



Civic Education Teachers' Perspectives on Climate Change and Climate Change Education among Selected Peri-Urban Schools in Lusaka District, Zambia

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Abstract: The study objective was to examine how Civic Education teachers understood Climate Change and Climate Change Education within Civic Education Context. The study used qualitative approach, particularly Discriminative Exponential Descriptive Survey Design (DEDSD). The sample size was 125 comprising closed and one ended questions. Data saturation was reached when there were no new themes emerging from open-ended questions. The data was analyzed using thematic approach and presented in line with research objectives/questions. The study found that the majority of teachers teaching Civic Education fully understood the causes and effects of climate change. They fully understood that climate change was caused by human activities such as cutting down of trees as well as emission of greenhouse gasses and that the effects include extreme temperatures, droughts and floods. However, the majority did not fully understand Climate Change in the context of Civic Education. The study recommends knowledge sharing among teachers, sourcing of adequate teaching and learning materials as well as embarking on curriculum reform.

Keywords: Climate Action, Climate Change Education, Climate change

1. INTRODUCTION

Over the years, planet earth has experienced a phenomenon known as climate change, which has brought about public concern (Chisanga *et al.*, 2022; Huho, 2015). Being a newly emerging social and scientific issue, its place in secondary school curricula has led to Civic Education and other specialized teachers become more equipped with the responsibility of teaching climate change science as well as playing a pivotal role in community awareness about climate change and its consequences (Boon, 2010). Boon (2010) further stated that, the use of the phrase "greening of the curriculum" to describe the process of more environmentally focused content is becoming part of secondary education across all curricula hence, the need to gather some insights on how civic educators understood the phenomenon. Climate change education is a cross-cutting curricular issue, which demands negotiation between discipline-based teachers, timetable and syllabus commitments that constrain opportunities for teaching. The uniqueness of the topic poses a challenge of not many teachers having the confidence in their subject knowledge (Wals, 2010). Many teachers are unprepared for the integration of action and content knowledge that characterizes climate change education, especially those in science where subject knowledge tends to be more facts oriented (Bagoly-Simó, 2022). United Nations Education Scientific and Cultural Organization (UNESCO) (2021) reports that fewer than 40% of teachers are capable of teaching climate change topics such that, only one-third were capable of explaining climate change and climate action concept.

According to Niang *et al* (2014), currently, climate change education has been incorporated into mainstream education globally because of the role of education in society (Monde *et al.*, 2023). Climate change awareness needs to be brought to the attention of learners so as to inculcate knowledge in matters related to climate change such as environmental sustainability. According to UNESCO (2021), countries differ in the aspects of school curriculum where climate change is taught to learners. Among the areas of study where climate change falls include geography, environmental science, social studies, sustainable development, among others. In some countries, school syllabi include climate change as an aspect of human, social and cultural rights. In Zambia, civic education is one of the subjects that tackles climate change (Ministry of Education, 2013).

This study chose civic education as a field of study where teachers' perspective about climate change and climate change education needed to be investigated. This was because civic education was compulsory and one of the most popular subjects among learners in schools in Zambia (Ministry of Education, 2013). Further, it is a general perception that climate change education is a preserve of subjects such as geography (Kamukwamba and Nachiyunde, 2018) and so climate change education in the context of civic education presents a unique case worth of investigating. Thus, the findings of this study are of great value to the appreciation of climate change in contexts that are not obvious yet of unique significance.

The aim of the study was to explore different understandings of Civic Education teachers concerning climate change and climate change education among selected secondary schools in Lusaka District of Zambia.

2. THEORETICAL AND PHILOSOPHICAL FRAMEWORK

This study was guided by the Socioecological Constructivist Theory. According to Hein (1991), socioecological constructivist theory refers to the idea that participants construct knowledge for themselves based on their experiences. People, both individually and socially, construct meanings Hein (1991). Constructivist theory was mainly championed by scholars such as Dewey, Piaget and Vigotsky, among (Guba, 1990). Adherence to this theory implies putting aside Platonic and all subsequent realistic views of epistemology and recognize that, there is no knowledge 'out there' independent of the knower. Thus, participants were at liberty to interpret climate change and climate change education premised on lived practice context. The study further acknowledges that, learning is contextual as people do not learn isolated facts, except in relationship to what else they know and what they believe. Constructivism holds a view that, it is not possible to assimilate new knowledge without having some prior knowledge to build on. A reflexive reflection on anything people have learned, confirms that knowledge and reality are the product of repeated exposure and interaction with our immediate environment as well as mental processes (Hein, 1991).

3. METHODOLOGY

This study employed qualitative research approach, particularly DEDSD. The concern of the researcher in this study was to gain a deeper understanding of how civic education teachers perceive climate change and climate change education within their practice context. Based on the works of Vermont (2018) and Castillo (2009), the study employed a DEDSD so as to gather broad-based insight on the subject in the first stage and thereafter, scale down to specific narratives based on the rate of theoretical saturation as illustrated in Figure 1.

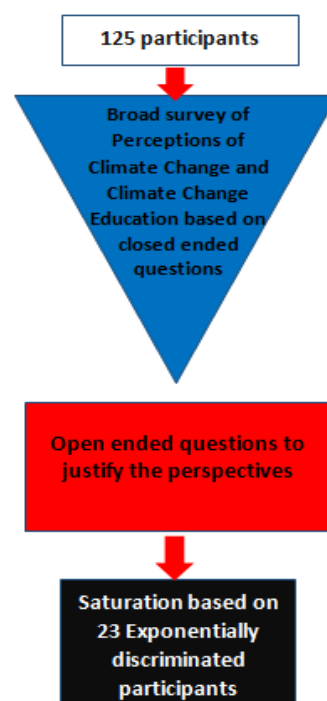


Figure1. DEDSD Process Informed by Castillo's Philosophy (2009)

The study targeted Civic Education Teachers in Peri-urban schools of Lusaka District. The target population of peri-urban areas was selected because according to the Ministry of Education (2020), learners in these schools lived with the effects of climate change such as failure to report for class due to floods as a result of heavy rains. The study sample size was 125 sampled using homogeneous purposive sampling among civic educators. The 125 respondents participated in closed ended-questions but saturation was reached when there were no new themes emerging from open-ended questions. Data collection was done through the use of semi-structured interview guide where questions were grouped into various categories, which included how teachers perceived climate change and climate change education within civic education context. In line with Creswell (2013), the use of the semi-structured interview guide provided the participants to freely express themselves instead of being restricted to choosing responses from a list of responses.

Based on the works of Sally (2017), and also the ethical clearance guidelines of the ethics committee of the University of Zambia, this study adhered to various ethics where participants' names did not appear on any tool of data collection, whilst upholding confidentiality throughout the research process.

4. DATA ANALYSIS

Data was analyzed using Thematic Analysis option where raw responses were scanned, cleaned up, thematized and thereafter coded (Ng'andu, 2013). Themes and codes were eventually clustered with perspectives that related to them. Descriptive statistics was used in summarizing quantifiable nominal data into graphic visual effects to communicate data summary. In order to ensure that the study was both credible and trustworthy, triangulation was utilised (Vermont, 2018).

5. FINDINGS

5.1. Understanding of Climate Change among Civic Education Teachers

The majority (97%) of the participants understood climate change and its causes, and this was exemplified in their ability to link the recent droughts and floods to climate change (Figure 2 a). Despite their full knowledge on what climate change was and its causes and effects, the majority of the participants (67%) claimed not having adequate knowledge about how climate change is related to Civic Education (Figure 2 b). This signified poor understanding of climate change as one of the civic issues and could potentially negate the seriousness attached to the teaching of the topic within the mainstream subject area.

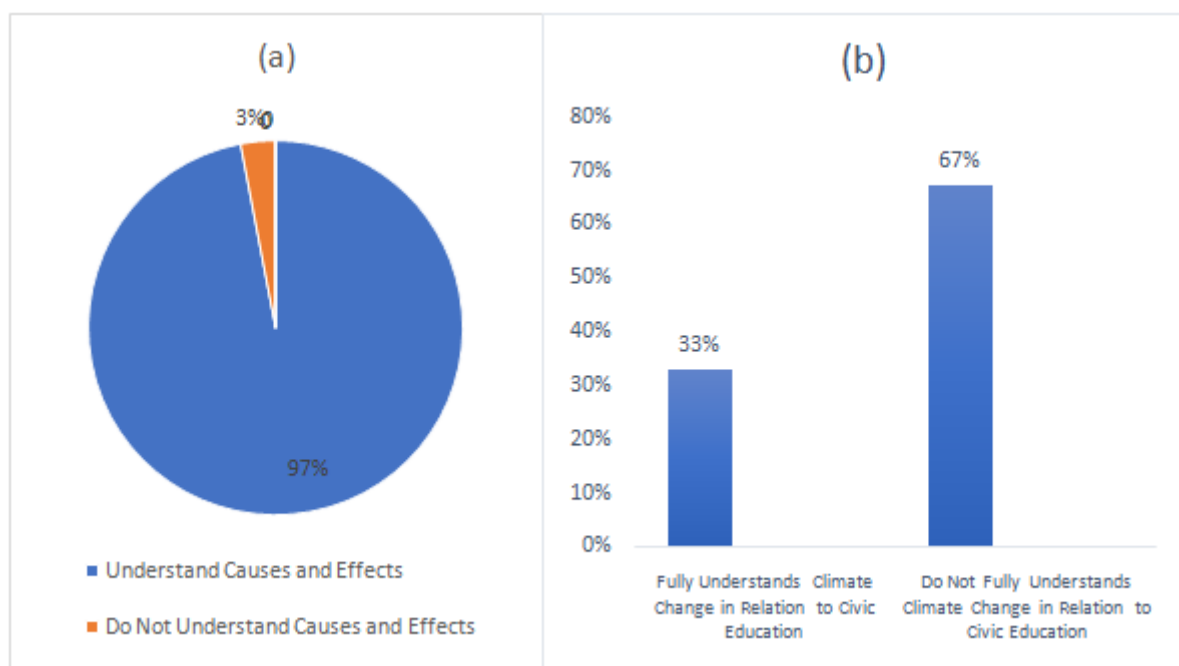


Figure 2. Distribution of participants by (a) understanding of climate change, its causes and effects and (b) understanding climate change in relation to Civic Education.

5.2. Participants' Awareness of the Causes of Climate Change

For each category of response presented in Figure 2, participants brought out personal expressions to qualify their claim of understanding of the causes of climate change. These were categorized into themes as presented in Table 1. The last column shows the synthesised perspectives which were given by the participants. The key thematic areas they were aware of in terms of causes of climate change were, deforestation, the use of fossil fuels, as well as emission of Green House Gases. These are basically the mainstream technical facts that citizens were exposed to and it was no surprise that, all participants demonstrated a mastery understanding of them. For example, some of the participants' narratives presented in Table 1 showed that:

"Trees are vital for a good weather and climate. They are part of the overall climatic system. When trees are cut, the entire system gets disturbed and that causes climate change". R55

"Due to rapid urbanization, there is an indiscriminate cutting of trees. This has caused prolonged droughts and at times floods. That causes climate change." R17

Table1.Participants' qualification of their understanding of causes of Climate Change

Theme	Code	Participants' synthesised description
Deforestation	People cut trees	<i>Climate change is caused by people cutting down trees which results into increased temperatures, droughts and flooding. [R3, R9, R15, R23]</i>
		<i>From time to time we experience erratic supply of electricity from ZESCO. This creates demand for charcoal which comes from trees that have been cut. This causes climate change. R31</i>
		<i>Trees are vital for a good weather and climate. They are part of the overall climatic system. When trees are cut, the entire system gets disturbed and that causes climate change. R55</i>
		<i>Due to rapid urbanization, there is an indiscriminate cutting of trees. This has caused prolonged droughts and at times floods. That causes climate change. R17</i>
Carbon Emissions	Pollution	<i>Fumes from cars and smoke from firewood causes temperature increases and this causes prolonged droughts and at times heavy flooding. R16</i>
		<i>Cars exhausts are a menace to the atmosphere. They cause damage to the protective layer and this causes increase in temperatures. R34</i>
		<i>We have a lot of industries coming up and these are releasing smoking in the air. This smoke causes temperature increases which changes the climate. R21</i>
		<i>More and more people in major cities such as Lusaka are buying cars on a daily basis. These cars release smoke and it is that smoke which is causing temperature increases. R8</i>
		<i>Greenhouse gases such as Carbon are known to damage the Ozone layer that protects the earth from harmful rays of the sun. R3</i>
		<i>The destruction of the Ozone layer causes increase in global temperatures and this causes droughts and floods. R7</i>
		<i>Climate change is caused by fumes released in industries. There is a lot of pollution caused by all sorts of gasses some of which are a danger to the atmosphere. Once these gasses accumulate up there, they cause damage and temperature increases and this is what is causing climate change which we can see through high temperatures, droughts and floods. R30</i>

5.3. Understanding Climate Change in Relation to Civic Education

The participants were further asked to qualify their responses with regard to how climate change is related to Civic Education in order to clearly understand the reasons behind their opinions. As earlier stated in Figure 2, the responses were put into two categories, 67% did not fully understand climate change in the context of Civic Education whereas 33% did. The former group thought climate change issues could best be handled under environment-related subjects adding that Civic Education should be concerned with issues such as governance, human rights and civil society. The latter group clearly pointed that, climate change could also be a civic issue especially that it affects members of the public. This inherently implied contradictory understanding of the nature of the subject matter with regard to where it can sit well and may potentially create disharmony among teachers of civic education. This could also compromise quality teaching of climate change-issues within the mainstream subject if the teachers concerned do not speak the same thing. The summarized details are presented in Table 2.

Table 2. Participants' Justification of their understanding on how climate change is related to civic education

Subtheme	Code	Participants' synthesised description
Fully Understands	Yes	<p><i>We know the relationship between climate change and civic education. They both discuss governance. R33</i></p> <p><i>Climate change is a human rights issue and hence relates to civic education. R6</i></p> <p><i>Climate change affects the entire population and this clearly shows that, it is a civic issue that we must all be interested in as civic educators. R66</i></p> <p><i>There are some civil society organizations championing climate change issues and so climate change should be taught in civic education. R4</i></p>
Do not fully Understands	No	<p><i>The relationship between civic education and climate change is very weak; I don't fully get it. R1</i></p> <p><i>Climate change topic should be restricted to Geography and not Civic Education. R9</i></p> <p><i>Teaching climate change topics in civic education is a duplication of efforts done in geography. The same things are being taught in more than one subject. I do not fully understand why. R33</i></p> <p><i>No, I don't fully understand the climate change in the context of civic education; at least not in the way I can easily explain. R17</i></p> <p><i>It is not easy to fully comprehend the relationship between climate change and civic education, At times I try to grasp climate change in the aspect of civic education, but I do not fully do so. It's a struggle to explain. R19</i></p>

5.4. Civic Education Teachers' Knowledge on Effects of Climate Change

In the interviews, participants who said that they were aware of the effects of climate change were further requested to provide details of the actual effects of climate change that they were aware of. Evidence in Table 3 shows that, participants were aware of how climate change could trigger extreme weather events such as floods, high temperatures, and drought, among others. They further demonstrated how climate change could trigger socioeconomic challenges due to loss of property, low crop yields, hunger, among others. *Economic hardships caused by flood and droughts negatively affected learner ability to come to school daily and this negatively affected their academic performance. Teachers too were affected by the discomfort of extreme temperatures which made teaching difficult*, stated one of the participants. Table 3 provides further details of grouped verbatims.

Table 3. Effects of Climate Change as perceived by Civic Education teachers

Subtheme	Code	Participants Voice
Extreme Weather events	Floods	<p>Climate change cause floods when too much rain fall Of late we have seen floods in Lusaka. Those are the effects of climate change. R5</p> <p>Rains in Lusaka of late falls as a very heavy downfall. This is due to change in climate. R3</p> <p>It is clearly observed during the rainy season in recent years that there are floods. This is because climate has changed. R7</p>
	Drought	<p>At times, climate change causes droughts where little or no rains fall. R9</p> <p>In some cases, we have floods while in other cases, we have no rains for a prolonged period. Both are effects of climate change. R10</p> <p>Some years are hot with little or no rains. This is because climate has changed. Some parts of the country have very little rainfall. It never used to be like that. This is no doubt changes in climate. R9</p> <p>Droughts are an indication that climate has changed. We never used to have such prolonged droughts as we are witnessing now in some parts of the country such as Lusaka and Southern Province. These are the effects of climate change. R15</p>
	Extreme temperatures	<p>Climate change causes extreme temperature where it becomes too cold and at times too hot. Lusaka in recent years has become too hot. This is climate change. R11</p> <p>Climate change is easily felt when temperatures become either too cold or too hot. This is what we are witnessing of late. R13</p> <p>Temperatures in recent years can go as high in the hot season. Surely climate has changed. R16</p>
Economic	Reduced Household Income	<p>When there is a drought, families suffer crop loss; same as when there are floods. Climate change causes crop failure and this badly affect farmers. R28</p> <p>When there are floods as we have witnessed in recent years, crops are swept away and this causes poverty and reduced food security. R19</p> <p>When there are no rains, farmers lose out. This has a bad effect on household income. This is what has become common in recent years. R8</p>
Educational effects	Poor Academic Performance	<p>When temperatures are too high or too low, learners fail to concentrate in class. They feel sleepy or shiver in coldness. This leads to poor academic performance. R33</p> <p>When temperatures get too cold, learners find it hard to concentrate. R81</p> <p>Extreme temperatures are bad for learning. In the hot season, afternoon lessons are hard to conduct. In the end, poor results among learners manifest. R7</p> <p>Learners fall sleepy when temperatures are extreme. This negatively affect their learning. R4</p>
	Poor Lesson Delivery	<p>Teachers get affected by extreme temperatures. When it is too hot or too cold, they fail to teach effectively and thus making lesson delivery poor. R11</p> <p>Extreme temperatures affect teachers just as they affect learners. It is not easy to teach enthusiastically when temperatures are high. This is what is happening in recent years because climate has changed. R41</p> <p>As a teacher, you tend to feel sleepy teaching afternoon classes because of extreme temperatures. R2</p>

6. DISCUSSION

This study has found that the majority of the respondents understood climate change as well as its causes. They were aware that climate change denotes the shift in the climatic pattern on a global level which had caused extreme weather conditions such as droughts and floods. The respondents had lived to see these effects in Lusaka where they live. They further knew that these were caused by man-made factors such as the use of greenhouse gases, cutting down of trees, as well as gas emissions from vehicles and industries. This confirms the constructivist's and interpretivists stance that, people create reality premised on their lived experiences (Hein, 1991), these findings synchronize with Muchanga and Nkhata (2023), who also observed that, teachers were generally aware of climate change issues although some, did not see its relevance in civic education. Similarly, the current study found that, despite the participants' knowledge of climate change and its causes, as well as having had a long year of service as teachers of Civic Education, the majority of them (67%) did not fully understand climate change education topics in relation to Civic Education even though they understood what climate change was as well as its causes and effects. Much of the reason was that the subject of climate change is by large a domain of Geography and not Civic Education.

On the other hand, 33% of the participants had a good understanding of climate change in the context of Civic Education; that it is about environmental change and sustainability. Some of those who expressed knowledge on climate change in relation to civic education expressed doubts in being able to clearly explain and articulate climate change in the context of civic education. These findings have largely agreed with what has been found by previous studies (Bagoly-Simo, 2023; Huho, 2015; Niang *et al.*, 2014). Previous studies have indicated that there is need for climate change education as a way of tackling and adapting to climate change through awareness and knowledge sharing (Muchanga and Nakazwe, 2015; Kamukwamba and Nachiyunde, 2018). The United Nations has embarked on the use of education to bring about global awareness of the dangers of climate change and how serious the problem is. This study however has filled up the knowledge gap that has been left by previous studies. The few studies in the Zambian context have focused on climate change awareness in Zambian schools from one region, such that their methodological approaches have not yielded positive findings (Ministry of Lands and Natural Resources, 2020; Kamukwamba and Nachiyunde, 2018; Namafe and Muchanga, 2017). In agreement with the previously done local studies such as one by Muchanga (2013), there is still need to inculcate in teachers an understanding of climate change in the context of Civic Education. It is still largely a perception of many teachers that climate change topics are more to do with Geography than they are to do with Civic Education. This perception has a bearing on the way lesson delivery is done because a teacher needs to be convinced about what he/she is teaching and that conviction reflects in the zeal and enthusiasm with which he/she teaches.

Huho (2015) earlier explained that teaching Climate change is commonly left to science teachers within the school set up, without proper teacher guide book. According to Huho (2015), most of the climate change education materials focus on knowledge transfer without considering the content of climate change education and how it interacts with other cross-cutting issues. For example, Niang *et al.* (2014) noted that, in East African countries such as Somalia, population displacement is frequent such that, setting up classroom environment for learners to learn about climate change education proves to be a challenge. Niang *et al.* (2014) argued that Africa has been classified as one of the regions of the world most vulnerable to the impacts of climate change owing to its high exposure and poor adaptive capacity. However, they observed a lack of concerted effort towards the provision of education, which aims at addressing climate change. The manner in which climate change education has been implemented through closely related subjects leaves much to be desired. Hence, this inherently point to how spatially distributed the misconception climate change education mainstreaming is among different places.

7. CONCLUSION

The study generally concluded that teachers of civic education were knowledgeable about climate change science more than they understood climate change education. This was exemplified by their ability to articulate various drivers and effects of climate change. The major shortcoming however was that, the majority could not establish the linkage between climate change with civic because they never perceived it to be a civic matter per se, but rather a geographical topic. Moreover, climate

change education was generally viewed to be an alien subfield that could arguably be best taught in another environmentally related subjects instead of Civic Education. This scenario simply entails the need to strengthen continuous professional development around climate change education across different areas of specialization within the teaching profession.

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