The Impact of Climate Change on Quality Education Delivery: A Case Study of Four Selected Secondary Schools in Kabwe District, Zambia

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DOI: https://doi.org/10.47772/IJRISS.2023.70621

Received: 25 April 2023; Revised: 18 May 2023; Accepted: 22 May 2023; Published: 20 June 2023

ABSTRACT

The study was an attempt to establish the impact of climate change on quality education delivery in selected four secondary schools in Kabwe district of central province in Zambia. Two objectives were at the heart of the study, namely: to establish effects of climate change commonly experienced in Kabwe district and to investigate how such effects affect provision of quality education in the selected four secondary schools within the district. 128 participants comprising 40 teachers, 80 pupils and 8 school administrators were purposively selected from four different secondary schools in Kabwe district. A survey using structured interviews and questionnaires were used. On challenges associated with effects of climate change commonly experienced in Kabwe district, the study established the following: impassable access roads to schools due to floods, destruction of homes, school buildings, obliteration of field crops and livestock due to heavy rains and droughts, and escalation of diseases and stress. On how the afore mentioned challengesaffect quality education delivery, the study established the following: high absenteeism rate among pupils, deprivation of pupils with quality physical learning environment, increased hunger and reduced attentionspan in pupils, and compromised health of pupils. The study has proposed the following interventions: upscale tree planting programs, parents-teachers associations in concerned schools to aggressively lobbylocal authorities to maintain strategic roads in townships and residential areas leading to schools, to continue promoting use of eco-friendly practices such as conservation farming, strict control of both forest and charcoal burning, ban open air trash burning.

Key Words: climate change, drought, floods, impact, quality education,

INTRODUCTION

Climate change has continued to pose a serious threat to the planet and its inhabitants. Droughts and wildfires that threaten human health and safety, coupled with severe weather events such as floods, hurricanes and typhoons have become common daily features. These extreme weather events such aswildfires, drought and flood (Kim, 2010), have continued to cause significant damage to infrastructure, homes, business and more often than never before loss of lives. Coastal cities and communities are constantly at a higher risk of flooding due to the continued rising sea levels resulting from melting glaciers and ice caps(U.S. EPA , 2016). In addition, the changes in precipitation patterns and rising temperature have been affecting crop yields and water availability most especially in developing countries. This has been posing a serious threat on food and water security.

Furthermore, studies have shown these extreme weather patterns to have negative impact on provision of quality education(Zimbabwe Human Development Report, 2017). By quality education we refer to a five dimensional education that encampuses quality of health of pupils, quality of learning environment, quality and relevancy of learning content to national development, quality of teaching and learning processes; and

the quality of leaning outcomes that address the integral development of the learner and national needs(United Nations Children's Fund, 2000).

Ardales et al. (2016) interrogated the impact of floods on teaching and learning among learners in schools located on the banks of the lake. The study reported disruptions in the school calendar and failure by teachers to finish the syllabi. Furthermore, Ardales and others obseverd that, the physical destruction in school infrastructure and homes caused by floods deprived teachers of the conducive working environment. The consequential effect of that was failure by teachers to adequately prepare the teaching and learning materials. On the part of pupils, Ardales and others associated a reduction in both motivation and concentration levels that pupils exhibited to the floods pupils experienced (Ardales, Espaldone, Lasco, Quimbo, & Zamora, 2016). Earlier on, Chang et al., (2012)also had linked floods to prolonged closure of schools and high dropout rate of children from the school system.

Randell and Gray (2016), examined the effects of climate variability on schooling outcomes in ruralEthiopia. The study predicated a reduction in children's school participation in rural sub-Saharan Africadue to effects of climate change.

In Zambia, Conteh (2015)investigated the impact of floods on primary school education in the Zambezi plains in western province. The findings were in agreement with those made by Ardales et al (2016) and Chang et al. (2012) on the effects of flood on teaching and learning. The study reported disruption in the school calendar, destruction of school infrastructure, restricted mobility of pupils, forced displacements of households, and elevated absenteeism of both teachers and pupils from school.

Suffice it to mention that Ardales et al. (2016), Chang et al. (2012) and Conteh (2015) carried out their studies in communities located in areas that were susceptible to floods, coast areas. The current study attempted to establish the impact of climate change on quality education delivery in selected schools in Kabwe district of central province in Zambia, a town located on the mainland and far away from any huge waterbody.

RESEARCH METHODOLOGY

Research Design

The study employed an open ended qualitative survey research design.

Research Objectives

The study had two objectives. The first objective was to establish the effects of climate change that are commonly experienced in Kabwe district of Zambia. The second objective was to find out how the identified effects of climate change commonly experienced in Kabwe district affect the provision of quality education in four selected secondary schools within Kabwe district.

Research questions

Two research questions were at the heart of the current study. These included the following:

1. What are the effects of climate change that are commonly experienced in Kabwe District?
2. How do aforementioned effects of climate change affect the provision of quality education in the four selected secondary schools in Kabwe District?
3. **Sample, Sampling Technique an** 128 participants comprising 8 administrators, 40 teachers and 80 pupils took part in the study. These participants were purposely selected from four selected secondary

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS |Volume VII Issue V May 2023

schools located within Kabwe district.

Data Collection

Two instruments were used to collect data namely the structured interview questions and a questionnaire. The structured interview questions were used to collect data from school administrators who provided responses using pen and paper. Questionnaires were used to gather data from teachers and pupils

RESULTS

This section presents the findings obtained during the study. Responses from participants were analysed qualitatively using Qualitative Data Analysis Miner (QDA) Software. The following themes emerged from the two research questions under consideration.

1. **Effects of Climate Change Commonly Experienced in Kabwe District**
2. **Impassable Access Roads**

Pupils, teachers and school administrators identified impassable access roads to and from schools due to floods as one of the major effects of climate change experienced by school going children in KabweDistrict. Due to heavy rains, most of the roads were flooded, bridges and culverts washed away. This, they said made it difficult for both pupils and teachers to crossover to and from school.

Damage of Property and buildings

Pupils, teachers and school administrators all associated destruction of building structures prevalent in rain season to climate change. They noted that during rainy season, school buildings, rooftops and pupils' homes were commonly destroyed due to excessive rain.

Destruction of Field Crops and livestock

Teachers and school administrators further observed that due to excessive rain and droughts, family fields and livestock were destroyed. This, ultimately resulted into families experiencing famine and hunger.

Escalation of Diseases and Stress

Teachers and school administrators also associated floods and excessive heat as contributing factors to the rise in cases of airborne diseases, waterborne diseases, physical and mental stress among pupils and teachers. Table 1 gives a summary of effects of climate change commonly experienced in Kabwe district according to participants.

Table 1: Effects of Climate Change commonly experienced in Kabwe District according to participants.

Effects of Climate Change Commonly Experienced in Kabwe District according to participants
i. Impassable access roads ii. Damage of property and buildings iii. Destruction of field crops and livestock iv. Escalation of diseases and stress

1. **Impact of Effects of Climate Change on Provision of Quality Education Selected Secondary Schools**
2. **Increased Absenteeism Rate among Pupils**

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS |Volume VII Issue V May 2023

Both administrators and teachers linked impassable access roads to schools to late reporting for school and increased absenteeism rate among pupils. They observed that when roads were flooded pupils opted to remain home than attending lessons at school.

Destruction in quality of Learning Environment

Administrators and teacher linked damaged houses and school buildings by floods to distortion of quality physical learning environment. They further submitted that both teachers are pupil are deprived of a safe working environment.

Increased hunger and reduced attention Span

Both administrators and teachers associated destruction of field crops and livestock to increased cases of hunger among pupils. They further argued that crop failure due to flood ultimately result into hunger in homes and a reduction in attention span among pupils in class.

Escalation of Poor Pupils' Health

Administrators and teachers associated pupils' poor health to high prevalence rate of waterborne diseases and malaria during rain season. They submitted that floods caused water contamination while excessive stagnant water become the breeding ground for mosquitos. Furthermore, they submitted that waterborne diseases and malaria compromised the quality of drinking water in school and ultimately, escalated poor quality of the health of pupils. Consequently, absenteeism rate among both teachers and pupils was high. Table 2 shows a summary of effects of climate change commonly experienced in Kabwe town on the provision of quality education in four selected secondary schools under study.

Table 2: Effects of Climate Change on Provision of Quality Education Selected Secondary Schools

Effects of Climate Change on Provision of Quality Education Selected Secondary Schools
i. Destruction in quality of learning environment ii. Escalation of poor pupils' health iii. Increased absenteeism rate among pupils iv. Increased hunger and reduced attention span

DISCUSSION

The findings of this study revealed that Kabwe town, like any other place on planet earth, is not spared by effects of climte change. Despite being on the mainland, far away from huge water bodies, Kabwe town still experiences flooded roads, destruction of buildings and destruction of field crops due to excessive rains. It was further noted that floods, many a time, cause contamination of drinking water. The consequetial effects of water polution is escalation of diseases and stress.

The implications of these findings on the provision of quality education in the four selected schools, and other schools in Kabwe district, can be well understood if these findings are situated within the context of the five dimensional definition of quality education (United Nations Children's Fund, 2000). According to the United Nations Children's Fund (2000)quality education constitutes the following: healthy learners, safe physical and social learning environment, relevancy of teaching and learning content to national development, appropriateness of learning processes; and meaningful leaning outcomes that address the integral development of the learner and national needs. Complete or partial exclusion of one or many of

these five dimensions, be it at school level, district level, provincial level or national level compromises the quality of education. For instance flooded school environment creates a fertile breeding ground for mosquitos. Consequently, this results in high prevalence rate of malaria among pupils. Furthermore, pathogens that cause dysentery and diarrhoea also increase. Impassable roads due to floods, destruction of homes and school buildings compromise the quality of the physical learning environment of pupils. There is a common agreement among educators that positive learning outcomes in pupils is attainable only in aquality and healthful learning environment (United Nations Children's Fund, 2000). Aquality and healthful learning environment therefore constitutes an environment that is safe, protective and able to provideadequate resources and facilities to all the learners (United Nations Children's Fund, 2000). To the contrary, flooded schools and homes do not provide such an environment.

Quality of pupils' health also has a huge impact on the quality of education outcomes. Wolfe (1985), attributed the negative impact that poor health of pupils has on the quality of education outcomes to failureby pupils to attend lessons due to illness. He argued that, sickly pupils are likely to miss lessons more often compared to health pupils (Wolfe, 1985). Other than the quality of the physical learning environment, illnesses is likely to inhibit the quality of learner to learner social interaction which is fundamental inlearning of new concepts (Vygotsky, 1978)Elevated absenteeism rate among learners also has negative impact on the quality of education outcomes. According to Gottfried (2014), absenteeism lowers mathematics and reading achievement outcomes. Teixeira (2016), also reported a significant decrease in students' final grade as a result of absenteeism.

With regards reported increased hunger and reduced attention span, Janice and Elizabeth (2015), related hunger to poor health outcomes in adolescents and chronic conditions whereas Shabbir, Zaman and Atif (2019), associated malnutrition with increased absenteeism rate and lowered academic performance among learners.

With all this evidence put forward, the negative impact of climate change, directly or indirectly, on quality education outcomes is indisputable and must be a concern of all educators.

CONCLUSION

The study attempted to establish the impact of climate change on quality education delivery in four selected secondary schools within Kabwe district of central province in Zambia. The findings undoubtedly demonstrated that, like schools located on the banks of huge water bodies, the four schools under study were not spared from the effects of climate change despite being on the mainland and far away from huge water bodies. Some of the effects included flooded access roads, damage of property, buildings, field crops and livestock, escalation of water borne diseases. The study further established that the effects of climatechange, directly and indirectly, impact negatively on the provision of quality education services and outcomes. This is through interfering with the quality of the physical learning environment, lowering the quality of health of the pupils and increased absenteeism rate among pupils. The findings puts the burden on the shoulders of all educators within the four schools, and any other school, to come up with local solutionsin order to mitigate these challenges. Furthermore, schools, individually and severally, must upscale activities such as tree planting that help to reduce the impact of climate change. School administrators, working together with school parents' associations must aggressively continue to lobby with the localauthorities to maintain strategic roads, roads, drainages and bridges in townships and residential areas. There is also need for continued promotion of eco-friendly practices such as conservation farming, strict control of both forest and charcoal burning, ban open air trash burning and promote use of renewable energy such as wind and solar.

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