

ORIGINAL ARTICLE

# Adapting Education for Sustainable Development in Zambian Secondary Schools

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## Abstract

The study explored how strategies for Education for Sustainable Development (ESD) have been integrated into the revised Zambian secondary school curriculum, focusing on three selected public schools in Lusaka District. Guided by the question of how the eleven global indicators of Sustainable Development Goal 4 (SDG4) are applied at the secondary level, the study used a descriptive survey design. A total of 30 respondents participated, including officials from the District Education Board Secretariat, experts from the Curriculum Development Centre, head teachers, and teachers. Findings revealed that the curriculum promotes ESD through two main career pathways, namely the academic and vocational pathways that allow learners to pursue education that aligns with their interests and future opportunities. Additionally, the curriculum emphasizes hands-on, practical-based learning and modified pedagogical approaches to develop not just knowledge, but also skills, values, and attitudes. These changes aim to narrow the mismatch between school education and labour market demands. However, the study highlighted a need for improved infrastructure and resources. It recommended that the Ministry of General Education provide adequate materials and laboratory facilities to enhance the effectiveness of practical teaching and learning, thereby supporting the full implementation of ESD in Zambia's secondary schools.

**Keywords:** Curriculum, Education for Sustainable Development, Pedagogy, Practical-Based Learning, SDG 4

## Background

The purpose of this study was to ascertain strategies used in secondary schools to adapt Education for Sustainable Development (ESD) (MoESTVE, 2013) in the Zambian curriculum in selected secondary schools in Lusaka District. In recent years, the global context of education has brought a new focus to education policy and practice. The inclusion of global citizenship education, environmental education, development education, and education for sustainable development are such tangible examples (O'Flaherty and Liddy, 2018). These reforms have also been acknowledged in international developmental agendas such as the United Nations Sustainable Development Goals (SDGs). This has brought about

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significant policy changes at national levels. Increased interest in global citizenship and development education has come about as a result of a number of factors, such as the increasing multicultural nature of societies and the work of international development organizations (Hogan & O'Flaherty, 2021).

Moving away from traditional approaches to teaching and learning that emphasize mastering a pre-established body of knowledge and skills, the education sector worldwide is now shifting its focus to what are called key competencies. This shift calls for the adoption and exploration of new instructional and learning approaches aimed at cultivating abilities commonly referred to as 21st-century skills. Drawing from these theoretical and conceptual frameworks, various initiatives have been introduced through policies, school curricula, and educational practices with the goal of advancing ESD in developing nations (Yuto, 2017). The concept of sustainable development is widely supported. International policy developments which aim to support the goals of education include the UN Decade of ESD (UNESCO, 2012) and the UN SDGs. The UN SDGs emphasise on making sure that learners acquire the requisite knowledge and skills that are necessary for the advancement of sustainable development (UNESCO 2015).

The Zambian Ministry of General Education upholds the principle that every individual has an equal right to educational opportunity regardless of personal circumstances or capacity (Tembo, 2001). Chirwa-Banda (2017) notes that working in line with the 2030 Sustainable Development Agenda, the education sector has set specific National Targets and development of national Indicators streamlined in the major documents of the Ministry of Education, namely: The Education Act, Education policy, the Fourth National Implementation Framework (NIF IV), the Seventh National Development Plan (7NDP) and the Revised Education Curriculum Framework Document. Chirwa-Banda (2017) further records that Zambia's five national priority domains for education are System-wide Policy and Planning (SWPP), Teacher Policies and Development; Technical Education, Vocational and Entrepreneurship Training (TEVETA); Youth and Adult Literacy and Education (YALE) and Monitoring and Assessment of Learning Achievement (MALA) with the aim to sustainably achieve equitable and inclusive access, and quality of education, including through enhanced efficiency and effectiveness of education service delivery. Chirwa-Banda (2017) observes that education today does not sufficiently prepare learners to contribute to sustainable development. Teaching and learning needs to be designed in a participatory, learner-centered way. The resolve of the education sector is to promote education for sustainable development beyond the United Nations Decade of Education for Sustainable Development (UNESCO, 2012). The United Nations (2015) outlines that the long-term target is to ensure that by 2030 all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles. Furthermore, all girls and boys are expected to have access to quality early childhood development, care and pre-primary education so that they are ready for primary education. There is also expectation for a substantial increase in the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and

entrepreneurship. Additionally, all youth and a substantial proportion of adults, both men and women should achieve literacy and numeracy.

Chirwa-Banda (2017) argues that to achieve SDG 4, teaching and learning have to be participatory and learner-centered. This approach is critical if learning outcomes in education for sustainability are to be achieved. With strategic planning, capacity building and critical thinking, leaders should learn to plan for sustainability. The main issue at hand is whether learners are acquiring competencies and skills. The national plans on SDG 4 are to mobilize education and learning to quicken progress towards sustainable development. Doing so requires reorienting education and learning to increase every learner's chance to acquire the values, attitudes, skills and knowledge that enable them to contribute to sustainable development at the individual, household, national and global level (MoESTVE, 2013).

In an effort to develop the education sector the Zambian government has since independence formulated and implemented various policies. For instance, the *Educational Reforms Policy of 1977* emphasized that education was a tool for personal and national development. The Focus on Learning Policy of 1992 (Ministry of Education, (MoE) 1992) focused on the mobilization of resources to develop schools while *Educating Our Future: National Policy on Education of 1996* highlighted the significance of education for all children at all levels of the education system (MoE, 1996). However, none of these policies addressed education for sustainable development. Over two decades later, Chirwa-Banda, (2017) observed that education in Zambia hardly prepared learners to contribute to sustainable development. Furthermore, studies conducted by Nambela (2016) and Mubita (2017) on provision of quality education and integration of subjects showed that issues of ESD were not being addressed by the education system. Therefore, there was need to assess the strategies used to adapt ESD in the revised Zambian curriculum in secondary schools in Lusaka District. This study was, therefore, undertaken to answer the following research question:

*How have the eleven global indicators of SDG 4 been applied in the revised Zambian education curriculum at secondary school level?*

In answering the above research question, and in order to make our arguments, we proceed by articulating how the current study uses the ideas of the Human Capital Theory proposed by George Schultz. At the heart of the Human Capital Theory is the widely accepted argument that each worker possesses a set of abilities, knowledge and skills that can be enhanced or increased through training and education. From the Human Capital Theory standpoint, education improves the choices available to individuals, and that an educated citizenry provides an educated and skilled labour force required for industrial development and economic growth (Ukwuaba, 2015). The quality of economic growth in the nation depends on education. Factors contributing to economic development are skills, knowledge and attitudes of the people which are propagated by the education system (Almendarez, 2010).

In the context of this study, which looked at the application of the 11 indicators of SDG number 4 to secondary school curriculum in Zambia, education and training are key

variables. It is therefore, a consequence that, in terms of education content packaging, the curriculum is expected to contain study programs that are skill oriented, shapes talents, and are relevant to the labour market. The Human Capital Theory was so relevant in that it guided on the types of skills or knowledge which were responsive to the needs of labour at a given time and in a given place. This study has revealed that several indicators of the SDG 4 were tailor made and aligned to various subject departments and fused in the mainstream subjects. This was for purposes of exposing learners to acquiring skills and knowledge that would position them as relevant and sustainable capital on the labour market and thereby be an asset to the country at large. Therefore, the Human Capital Theory guided this study accordingly in accessing how the 11 indicators of the SDG 4 were being applied in the curriculum and the modes which implementers adopted to transfer knowledge and skills to learners.

## **Methodology**

This study used the descriptive research design within the qualitative paradigm to gather data that describes phenomena (Gray, Williamson, Karp, & Dalphin, 2007). According to Leedy and Ormrod (2001) descriptive research involves either identifying the characteristics of an observed phenomenon or exploring possible associations amounting to two or more phenomenon. Descriptive research involves gathering of data that describe events and later on analyzing it.

Purposive sampling procedure was employed. According to Simuchimba (2005), this is a form of non-probability sampling in which participants are deliberately chosen based on how well-informed and experienced they are on the subject being investigated. Therefore, this research used purposive sampling because the sample members could be identified by virtue of their positions at the respective work places and these were familiar with the phenomenon under investigation. This is in line with the views of Henning (2004, as cited in Banja & Muzata, 2021, p. 313) who states that “when selecting research participants, the driving considerations behind the selection, should be getting relevant people who can talk about their experiences, and in the process, provide rich data.” This is particularly important when considered that working with qualitative data is anchored on interpreting it and making sense of it and not on measuring it (van Aardt, 2019). This was the case in this current study.

The study area was Lusaka. The targeted population was all the teachers, head teachers of secondary schools in Lusaka District, the District Education Board Secretaries (DEBS) in Lusaka and all officials from the Curriculum Development Centre. The sample size in this study was based on the sample size for qualitative study recommended by Marshall, et al, (2013), which recommended 20 to 30 participants in an interview for purposes of data saturation. The study had 30 respondents, comprising 21 teachers (5 mathematics, 5 science, 6 expressive arts and 5 languages), 3 head teachers, 3 officials from District Education Board Secretary’s office, and 3 experts from the Curriculum

Development Centre. Recruitment of participants was done by virtue of their positions. The targeted respondents of this study were all responsible officials capable of influencing the implementation of ESD in respective institutions and selected secondary schools of Lusaka district.

Data collection was done by means of interview guide and questionnaire. These were designed by the researchers. Primary data were collected from the respondents through one-on-one in-depth interviews that relied solely on open-ended questions. The aim was to gather relevant, reliable and detailed firsthand information that were essential for addressing the research question from the perspective of the participants (Maree, 2007). Individuals interviewed included teachers, head teachers, officers from the office of the District Education Board Secretary and experts from the Curriculum Development Centre (CDC). Each respondent was interviewed as an individual for between 30-40 minutes in secluded places. This was done to promote confidentiality and encourage the respondent to share their experiences. All the interviews were audio recorded with the permission of the participants. Later, the interviews were transcribed and analyzed inductively with initial analysis and data collection occurring concurrently. This is in line with the views of Creswell & Poth (2018), Miles et al. (2020) and Braun & Clarke (2022). Respondents were interviewed in a safe place preferred by each respondent mostly in their respective offices. Apart from interviews secondary data were collected from various documents such as theses and dissertations and policy documents from the Ministry of General Education. These documents were obtained from school administrations, DEBS office and Curriculum Development Centre. These documents provided invaluable data on the different categorizations of SDGs.

In terms of data analysis, the in-depth interviews were analyzed qualitatively by way of thematic and content analysis. These played a vital role in directing the authors toward recognizing significant themes, sub-themes, and meanings that surfaced throughout the data analysis process, by paying close attention to prominent words and phrases that arose during the interviews (Cohen et al., 2011). In this way, data collected was reduced and simplified. This enabled the researchers to format the collected data in a manner that reflected the themes of the research question. After analyzing the data, it revealed diverse themes that represented a summary of the general thinking of the participants. Data collected from documents review guide was analyzed using the UNESCO standard implementation approaches with regards ESD implementation. Thus, using the standard procedures, the collected information was analyzed and compared to the ideal implementation process. Extracts from the data analysis are presented via verbatim transcriptions.

Ethical clearance to conduct this study was granted by the University of Zambia Ethics Committee. The research question and potential benefits were explained to participants. Further, participants were requested to sign consent forms as evidence of their willingness to participate in the study. Participants were also encouraged to indicate if they were not comfortable with any aspect of the interview (Creswell, 2014). To ensure confidentiality,

information collected from participants was de-identified.

## Findings and discussion

The findings that are presented and discussed, under this section, are anchored on the following three themes; firstly, strategies for attaining ESD in the Zambian education curriculum; secondly, the application of the Eleven Global Indicators of SDG 4 for Education in the revised Zambian education curriculum at secondary school level; and thirdly, the extent to which secondary schools adapted their pedagogical practices towards education for sustainable development. In the quest to show the actual view of the respondents, some key verbatim are presented.

### Strategies for attaining Education for Sustainable Development in the Zambian Education Curriculum

To find out the strategies in the Zambian curriculum that addressed education for sustainable development, teachers, head teachers, DEBS personnel as well as experts from the Curriculum Development Centre were engaged as respondents. Beginning with table 1, the section below presents and analyses some strategies used in the curriculum to address education for sustainable development.

Table 1: Specific Strategies in the Zambian Curriculum Addressing Education for Sustainable Development

SN	Strategies that Address Education for Sustainable Development in the Revised Curriculum.
1.	Inclusion of TVETA based practical subjects and certification
2.	Restructuring the education curriculum career pathways
3.	Aligning school based activities to being pro SDG 4 based
4.	Enhancement of science based practical tasks within schools

Source: Education documents (subject syllabi, schemes of work) found in schools (2020)

In order to have a clear understanding of the strategies involved in ESD, the nature of curriculum needed to be that addressed. As seen from table 1, one of the strategies that address ESD in the revised Zambian curriculum was inclusion of TVETA courses and certification (MoESTVE, 2013). Respondents stated that the SDG 4 was being implemented indirectly through school-based subjects like Home Economics, Food and Nutrition, Food Science and Hygiene, Computer Studies and Design and Technology. These subjects were reported to be among many subjects that placed emphasis on skill acquisition, which was a key tenet of sustainable development. They added that strategies placed in the Zambian curriculum were diverse and cross cutting. One teacher from School 'B' stated:

...am aware that the SDG 4 is being implemented indirectly through school-based subjects. This is done to help accelerate the cause for skills acquisition by school going learners. I can cite subjects like Design and Technology, and Computer Studies which is a compulsory subject offered to all junior secondary learners. All this is in a bid to accord learners hands on experience.

A teacher from School 'C' mentioned other subjects in which SDGs were perceived. He said:

In the case of our school, inclusion of SDG 4 in our curriculum is highly perceived in some subject matter such as Home Economics. We have a fully furnished department of Home Management which takes on learners in various food processing lessons coupled with hygiene. This is something that encourages learners to pursue learning with interest. Once these skills are acquired by our learners, definitely, they would become entrepreneurs when they leave high school, thereby contributing to sustainable development goals for the country.

Another teacher from School C' had this to say:

There are more strategies that have been put in the Zambian curriculum to further the idea of education for sustainable development. Our national technical schools currently referred to as STEM schools are offering TEVTA based programs which empower learners with trade and craft skills. These subjects include; Metalwork, Woodwork, Food and Nutrition as well as Art and Design. These subjects are offered with a view of equipping learners with skills that might help them survive amid unemployment. This is an aspect addressed in the SDGs which the curriculum sought to take care of through formal school teaching.

The analysis of the findings further revealed that restructuring the education curriculum career pathways for sustainable development was another strategy being used under the revised curriculum. One teacher shared his awareness with the researchers stating that, the implementation was being done through the restructuring of the education curriculum career pathways. He indicated that, career pathways were adjusted to two ways: academic career pathway and vocational career pathway. This teacher further observed that the SDG 4 was very much biased to the vocational pathway. He asserted:

The introduction of the career pathways in the revised curriculum was symbolic with regards strategies in the Zambian curriculum that address education for sustainable development. It is through career pathways that sustainable development is defined in the context of vocational pathway which equips learners with skills that would sustain their lives in the endeavours of being self-sustaining with limited or less reliance

on formal employment.

Nevertheless, a specialist from CDC also shared with the researchers the strategies which the Zambian Education Curriculum addresses concerning education for sustainable development. He contended that, ESD was a kind of education that encouraged hands on practical work and discouraged theoretical type of learning. This sustainable education was one that was accompanied by special pedagogical approaches that turned theoretical classroom learning into practical learning. He categorically mentioned the areas perceived as strategic for this endeavor. These included subject content as well as methodological content. He stated:

Here at Curriculum Development Centre our mandate is to ensure that we tailor-make the education teaching and learning content to be responsive to national and global needs; the kind of education that would equip learners with lifelong skills that would empower them with self-reliant skills. However, to achieve this, as CDC we consider what to be taught and learnt and how to teach it. Therefore, we have adopted pedagogical approaches that strategically address SDG 4 in a more practical way.

The above position by CDC responds to the concerns expressed by Yorozu (2017) who concluded that, there seemed to be a very common negative element among all the countries that adopted the competency-based curriculum in response to the SDG 4 Eleven Global Indicators. It was observed that the education systems of affected countries were not responding to the respective developmental needs of their countries as learners lacked appropriate skills and applicable knowledge. In tandem with these views, Chilufya (2014) established the need to create innovations in delivery methods that would indicate a movement beyond rhetoric and instead lead to the implementation of policies and programs that will promote learners that understand issues of sustainability and who take responsible action in relation to issues of sustainability. Mulenga and Kabombwe (2019) further argue that such a competency-based curriculum is designed to help learners acquire the knowledge, skills, values, and attitudes necessary to effectively apply their newly acquired competencies within their communities.

Another strategy was how school based activities were being aligned to being pro SDG 4 based as a strategy for attaining education for sustainable development (MoESTVE, 2013). Some respondents stated that most school-based activities were pro SDG4 in approach. One head teacher mentioned activities such as the revamped Production Unit activities. He said that such strategies were used as consolidating activities on classroom-based subjects like Agriculture Science. He asserted:

School activities today such as Production Unit, are tailor-made to enhance on classroom-based subjects like Agriculture Science so that learners be kept busy through skills improvement. This is an indirect

way of implementing sustainable education through SDG 4.

Another teacher from school 'B' during interviews explained to the interviewer that he finds Production Unit to be one of the highly observable strategies in the curriculum that was as a key tenet in addressing sustainable development. He said:

Yes, there are strategies like Production Unit where we teach learners practical skills especially in agriculture on how to rear broiler chickens and farming in general. This is an aspect that is highly visible when you visit our school garden and piggery.

Another teacher singled out aspects of clubs, associations and the Production Unit to be another strategy of aligning school-based activities to SDG 4. She asserted:

Participation in co-curricular activities was emphasized in the framework, and the activities in the co-curriculum included; Clubs and Associations, Sports, Preventive Maintenance and Production Units. These are exactly what our school designs.

Given the various responses of the participants, it was clear that indeed the revised Zambian curriculum employed many kinds of strategies to address education for sustainable development. The findings revealed that, inclusion of TVETA based subjects and accompanying certification, restructuring the education curriculum career pathways, aligning school-based activities to being pro SDG 4 based and enhancement of science based practical tasks within schools were among the known strategies the curriculum employed to address education for sustainable development. It was noted that most school-based subjects were aligned to SDG 4. This showed subjects like Office Practice and Bookkeeping being merged and modified into Business Studies with components meant to equip learners with knowledge of business concepts and processes. This has capacity to address education for sustainable development. The Business Studies component was a foundation subject for Commerce and Principles of Accounts. These are two core senior secondary school subjects that give learners a preparatory ground for understanding seemingly complex business jargon and to enable them to navigate well in the marketplace. This notwithstanding, subjects like computer studies, home management, design and technology, art and design, and music are among the life skills necessary for a learner in order that they sustain themselves productively when they decide to venture into them commercially.

In the same vein, restructuring the education curriculum career pathways and aligning school-based activities to being pro SDG 4 based illuminated the curriculum emphasis to address education for sustainable development. School based activities such as Production Unit, clubs and societies equipped learners with knowledge (informal) that prepared them for survival socially and economically. This finding supports the position of the MoESTVE (2013) that competency-based education (embraced in the Zambian Revised Curriculum

Framework of 2013) was introduced to prepare learners for future challenges by providing them with life skills. This points to the fact that the nature of strategies adopted in the Zambian revised curriculum addressed education for sustainable development.

In tandem with the Human Capital Theory that guided this study, the findings consolidate the belief that the value of education does not lie only in knowledge or skills but also in competences, attributes and attitudes. Therefore, the curriculum strategies put in place have proved to be worth imparting thereby making the Human Capital Theory relevant and informative to this discussion.

### **Application of the Eleven Global Indicators of SDG 4 for Education in the revised Zambian Education Curriculum at Secondary School Level**

Further evidence of the adaptation of the Eleven Global Indicators of SDG 4 for Education in the revised Zambian education curriculum at secondary school can be seen through the manner in which the 11 indicators of SDG 4 have been applied in the revised Zambian education curriculum. For this aspect of the study, document review as well as interview guide were used as main data collection instruments. Eight school administrators, 2 staff from CDC as well as officers from the DEBS office were interviewed. This section discusses all the eleven indicators listed by the Ministry of Education (MoESTVE, 2013).

The 1st Indicator towards achievement of the SDG 4 requires that 'a proportion of primary children to have attained proficiency in reading and basic arithmetic by the end of primary.' Three officers from the CDC, 4 head teachers and 8 teachers indicated that, to achieve the 1st indicator, the curriculum emphasized concentration of teaching reading and comprehension skills to grade eight learners as a way of consolidating on their primary school reading skills. Regarding the 2<sup>nd</sup> Indicator that requires that 'proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial well-being by sex to be enrolled for early child hood education', 3 CDC officers, and 2 DEBS personnel reported that the previous curriculum recommended inclusion of early childhood classrooms in primary schools country wide as a strategy as most primary schools were within reach by learners. As for the 3<sup>rd</sup> Indicator which reads 'participation rate in organized primary (one year before the official primary entry age) by sex', 3 CDC personnel, 3 DEBS officers, 4 head teachers all alluded that, the curriculum strategized a pyramid enrolment structure with more numbers at early childhood and few places at grade 1 so that by the end of pre-school years, only the proficient learners would transition to Grade 1.

On the 4<sup>th</sup> Indicator, 'participation rate of youth and adult in formal and non-formal education and training in the previous 12 months by sex', 3 CDC personnel, 3 DEBS officers, 4 head teachers and 7 teachers of vocational subjects explained that, the curriculum proposed the establishment of TVET programs and establishing of training

centers. Then schools that offered TVET subjects were to facilitate learner acquisition of TVETA certificates after a period of study. On the 5<sup>th</sup> Indicator, 'proportion of youth and adult information and communications technology (ICT) skills, by type of skill', 3 CDC personnel, 3 DEBS officers, 4 head teachers and 8 teachers of computer studies indicated that, the curriculum had introduced Computer Studies in schools in order to enhance ICT skills to youths and adults alike while on the 6<sup>th</sup> Indicator that reads 'parity indices (female/male, rural/ urban, bottom/ top wealth quintile and others such as disability-affected, as data becomes available for all education indicators on this list that can be disaggregated', 3 CDC personnel, 3 DEBS officers, 4 head teachers and 10 teachers of guidance and counseling stated that, the Zambian curriculum provided a careful strategy for enrolment both in rural and urban areas by considering gender indices during enrolment. Also, it provides special facilities for learners living with disabilities, thereby making the system inclusive.

On the 7<sup>th</sup> Indicator stated as 'proportion of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex', 3 CDC personnel, 3 DEBS officers, 4 head teachers and 10 teachers stated that, the curriculum was responsive to proficiency assessment. It was indicated that, the curriculum provided the administration of continuous assessment to learners in every grade constantly so as to keep ascertaining their proficiency levels with regards literacy and numeracy, more at primary level than at secondary level. On the 8<sup>th</sup> Indicator that says 'extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in: (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment, 3 CDC personnel, 3 DEBS officers, 4 head teachers, and 12 teachers highlighted that, the curriculum current recommended civic education to be a compulsory subject in senior secondary schools so as to address Indicator 8 holistically. On the 9<sup>th</sup> Indicator which states that 'proportion of schools with access to (a) electricity; (b) the internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapt infrastructure and materials for students with disabilities; (e) basic drinking water; (f) single-sex basic sanitation facilities (as per the WASH indicator definitions), 3 DEBS officers and 4 head teachers reported that, most rural schools were being connected to the Zambia Electricity Supply Corporation (ZESCO) power grid through the Rural Electrification Authority (REA) project. They were of the view that full installation was going to enhance internet service utilization.

On the 10<sup>th</sup> Indicator, stating that 'volume of official development assistance flows for scholarships by sector and type of study', 3 CDC personnel indicated that the curriculum had room for collaboration with stakeholders such as the Zambia Higher Education Scholarship and Loans Board in order to secure locally and foreign scholarship opportunities for higher achieving secondary school learners and in-service staff while on the 11<sup>th</sup> and last Indicator that reads 'percentage of teachers in: (a) pre-primary; (b)

primary; (c) lower secondary; and (d) upper secondary education who have received at least the minimum organized teacher training (i.e. pedagogical training) pre-service or in-service required for teaching at the relevant level in a given country, 3 DEBS officials, 4 head teachers stated that, the curriculum placed emphasis on degree holders to handle senior secondary teaching while diploma holders were to handle junior secondary learners in order to approach the teaching of syllabus content with expertise.

As presented above, the different respondents reported their experience, understanding, and explanation of the different ways in which the Zambian curriculum was being applied in secondary schools countrywide. Below are some verbatim statements from the curriculum development experts who explained and justified further how SDG 4 indicators were being applied in the Zambian Curriculum. One curriculum specialist officer interviewed said:

First of all, it must be stated that, curriculum design and development takes a multi-sectoral approach. It is a curriculum that is a sum total of necessary formal, informal and semi-formal education that a country needs. To this effect, curriculum developers carry out massive research to arrive at content to include and most of the sources of content for inclusion in the curriculum are official policies, global directives as well as core education needs for a country. SDG 4 as a global orientation on education provision renders it vital to be fused in the Zambian curriculum and thus, its visible effects through various subjects and system improvised operational modalities.

The above statement by the curriculum expert explained the extent to which the Zambian curriculum applied the indicators of the SDG 4. Another respondent from DEBS office emphasized the career pathways as introduced in the curriculum. The pathways encourage learners to choose a path at a tender age, whether to follow the academic or vocational pathway. This presents opportunities and choices for a learner to take up a pathway that works to their aptitude, advantage and interest. She indicated that:

So far a career pathway is one of the ways we have to implement education for sustainable development through Home Economics, Agriculture Science, Woodwork, and Metal Work. It is where we expect learners to acquire the skills that can help them when they leave school.

The head teacher from school 'C' echoed the statement of the official from DEBS office. However, the head teacher emphasized hands-on learning as the strategy the Zambian curriculum has applied in the fulfillment of indicator number 5 that focuses on formal and non-formal education acquisition with TVET skills. He said, "The new curriculum emphasizes two career pathways which is the vocational and academic. However, it is the

vocational pathway with a TVET approach that is attending to skills acquisition.”

The above information represents perceptions of various respondents. Regarding the application of the eleven Global Indicators of SDG 4, it was found that there was active implementation among the studied schools. This was mainly done by aligning the indicators with the school-based subjects. Thus it is taken that the implementation was a fulfilment of education for sustainable development. This was contributing to the achievement of holistic education, embracing every aspect of education as a common developmental goal. This is also aligned to emerging policy changes that aim to achieve education for sustainable development. This correlates with the rich literature on the subject such as the proposition by Baily et al., (2017) who recognize the key role that education plays in equipping all learners with the knowledge and skills that are necessary in promoting sustainable development.

This notwithstanding, there is a way the application of the SDG 4 eleven global indicators, gives the Zambian curriculum a global dimension and alignment as it affirms readiness for the attainment of vision 2030 for education. The results of this study are aligned with global policies that seek to advance educational goals which include the UN Decade of Education for Sustainable Development (UNESCO, 2012). Additionally, the findings agree with UNESCO (2006), which recognizes the strides Zambia has made in transitioning from curriculum approaches that are content-driven and unreflective, towards those that are grounded in reflective practices and foster critical thinking. Similarly, Wals and Kieft (2010) have advocated for the transformation and realignment of educational content, teaching methodologies, and curricula as an effective strategy for developing the skills, knowledge, and values that associated with ESD.

This increasingly prevailing agenda as stipulated above is well addressed by the Zambian curriculum through the aligning of the 11 global indicators to the revised Zambian curriculum. More so, these findings agree with the Human Capital Theory that tenets such as competences, attributes and attitudes form the basis for quality human development. In line with this thinking, Mumba (2018) reports that education is the single most powerful tool that potentially has a wide positive multiplier effect in the achievement of the other goals. Mumba further advocates for the need to move beyond academic training, to the promotion and accomplishment of technical and vocational skills. This is further supported by Ndila (2017) who reported that established that farmers in Itezhi-Tezhi district in Zambia perceived ESD as instrumental in strives to improve methods of harnessing locally available resources to improve household economic outcomes and reduce poverty.

## **The extent to which secondary schools have adapted their pedagogical practices towards education for sustainable development**

Another prominent part of the research question addresses the views of the respondents relating to their perceptions on the extent to which secondary schools had adapted pedagogical practices towards education for sustainable development. This section analyses the preparedness of schools in their shift from the purely academic pedagogical approaches initially adapted, to a more hands-on and practical methodological approach. This section also explores the adjustments in pedagogy which schools had put in place to manage education for sustainable development.

Four school departments were targeted, namely, departments of mathematics and ICT, natural sciences, practical subjects and literature and languages. Regarding mathematics and ICT, 10 teachers of mathematics and 3 head teachers asserted that, in terms of pedagogy, there had been a shift from ordinary subject theoretical teaching and that the current (then) instructional process of teaching mathematics had an inclusion of computer topics that required practical approach. In terms of natural sciences, 15 teachers of sciences, 4 head teachers and 2 DEBS officers hinted that the current teaching of Natural sciences require in-depth theoretical teaching/learning, intensified routine practical experiments for assessment and non-assessment practice. This marked a shift from the ordinary theoretical teaching/learning with assessment based practical task. This finding resonates well with the recommendations of Phiri (2011) who advocates for more pupil-centered methods to instill much needed values and attitudes in pupils and as means for building a link between schools based learning that is anchored on relevant knowledge and skills and the contextualized needs of pupils instead of focusing on passing examinations.

Similarly, with regard to practical subjects, 7 teachers, 4 head teachers, and 2 DEBS officers indicated that there are now intensified theoretical presentations, and serious practical tasks which require readily budgeted for materials to use for school-based assessment and national examinations. This is a shift from theoretical presentations in the past which had involved less intense practical tasks and assessment practice.

At the same time, in terms of subjects that fell under the department of literature and languages, the responses on current adapted pedagogy practice from 15 teachers of language, 4 head teachers and 2 DEBS officers indicated that, there had been a departure from the old/traditional pedagogical practice that was based on theoretical illustrations that had minimal drills of grammar practice and reading of texts with no special emphasis on extensive reading habits. In this case current practice under the revised curriculum had adopted the latest teaching practices for languages that require intensified communicative

language practices with less focus on grammar but how language is used in authentic situations as well as extensive reading through text-based integrated approach.

One head teacher indicated that, schools did not just welcome and implement the curriculum directives but that, teachers with the right qualification befitting the task were employed and were available in his school. He gave examples of teachers of agricultural sciences, home management, as well as metal fabrication. He explained:

Yes, the teachers have knowledge because we have teachers who are trained in technical drawing, home economics, agriculture science, metal fabrication and before the introduction of the vocational career pathways we did not utilize these teachers much but after the introduction we have been utilizing them very much.

The authors further identified from the findings that, a lot of changes and advancements to the traditional pedagogy processes in secondary schools were made. The data showed that a number of subject areas such as mathematics, languages, natural sciences as well as practical subjects had modified methodologies from the traditional methods. An emphasis on practical and intensified hands-on techniques was adopted in the general pedagogy of subjects. This showed a shift from theoretical approach of teaching to a more practical approach which illuminated a kind of education that offered lifelong skills that would sustain a learner for a lifetime. According to UNESCO (2005) ESD represents a form of education that uses multi-disciplinary teaching methods and approaches with the aim of cultivating a basis for lifelong learning. ESD promotes among others, fundamental respect for human needs that are in line with the sustainable use of natural resources on the one hand and the wellbeing of the planet on the other.

The analysis above demonstrates that the Zambian curriculum methodology needed to change with regards the delivery of education for sustainable development. This clearly explains that the right pedagogy results into the right education skills acquisition and in the case of ESD, the hands-on pedagogy approach has shown to be the best fit to achieve the intended outcomes. This is in line with the stand taken within sub-Saharan Africa to ensure transition from teacher-centered to learner-centered education which enhances active learner participation in knowledge creation (UNESCO, 2006).

This study also discovered that the Zambian curriculum had embraced modified pedagogy approaches to hands-on and practical based learning, an aspect that is so significant to a relevant education. It was found that all the major subject departments in schools were utilizing enhanced methods in place of traditional practices. For example, the mathematics department had computer studies as a stand-alone subject as well as computer-based mathematics topics which required a different solving approach. This showed the extent to which the department adapted pedagogical practices towards

education for sustainable development through computer-based topics and component as a whole. In natural sciences, the pedagogy practices became more hands on with more demanding practical work both school based and national assessment based. The trend was the same with Practical subjects like food and nutrition, art and design. This transformed the departmental pedagogical practices from being purely for sustainable purposes.

This study further observes that classroom teaching practices were more refined and hands-on including languages which moved away from grammar-based learning to Communicative practices that fulfilled everyday communicative scenarios that were not limited to grammar correctness but communicative exchange. This pedagogy shift to practical based learning fulfilled the purpose of the 11 global indicators of the SDG 4.

## **Conclusion and Recommendations**

In this article, the authors have concluded that the strategies used to adapt ESD development in the Zambian curriculum as perceived in the selected secondary schools of Lusaka District, were appropriate as most schools were already utilizing the provisions of the 11 global indicators of the SDG 4. These global indicators have clearly been fused in the Zambian education curriculum. Therefore, it is also concluded that the positive outcome reported by this study ultimately puts the Zambian curriculum on a trajectory that guarantees right skills attainment through diversified pedagogy to ensure the preparation of the right human resource for future sustainable endeavors. This justified how secondary schools adapted pedagogical practices towards education for sustainable development.

In view of the findings and conclusions made in this study, the following recommendations are made to help improve strategies used to adapt education for sustainable development in the Zambian curriculum in the selected secondary schools of Lusaka District.

- i. Since the revised curriculum demands practical work, schools should supply departments such as Natural Sciences, Practical Subjects, Languages and Mathematics with relevant teaching materials in order for them to deliver a kind of education that was premised on the tenets of the 11 global indicators of the SDG 4; a kind of education that was responsive to the sustainable value of education through hands on skills.
- ii. The MoE and the Curriculum Development Centre need to constantly monitor the teaching and learning as guided by the new Zambian Education curriculum and reinforce strategies that would facilitate and encourage sustainable education in a bid to achieve their set goals of the attainment of a sustainable education endeavor.

## References

- Almendarez, L. (2010). Human capital theory: Implications for educational development in Belize and the Caribbean. University of the West Indies. <https://global.uwi.edu/sites/default/files/bnccde/belize/conference/papers2010/almendarez.html>
- Baily, F., O'Flaherty, J., & Hogan, D. (2017). Exploring the nature and implications of student teacher engagement with development education initiatives. *Irish Educational Studies*, 36(2), 185-201. <https://doi.org/10.1080/03323315.2017.1327367>
- Banja, M. K., & Muzata, K.K. (2021). Psychosocial experiences and coping strategies of parents of children with Cerebral Palsy in Zambia. *Journal of Educational Research on Children, Parents & Teachers*, 2(2), 310-324. <https://www.researchgate.net/publication/353368393>
- Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. Sage Publications.
- Chilufya, T. (2014). *Integrating environmental sustainability issues in the Zambian 2013 revised science curriculum at junior secondary school level* [Master's dissertation, University of Zambia].
- Chirwa-Banda, P. (2017). *Zambia's Ministry of Education initiatives towards the implementation of SDG 4*. Keynote speech delivered at the 7th African Regional Centers of Expertise (RCE) on Education for Sustainable Development (ESD) Conference, Lusaka, Zambia, 2–4 August 2017. [PowerPoint slides]. <https://www.slideshare.net/HannaatUNU/zambias-ministry-of-education-initiatives-towards-the-implementation-sdg-4-pamela-chirwabanda>
- Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education* (7th Ed.). Rutledge.

- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th Ed.). Sage Publications.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th Ed.). SAGE Publications.
- O'Flaherty, J., & Liddy, M. (2018). The impact of development education and education for sustainable development interventions: a synthesis of the research, *Environmental Education Research*, 24 (7), 1031-1049. <https://doi.org/10.1080/13504622.2017.1392484>
- Gray, P. S., Williamson, J. B., Karp, D. A., & Dalphin, J. R. (2007). *The research imagination: An introduction to quantitative and qualitative methods*. Cambridge University Press.
- Hogan, D., & O'Flaherty, J. (2021). Addressing Education for Sustainable Development in the Teaching of Science: The Case of a Biological Sciences Teacher Education Programme. *Sustainability*, 13, 12028. <https://doi.org/10.3390/su132112028>
- Leedy, P. & Ormrod, J. (2001). *Practical Research; Planning and Design*. (7<sup>th</sup> Ed.). SAGE Publications.
- Maree, K. (2007). *First steps in research*. Van schaik publishers.
- Marshall, B., Cardon, P., Poddar, A., & Fontenot, R. (2013). Does sample size matter in qualitative research?: A review of qualitative interviews in IS research. *Journal of computer information systems*, 54(1), 11-22. <https://doi.org/10.1080/08874417.2013.11645667>
- Miles, M. B., Huberman, M. A., & Saldaña, J. (2020). *Qualitative data analysis: A methods sourcebook* (4th Ed.). Sage Publications.
- Ministry of Education (1996). *Educating our Future: National Policy on Education*.
- Ministry of Education, Science, Technology and Vocational Education (MoESTVE). (2013). *Zambian education curriculum framework 2013*.
- Ministry of Education (1992). *Focus on Learning*.
- Mubita, A. (2017). A history of physical education in Zambia. *Physical Culture and Sport. Studies and Research*, 76(1), 47-54. <https://doi.org/10.1515/pcssr-2017-0029>.
- Mulenga, I. M., & Kabombwe, Y. M. (2019). A competency-based curriculum for Zambian primary and secondary schools: Learning from theory and some countries

around the world. *International Journal of Education and Research*, 7(2), 117–130. <https://www.ijern.com/journal/2019/February-2019/10.pdf>

- Mumba, L. (2018). Education is key to Africa's sustainable development. <https://www.unza.zm/news/2018-10/education-key-africas-sustainable-development>
- Nambela, C. (2016). *An evaluation of the effectiveness of the revised 2013 curriculum on the provision of quality secondary education in selected schools in Kitwe District, Zambia* [Master's thesis, University of Zambia].
- Ndila, M. (2017). *Addressing selected sustainable development goals through education for sustainable development in Itezhi-Tezhi District of Central Zambia* [Master's dissertation, University of Zambia].
- Phiri, T. K. (2011). Relevance of education for sustainable development to Zambian High School geography: a Survey of Lusaka City High Schools. [Master's dissertation, University of Zambia].
- Simuchimba, M. (2005). *Religion and education in Zambia, 1890–2000 and beyond* [Unpublished doctoral dissertation]. University of South Africa.
- Tembo, A. (2001). Focus on Policy: Zambia. *Enabling Education Network Newsletter*, (5). [http://www.eenet.org.uk/resources/eenet\\_newsletter/news5/page4.php](http://www.eenet.org.uk/resources/eenet_newsletter/news5/page4.php)
- Ukwuaba, L. C. (2015). Maximizing Human Capital Development (HCD) Through Non-Formal Education (NFE). *International Journal of Education and Research*, 3(8), 303-312
- United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development- Goal 4: Quality education*. United Nations Department of Economic and Social Affairs. <https://sdgs.un.org/goals/goal4>
- UNESCO. (2015). Sustainable Development Goals. <http://en.unesco.org/sdgs>
- UNESCO. (2012). *Shaping the education of tomorrow: 2012 report on the UN Decade of Education for Sustainable Development*, abridged.
- UNESCO. (2006). *Towards the implementation of the Decade of Education for Sustainable Development in Sub-Saharan Africa: Workshop report, 27–30 November 2006*, Windhoek, Namibia. UNESCO.
- UNESCO. (2005). *United Nations Decade of Education for Sustainable Development (2005–2014): International implementation scheme*. UNESCO Publishing. <https://unesdoc.unesco.org/ark:/48223/pf0000148654>

- van Aardt, L. (2019). Experiences of Grade 3 Learners on their Rights and Responsibilities across Diverse Settings. [Unpublished doctoral dissertation, University of Pretoria].
- Wals, A.E.J., & Kieft, G. (2010). Education for Sustainable Development: Research Review. SIDA
- Yorozu, R. (Ed.). (2017). Hokkaido University Sustainability Weeks 2014: Annual Report: Education for Sustainable Development. <https://hdl.handle.net/2115/65286>
- Yuto, K. (2017). Education for Sustainable Development (ESD) in Asia. Oxford Research Encyclopedia of Education. <https://doi.org/10.1093/acrefore/9780190264093.013.12>.