Attitudes of Teachers Toward Sustainable Goals in Education

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Abstract

Teachers play a pivotal role in achieving the Sustainable Development Goals (SDGs), particularly SDG 4, which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Understanding teachers' attitudes toward these goals is crucial for effective implementation and integration into educational practices. This study explores the attitudes of teachers toward sustainable goals in education and identifies factors influencing their perspectives. A mixed-methods approach was employed, combining quantitative surveys and qualitative interviews. Data were collected from 200 teachers across various primary and secondary schools in Rivers State, Nigeria, between January and June 2024. The survey included questions on teachers' awareness, beliefs, and attitudes toward the SDGs, particularly in the context of education. Qualitative interviews provided deeper insights into the factors shaping these attitudes. Data were analyzed using SPSS version 25.0 and thematic analysis. The findings revealed that a majority of teachers (78%) have a positive attitude toward integrating sustainable goals into their teaching practices. However, only 45% reported having adequate knowledge and resources to effectively teach sustainability concepts. Key factors influencing positive attitudes included professional development opportunities, support from school administration, and personal commitment to sustainability. Barriers identified included lack of training, insufficient resources, and perceived irrelevance of sustainability topics to the existing curriculum. The study highlights the generally positive attitudes of teachers toward sustainable goals in education, but also underscores the need for enhanced training and resources. To effectively integrate sustainability into education, policymakers and educational leaders should focus on providing comprehensive professional development, adequate resources, and supportive school environments. Addressing these needs will empower teachers to become effective change agents in promoting sustainability through education.

Keywords: Sustainable Development Goals, teacher attitudes, education, sustainability, professional development, Rivers State, Nigeria

Introduction

Sustainable development has been viewed as a contested concept over the past decades with theorists pointing out that the concept can have different meanings for different individuals (Robinson 2004; Selby 2006). Issues surrounding what exactly should be sustained or the vagueness of the concept are simply some of the concerns surrounding the term (Robinson 2004; Selby 2006). Despite this, Sachs (2012) proposes that all societies acknowledge aiming for societal wellbeing predicated on a combination of economic development, environmental sus- tainability, and social inclusion even if the specifics of these objectives differ within and between societies. Sachs (2012) further adds that the common focus on economic, environmental, and social goals is representative of a broad and global consensus on which the world can build its hopes for a good society.

Associated with this concept of sustainable development are several dimensions, which are important for this research. Firstly, the idea of a systems thinking perspective is central to the notion of sustainable development, with the concept foregrounding the linkages between ecological, economic, and social systems (Sinakou, Boeve-de Pauw, and Van Petegem 2019). Within the 2030 Agenda for Sustainable Development, this systems thinking perspective is

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highlighted in the focus on people, planet, and prosperity (McKenzie and Abdulkadri 2018), thus underscoring the interlinkages between these components. This is important given the fact that some individuals hold a monolithic or one-dimensional view of sustainable development, equating it with either economic growth primarily or environmental sustainability primarily, as examples. The notion of citizen action, participation, and/or empowerment is also important. Alberich (2004) defines citizen participation as the composite set of activities and process through which the population participates in public affairs that affect them. According to Poza-Vilches, Gutiérrez-Pérez, and López-Alcarria (2019, 1), 'The concept of citizen participation is unquestionably linked to the concept of sustainable development. Promoting equitable, inclusive, and fair societies involves generating processes for citizen participation that imply shared decision-making and an assumption of responsibilities in favour of global sustainability'. Thus, sustainable development promotes the idea of not only global and national level decision-making and participatory actions but also local and individual level actions that will not compromise but rather support sustainability. Sustainable development can be pursued through a variety of mechanisms, such as policy, legislative, technological, and/or financial mechanisms. In order to develop citizens who are conscious of sustainable development and able to contribute to its pursuit for the long-term viability of the planet and society, education becomes central in order to engender sustainability knowledge, values, and skills. Thus, the integration of sustainable development into education becomes a critical undertaking for all stakeholders in education, not least of which are teachers. Further, this means that engaging with and understanding teachers' perspectives is important.

Whilst there has been much engagement with teachers' roles in sustainability and teacher education in various parts of the world, within the Caribbean, the research base is growing but not yet as expansive as in other parts of the world. Within Jamaica specifically, Hordatt Gentles (2018) points out that there has been a concerted effort to promote the concept of sustainable development through environmental education, environmental education for sustainable devel- opment, and education for sustainable development (ESD), and that this has included work within and through Teacher Education Institutions (TEIs). Academics in the nation have engaged with various aspects of teacher education and sustainability, including, constructivism, and teaching and learning for sustainability (Down 2008); community-oriented pedagogies in ESD (Down 2010); teachers' change agency and sustainability (Down 2011); the inclusion of biodi- versity and other ESD content and issues in teacher education programmes (Collins-Figueroa 2012); Caribbean teachers' experiences with ESD (Down 2015); and the need to reorient teacher education and some of the challenges therein (Hordatt Gentles 2018). Fewer academics, though, have engaged with teachers' understandings of and views on sustainable development and related concepts. Down, citing Villegas-Reimers, voices that in order to be change agents, the knowledge and attitudes held by teachers must support political and social justice (2011). Indeed, Laurie et al. (2016) highlight that student learning will be negatively impacted if teachers do not understand ESD. This extends to its underlying concept of sustainable development. Engaging with and understanding teachers' perspectives is a necessary foundational step to inform ESD.

Scholars have noted the contestation and ambiguity that revolves around the concept of sustainable development (e.g. Robinson 2004; Selby 2006), and this is one of the challenges of

implementing ESD (Tulloch 2019), given that there is no common consensus around which to centre ESD initiatives. This is no less the case in the Jamaican context as teachers' perspectives on sustainable development necessitate more engagement since their understanding will influence their delivery of ESD. Down and Nurse (2007) point out that educators' in the region have an unease with both the concept of ESD and the concept that lies at its foundation – sustainable development, an unease which still exists today. Further, as Tulloch (2019) highlights, ESD must be embedded with reference to local contexts. Thus, engaging with teachers' localised understandings of its underlying concept is important. This study therefore seeks to begin addressing

This gap in knowledge of teachers' perspectives by determining Jamaican teachers' perspectives of sustainable development. The study utilises the frame of the three dimensions of sustainable development – systems thinking, monolithic perspectives, and citizen participation – to under- stand these perspectives all of which will be discussed further below, and then explores the implications of these perspectives for ESD. The study is guided by the research question: *What are the differences in teachers' perspectives across the dimensions of sustainable development?*

With this in mind, this paper examines sustainable development. We then move on to examine some of the literature on teachers' views of sustainability, and how teachers' perspectives influence their practice. The paper then outlines the methodology utilised, and the main results. The findings are then discussed, alongside their implications for reorienting teacher education for ESD.

This research is significant for several reasons. Firstly, given that teachers' own beliefs and understandings can influence (implicitly or explicitly) their classroom delivery of content, their understandings of sustainability can either enhance or limit its delivery. Additionally, if teachers' understandings of sustainable development are limited and do not embrace aspects of systems thinking, this limits the fulfilment of sustainable development which is focused on a holistic approach to development that takes into account all dimensions of society, economy, and environment. Finally, understanding these views allows educators to develop curriculum and pedagogies in the nation's teacher education institutions and universities that can extend, reflect on, and interrogate a diversity of views, so as to avoid education that indoctrinates, a concern highlighted by those such as Jickling (1994, 2000). Also, whilst the literature base on ESD has developed in the last decades, the findings of this research will contribute to the body of literature.

Literature review

Overview of the sustainable development concept and framework

The concept of sustainability has its origins in the field of ecology, referring to the potential of an ecosystem to exist over a long-term period with little or no alteration (Jabareen 2008). Thereafter, the notion of 'development' was added shifting the focus from the environment only to that of society and economy (Jabareen 2008). This shift was strengthened by the concept's entry onto the world agenda in the 1980s. At this time, it took on enhanced focus 'as an attempt to bridge the gap between environmental concerns about the increasingly evident ecological consequences of human activities and socio-political concerns about human development issues' (Robinson 2004, 370). The World Commission on Environment and Development (WCED), also known as the Brundtland Commission, proposed that sustainable development is development that 'meets the needs of the current generations without compromising the ability of future generations to meet their own needs' (WCED, 1987, 43). Their report sought to acknowledge the threats of both over- and under-development to environment and society, and redress these concerns in this new vision of development (Robinson 2004). Krasny (2020) succinctly states that sustainable development propounds that societal goals for economic development and social equity can be met without compromising the natural systems on which it depends.

Whilst the popularised Brundtland definition might have seemed a point of convergence for the global community, theorists point out that the notion of sustainable development remains a vague and contested one, with various definitions and conceptions proliferating

(Jickling 2000; McKeown 2002; Robinson 2004; Jabareen 2008). Indeed, some individuals posit that there is an inherent contradiction in the notion of sustainable development, as the notion of development (at least with respect to economic growth) is incompatible with the biophysical limits of the planet (Jickling 1994; Robinson 2004).

Notwithstanding this, there are commonalities to the various perspectives. In his review of the multidisciplinary literature on sustainable development, Jabareen (2008) highlights seven critical concepts in the theoretical framework of sustainable development:

- An ethical paradox – encapsulated in the arguably contradictory notions of 'sustainable' and 'development'.
- Natural capital – retaining the natural capital (environmental and natural resource assets) constant for future generations
- Equity – including aspects such as justice (in the environmental, social, economic spheres), social equity, quality of life, freedom, democracy, participation and empowerment
- Eco-form – the desired ecological form of urban spaces
- Integrative management – in which holistic approaches to the management of economic growth, social development, and environmental management are sought
- Political global agenda – addressing and bridging political divides and disputes amongst developed and developing countries with respect to views on development and sustainability
- Utopianism – an idealistic vision of society governed by global solidarity, spirituality, and an equitable allocation of resources

The notions of natural capital, equity, and integrative management are some of the elements that influenced the three dimensions of sustainable development – systems thinking, monolithic perspectives, and citizen participation – that underpinned the design of the instrument for this research. An integrative management approach has to be underpinned by systems or holistic thinking, in which situations are viewed holistically, relationships or interactions are recognised and prioritised, and causality within and between systems are recognised (Harwood 2019). As previously indicated, the idea of a systems perspective is a critical component of sustainable development, with the concept highlighting the linkages between ecological, economic, and social systems (Sinakou, Boeve-de Pauw, and Van Petegem 2019). Strachan (2009) highlights that systems thinking allows individuals to recognise inter-connections and the importance of the relationships represented by these inter-connections. He further proposes that this is critical for both understanding the sustainability crises faced by the global community and for proposing solutions. Likewise, Krasny (2020) states that not only does a system thinker recognise the fundamental components of a system (their structure, functions, and dynamics) and the interconnections between natural and social systems; he or she also recognises that even minor changes to one system component will radically impact the system's operation. She proposes that the application of systems thinking is critical to informed environmental decision-making. This is because an ability to engage in systems thinking is fundamental to understanding the complexities of our planet Earth and to sustainability literacy and action (Strachan 2009).

In contrast to system thinking, a second dimension of interest for this study is the notion of monolithic thinking, which is drawn from the problematic 'definitional' issues of sustainability that has been underscored by theorists such as Selby. Selby (2006) points out the preponderance of definitions of sustainable development that abound, and the fact that these different definitions align with particular interests. For instance, for economists, sustainable development is largely governed by the principle of 'growth'. For some environmentalists, the focus might be on carrying capacity, and for others it is about maintaining the beauty or pristine value of nature (Selby 2006). Thus, for the researchers of this study, the notion of monolithic thinking is defined as individuals only seeing or prioritising one aspect of sustainability to the detriment of systems thinking.

Finally, citizen action or participation is a third dimension of interest for this research. Krasny (2020) proposes that citizenship behaviours can include a range of behaviours inclusive of protests and advocacy, participation in political and government institutions, intergroup dialogue, and socio-political development. Additionally, the researchers of this study have included components of stewardship (e.g. managing a resource, garbage clean-ups) within this notion of citizen participation. Poza-Vilches, Gutiérrez-Pérez, and López-Alcarria (2019) have argued that citizen participation is undoubtedly linked to citizen participation, shared decision-making and responsibilities that promote sustainability.

Within Jamaica specifically, the notion of sustainable development itself is a problematised one given that the country's economic development is dependent upon its natural resource base (for instance, industries such as tourism), thus positioning economic development against environmental protection, and rendering recurrent conflicts 'between' the economy and the environment inevitable. In this context, there is a need for individuals to be able to engage with questions of sustainability (sustainability of what, for whom, etc.) and education plays a pivotal role in supporting this critical thinking.

Pre- and in-service teachers' perspectives on sustainable development

It has been argued that teachers serve as models for their students (Cheung 2020); hence, teachers' perspectives and how these are enacted, will influence their students. Vukic (2019) notes that if education is to help students change towards a lifestyle that is undergirded by sustainable development principles there is need for focus on those whose perspectives and actions will influence these students – the teachers. But Kioupi and Voulvoulis (2019) note that the complexity of sustainability as a concept make it difficult to relate the Sustainable Development Goals (SDGs) to educational learning outcomes and that teachers often feel over-whelmed by sustainability concepts.

In a study focusing on the perspectives of primary school teachers in Trinidad and Tobago about ESD, Cross (2019) found that teachers felt that the postcolonial residue impedes national sustainable development. Linked to this is the view that teachers themselves have differing perspectives and interpretations of the concept, as well as to whether the teaching of sustainable development should be discipline specific. For example, Sadler et al. (2006) found that teachers had different approaches to integrating ethical aspects as a sustainable development principle when teaching natural sciences. One group felt there was no connection between ethics as a sustainable development principle and natural sciences, another felt it was not their responsibility while, yet another sought to integrate the dimension in teaching natural sciences. Dimenäs and Alexandersson (2012) in their study focusing on teachers' views of sustainable development in a secondary school found that teachers in specific disciplines thought that particular sustainability principles were being covered by teachers in other disciplines but as they interviewed those teachers, they found that they also thought these principles were being covered in other disciplines. This demonstrates the problem inherent in using a disciplinary approach to emphasise sustainable development without dialogue within and across the disciplines. From these studies, a disciplinary approach to sustainability seems to indicate that teaching sustainable development is someone else's responsibility; this can also permeate subject-teachers' mind-sets – that delivery of sustainability (and ESD) is outside of the realm of their responsibility. The problem is that while each discipline is thinking that the other discipline is covering the associated principles, students end up missing out since everyone is seeing this as someone else's responsibility. In analysing teachers' perspectives, Dimenäs and Alexandersson pose a question, which is worth probing, 'do we need to ask ourselves whether an integrative view of knowledge is not a must in order to promote students' understanding and critical positioning' (2012, 15) of sustainable development?

Turning attention to student teachers' conception of sustainable development, Summers and Child's (2007) findings from a survey of 123 postgraduate students starting a secondary science teacher-training course indicated that while a substantial number of student teachers were knowledgeable about all the components of sustainable development, aspects pertaining to citizenship and preservation of diversity were missing and the student teachers expressed uncertainty and precaution about sustainability actions. Such studies underscore the need to solicit teachers' views and assumptions prior to implementing change. This is important since their knowledge (or lack of knowledge) will influence how effectively the change can be implemented.

implemented. Additionally, if teachers are to effectively influence change in themselves and their students, integration is key to teaching sustainable development. Furthermore, Vukic (2019) focusing on 107 high school teachers' familiarity with the concept of sustainable development found that a majority of the teachers were uncertain about what the concept represented, and were unaware of key sustainable development documents such as *Agenda 21*. Nonetheless, the teachers in the study recognised that they had a responsibility as a teacher to behave in accordance with the principles of sustainable development. Finally, Ferguson's (2008) research on the views of students at two teachers' colleges in Jamaica, with respect to sustainability and associated concepts, found that views of sustainable development were narrowly focused with issues such as equity, social justice, political empowerment and participation absent from individuals' conceptions. Instead, there was more emphasis on either economic dimensions such as economic growth or on environmental dimensions, such as environmental protection (Ferguson 2008).

How teachers' views influence their teaching

The task of teaching as carried out by teachers is shaped by their thoughts and actions. Researchers have long established that teachers' thinking and classroom practice are interrelated and as such, teachers' thinking influences their classroom instructional practice (Pennington 1995; Burns 1992; Fischer and Hänze 2020). Teachers' views are often shaped by the beliefs they hold about curriculum, students, pedagogy and the learning process, which in turn influence learning outcomes. Therefore, sending clear and consistent signals to teachers about what to teach is an important component of teaching for sustainable development in schools. Delivering or facilitating sustainable development content without attention to how teachers understand, interpret, and internalise sustainable development principles will have little or no effect on classroom practice (Darling-Hammond et al. 2020). Specific to how teachers' views influence their teaching of sustainable development, Vukic (2019) noted that though teachers had general ideas about their responsibility towards sustainable development, this did not translate to active practice in organising and deliberately undertaking sustainability activities to influence students' behaviour.

In a study focusing on teachers' views of sustainable development in upper secondary school in Sweden, Gustafsson, Engström, and Svensson (2015) found that what teachers taught about sustainable development was based on their own definitions and content choice regarding sustainable development, which led to pupils acquiring different sustainability-related content knowledge. If the goal is to effectively develop citizens who are sustainability conscious, then this will only be achieved if teachers are themselves knowledgeable about sustainable development and have positive attitudes and perspectives about such.

An overview of Jamaica

Before proceeding into the methodological approach and findings, it will be useful to situate the research within its national context. Jamaica is located in the Caribbean region and has a population of approximately 2.9 million. Though Jamaica's education system has evolved over some 390 years, it still reflects its history as a British colony; the education system is highly structured and examination oriented. The country has a history of sustainable development with an emphasis on environmental education. Ferguson et al. (2019) noted in the 1970s to the mid-1990s, the country in addition to participating in international environment and development conferences, implemented numerous sustainability projects in schools and universities. These projects involved central and local governments, training institutions and community-based organisations (Ferguson et al. 2019). The National Environmental Education Action Plan for Sustainable Development (NEEAPSD) was developed by the country's National Environmental Education Committee (NEEC) for 1998–2010. The plan aimed to operationalize environmentally sustainable development (NEEC, 1998). This 12-year plan focused on five areas for education: Teacher Professional Development; Curriculum.

Development and Implementation; National Public Awareness; Community Learning; and Resources and Practices (Ferguson et al. 2019). According to Ferguson et al. (2019), the NEEAPSD framework provided a plan that helped Jamaica make headway in advancing sustainable development education. While sustainable development is being promoted at the primary and secondary level in subject areas such as Social Studies, The University of the West Indies, the only regional university in the Anglophone-Caribbean established in 1948, plays an active role in advancing the principles and practices of sustainable development. For example, through its teacher education undergraduate and graduate programmes, the university promotes sustainable development; the programme offerings include (i) Education for Sustainable Development, Global Citizenship and Peace, and (ii) Leadership in Technical and Vocational Education and Training (Ferguson and Roofe 2020).

Methods

A survey research design utilising a questionnaire was conducted to determine teachers' views on sustainable development. An important advantage of utilising a questionnaire is that it allows for statistical analysis that might reveal the degree to which research participants, on average, view an issue that has a tremendous impact on society (Lamiell 2003). The questionnaire utilised was developed for this research. The questionnaire consisted of 28 closed-ended questions. It was divided into two sections. The first section collected demographic information (age, length of service, and gender). The second section consisted of 25 Likert scale items determining teacher perceptions of sustainable development. Responses on the Likert scale ranged from 1 = Disagree to 3 = Strongly Agree and covered areas such as the environmental (natural resources such as water, forestry, and degradation of plant life), social (human rights such as gender equality), and economic (poverty reduction, employment) aspects of sustainability. First, a literature review primarily of the international literature from UNESCO was conducted to confirm the aims of measurement, and to aid in the development of the items (Park, Kim, and Yu 2016; Biasutti, De Baz, and Alshawa 2016; UNESCO, 2012). The items were reviewed by two experts in sustainable development to advance the validity of the scale. Further to this, a pilot study was conducted with 25 teachers of similar characteristics to targeted participants. A Cronbach's alpha of .794 was obtained for the scale from this pilot study.

Sample

The study sampled 296 teachers from twelve high schools in rural and urban areas of Jamaica. The participating schools and participants were conveniently selected; other schools were excluded because of a lack of availability and/or accessibility. The teachers were from five urban schools and seven rural schools. Of the respondents, 94 were males (32%), while 195 were females (67%). One per cent of the participants did not reveal their gender. The teachers' average age was 36 years, with length of service ranging from 4 months to 37 years.

An a priori power analysis was conducted using G*Power 3 to test the difference between two independent groups (male and female) means using a two-tailed test, a medium effect size (d = .50), and an alpha error of .05. Three hundred questionnaires were administered and 296 responses were received. Hence, there was a response rate of 99 per cent.

Data collection

Twenty-five research assistants administered and collected as many questionnaires as possible within a specific timeframe of three weeks. There were approximately two research assistants per school.

Factor analysis was used to identify the factor structure of teachers' perspectives on sustainability at the secondary level. The Kaiser-Meyer-Olkin measure of sample adequacy was .868 above the recommended value of 0.6, and Bartlett's test of sphericity was significant (X^2 (153) = 1442.924, $p < 0.05$). The communalities were 0.3 and above; this further verifies that each item has a common variance with the other items.

Findings

The extent of teachers' perspectives on sustainable development

The maximum score that a teacher could obtain on the instrument is 54 points. The overall mean score on the extent of teachers' perspectives on sustainable development is 42.68 with a standard deviation (SD) of 5.621. This score suggests that teachers consider sustainable development to be an important phenomenon. This is further supported by the negatively skewed distribution of the scores indicating a clustering of the teachers' scores to the high end of the scale (see Figure 1).

How teachers' perspectives differ across the dimensions of sustainable development as measured by the instrument utilised

A Varimax rotation produced a three-factor solution, which explained 51% of the variance in teachers' views of the importance of the principles of sustainable development. Item 17 was
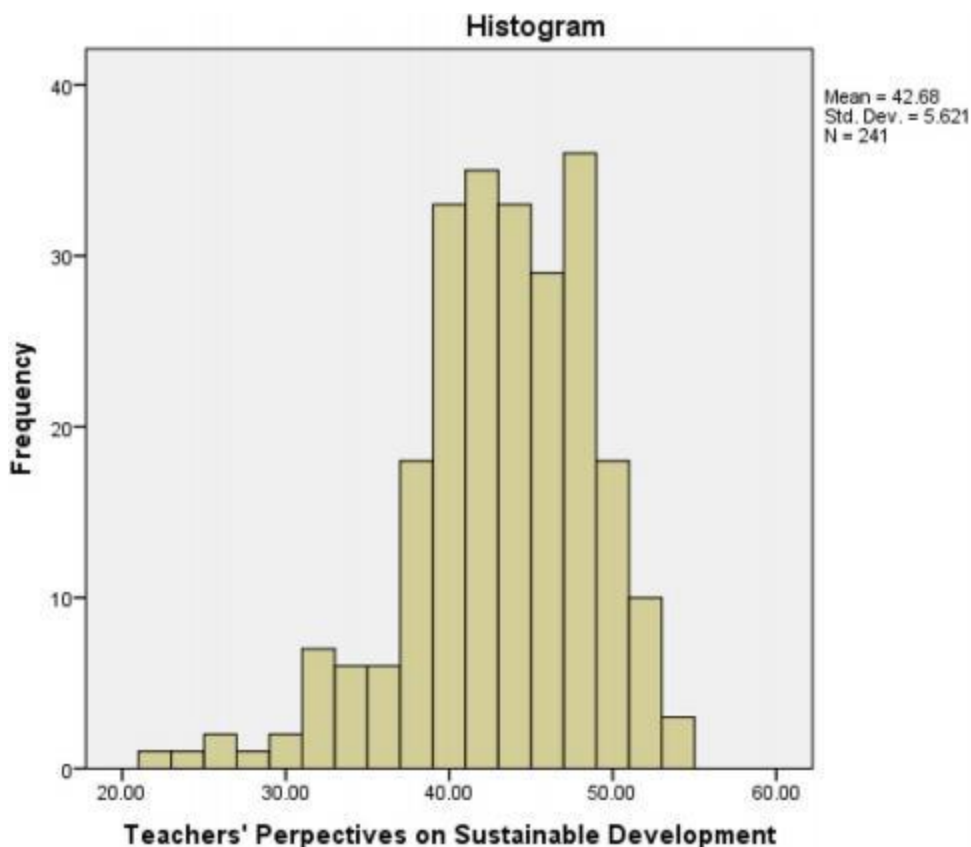

Figure 1. Summary statistics on teachers' perspectives of sustainable development.

eliminated because it did not align with any of the three factors qualitatively. The factor loading matrix is presented in Table 1. Internal consistency for each of the sub scales was examined using Cronbach Alpha. The alphas were high at .87 for systems thinking perspectives (10 items) and .808 for monolithic perspectives, and low at .340 for citizen participation (3 items). This low reliability for citizen participation could have resulted because of the number of items in the sub-scale.

Table 2 shows the distribution of the mean and standard deviation to indicate teachers' views of the most important principles in sustainable development. Systems thinking perspectives (mean 24, SD 4.3) were identified as the key perspective held by teachers in their under- standing of sustainable development; and citizen participation was the lowest (6, SD 1.4).

Systems Thinking

The items relevant to systems thinking using a scale of 1 to 3. The following items are considered to be most critical: *Economic development, social development and environmental protection are all necessary for sustainable development* (mean 2.66, SD .608), *Recycling is good for the economy and the environment* (mean 2.55, SD .632), *People whose lives will be affected by the decisions*
of the government must be involved in the decision-making process (mean 2.54, SD

.642) and Table **1. Factor loadings based** on a principle components analysis (rotated

component matrix).

Factor	loadings
Systems Thinking	
7. Environmental protection is an integral part of a country's development process	.795
15. recycling is good for the economy and the environment	.790
1. Economic development, social development and environmental protection are all necessary for sustainable development	.761
11. Buying locally grown produce contributes to society's well-being	.730
8. sustainability issues are interconnected and should be studied holistically.	.698
9. People whose lives will be affected by the decisions of the government must be involved in the decision-making process.	.694
2. sustainable development seeks to balance human and economic well-being with cultural traditions and respect for the earth's natural resources.	.649
13. a basic principle of sustainable development is taking action to avoid the possibility of serious or irreversible environmental or social harm.	.616
12. sustainable development challenges government to greater transparency and accountability in governmental decision-making.	.589
5. sustainable development seeks to eradicate poverty and reduce disparities in standards of living	.395
Monolithic Perspectives	
18. We can do nothing to decrease the emissions that contribute to climate change.	.668
4. sustainable development only emphasises environmental degradation such as a lack of clean water, destruction of the forest, pollution of the sea, extinction of wild animals and plants and reduction of natural resources.	.803
10. sustainability issues are not linked; each part is studied separately.	.837
6. sustainable development only focuses on environmental protection	.852
Citizen Participation	
3. sustainable development includes an emphasis on gender equality.	.532
14. riding a bicycle is good for the economy and builds relationships among community members.	.764
16. recycling is good for the economy because it creates employment	.551

environmental protection is an integral part of a country's development process (mean 2.52, SD .599) (see Table 3).

Table 2. descriptive statistics.

	n	minimum	maximum	mean	std. deviation
systems thinking	296	10.00	30.00	24.0541	4.30181

monolithic Perspectives	296	3.00	12.00	9.7331	2.48242
citizen Participation	296	2.00	9.00	5.8649	1.41253
valid n (listwise)	296				

Monolithic perspectives

The following items relevant to monolithic perspectives are considered to be most critical: *Sustainable development only focuses on environmental protection* (mean 2.54, SD .732) and *sustainability issues are not linked; each part is studied separately* (mean 2.49, SD .708) (see Table 4).

Citizen participation

The following items relevant to citizen participation on the Likert scale of 1 to 3, are considered to be most critical: *Recycling is good for the economy because it creates employment* (mean 2.147, SD .599) and Sustainable development includes an emphasis on gender equality (mean 2.048, SD.723) (see Table 5).

Discussion

Within the context of a Small Island Developing State (SIDS) such as Jamaica, the fact that teachers in this study have understandings of sustainable development is significant. Significant because SIDS possess limited resources amidst vulnerabilities and teachers, as part of education, are usually seen as critical change agents in providing the knowledge, skills and attitudes needed to address the vulnerabilities within such states (UNEP 2014). Consequently, teachers must at a foundational level possess knowledge and awareness of sustainable development and various sustainability issues in order to

facilitate ESD in their **Table 3.** systems thinking.

	mean	std. deviation
1. Economic development, social development and environmental protection are all necessary for sustainable development	2.656	.6080
2. sustainable development seeks to balance human and economic well-being with cultural traditions and respect for the earth's natural resources	2.466	.5881
5. sustainable development seeks to eradicate poverty and reduce disparities in standards of living	2.141	.6675
7. Environmental protection is an integral part of a country's development process	2.522	.5993
8. sustainability issues are interconnected and should be studied holistically	2.304	.6137
9. People whose lives will be affected by the decisions of the government must be involved in the decision-making process	2.544	.6416
11. Buying locally grown produce contributes to society's well-being	2.438	.6629
12. sustainable development challenges government to greater transparency and accountability in governmental decision-making	2.325	.5923
13. a basic principle of sustainable development is taking action to avoid the possibility of serious or irreversible environmental or social harm	2.327	.6145
15. recycling is good for the economy and the environment	2.548	.6315

Table 4. monolithic perspectives.

	mean	std. deviation
4. sustainable development only emphasises environmental degradation such as a lack of clean water, destruction of the forest, pollution of the sea, extinction of wild animals and plants and reduction of natural resources	2.398	.7491
6. sustainable development only focuses on environmental protection	2.542	.7327
10. sustainability issues are not linked; each part is studied separately	2.491	.7077
16. recycling is good for the economy because it creates employment	2.147	.5988

Table 5. citizen participation.

	mean	std. deviation
3. sustainable development includes an emphasis on gender equality	2.048	.7236
14. riding a bicycle is good for the economy and builds relationships among community members	1.751	.7281
16. recycling is good for the economy because it creates employment	2.147	.5988

classrooms and schools. This knowledge and awareness have to be the necessary precursors to behaviours and action in favour of sustainable societies, since action is predicated on knowledge. Additionally, given that sustainable development is a contested and ambiguous concept, and that this sentiment is echoed in Caribbean nations such as Jamaica (Down and Nurse 2007), it is significant that teachers in the nation have an understanding of the concept.

The three dimensions of sustainable development presented in this study are systems thinking, monolithic perspectives, and citizen participation. Most teachers' perspectives were related to the dimension of systems thinking whilst perspectives on citizen participation were the lowest. Drawing on Sinakou, Boeve-de Pauw, and Van Petegem (2019) we are reminded that systems thinking is integral to sustainability as it speaks to linking ecological, economic, and social systems. Since most teachers' views were linked to systems thinking it means that most teachers in the study understand that these systems are interlinked, and that actions in one realm will influence actions in the others. Such actions may include willingness to be involved in and promoting interdisciplinary and cross-disciplinary collaboration, relating content to real life issues, and being an advocate through the modelling of sustainability actions, such as recycling, conflict resolution, and respect for intercultural differences. This in an effort to influence student's sustainability thinking and actions. At the same time this inference is made, a caution must be given as sometimes what individuals say they do and actually do are often times different.

The high mean score of systems thinking perspectives (M = 24.0541, SD = 4.30) in comparison to monolithic perspectives (M = 9.7331, SD= 2.48) and citizenship participation (M = 5.8649, SD = 1.41) suggests that more of the teachers in the study had systems thinking views of sustainable development. Such findings provide an attempt at answering Dimenas and Alexandersson's question about whether an integrative view of knowledge is not a must to promote students' understanding and critical positioning of sustainable development.

Notwithstanding the systems thinking shared by teachers, a finding from the study that deserves consideration in this paper is that the dimension of citizenship received the lowest mean score indicating that for these teachers this dimension of sustainability was not as important. Citizen participation is important to sustainable development since this dimension addresses people's participation in decision-making on issues that affect them and in actions that support sustainability. This includes components of stewardship such as managing resources and garbage clean-ups as aspects of active citizen participation. It also involves a recognition that within any society, there is individual and collective responsibility for actions that support sustainability at the community, national and global levels (Poza-Vilches, Gutiérrez-Pérez, and López-Alcarria 2019). The low importance of the citizenship dimension of sustainable development aligns with Summers and Child's (2007) research where they found that though student teachers entering training were knowledgeable about all aspects of sus- tainable development, many of them were not knowledgeable about aspects to do with citi- zenship. It also aligns with Ferguson's (2008) research in which pre-service teachers neglected aspects of political empowerment and participation in their conceptions of sustainable development.

These findings underscore the need for specific and deliberate actions to be undertaken to prepare teachers to facilitate ESD in their classrooms through including courses on sustainable development and ESD in their training, and that will also empower them to become involved in sustainability. Such involvement as citizens may encompass advocacy regarding environmental, social and economic justice, social equity, freedom etc. Furthermore, citizen involvement becomes even more crucial for SIDS like Jamaica where scarcity of resources and vulnerability to climatic conditions exist. To maximise limited resources, citizens in such countries must learn that their individual actions have an influence on the lives of others and other aspects of society.

Implications for ESD

While the findings from this study hold promise as it relates to the systems thinking of a majority of the teachers, the monolithic perspectives and the citizenship dimension suggest that there is still much work to be done to help teachers move beyond seeing sustainable development as a paradigm with isolated or unrelated components or as a developmental model to which they cannot contribute. This is necessary if citizens are to be empowered to make responsible sustainable development actions. Further, this has implications for education that supports sustainable development. For education to serve its public good, those who teach must understand the crisis being faced globally and take the necessary actions to influence the desired change. Additionally, critical thinking and reflection about sustainable development, its complexity and possible contradictions, particularly in a SIDS context, must be encouraged and facilitated to ensure that ESD moves beyond simple indoctrination. Indeed, this is a chief concern highlighted by theorists such as Jickling (1994, 2000). Therefore, in this section of the paper we turn our attention to the implications of the teachers' perspectives on sustainable development for teachers and teacher educators as two critical stakeholders in ESD.

Teachers educating for sustainable development

Education for Sustainable Development positions sustainable development within the context of education and can be aptly defined as education that 'empowers citizens to take informed decisions and responsible actions for environmental integrity, economic viability and a just society' (UNESCO, 2014, 12). Under Target 4.7 of SDG Four, teachers are implicitly recognised as playing a role in ensuring that learners acquire the knowledge and skills consistent with sustainability. Andic and Tatalovic Vorkapic propose that 'the students are often a mirror of their teachers; hence, values, attitudes and behaviour of teachers are often reflected through their students' (2017, 122). Likewise, UNESCO (2018) notes that teachers have a crucial role to play in bringing about real and lasting change in society through how they shape learners' worldviews, attitudes, and skills to address sustainability challenges. Further than all of this, teachers themselves are members of society and therefore form part of the societal response. Since teachers in this study perceive sustainable development as one that is underpinned by systems thinking, their teaching and learning actions should demonstrate such importance. This means that teachers should become models of sustainability practices in different facets of their lives. Consequently, in educating for sustainable development, their teaching practices should demonstrate integration of concepts, skills, values and attitudes reflective of sustainability beyond subject matter boundaries and beyond the classroom.

As a parallel to support sustainable development, ESD seeks to reorient education and learning to ensure that all individuals are exposed to the knowledge, skills, values, and attitudes to support sustainable development and to strengthen education and learning in all facets of sustainable development (UNESCO, 2014; Leicht et al. 2018). Education for Sustainable Development, therefore, is a tool or means of achieving sustainable development. Burgener and Barth (2018) argue that successful teaching for sustainability is dependent upon teachers' com- mitment to and competency in sustainability.

Given the contested, vague, and problematic notion of sustainable development, teachers are critical in raising awareness about sustainable development, first for themselves and secondly for enabling students to critically consider, interrogate, and engage with the concept through critical reflection (Jickling 1994).

Teacher educators educating for sustainable development

Within the context of recent major global initiatives such as the Decade of Education for Sustainable Development (DESD) (2005–2014), the Global Action Programme (GAP) on ESD, and the global

SDGs, focus on the role of teachers and the need to reorient teacher education towards sustainability has intensified. Under the DESD, teacher education for ESD was one of the eight thematic programme areas for UNESCO (Wals 2009). The third Priority Action area of the GAP on ESD focused on building the capacities of educators and trainers for both present and future generations.

Indeed, Down (2011) proposes that TEIs have the responsibility of preparing teachers to lead the transformative processes embodied in ESD. Hordatt Gentles (2018) too proposes that teachers can be powerful change agents if empowered for these roles through teacher education. Loubser (2015) clearly states that educating for sustainability is predicated on teachers being trained with the requisite skills, attitudes, and values to support sustainability.

Since teachers in this study perceive sustainable development as an important concept and one that incorporates systems thinking, pre-service and in-service teacher preparation curriculum should be designed to promote systems thinking. Pre-service teachers must see examples of interdisciplinary and cross-disciplinary curricula planning and delivery by their teacher educators during their training. Likewise, in-service training should expose in-service teachers to professional development that is cross disciplinary and collaborative, and emphasise the practical application of sustainable development principles that demonstrate the linkages and interrelationships between ecological, economic, and social systems.

Ongoing cross-disciplinary training of teachers will help to build relationships that are necessary for fostering citizenship empowerment for sustainable development. Since citizen participation received the lowest mean score among the dimensions of sustainable development in this study this is important. This finding suggests that teacher preparation should integrate opportunities for participation through community action projects and project-based learning as means to develop advocacy in teachers for active citizenship participation. This should enable them to in turn educate their students since it is argued that students often mirror the attitudes and values of their teachers (Andic and Tatalovic Vorkapic 2017).

Additionally, within Jamaica specifically, the reorientation of teacher education is significant given that the cultures of TEIs are authoritarian and traditional in nature (e.g. teacher-centred as opposed to student-centred) and do not enable the ideological and pedagogical shifts nec- essary to support ESD (Hordatt Gentles 2018). Without this reorientation, the role of teachers as change agents for sustainability is impeded. Academics within the region have been attending to these issues of teacher education and ESD, highlighting that pedagogical approaches to teacher education in the region should include approaches that are whole-institution, interdisciplinary, action-oriented, and community-oriented, (e.g. Collins-Figueroa 2012; Down 2015). It is these types of approaches that will engender the critical-thinking, collaborative, problem-solving, systems thinking, and reflective (amongst others) competencies that are critical for acting for sustainable development (Rieckmann 2018).

As argued by Cheung (2020) when change is required in school, teachers' perspectives are critical to shaping such change. Thus, those who lead TEIs should seek to gather and understand perspectives of teachers on sustainable development and other related concepts. This could take place at a macro-level through a widespread survey, for instance, as well as through smaller-scale attempts to engage these perspectives, for instance at a classroom level. Additionally, policymakers in education and those outside of education will need to develop workable partnerships that progress towards an integrated agenda that recognises that changes in one aspect of the system will redound to changes in another. After ascertaining teachers' perspectives, pre- and in-service curricula for teachers should begin where they are and build on this knowledge so that learning is grounded in these perspectives, moving on from that point.

Conclusion

Teachers, by virtue of the roles they perform, are critical change agents in schools (and beyond). Therefore, their understandings and perspectives are important as they serve as translators of

the change needed by society. Teaching to achieve sustainable development while attending to 21st century learning and building sustainable societies is a complex undertaking. The com-plexity that resides in this mission is found in an understanding of the concept of sustainable development itself. Our review of the literature suggests that different arguments abound regarding how individuals interpret the concept and who is responsible for teaching it. Regardless of the contestations that exist about the concept, it is argued that teachers' role in carrying this message cannot be ignored and must be seen as critical to equipping citizens for sustainable development. Therefore, in order for teachers to carry the message of sustainable development to their students they must be educated to internalise what the concept means; what it means for them; and what it means for those they teach.

In this study, 296 teachers were surveyed to determine the extent of their perspective on sustainable development. The findings were then used to consider the implications for ESD. The findings indicated that teachers' perspectives could be placed in three dimensions: systems thinking, monolithic perspectives and citizen participation. Most of the teachers' perspectives reflected systems thinking indicating their understanding of sustainable development as involving and interlinking the environmental, social and economic aspects of life. Their perspectives to a lesser extent were associated with citizen participation.

The findings from this Jamaican study have made a modest contribution to the existing literature on the need to re-orient teachers towards critical issues related to sustainability. From this study, one critical issue to which they must be re-oriented is that of citizen participation. Since ESD is geared towards active citizen empowerment, this is a call to action for all those who are responsible for promoting ESD. This requires specific and intentional pedagogical approaches that combine theory and practice in educating teachers. Using pedagogies such as project-based learning, collaborative learning and place-based learning is an important step in influencing citizen participation and action competencies in support of sustainable development issues. Such approaches provide teachers as learners with the opportunity to deepen experiences and learning, thereby deepening their perspectives. Once teachers begin to engage with isolated issues and then examine their ripple effects in very practical ways, this should redound to influence their practices as individuals and their practices as teacher professionals, therefore influencing the lives of their students. This will be the best means for improving teachers' perspectives towards realistic and practical understanding of sustainable development for self, for their students and for active citizen participation.

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