JOURNAL OF EDUCATION FOR SUSTAINABLE INNOVATION | ISSN 3025-1052
Vol. 3, No. 1, 2025, 76-86
https://doi.org/10.56916/jesi.v3i1.1174

Integrating Education for Sustainable Development in Tanzanian Ordinary Secondary School Curriculum: Teacher' Perpectives

Konga Lufunyo Jonas*
Department of Education Foundation and Continuing Education, University of Dodoma, Tanzania

Abdon Ephrem
Department of Education Foundation and Continuing Education, University of Dodoma, Tanzania

***Corresponding Author:** abdon.kimario@udom.ac.tz

Keywords
Education for sustainable development
ordinary secondary school curriculum
teachers' perspectives
sustainable development

Article History
Received 2025-03-01
Accepted 2025-04-17

Abstract
This article explores the perspectives of teachers towards integration of Education for Sustainable Development (ESD) in Tanzanian ordinary secondary school curriculum. Using a qualitative approach and phenomenological design, the study explored teachers' lived experiences through interviews and observation from 8 selected secondary schools in the Dodoma City Council. Thematic analysis was used to analyse the collected data. The findings revealed that secondary school teachers are aware of the presense of ESD contents in the curriculum of the subjects they teach and are very supportive of the ESD initiatives beleving that ESD equip students with skills to protect the environment. However, their perspectives regarding the integration of ESD into ordinary secondary school curriculum varied across subjects, which suggests that the implementation of education for sustainable development is a contextual and contested field. The significant contribution of this paper is represented by its implications for the implementation of ESD in ordinary secondary schools in Tanzania. Having highlighted the potential of teachers perspectives of education for sustainable development, the curriculum developers can review how education for sustainable development is reflected in the school curricula and address areas that require attention to ensure students acquire comprehensive knowledge, skills and values on education for sustainable development.

INTRODUCTION

The continued growth of 21st century economies and societies coupled with impacts they create on socio-economic and ecological conditions have made Education for Sustainable Development (ESD) a pressing agenda worldwide (Didham, & Ofei-Manu, 2015; Shulla et al., 2020; Kongela, 2023; Dittrich, 2025). The United Nations defines ESD as an approach to education that gives learners the knowledge, skills, values and agency to address interconnected global challenges including climate change, loss of biodiversity, unsustainable use of resources and inequality. It empowers learners to make informed decisions and responsible actions for environmental integrity, economic viability, and a just society for present and future generation (Rieckmann, 2017). The evolution of ESD originated from Environmental

education (EE) which rose to significance in the 1972 Stockholm Declaration (Shelton, 2008). Its importance gained further elaboration in the Belgrade Charter in 1975 and the Tbilisi Declaration of 1977 (Aleixo, Azeiteiro, & Leal, 2017). However, it was in the Rio Declaration (Earth Summit) in 1992 where education gained strength as a vital mechanism for achieving sustainable development (Kuzich, 2011). ESD gained further impetus in the United Nations' Decade of Education for Sustainable Development (2005-2014). The goal of the Decade was to promote and improve the integration of Education for Sustainable Development into curricula at all levels and sectors of education worldwide (Devine-Wright, 2005 Aleixo, Azeiteiro, & Leal, 2017). There is also justifiable relationship between ESD and the achievement of the 17 sustainable development goals (SDGs) for 2030. Goal 4 target 7 for example, declared that students have the rights to acquire the knowledge and skills needed to promote sustainable development (Goyal, Kumar, & Shalini, 2024).

In response to this, there has been a global call for educational institutions, including secondary schools, to integrate Education for Sustainable Development (ESD) into their curricula. This aims to promote behavioral changes that foster a more sustainable and equitable society for all (Aleixo, Azeiteiro, & Leal, 2017). In Europe, for example, countries like Denmark, Germany, Turkey, Sweden and Norway have improved their teaching pedagogy and practices to include sustainability issues in their educational systems (Paaske, Segura-Bonilla, & Hernandez-Milian, 2021; Müller, Hancock, Stricker, & Wang, 2021; Aydin, & Keles, 2021; Barak, & Avcı, 2022; Sætre, 2016; Bragdø, 2022). Likewise, in the Asian countries for instance China, Japan, Republic of Korea and Oman have made progress towards implementation of the environmental education and ESD into formal education curriculum (Choi, Jiang, Ru, Li, & Cao, 2009; Ambusaidi & Al Washahi, 2016).

Similarly, African countries like Namibia, South Africa, Uganda, Zimbabwe and Kenya have integrated ESD in the school curriculum as a step to address environment problems (Anyolo, 2015; Dube, 2017; Kariuki, Mokaya, & Kinuthia, 2016; Shava, Chasara, & Hahlani, 2021). In these countries, integration of ESD into school curricula has been initiated in different ways. For example, in Namibia, ESD has been incorporated in school curriculum in order to enhance the quality of life of all the Namibian people as it focuses on fundamental issues of the environment including population, hunger, democracy, peace, human rights, and degradation of flora and fauna (Anyolo, 2015). Also in South Africa, EE and ESD have been included in school curricula aimed to deal with the situation of environment through Geography subject in different grades of schooling (Dube, 2017).

Again, in Uganda, the response on education for sustainable development has been shown through developing strategies by the Uganda National Commission for UNESCO in which participation of cross-section stakeholders in education, economy, environment and society sectors through meetings, workshops and seminars have been initiated with the aim of understanding and applying sustainable development in everyday life of the Ugandans (Andama, & Suubi, 2015). In Kenya, education for sustainable development has been received and given attention with four ideas related to sustainable development which have been improving access to basic education, restructuring of the current education system, development of public understanding and awareness, and enhancing the quality of the teacher training programmes (Nyatuka, 2020; Kariuki, Mokaya, & Kinuthia, 2016). In contrast, in Zimbabwe, education for sustainable development has been captured by improving higher education, reorienting education system to address sustainability, providing training to various sectors with the aim of promoting sustainability practices through education system (Shava, Chasara, & Hahlani, 2021).

Like other African countries, Tanzania has undertaken various reforms in education as an attempt to address socio-political and economic challenges (URT, 2005). Through the introduction of

the "education for self-reliance" policy in 1967, it emphasized on the linkage between school learning and community realities, which represented a significant aspect to address environmental challenges. Similarly, pedagogies were improved through the Education Sector Development Programme (ESDP), and efforts towards integrating environmental aspects into school curricula were initiated, despite some drawbacks (Gjotterud, Kyaruzi & Krogh, 2011). Additionally, through the National Environmental Policy, Tanzania responded to the United Nations Conference on Environment and Development (UNCED), which emphasised the integration of environmental concerns and economic development as manifested in the Rio Declaration on Environment and Development and Agenda 21 (Kimaro, 2018).

Furthermore, the 2014 Education and Training Policy (ETP) a revised edition of 2023 has reflected the integration of Education for Sustainable Development (ESD) in formal schools at different levels (URT, 2023). This has been witnessed through the subjects that have incorporated sustainable development issues as topics under study, addressing concerns like deforestation, inequality, loss of biodiversity, poverty, pollution, and desertification (Kimaryo, 2011; Kilama, George, Katera, & Rutatina, 2016). Additionally, the ETP of 2014, a revised eddition of 2023 has stated that one of the objectives of secondary education is to guide learners to promote sustanable development and effectively utilise resources. This shows that ESD has been given priority despite the challenges facing its implementation (URT, 2016). However, studies, including one by Mwendwa (2017), found that the teaching of sustainable development in Tanzania's secondary school curriculum exhibits more weaknesses than strengths. For instance, subjects like geography contain significantly more content compared to others. Another study by Jaspar (2009) revealed that the teaching of education for sustainable development in schools has been facing challenges from the curriculum, which is believed to lack a clear scope on how ESD will be integrated into the school curriculum to address the challenges of unsustainable practices. Similarly, the teaching of education for sustainable development is mostly focused on environmental education, which is only one element under the environmental aspect of ESD (Ephrem, 2016). Additionally, Mwaura (2007) explains that the studies that offered to deliver relevant ESD content were not comprehensive, and the teaching strategies were mostly inappropriate.

The study by Durrani, ur Rahman, & Anjum, (2021) showed that there is a gap between education for sustainable development and the curriculum, as the content is not adequately reflected in the curriculum for implementing ESD. The existence of such a contention brings confusion to teachers during the implementation of the curriculum, specifically those who are teaching subjects with less ESD content. It should be noted that teachers are important players in achieving the goals of Sustainable Development, as they are influential in educating students on ESD. In this case, teachers need to have a well-prepared curriculum that delivers enough content of education for sustainable development in schools, along with appropriate teaching strategies.

While a number of studies have been conducted on the integration of education for sustainable development into the school curricula, such as Durrani, ur Rahman, & Anjum, (2021), Mwendwa, 2017, Kimaro, 2018 and Ephrem, 2016 very few of such studies have examined teachers' perspectives of integrating ESD into ordinary secondary schools' curriculum in Tanzania. This indicates the need to examine the prevailing situation, as failure to appreciate the perspectives of teachers on integrating ESD into the curriculum may limit the efforts by international and national efforts towards achieving sustainable develoomент. Sustainable development may be achieved through positive perpectives from teachers who implement the curriculum at the school level. For that matter, changes in the behaviour, values, and skills of learners for the solution of economic, environmental, and social problems the world is currectly encounter rely heavily on teachers. Thus, this study intended to

examine the perpectives of teachers on the integration of ESD into ordinary secondary schools' curriculum in Tanzania.

MATERIALS AND METHODS

The current study employed a qualitative research approach (Creswell & Crewell, 2017) because it aimed at exploring the subjective world view of teachers' lived experiences about the integration of ESD in the ordinary level secondary school curriculum. The use of qualitative approach helped the researcher to explore the perspectives of teachers about the implementation of ESD in the school curriculum as well as their views about the importance of integrating ESD in the curriculum. In addition, the study employs a phenomenological design which focus on the empirical investigation of participants' lived experiences regarding a phenomenon (Beck, 2019). This design enables the researchers to gather insights into teachers' experiences with the implementation of Education for Sustainable Development (ESD) in the school curriculum.

Samples

The study was conducted in Dodoma city, which is among the eight district councils in Dodoma region. The region has sixty (60) secondary schools of which forty (40) are government/public and twenty (20) are owned by private organizations (URT, 2021). The purposive sampling method was employed to select twenty-four (24) teachers from eight (8) ordinary level secondary schools in Dodoma City. According to Creswell and Poth (2016), the recommended sample size in a phenomenogical study ranges from 5 to 25 participants. Three teachers were interviewed in each of the eight schools one from each discipline of study (sciences, arts and languages). The choice of the study disciplines was an attempt to understand the perspectives of teachers across the subject disciplines regarding the integration of ESD into the curriculum. For anonymity, all the participants and schools involved were given pseudo names.

Data collection methods

To answer the research objectives, both primary and secondary data were collected through interviews, observations, and documentary review. The interview was carried out with eighteen teachers. Interviews were used to find out information and opinions of teachers about integration of ESD in the ordinary level secondary school curriculum. In addition, observation was conducted in the classroom, to see whether the participants/teachers were putting into practice what they said they intended to do during the interviews. Finally, documents such as Subject syllabus,articles, education and training policies of 2014 a revised edition of 2023 was reviewed to check the efficiency and contents of ESD in different subjects taught in ordinary secondary school.

Data analysis

Data were analysed through thematic analysis. Data gathered through interview, documentary review and observation, were analysed based on themes generated from the research objectives regarding teachers' perspectives of integrating ESD into Tanzanian ordinary secondary schools' curriculum. The information generated from interview were taken through hand written notes on interview guide form with their quotations ready for analysis. Similarly, the data collected through observation were analysed by considering the context of observation including setting, task, participant and situation. Furthermore, data collected through documentary analysis were analysed through content and thematic analysis where in terms of content, data were organised based on the categories while thematic analysis included forms of pattern recognition within a datum (Bowen, 2009).

Ethical issues

In this study, ethical issues were considered by obtaining permission letter from the Directorate of Postgraduate studies of the University of Dodoma. The letter helped the researcher to get an official letter from the Dodoma City Council which granted permission for the researcher to collect data from the targeted area. Also, in order to maintain secrecy, names of the respondents were not written anywhere. On the other hand, the researcher respected each respondent involved because they were not forced to participate in this study.

RESULTS

Demographic information

The demographic characteristics considered during data collection were gender, level of education, age, and working experience of the study participants. A total of 24 participants were involved in the study, of which 13 (54%) were females and 11 (46%) were males. The variation in the number of female and male participants did not affect their ability to conveniently answer the research objectives. The education levels of the participants were diverse, with three levels represented: diploma in education, bachelor's degrees, and master's degrees. The findings show that 18 participants had a degree-level education, 4 had a diploma-level education, and 2 had a master's degree. Among the degree holders, 9 had a Bachelor of Science in Education, and 12 had a Bachelor of Arts with Education. Regarding age, the respondents were classified into four groups with a 5-year interval: 24-29 years, 30-35 years, 36-41 years, and 42+ years. The findings reveal that 4 participants were in the 24-29 years age group, 8 were in the 30-35 years age group, 10 were in the 36-41 years age group, and 2 were 42 years or older. The majority of the participants were found in the 30-35 and 36-41 years age groups. Finally, the study categorised the participants based on their working experience, which was divided into three groups with a 10-year interval: 1-10 years, 11-20 years, and 21+ years. The findings show that 9 participants had 1-10 years working experience, and 16 participants (64% of the total sample) had 11-20 years working experience. Overall, the data collection process ensured that the information required was collected without any bias.

Awareness of ESD Content

Based on the data collected from the interview, the participants were asked whether they were aware of the integration of education for sustainable development into the subjects they were teaching. Likewise teachers were asked if the contents of ESD were included in the subject curriculum they were implementing in ordinary secondary schools and the importance of integrating them in the subjects they teach. The responses were taken through hand written notes and quotation were provided which indicated that teachers' awareness of ESD integration varied in a number of ways. The study found that, some teachers were aware of the ESD contents in the curriculum and were very supportive of the initiative as it could equip students with skills to protect the environment. This was indicated through information provided by the study informants where one Geography teacher from school A, who was certain that ESD was integrated into the curriculum from school A, revealed:

> *Yes, there are many topics related to ESD in the subjects I teach. For example, in Geography syllabus for Form Two and Four, there are topics related to education for sustainable development like environmental conservation, soil erosion, climate change, renewable and non-renewable energy resources, water resources and forest resources.*

A similar argument was made by a biology teacher from school H who added:

> *ESD is good for learners and they need to know for example, topics of safety in our environment which in turn, I think will help them to practise even after school life. The topics have stated a lot on that case. Thus, it is for them to apply it. When I teach about waste disposal, it is an advantage for them because with this growing population in the society, we need people who are knowledgeable on waste management*.

This implies that, teachers teaching different subjects were aware of the presence of ESD related topics within their subjects. However, the findings indicated that some teachers were not pleased with the integration of ESD with their subjects as they thought that it was minimising the cumulative time for teaching the content specific to their subject.

On this, the Chemistry teacher of school F was quoted as saying :

> *In my understanding, that the ESD topics are very few. I think, for learners to know and practise them in the real situation, it could be difficult. If the contents and syllabus will be enough, teaching ESD contents through my subject, will be easy for learners to understand and apply in real life situations*

Based on the findings, it was revealed that some teachers were fully aware of the ESD content and the needs for its integration, but they were concerned that the curriculum was too overloaded thus it would make it difficult for them to cover the curriculum on time when the ESD content and topic were added-on. Regarding this, a mathematics teacher from school C had these to say:

> *I have a very tight and demanding curriculum and I have a lot of topics to cover. Most of these topics involve numbers. Therefore, combining these with environmental issues is proving too tricky. I think, the ESD topic should be better taught by teachers in other subjects but not mine. Even though they also complain about loaded curriculum, at least, their contents aren't too far from ESD issues.*

Another aspect discussed by the study informants was the lack of sufficient training and required materials to disseminate ESD contents in classrooms. In relation to this, a civics teacher from school B, stated:

> *I must admit that my awareness of specific ESD content is limited. I know it is about sustainable development, but I would appreciate more guidance on the specific topics and concepts that should be covered.*

This was also echoed by a physics teacher from school C:

> *I have good understanding of environmental issues, but I still need to familiarise myself with the broader scope of ESD and its integration into different subjects*.

The need to have more preparations and materials to cover the ESD content was also observed in comments shared by a teacher from school A. The teacher argued that, ESD contents were spread all over the curriculum with some subjects having wider ESD coverage than others, but the needs to be aware of ESD and its integration needed to include all teachers regardless of content distribution:

> *ESD's content covers a wide range of topics. These include climate change, biodiversity, sustainable consumption and social responsibility. Therefore, it is important for all of us to have a clear understanding of these concepts to effectively integrate them into our teaching*.

He further added that:

> *I still feel that there is a need for more training and resources to enhance the awareness and understanding of ESD content. In this context, continuous professional development is essential.*

The findings as presented above imply that, teachers were more aware of the integration of education for sustainable development and what learners needed to know about sustainable development into secondary school curriculum than teachers of other subjects. However, the findings also indicate that geography and biology teachers were more aware of ESD content and topic than their counterparts in other subjects. This was primarily because Geography and biology subjects have the highest number of ESD contents in their respective curricula.

Importance of Integrating ESD in the Curriculum

The study also inquired about the importance of integrating ESD into the curriculum. This sub-theme focused on revealing teachers' beliefs on the significance of incorporating sustainability practices into the curriculum. There was a strong response among teachers as they agreed that environmental issues were contemporary to the modern society and that the schools had to play their roles to ensure that students were equipped with the knowledge to tackle environmental issues.

Based on the foregoing, a Physics teacher from school E highlighted the importance of ESD, by stating:

> *Integrating ESD into the curriculum is crucial for our students to understand the impact of human activities on the environment and to develop innovative solutions for a sustainable future. This is because; it helps them become responsible citizens who contribute positively to society.*

In a similar line of argument, another teacher from school G who was teaching Geography emphasised on the importance of integrating ESD into the curriculum. He stated:

> *Integrating ESD within the curriculum is crucial for developing well-rounded students who are aware of their impact on the environment and are equipped with the knowledge and skills to address environmental challenges which generally occur in our daily lives.*

There was also a strong support among art teachers on the importance of integrating ESD into the curriculum. On this aspect, a history teacher from school A, argued:

> *As an art teacher, I strongly believe that integrating ESD in creative projects can help students express their ideas on sustainability issues and as a result raise awareness among their peers. It is a powerful way of inspiring change.*

Similarly, a civics teacher from School D, gave the following argument:

> *ESD goes beyond academics; it instils values and attitudes that our students need to become responsible citizens who can contribute to a more sustainable future.*

The data given by the study informants indicate that, teachers recognised the significant role of ESD in preparing students for sustainable development. It was revealed that ESD was providing a means to inspire environmentally responsible behaviours and sustainable practices among students. However, there were recurring issues with the integration of ESD within the curriculum which led some teachers to argue that ESD was not emphasising this enough. It was argued that subjects such as physics and civics did not have the sufficient number of the ESD content within their respective curriculum compared with subjects such as geography and biology.

DISCUSSION

The findings from this study revealed that majority of the teachers' who teaches ordinary secondary schools have positive perception on the of integrating ESD into Tanzanian ordinary secondary schools' curriculum. However, very few teachers were unaware of the ESD's integration into the curriculum of the subjects they teach. For teachers to have positive perception of integrating ESD into learning curricula, it is an important atribute as it provides knowledge to students who play crucial role to implement sustainability practices in the community they live. Likewise, teachers are important agents who organize learning at school level where curriculum is implemented and all activities such as time, content, location, and setting take place to ensure effective learning.

A study by Mirza (2020) revealed that, teachers in Pakistan had misconception about the concept of education for sustainable development. This implies that the teaching of education for sustainable development in schools remained a problem hence the fulfilment of SD practices might not bring results towards sustainability issues. Moreover, it was found that teachers' perception on the importance of ESD was influenced by a number of issues, which included the specification of the ESD topics, and the coverage of the ESD contents. This implies that insufficient ESD content in the curriculum is a factor which confuses teachers' efforts to understand and teach ESD into ordinary secondary schools. As Dube (2017) revealed that Geography teachers in South Africa had difficulties in identifying EE and ESD themes in the curriculum document and how to incorporate them in the lessons they were teaching. This implies that the teaching of education for sustainable development in secondary schools is challenging for some teachers while implementing the curriculum as they misunderstand the real target of ESD

Similarly, Kimaro (2018) conducted a study on integrating EE for sustainability into primary school curriculum in Tanzania. The study revealed that the issue of climate change was the concern that the awareness of the majority of the participants on ecology, economy and culture was generally low. This implies that most teachers did not understand it well. The other aspects of ESD which were crucial position in altering the goals of sustainable development through schools as an important agent for teaching ESD. Njeru (2013) argued that the barriers to implementing education for sustainable development into schools had been influenced by teachers' limited knowledge of ESD and thus it is poorly implemented in the curricula.

Furthermore, Vasconcelos et.al.,(2017) conducted a study on science teachers' awareness of education for sustainable development, the study found that science teachers are greatly unaware of the goals and targets defined by the United Nations Agenda for 2030. This means that lack of awareness on concepts of ESD could ruin the effectiveness of its implementation. Christoforatou (2021) conducted a study on teachers' education for sustainable development within a national frame work.The findings revealed that there was a need for active professional competences of teachers in particular the relevant cognitive skills including knowledge of the concept of sustainable development. Anyolo (2015) conducted a study in Namibia on implementing education for sustainable development taking three senior secondary schools in Oshana education region in Namibia. The study findings revealed that, teachers' understanding on the education for sustainable development was perceived differently and they were not given workshop on the issues pertaining to ESD. This implies that, teachers were facing challenges in integrating ESD in school curriculum which led to the variation of perception and awareness on ESD into ordinary secondary schools curriculum.

CONCLUSION

It was revealed that teachers' perspectives of integrating ESD into the Tanzanian ordinary secondary schools' curricula were generally positive in this study. It is therefore, concluded that the institutions responsible for developing curriculum need to consider the volume of sustainability in all subjects to inculcate attitudes and awareness among teachers who will later boost practices that promote sustainable development in the societies. However, some participants showed that they were not agreeable on the integration of ESD into the secondary school curriculum because of the contents of ESD contained in their subject discipline. Also, teachers should be exposed to various technological innovations on ESD integration to add value to teaching that suits knowledge transfer to students who take a large portion of current and future labour power in terms of carrying sustainability aspects. The teacher who have wider understanding on teaching ESD through integration will benefit the community and the world at large on the various spheres of life like conservation, benefits accrued from ESD could also help in establishing groups that promote conservation and advocacy programmes. This would lead to sustainable development in various localities.

Recommendations

As Tanzania and other countries emphasize the integration of Education for Sustainable Development (ESD) into all levels of learning curricula to address sustainability challenges both locally and globally, it is essential to focus on teaching pedagogy and the professional development of teachers regrading ESD. This will help build capacity in teaching and foster a shared understanding of the rationale behind ESD. Furthermore, given that teachers in ordinary secondary education cover multiple subjects, it is crucial to consider the effectiveness, quality, and sustainability of integrating ESD into school curricula.

ACKNOWLEDGMENT

This paper was partly based on the data collected for a Master study in 2023. Special gratitude goes to teachers, school heads and the executive director, Dodoma City Council as availability of data for this study would have been impossible without their support.

REFERENCES

Aleixo, A. M., Azeiteiro, U. M., & Leal, S. (2017). UN decade of education for sustainable development: perceptions of higher education institution's stakeholders. *Handbook of Theory and Practice of Sustainable Development in Higher Education: Volume 4*, 417-428.

Ambusaidi, A., & Al Washahi, M. (2016). Prospective teachers' perceptions about the concept of sustainable development and related issues in Oman. *Journal of Education for Sustainable Development*, *10*(1), 3-19.

Andama, E., & Suubi, U. M. (2015). Mainstreaming education for sustainable development in teacher education at Busitema University, Uganda. *Stories of Change*, 127.

Anyolo, E. O. (2015). *Implementing education for sustainable development in Namibian schools* (Doctoral dissertation, Itä-Suomen yliopisto).

Aydin, S., & Keles, P. U. (2021). Teachers Candidates' Awareness of Sustainable Development. *Shanlax International Journal of Education*, *9*, 221-227.

Barak, B., & Avcı, G. (2022). Comparative analysis of Turkey and Germany (Bavaria) secondary education curricula in terms of education for sustainable development.

Beck, C. T. (2019). *Introduction to phenomenology: Focus on methodology*. Sage Publications

Bragdø, M. B. (2022). Education for sustainable development in social studies: A scoping review of results from Scandinavian educational research.

Christoforatou, E. (2021). Teacher education for sustainable development within national frameworks: Squaring the circle from a German perspective. *International Journal of Development Education and Global Learning*, *13*(1), 1-15.

Choi, M. Y., Jiang, D., Ru, G., Li, F., & Cao, X. (2009). Education for sustainable development practice in China. *Hayama: Institute for Global Environmental Strategies (URL: http://enviroscope. iges. or. jp/modules/envirolib/view. php? docid= 2389)*.

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.

Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.

Devine-Wright, P. (2005). Beyond NIMBYism: towards an integrated framework for understanding public perceptions of wind energy. *Wind Energy: An International Journal for Progress and Applications in Wind Power Conversion Technology*, *8*(2), 125-139.

Didham, R. J., & Ofei-Manu, P. (2015). 1 Education as a catalyst for change and sustainable development. to Action, 93.

Dittrich, A. K. (2025). An International Reconstruction of Teachers' and Teacher Educators' Perspectives on the Challenges of Education for Sustainable Development in Teacher Education. *Journal of Education for Sustainable Development*, 09734082241309704.

Dube, C. (2017). The uptake of education for sustainable development in geography curricula in South African secondary schools. *Schooling for sustainable development in Africa*, 93-105.

Durrani, R., ur Rahman, F., & Anjum, S. (2021). Perceptions of Teacher Educators about Integration of (ESD) in Elementary Teachers Education Program. *Journal of Development and Social Sciences*, *2*(4), 215-225.

Ephrem, A. (2016). *Practicing sustainability approaches to education in selected universities in Tanzania: Challenges and prospects* (Doctoral dissertation, The University of Dodoma).

Goyal, A., Kumar, P., & Shalini. (2024). Quality Education: A Key Component of the United Nations Sustainable Development Goals (SDGs). In *Digital Technologies to Implement the UN Sustainable Development Goals* (pp. 127-151). Cham: Springer Nature Switzerland.

Jaspar, J. C. (2009). *Teaching for sustainable development: teachers' perceptions* (Doctoral dissertation, University of Saskatchewan).

Kariuki, C. N., Mokaya, D. C., & Kinuthia, D. (2016). Infusing Climate Change Content into Kenya's Secondary School Taught Curriculum: Successes and Challenges. *Journal of Environmental Science, Toxicology and Food Technology*.

Kilama, B., George, C., Katera, L., & Rutatina, N. (2016). Assessing Data for the Sustainable Development Goals in Tanzania. *Report Highlights. Dar es Salaam*.

Kimaro, A. R. (2018). *Integrating environmental education (EE) for sustainability into primary school curriculum in Tanzania: Exploring stakeholders' views and perceptions* (Doctoral dissertation).

Kimaryo, L. (2011). *Integrating environmental education in primary school education in Tanzania: Teachers' perceptions and teaching practices* (Doctoral dissertation, Åbo Akademis förlag-Åbo Akademi University Press).

Kongela, S. M. (2023). Sustainability potential awareness among built environment stakeholders: Experience from Tanzania. *International Journal of Building Pathology and Adaptation*, *41*(2), 301-319.

Kuzich, S. (2011). Education for sustainability: Implications for curriculum and pedagogy. *Development*, *4*(2), 203-211.

Mirza, M. S. (2020). Teacher Educators' Preparedness for Re-Orienting Teacher Education Programs for Sustainable Development in Pakistan. *Journal of Research & Reflections in Education (JRRE)*, *14*(1).

Mwaura, K. N. (2007). An investigation into awareness about education for sus-tainable development (ESD): A study of the faculty of education at the Catholic University of Eastern Africa. *On line Unpublished master's the-sis). Catholic University of Eastern Africa*.

Mwendwa, B. (2017). Learning for sustainable development: Integrating environmental education in the curriculum of ordinary secondary schools in Tanzania. *The Journal of Sustainability Education*.

Müller, U., Hancock, D. R., Stricker, T., & Wang, C. (2021). *Implementing ESD in Schools: Perspectives of Principals in Germany, Macau, and the USA. Sustainability 2021, 13, 9823*.

Njeru, A. N. (2013). *Identifying the barriers to implementing education for sustainable development in Kenyan secondary schools: A case of southlands of Nairobi* (Doctoral dissertation).

Nyatuka, B. O. (2020). Education for sustainable development in Kenya: rhetoric and reality in basic education. *Global Journal of Transformative Education*, *2*(1), 86-98.

Paaske, D. M., Segura-Bonilla, O., & Hernandez-Milian, J. (2021). ESD for managers in the Danish lower secondary educational curriculum. *Journal of Work-Applied Management*, *13*(1), 154-166.

Rieckmann, M. (2017). *Education for sustainable development goals: Learning objectives*. UNESCO publishing.

Sætre, P. J. (2016). Education for sustainable development in Norwegian geography curricula. *Nordidactica: Journal of Humanities and Social Science Education*, (2016: 1), 63-78.

Shava, G. N., Chasara, T., & Hahlani, O. S. (2021). Sustainable development goal (SDG) 4 on quality in education, current issues in Zimbabwe higher education, educating for the future. *Int. J. Innov. Soc. Sci*, *146*, 154.

Shelton, D. (2008). Stockholm declaration (1972) and rio declaration (1992). *Max Planck encyclopedia of public international law*.

Shulla, K., Filho, W. L., Lardjane, S., Sommer, J. H., & Borgemeister, C. (2020). Sustainable development education in the context of the 2030 Agenda for sustainable development. *International Journal of Sustainable Development & World Ecology*, *27*(5), 458-468.

United Republic of Tanzania [URT]. (2023). Education and Training Policy. Ministry of Education, Science and Technology: Dar-es-Salaam: MoEST

United Republic of Tanzania [URT]. (2016). Education Sector Performance Report 2016/17: Dar es Salaam: MoEST

United Republic of Tanzania [URT]. (2005). Minister for Education Budget Speech for the Financial Year 2005, Dodoma, Tanzania.

Vasconcelos, C., Silva, J., Calheiros, C. S., Mikusiński, G., Iwińska, K., Skaltsa, I. G., & Krakowska, K. (2022). Teaching sustainable development goals to university students: A cross-country case-based study. *Sustainability*, *14*(3), 1593.