about the learned content. The effect of this manifestation of inequity is far-reaching. Continuous professional development should be embraced to address any gender inequity issues that may unintentionally occur in the classroom. Not only that, but Akpakwu and Bua (2014) have posited that the development of new ways of teaching and learning is essential, so as to facilitate the participation of students in the learning process regardless of their gender.

Summary of literature

Overall, the 21st century is characterized by rapidly evolving societies, in which public awareness about gender equity and environmental sustainability has now become a necessity. It is through an updated academic curriculum that society will continue to promote awareness and nurture leaders who are sensitive to these aspects.

In the following section of this paper, I directly compare the previous and existing Rwandan curricula in terms of the extent to which they embed these two social factors in education. I begin by introducing the historical and socio-cultural context from which the modern curricula have arisen. I then comparatively analyze Rwanda's current CBC with its previous KBC.

ANALYSIS OF THE RWANDAN CURRICULA

Historical context

In pre-colonial times, Rwanda was a community-based society. Its education system was gender-based with determined gender roles. Adolescent girls studied in specific cultural schools called Urubohero, where they learned weaving, basketry, and parenthood (The New Times 2018). They were exclusively taught to become good mothers and obedient wives. On the other hand, their brothers studied blacksmithing, hunting, building, and war skills in special schools called Urugerero, learning to become warriors and responsible heads of their future families (The New Times 2013). During this period, education was largely informal, and community elders were the primary educators (Wioleta and Vincente 2023).

Upon the arrival of colonialists and missionaries in the early 1900s, Rwandan education underwent its first transformation (K12 Academics 2017). A formal, European-influenced education system was embraced, and traditional education was discouraged. Urubohero and Urugerero were replaced by secondary schools and Catholic seminaries. The purpose of these early schools was to create a new generation of leaders who would help the Belgians—Rwanda's colonizers—to rule the country. The French language was promoted, while science, technology, and technical-related courses were not taught at this time. Religious Catholic schools also focused on promoting priesthood.

When Rwanda gained independence from Belgium in 1962, the new government recognized the need to refine the education system. A number of new primary and secondary schools were built, and in 1963 the first-ever tertiary education institution, the University of Rwanda, was established. Primary education lasted for eight years, with Kinyarwanda as the language of instruction. Due to the high demand for primary education and the scarcity of schools, a double-shifting system was introduced, with one group of students studying in the morning and the other in the afternoon (K12 Academics 2017). Post-primary education was delivered in French. Despite the new government's efforts to promote education, political turbulence interfered, with the 1994 genocide against the Tutsi marking the end of that era and the beginning of political stability in the country.

With the turmoil of political issues impacting education, the curriculum and its components were delivered at the lowest quality. This explains why the integration of gender equity and environmental sustainability was overlooked for so long in the Rwandan curriculum. For instance, in the 15 years following the 1981 Convention on the Elimination of All Forms of Discrimination Against Women, the number of girls in schools and of women holding political positions remained strikingly low. In the 1990s, less than ten percent of the population enrolled in secondary schools, and females accounted for only a tenth of them (Dr. Puttanna and Dusaidi 2017).

After the liberation of Rwanda, education was a major sector that deserved much attention. Much was therefore done to reshape it and bring it to global standards. New schools were built, the language of instruction was changed from French to English, the years of primary education were lowered from eight to six, and the national core curriculum was reformed (K12 Academics 2017). Building from the ashes of

the 1994 genocide, the MINEDUC set an Objective-Based Curriculum (OBC) (Gahire 2024). In 2008, it was revised and became the KBC. After six years of implementing the KBC, however, MINEDUC introduced the CBC, which is more modern and well rounded (Rwanda Basic Education Board 2015). This develops learners' competencies and encourages them to put into practice what they learn beyond the four walls of a classroom.

Since the Rwandan CBC is considered well rounded and promotes the holistic growth of a student, this research examines the broad-based nature of the CBC and compares it to its predecessor—the KBC—through the respective lenses of environmental sustainability and gender equity. In the upcoming participant-based data analysis, it specifically assesses how sensitive CBC graduates are towards environmental sustainability and gender equity issues in comparison to KBC graduates. First, the two curricula are directly compared in terms of their specific content and focus.

Comparison of the two curricula

Rwanda's core curriculum is the backbone of its national education system. It is the guide for the hallmark of progress that the learner makes as they grow. MINEDUC seeks to ensure that their curriculum is progressive, and in the light of key trends in the literature (Dewey 1899l, Caswell 1950, cited in Curriculum Development 2008, p.7), MINEDUC defines the Rwandan curriculum as encompassing the "total learning experience" (REB 2015). This makes the CBC fall under the "progressive point of view" on curriculum design (Bentayao 2008, p. 6). Unlike the learner-centered CBC, which pays much attention to skills development, values, and attitudes for real-life application, the teacher-centered KBC exclusively focused on the acquisition of theoretical knowledge. In this vein, the KBC followed a classic mode of the teaching and learning process, evidently qualifying it to fall under the "traditional point of view" on curriculum design (Bentayao 2008, pp. 7-8).

Under the environmental sustainability lens, the CBC is perceived as encompassing courses that teach and strengthen students' understanding of the environment, hence fostering the essential skills needed to sustain and protect it. From primary to secondary classes, students are exposed to well-prepared content complemented by the insightful practicality of what they learn. In addition to the diverse rigor of sustainability-related courses, most schools in Rwanda have active partnerships with non-governmental international organizations that aim to promote quality education for sustainable development. For instance, Under the project titled "Empowering Rwandan Education Professionals", one hundred schools have been selected to deepen their understanding of environmental protection and climate change (Foundation St Dominique Savio 2014).

Rwanda's CBC incorporates courses that equip the learner with hands-on experience in waste management, and trains them to seek opportunities that arise from the field. It also challenges them to think creatively through poems, drawings, and songs, thus stimulating them to learn from and compare their ideas with their peers. The CBC encourages students to participate in regional and national competitions organized by both governmental and private organizations. For example, the Rwanda

Environmental Management Authority (REMA) annually organizes a competition under the theme “Beat Plastic Pollution: If you can’t reuse it, refuse it” (REMA 2018). Each year, the Dian Fossey Gorilla Fund also organizes the Conservation Debate Competition (Fossey Fund 2022), in which schools in Rwanda are invited to participate. This underscores how the CBC, with support from stakeholders, strives to create a future generation of sustainability-conscious leaders. It is worth noting that before the CBC, the participation of students in sustainability-related contests was minimal.

Being a curriculum that takes into account the total learning experiences of the student, the CBC ensures that the learned content is applied within the school environment. School policies ensure that student engagement in the school community (through either clubs or youth movements) intersects with the broader learning objectives of the curriculum. For instance, secondary students are required to participate in community work, traditionally known as Umuganda, on the last Saturday of each month. In the field, they put into practice what they learn, contribute to the community’s environmental restoration goals, and instill a sense of civic responsibility (Nu-Vision High School 2024). These are important holistic education ingredients that the KBC lacked.

It is difficult to overlook how the new curriculum has strengthened the technical skills acquired by students in vocational centers. With its emphasis on problem-solving and real-life application of the learned content, the CBC has brought a wide range of courses that directly impact the community. With this innovation-provoking curriculum, learners in vocational centers are prompted to use their technical skills to solve existing societal problems. For example, vocational center graduates are the leading human resource workforce (MINEDUC 2023) for the nation in producing pellets and briquettes for domestic use. Their remarkable transformative contribution reduced biomass dependence from 83% in 2010 to 42% in 2024 (Rwanda Energy Group 2024).

Furthermore, complying with REMA’s requirements, schools adopted a waste segregation method to practice proper disposal. Garbage bins for each type of waste—biodegradable, non-biodegradable, and laboratory—were established in school compounds, and students began taking part in disposing of waste. This not only ensures proper waste management and environmental protection but also offers invaluable practical learning platforms through which students gain waste management skills that they later use in life.

In the same vein, educational institutions are especially encouraged to “practice what they preach” (REMA 2010). Schools are highly recommended to use biogas for cooking instead of solely relying on firewood. Under the National Domestic Biogas Program (NDBP), 600 schools were equipped with biogas digesters (Rwanda Energy Group 2015).

Moreover, schools and local communities are not the only ones concerned with environmental sustainability and waste management. The government of Rwanda also ensures the stewardship of environmental protection at large. In the past four years, in partnership with the Grand Duchy of Luxembourg, the Ministry of Environment commenced a groundbreaking project—Nduba Waste

Management Facility—worth £67 million to build a waste management facility in Kigali (Ministry of Environment 2025). Currently, Rwanda is a leader in waste management, and its capital—Kigali—is often ranked the cleanest city in Africa (Kigali Daily News 2024). Much of the effort that has gone into awareness, mass education, and facility construction is already bearing fruit. This accentuates Rwanda's serious commitment to addressing waste management issues and laying an unshakable foundation from which future generations of leaders will continue.

Under the gender equity lens, the existing Rwandan curriculum similarly has much to offer in comparison to its predecessor. Since 1994, Rwanda has made remarkable strides in promoting gender equity across all sectors and has deliberately paid special attention to promoting this in the education sector. Consequently, Rwanda takes a forefront position in presenting better statistics than the rest of Africa. As of the time of writing, women hold 64% of seats in the lower house of Rwanda's legislature. It is not just numbers, but tangible actions, goals, and expected outcomes that speak volumes and trace a paradigmatic route that peer nations should follow. From a factual perspective, in ensuring equality and equity of all genders, Rwanda ranked sixth in the world. It is worth noting that the U.S. ranked 28th by comparison (USAID 2018). This not only unveils Rwanda's efforts in promoting gender equity but also uncovers the country's relentless efforts to become a leader in national gender standards (UNDP 2023). Promoting awareness on a large scale, the CBC is entwined in Rwanda's remarkable progress and in nurturing future leaders who are sensitive to gender equity.

Unlike many African countries where gender-responsive education is well documented but only partly infused in the curriculum (Simmonds & Le Grange 2014), Rwanda takes a different approach. For instance, whereas Simmonds & Le Grange (2014) note that the South African curriculum fails to address the complexities of gender at school, the Solutions Journalism Network (2023) applauds Rwanda for establishing “Girls Rooms”, an essential component of a learner’s total experience. According to the 2020 ministerial order, these rooms should be equipped with pads, painkillers, water, beds, and detergents. These rooms aim to support girls experiencing periods while at school. As of 2021, 55.4% of all primary and secondary schools in the country had already established such rooms (Solutions Journalism Network 2023). This is the strongest indicator of how Rwanda’s policies meet the individual needs of each gender in the academic setting. Subsequently, schools have reported significantly reduced rates of absenteeism among girls.

The MINEDUC also takes into consideration the fact that current Rwandan educators were themselves exclusively taught under an old-fashioned curriculum that was more knowledge-based. It did not encompass the skills and attitudes that a 21st-century teacher is recommended to have. In this light, the government of Rwanda ensures that teachers are constantly trained on gender equity, gender equality, and effective ways of integrating them into the “taught curriculum” (Bentayao 2008, p. 8). Rwanda has developed a package for guiding teachers and school leaders in facilitating gender-responsive pedagogy within the school environment (MINEDUC 2018).

Moreover, Rwanda has opened doors to welcome foreign support in promoting gender equity, especially in education. For example, besides numerous religion-affiliated secondary schools that support girls, there are other large projects that aim to supplement the efforts of the Rwandan government in promoting equity in education. A typical example is “GIRL (Girls In Rwanda Learn)”, a UK-assisted project supporting marginalized girls in Rwanda to return to school (Stotles 2024). The Imbuto Foundation—the First Lady’s initiative—should also be acknowledged. It plays a pivotal role in funding the education of promising girls from low-income backgrounds. With a budget of more than Rwf 100M (N. a. 2023), the Imbuto Foundation relentlessly supports and empowers marginalized girls and women in education.

Summary of curricular analysis

Based on the details elaborated in this section, we can conclude that the CBC constitutes more than just a list of objectives. It is the total learning experience of Rwandan students, including how they use their learned skills and knowledge to impact the community at large. As a state, Rwanda also gives what it can to supplement the progressive nature of its curriculum. It has demonstrated an unwavering commitment to promoting and fostering environmental sustainability and gender equity through both educational reforms and international partnerships. Rwanda’s initiatives not only unveil the country’s efforts in addressing waste management issues, but also uncover its devotion to collaborating and learning from developed countries that have achieved sustainable goals both in the economic and educational sectors (Ministry of Finance and Economic Planning 2021).

This section directly compared Rwanda’s new and old curricula in terms of the extent to which they embed environmental sustainability and gender equity in teaching and learning activities. In the following section of this paper, I present the quantitative survey data collected from the graduates in table format, followed by discussions of their significance which also integrate relevant qualitative data (i.e., extracts from participants’ long-form responses to open-ended questions). I begin by presenting data related to how participants integrate environmental sustainability practices into their daily lives. I then present the equivalent data on how participants are sensitive to gender equity practices and how they integrate their classroom knowledge into their daily lives.

DATA ANALYSIS AND METHODOLOGY

The survey was distributed to 96 Rwandan high-school graduates, of whom 95% consented to take part. The participants were of two categories: the recent high school graduates who had studied the new curriculum, comprising 45% of the participants; the older graduates who had studied the previous curriculum, constituting 55% of the total participants. They were randomly selected from 13 secondary schools located in six different districts of the country. The participants were explained the aims and objectives of the research. The survey questions were designed to reflect the nature of Rwanda’s new and progressive curriculum. They were intended to encourage participants to give answers that reveal

different nuances of their overall learning experience. The questions also explored how the participants also integrate skills they learned at school into their daily lives, with respect to the curricula in which they studied. Data were collected using a Google form, which each participant completed only once. In preparing the research questionnaire, a mixed-method approach was employed to ensure that the collected data included a balanced range of both qualitative and quantitative data.

Following an initial opening section which included the necessary research background and consent information, the main body of the survey was split into two sections. These explored the participants' thoughts and experiences on environmental sustainability and gender equity respectively, and were each divided into sets of quantitative and then qualitative questions. Firstly, five-point Likert scales were used to determine the extent to which participants integrate environmental sustainability and gender equity practices into their daily lives, through the lens of several different questions. The following ranges of mean values are used to describe the extent to which participants agree with the statements in question:

- 4.50 – 5.0: Very high
- 3.50 – 4.49: High
- 2.50 – 3.49: Moderate
- 1.50 – 2.49: Low
- 0 – 1.49: Very low

In the following tables, the statements are ranked here in descending order based on their mean perception amongst participants.

Table 1: Mean perception of older high school graduates on environmental sustainability

Statement	Mean	Description
I am committed to reusing items instead of throwing them away after their primary usage because I was taught this in class.	2.93	Moderate
I understand that cutting down trees necessitates approval from local authorities.	2.93	Moderate
I prefer packaging in biodegradable containers instead of non-biodegradable polythene bags.	2.86	Moderate

I repair my clothes and shoes when they are damaged instead of immediately throwing them away because my teachers encouraged me to do this.	2.83	Moderate
I understand that paying a solid waste collection fee is my responsibility and I pay it without hesitation.	2.80	Moderate
I am happy to participate in monthly community work activities (Umuganda) and I encourage my peers to do the same.	2.80	Moderate
I regularly opt for biking and walking for short trips.	2.80	Moderate
I prefer hybrid and electric cars over conventional cars because I understand the role I should play in reducing harmful gases released into the atmosphere.	2.80	Moderate
I prefer public transport over private transport because in class I was taught that this is one of the measures of reducing greenhouse gases released into the atmosphere from vehicles' engines.	2.76	Moderate
I collect rainwater and use it for irrigation purposes or other domestic activities.	2.76	Moderate
I am willing to report anyone who illegally cuts down trees planted by community members during Umuganda.	2.70	Moderate

I understand the importance of installing a solar panel in my home.	2.70	Moderate
When purchasing items, I prefer those with eco-friendly certifications.	2.63	Moderate
I know how to differentiate biodegradable and non-biodegradable wastes because I was taught this concept in class.	2.62	Moderate
I sell recyclable wastes to the companies in charge.	2.56	Moderate
I prefer biogas over firewood and charcoal when cooking.	2.55	Moderate
I plant at least five trees per year.	1.20	Very low
Overall Mean	2.66	Moderate
Standard Deviation	0.39	

Table 1 reveals that statements in relation to reusing items instead of throwing them away after their primary use, and to cutting down trees requiring approval from local authorities, displayed the highest weighted mean of 2.93. This is described as moderate. On the other hand, the statement regarding planting at least five trees per year displayed the lowest weighted mean of 1.20, which is described as very low. The overall mean is 2.66, which indicates that there is moderate awareness of sustainability practices amongst the people who graduated from high school prior to 2015, having studied the old Rwandan curriculum.

In the open-ended questions, older high school graduates also expressed seemingly strong opinions of how formal education is a driving factor in the promotion of environmental sustainability in society. Most of them elucidated that the primary role of education is awareness promotion. For example, respondent 17 stated: “Formal education plays a crucial role in promoting environmental sustainability by fostering awareness, critical thinking, and problem-solving skills related to environmental challenges”.

Older high school graduates also showed an understanding of the existing gaps that should be addressed in order to achieve sustainable development. They emphasized that an insufficient budget is allocated for sustainability-related activities in the education sector, and therefore argue that it should be increased. For instance, respondent 23 stated: "Despite the constraints of our nation's budget, Rwandan leaders ought to emphasize sustainability education and allocate enough funds for it". Moreover, older high school graduates showed that other than teaching, their former schools did not encourage them to participate in sustainability-related activities.

Table 2: Mean perception of recent high school graduates on environmental sustainability

Statement	Mean	Description
I regularly opt for biking and walking for short trips.	4.90	Very high
I understand the importance of installing a solar panel in my home.	4.88	Very high
I know how to differentiate biodegradable and non-biodegradable wastes because I was taught this concept in class.	4.87	Very high
I prefer biogas over firewood and charcoal when cooking.	4.85	Very high
I am willing to report anyone who illegally cuts down trees planted by community members during Umuganda.	4.85	Very high
I prefer hybrid and electric cars over conventional cars because I understand the role I should play in reducing harmful gases released into the atmosphere.	4.85	Very high
I repair my clothes and shoes when they are damaged instead of immediately throwing them	4.83	Very high

away because my teachers encouraged me to do this.		
I prefer public transport over private transport because in class I was taught that this is one of the measures of reducing greenhouse gases released into the atmosphere from vehicles' engines.	4.83	Very high
I am happy to participate in monthly community work activities (Umuganda) and I encourage my peers to do the same.	4.83	Very high
I understand that paying a solid waste collection fee is my responsibility and I pay it without hesitation.	4.80	Very high
I understand that cutting down trees necessitates approval from local authorities.	4.80	Very high
I prefer packaging in biodegradable containers instead of non-biodegradable polythene bags.	4.80	Very high
I collect rainwater and use it for irrigation purposes or other domestic activities.	4.80	Very high
I plant at least five trees per year.	4.78	Very high
When purchasing items, I prefer those with eco-friendly certifications.	4.75	Very high

I am committed to reusing items instead of throwing them away after their primary usage because I was taught this in class.	4.63	Very high
I sell recyclable wastes to the companies in charge.	4.63	Very high
Overall Mean	4.80	Very high
Standard deviation	0.075	

As presented in *Table 2*, the respective statements on opting for biking and walking for short trips, and on understanding the importance of installing solar panels, displayed the highest weighted means of 4.90 and 4.88, both of which are described as high. On the contrary, the statements on reusing items instead of throwing them away after their primary usage, and on selling recyclable wastes to the companies in charge, each displayed a comparatively lower weighted mean of 4.63, which is nonetheless described as very high. 4.80 represents the overall weighted mean and is described as very high. It reveals that there is a substantial degree of environmental sustainability awareness amongst the recent Rwandan graduates, particularly in comparison with their predecessors.

Via the open-ended section of the survey, recent high school graduates showed how crucial formal education is in promoting environmental sustainability education. Beyond developing green skills and scientific knowledge amongst learners, recent high school graduates hinted that formal education also plays an essential part in shaping their attitudes. For example, respondent 51 stated that:

Frankly, everything I know related to protecting the environment is what I learned from the school. In the human geography course, for example, we had a common slogan that stated “cut one, plant two”. This opened my mind to thinking about what I should do right after cutting down trees.

They not only admired the way their former school administrators encouraged them to prevent environmental pollution but also praised how they put in place measures to ensure sustainability at the school level, such as harvesting rainwater and allowing students to participate in clubs and student organizations that worked to protect the environment. For instance, respondent 73 stated that: “My former school had recycling programs. We had designated bins for plastic, paper, and organic waste. We even had competitions to see which class could recycle the most”. This reflects how the competence-based and learner-centered Rwandan curriculum is efficient at promoting environmental sustainability education among the learners.

Moreover, recent high school graduates showed concern for gaps that should be filled in order to achieve sustainable development. In particular, respondent 73 stated: "Once, in a class project, our chemistry teacher obviously struggled to help students make a biogas project that was mentioned as an essential practical activity in the student book". They pointed out that there is limited public awareness, and so sensitizing people about the reuse, reduce, recycle, and repair principle, in addition to ensuring continuous professional development for teachers and strengthening collaboration among the government, businesses, and communities, can help address existing gaps.

Table 3: Mean perception of older high school graduates on gender equity

Statement	Mean	Description
I am willing to report individuals who violate people because of their gender.	4.62	Very high
I believe boys and girls should have equal access to education opportunities.	4.52	Very high
I am always willing to support a peer (regardless of their gender) in advancing their career or education.	4.48	High
I actively challenge gender stereotypes in my family and community.	4.44	High
I am willing to participate in community programs such as 'Women for Women' that promote gender equity.	4.44	High
I participate in community movements that aim at promoting gender equity.	4.34	High
I share all tasks equally amongst all genders at home.	4.32	High

I regularly use inclusive language and behaviors to make everyone feel valued.	3.92	High
I involve all members of my family when making a sensitive decision.	3.88	High
I ensure fair treatment of all my siblings or children at home.	3.86	High
I am aware of Isange One Stop Center and its functions.	3.84	High
I am willing to support any victims to access the Isange One Stop Center services.	3.76	High
Overall Mean	4.20	High
Standard deviation	0.32	

As presented in *Table 3*, the statements pertaining to the willingness to report individuals who violate people because of their gender, and to the belief that both boys and girls should have equal access to educational opportunities, displayed the highest weighted means of 4.62 and 4.52 respectively, which are described as very high. On the other hand, the statements corresponding to awareness of the presence of the Isange One Stop Center, and to participants' willingness to support any victims accessing its services, displayed the lowest weighted averages of 3.84 and 3.76 respectively, which are still described as high. The overall mean is 4.20, described as high, and reveals that those who graduated before 2015 have a strong understanding of gender equity and apply its principles in their daily lives.

Through the open-ended questions that they answered, older high school graduates revealed that their former schools did in fact encourage gender equity in the school environment. Administrators encouraged them to be fair to one another, and they highlighted that their schools gave them opportunities to make decisions that concerned their future, regardless of their gender. For example, respondent 43 stated that:

Back in 2009, I was a senior 3² student. Our teachers allowed us to choose a combination of courses that we would later focus on in the senior years of high school. I have never heard any claims from any of my classmates that they were prohibited from choosing a combination that interested them.

² Senior 3 is the final year of lower secondary education in Rwanda, and is equivalent to grade 9 in the US education system. At this level, students choose three major courses of concentration for the next three final years.

This shows that the Rwandan education system has been sensitive to gender equity, and educators have been respecting gender equity principles even before the implementation of Rwanda's new curriculum. The older graduates also showed that they understand the importance of gender equity. They highlighted that gender equity has a mutual connection with societal development and its integration in education raises well-informed and responsible citizens. Among many participants who hinted on this, respondent seven stated: "Gender equity education breaks gender stereotypes and brings about inclusive upward social mobility".

Table 4: Mean perception of recent high school graduates on gender equity

Statement	Mean	Description
I involve all members of my family when making a sensitive decision.	4.88	Very high
I am willing to report individuals who violate people because of their gender.	4.87	Very high
I regularly use inclusive language and behaviours to make everyone feel valued.	4.85	Very high
I am aware of Isange One Stop Center and its functions.	4.85	Very high
I participate in community movements that aim at promoting gender equity.	4.85	Very high
I believe boys and girls should have equal access to education opportunities.	4.83	Very high
I am willing to participate in community programs such as 'Women for Women' that promote gender equity.	4.83	Very high
I am always willing to support a peer (regardless of their gender)	4.80	Very high

in advancing their career or education.		
I am willing to support any victims to access the Isange One Stop Center services.	4.80	Very high
I share all tasks equally amongst all genders at home.	4.75	Very high
I actively challenge gender stereotypes in my family and community.	4.73	Very high
I ensure fair treatment of all my siblings or children at home.	4.73	Very high
Overall Mean	4.81	Very high
Standard deviation	0.053	

Table 4 shows that the statements pertaining to involving all members of a family when making a sensitive decision, and to the willingness to report individuals who violate one's rights because of their gender, received the highest weighted means of 4.88 and 4.87 respectively, both of which are described as very high. Conversely, the statements related to challenging existing gender stereotypes, and to the fair treatment of family members, received a lower weighted mean of 4.73, which is regardless described as very high. The overall mean is 4.81, which is also recognized as very high. This elucidates that recent high school graduates have a thorough understanding of gender equity concepts and that they regularly apply them in their day-to-day way of living.

Regarding their opinions on the role of formal education in promoting gender equity, recent high school graduates shared that its role is far-reaching. Education helps instill gender ethics amongst not only learners but also community members at large. Through learning, students acquire a spirit of questioning and challenging existing theories, which include stereotypes related to gender equity. They also shared that their school officials unreservedly helped them to understand and broaden their knowledge of gender equity. For example, respondent 30 stated:

We participated in several peer-run advocacy activities and our teachers often notified us whenever there was an on-going competition about gender equity in which we were eligible to participate.

In school work, particularly in an obligatory course called General Studies and Communication Skills, learners often engaged in debates involving gender equity topics.

The data presented above clearly indicate substantial differences on how recent and older high school graduates perceive environmental sustainability and gender equity and how they integrate these respective principles into their daily lives. Having studied in Rwanda's newly adopted learner-centered progressive curriculum, recent high school graduates exhibit greater levels of awareness of environmental sustainability compared to their predecessors.

On the other hand, older graduates who have studied in a traditional content-centered curriculum regardless show that they apply gender equity principles in their daily lives at an excellent level. In the same light, young graduates also possess a remarkable understanding of gender-equity principles. This section focused on presenting and analyzing the collected data. In the remaining section of this research paper, I will draw conclusions and provide potential recommendations based on the above data analysis.

CONCLUSION AND RECOMMENDATIONS

This study aimed to investigate whether transitioning Rwanda's core high-school curriculum from a content-centered to a progressive and learner-centered model has improved and fortified graduating students' competencies in environmental sustainability and gender equity. Based on the analysis, the new Rwandan curriculum is considerably more efficient at promoting environmental sustainability and gender equity principles among the graduating students compared to its predecessor. The progressive nature of the CBC enhances a balance between classroom knowledge and its application in the learners' lives, an essential trait that the KBC lacks. This reveals an important practical implication as it shows that student-centered learning approaches are more effective at nurturing students' understanding of concepts and equipping them with skills and a mindset that are necessary for leaving a long-lasting impact on society.

Although the progress is evident, it is far from sufficient. Refining the curriculum is one of many measures of supporting the promotion of environmental sustainability and gender equity. The MINEDUC and all stakeholders should establish continuous professional development programs for teachers. This will help to foster professional growth in the education sector and ensure that teachers' skills regarding environmental sustainability and gender equity remain updated and relevant. In addition, policymakers should learn from Finland's curriculum, which is known to foster ethical and respectful students with an undeniable sense of fairness and an open attitude to diversity (Harriet et al. 2017).

Moreover, curriculum designers should embed enough sustainability-related practices in science subjects, since this has proven to be helpful in Sweden (Jeongmin 2023). In the same light, education boards in Rwanda should regularly organize community outreach programs targeting older high-school graduates aimed at sensitizing them about sustainability practices. This will help to address a concerning existing knowledge gap of environmental sustainability between the CBC and KBC graduates.

The student-to-teacher ratio is still relatively high. It is thus necessary that the MINEDUC puts in place measures that facilitate more students to enroll in the College of Education so that, in the future, the number of graduating teachers will compensate for the ever-increasing number of students.

The results of this research have highlighted the importance of a progressive curriculum towards shaping well-informed students. It provides evidence-based insights to help policymakers refine the curriculum, and it shows the progress that has been made in Rwanda in promoting environmental sustainability and gender equity skills amongst the young population. Despite the findings and the overall role that the research plays, the timeframe in which the research was conducted was limited. This prevented me from conducting a more extensive collation and analysis of data that would otherwise have included interviews featuring education professionals and government leaders. In the future, this research should be expanded by further exploring what the Ministry of Education and other stakeholders plan for the Rwandan education sector.

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