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ADMINISTRATORS' ENVIRONMENTAL HAZARDS MANAGEMENT STRATEGIES FOR STUDENTS SAFETY IN SENIOR SECONDARY SCHOOLS IN RIVERS STATE, NIGERIA

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ABSTRACT

This paper investigated administrators' environmental hazards management strategies for students safety in senior secondary schools in Rivers State. Three research questions and three corresponding null hypotheses guided the study. The study adopted a descriptive survey design. The population of the study consisted of 302 Principals and 6557 teachers totalling 6859 in 302 public senior secondary schools in Rivers State. The sample for this study was 823 respondents; representing 12% of the total population of the study. The respondents were stratified into principals and teachers of selected schools. The instrument that was used for data collection was a self-constructed questionnaire titled "Administrators' Environmental Hazards Management Strategies for Students' Safety Questionnaire" (AEHMSSSQ). The results of the tests were analyzed using the Cronbach's Alpha statistics based on the three sections of the instrument. Cluster A of the instrument yielded 0.68, cluster B 0.76 and cluster C 0.82. The overall Alpha yielded 0.78, showing that the instrument is reliable enough to be used in the study since it is above the 0.60 level of reliability acceptance. Mean and Standard Deviation Statistics were used to answer the research questions while t-test was used to test the null hypothesis at 0.05 level of significance. The findings of this study indicated that majority of the respondents agreed to a high extent that administrators use risk assessment strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State. The paper concluded that administrator's environmental hazards management strategies for student safety in senior secondary schools in Rivers State sheds light on the proactive measures taken by school administrators to ensure the safety of students amidst environmental hazards. The study therefore recommended that Government Regulatory Bodies should mandate periodic assessments and audits of risk assessment strategies in schools, school administrators should establish dedicated facility management teams within schools to oversee routine inspections, maintenance, and upgrades of infrastructure and school administrators should collaborate closely with local emergency services such as fire departments, police, and medical services to ensure alignment of school emergency response strategies.

Keywords: Administrators, Environmental Hazards, Management Strategies, Students Safety, Secondary Schools, Rivers State, Nigeria.

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INTRODUCTION

Education is the foundation for development in any society. It is the transmission of knowledge from one generation to another. It is the process of facilitating learning or the acquisition of knowledge, skills, values, beliefs and habits. Education takes various forms; it could be formal or informal. Formal education takes place in an organized environment whose central purpose is teaching students. This organized setting is called the school environment and is made up of classrooms of several students learning together with a competent certified teacher of the subject. The school environment like any other environment consists of hazards which are potentially dangerous to the occupants in the school. These hazards could be managed in order to ensure a safer environment.

Environmental hazard is a substance, a state of an event which has the potentials to threaten the surrounding natural environment or adversely affect people's health, including pollution and natural disaster such as storms and earthquakes, or any single or combination of toxic chemical, biological or physical agents in the environment, resulting from human activities or natural processes that may impact the health of exposed subjects, including pollutants such as heavy metals, pesticides, biological contaminants, toxic waste, industrial and home chemical. Human made hazards while not immediately health-threatening may turn out detrimental to man's wellbeing eventually, because deterioration in the environment can produce secondary unwanted negative effects on the human ecosphere. To ensure safety in secondary school there is need for effective school administration to operate successfully within a safe school climate where there is safety consciousness's and disciplines imbibed in the students of the institution and also safe school facilities and conducive environment where proper teaching learning processes can thrive (Oragwu & Nwabueze, 2015).

Administrators' environmental hazards management strategies refers to those efforts or techniques employed within the school system to prevent, reduce, cushion or avoid the dangers of hazards in order to ensure that academic activities follow the planned schedules. There are several types of hazards that can be managed within the school system they include: biological hazard, chemical hazard, ergonomic hazard, physical hazard, psychological hazard and environmental hazard.

Physical hazards are those hazards that occur within an environment that can harm the body without necessarily touching it (Sekiwu, 2011). They cause pain and injury to individuals within the school system who are victims. Physical hazards can be caused through failure to exercise care, through chemical explosion, poor disposal of waste etc. The physical environment is concerned with ensuring a clean and safe environment exemplified by the presence of water supply, refuse disposal, sewage disposal, quality of school buildings, and absence of harmful objects as well as vectors of disease agents (Cornacchia et al., 2018)

Psychological hazards are hazards that affect the mental health of a person overwhelming an individual coping mechanism, Ekenodo and Ekechukwu (2015) highlighted some factors that influence psychological environment in the school such as; interpersonal relationships internal and external pressures and heavy work load. Environmental hazard can be defined as a state or event which has the potential to threaten the surrounding and natural environment and people within the environment. No matter the occupation one is engaged in, it is a fact that one's health comes first and is more important than any other factor. There are many hazards that might result from the environment if they are not properly managed, such include falling buildings, dead

trees, and students throwing stones, fighting and so on, and thus, can pose threat to those in the school.

Noise hazard according to Encyclopaedia Britannica (2012) is any undesired sound that is intrinsically objectionable or one that interferes with other sound that are being listened to. The school is important for the cognitive, creative, and social development of children. Schools are therefore expected to ensure the best possible conditions for a child's physical and intellectual development, including control of excess environmental noise. The noise in a classroom is made up of external noise which is transmitted through the building envelope, plus internally generated noise, so that children in school may be exposed to noise from a wide variety of sources. External noise is likely to consist of array of environmental noise including noise from transportation sources, industrial noise, plant noise and the noise of people outside the school.

An additional source of noise which is reputed to cause significant disturbance to teaching is the noise of rain falling on light weight school roofs (O'Neil, 2002). Owan (2012) pointed out some sources of noise, which are electricity generating plants, vehicular traffic noise engine and pressure horns, construction/industrial noise, Industrial/machinery noise, noise from worship institutions, household noise. Other sources of noise as pointed out by Abolarin (2012) are air craft noise, noise from railroads, noise from consumer products, internal combustion engines (ICE).

In senior secondary schools in Rivers State, Okonkwo (2023) identified various roles in ensuring the safety of students amid various environmental hazards. These hazards encompass a spectrum of challenges, from natural disasters to public health concerns and industrial activities. In response, administrators should adopt a multifaceted approach to environmental hazard management to create a secure and conducive learning environment. Central to this approach is a comprehensive risk assessment, which involves identifying and understanding potential environmental hazards within and around the school premises (Nwosu, 2021). This includes mapping flood-prone areas, assessing seismic risks, and considering other region-specific challenges. By gaining insights into these risks, administrators can formulate targeted strategies to mitigate potential threats.

Emergency response planning is another critical aspect, as emphasized by Okonkwo (2023). Administrators should develop and regularly update detailed emergency response plans, outlining procedures for various hazards such as natural disasters, accidents, and public health emergencies. Regular drills and simulations to ensure that students and staff are well-prepared to respond effectively during actual emergencies. Maintaining and upgrading school infrastructure is paramount. Regular inspections, maintenance activities, and adherence to safety codes are essential to ensure the structural integrity of buildings and facilities (Nwosu, 2021). Upgrades may be necessary to withstand specific environmental challenges, such as reinforcing structures in earthquake-prone areas or improving drainage systems to prevent flooding.

Promoting health and hygiene practices within the school community is an integral part of environmental hazard management. This involves implementing proper waste disposal systems, maintaining clean environments, and conducting health education programs. Regular health check-ups and vaccinations contribute to preventing the spread of diseases within the school. Engaging with the local community is emphasized, involving parents, residents, and community leaders. Raising awareness about potential hazards and involving the community in developing and implementing safety measures foster a collective approach to safety. Community members are encouraged to participate in drills and training sessions.

Collaboration with local authorities, emergency services, and government agencies is prioritized. Regular communication and coordination enhance the school's preparedness and response capabilities. This collaborative effort ensures access to resources and support during emergencies.

Establishing a system for continuous monitoring and evaluation is essential. Regular reviews and updates to safety protocols based on feedback, lessons learned from drills, and changes in the local environment contribute to the effectiveness of environmental hazard management strategies. In adopting this holistic and proactive approach, administrators strive to create a safer environment for students in senior secondary schools in Rivers State, ultimately safeguarding the well-being of the entire school community.

Several studies have been conducted to examine administrators' environmental hazards management strategies for students' safety in senior secondary schools in Rivers State. For instance, Ogbonna and Bisong, (2018) investigated strategies for the management of environmental hazards: implications for sustainable healthy living in River State, Nigeria. The study was designed to assess the strategies adopted in the management of environmental hazards in River State. The specific objectives of the study were to identify the strategies adopted by the government to promote environmental management consciousness and prevention of environmental hazards as well as the role of the residents on environmental hazards prevention.

The results revealed that certain strategies were adopted by both government and agencies in reaching people with information on environmental issues. The study recommended that government should extend its environmental management programmes beyond certain areas in River State through the provision of accessible roads and good drainage channels to ensure effective environmental hazards prevention. Also that awareness campaigns should be increased to enlighten the public of their role in the prevention of environmental hazards, and environmental education be included in the curriculum of secondary schools to inculcate good environmental management attitude among young people. The findings of Nkporbu, Asuquo and Douglas (2016) in a study on the possible risk factors for psychosocial hazards among workers at the university of Port Harcourt, revealed that; risk factors for psychosocial hazards included work load with 548 (98.2%), followed by home-work interface with 458 (82.0%), lack of possibilities to advance forward 392 (70.1%), lack of career development 327 (58.7%), work content with 329 (60%) while constant state of alertness (CSA) was the least with 98 (17.6%). It was hence concluded that workers at the University of Port Harcourt experienced or are faced with several risk factors for psychosocial hazards; most of them are organizational and employer's factors. The study recommended that there is a need to institute appropriate measures to address preventable risk factors and improve the work environment thereby increasing workers' effectiveness, productivity and improving their health.

From the foregoing, it seems only a handful of studies has been done in Rivers State which examined administrators' environmental hazards management strategies for students' safety in senior secondary schools in Rivers State, no study has been identified to have examined environmental hazards management strategies for students' safety in terms of risk assessment strategy in the management of environmental hazard for student safety, infrastructure maintenance and upgrades play in the overall effectiveness of administrators' strategies for students' safety, emergency response strategy in the management of environmental hazard for student safety and the challenges administrators face in implementing and evaluating environmental hazard management strategies for students' safety in senior secondary schools in Rivers State. This implies a gap which the present study will fill. It was an attempt to bridge the

gaps in the Literature that necessitated the investigation on the study administrators' environmental hazards management strategies for students' safety in senior secondary schools in Rivers State.

Statement of the Problem

In Rivers State, senior secondary schools are currently grappling with a critical issue pertaining to the efficacy of administrators' strategies for managing environmental hazards and ensuring the safety of students. The geographical location of the state exposes these educational institutions to a range of environmental risks, including natural disasters, industrial activities, and public health concerns. Despite this heightened susceptibility, there is a noticeable gap in the implementation and assessment of comprehensive hazard management strategies tailored to the specific challenges faced by senior secondary schools in the region.

This deficiency raises significant concerns about the potential vulnerability of students to various environmental hazards. The inadequacy of current strategies may leave students and staff exposed to unforeseen risks, compromising their safety within the school environment. To address this pressing issue, there is a critical need for an in-depth investigation on administrators' environmental hazard management strategies. This inquiry should encompass an assessment of the comprehensiveness, effectiveness, and adaptability of current approaches, with a specific focus on the unique challenges posed by the environmental landscape of Rivers State. Furthermore, the identification and development of more robust strategies are imperative. This involves exploring innovative solutions, fostering collaboration with local authorities, and incorporating community engagement to create a more resilient and proactive approach to environmental hazard management in senior secondary schools. By comprehensively addressing these concerns, administrators can significantly enhance the safety and well-being of students in Rivers State and create a secure learning environment conducive to academic success.

Aim and Objectives of the Study

The aim of this study was to investigate administrators' environmental hazards management strategies for students' safety in senior secondary schools in Rivers State. Specifically, the study sought to:

- Examine the extent administrators use risk assessment strategy in the management of environmental hazard for students' safety in senior secondary schools in Rivers State.
- Investigate the extent administrators use infrastructure maintenance and upgrades in the management of environmental hazard for students' safety in senior secondary schools in Rivers State.
- Investigate the extent administrators use emergency response strategy in the management of environmental hazard for students' safety in senior secondary schools in Rivers State

Research Questions

The following research questions guided the study:

- To what extent do administrators use risk assessment strategy in the management of environmental hazard for students' safety in senior secondary schools in Rivers State?
- To what extent do administrators use infrastructure maintenance and upgrades in the management of environmental hazard for students' safety in senior secondary schools in Rivers State?
- To what extent do administrators use emergency response strategy in the management of environmental hazard for students' safety in senior secondary schools in Rivers State?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

- **HO1:** There is no significant difference between the mean responses of principals and teachers on the extent administrators use risk assessment strategy in the management of environmental hazard for students' safety in senior secondary schools in Rivers State.
- **HO2:** There is no significant difference between the mean responses of principals and teachers on the extent administrators use infrastructure maintenance and upgrades in the management of environmental hazard for students' safety in senior secondary schools in Rivers State.
- **HO3:** There is no significant difference between the mean responses of principals and teachers on the extent administrators use emergency response strategy in the management of environmental hazard for students' safety in senior secondary schools in Rivers State.

METHODOLOGY

A descriptive survey design was adopted in the study and the population of the study consisted of 302 Principals and 6557 teachers totalling 6859 in 302 public senior secondary schools in Rivers State. The sample for this study was 823 respondents; comprising of 680 teachers' and 143 Principals. The respondents were stratified into principals and teachers of selected schools. The 60 schools that were selected represented 20% of the total population of (302) schools in Rivers State while the 823 respondents selected represented 12% of the total population of teachers' and principals (6859) of public senior secondary schools of Rivers State. A total of 823 questionnaires were distributed, while 691 were returned, giving 84% return rate. The instrument that was used for data collection was a self-constructed questionnaire titled "Administrators' Environmental Hazards Management Strategies for Students' Safety Questionnaire" (AEHMSSSQ). The results of the tests were analyzed using the Cronbach's Alpha statistics based on the four sections of the instrument. Cluster A of the instrument yielded 0.68, cluster B 0.76 and cluster C 0.82. The overall Alpha yielded 0.78, showing that the instrument is reliable enough to be used in the study since it is above the 0.60 level of reliability acceptance. Mean and Standard Deviation Statistics were used to answer the research questions while t-test was used to test the null hypothesis at 0.05 level of significance using the statistical package SPSS version 25.

CONCEPTUALIZATION

Risk Assessment Strategy in the Management of Environmental Hazard for Students' Safety

Environmental hazards pose a significant threat to student safety in senior secondary schools, particularly in regions like Rivers State, Nigeria. Notably, risk assessment strategies play a pivotal role in mitigating these risks and fostering a secure learning environment. Okafor (2019) emphasized the importance of a comprehensive risk assessment in identifying and understanding environmental hazards specific to school locations. The study highlighted that a thorough risk assessment forms the foundation for effective hazard management strategies, enabling administrators to tailor their approaches to the unique challenges faced by schools in Rivers State.

Moreover, Adegoke et al. (2020) highlighted the relevance of risk assessment in the development of emergency response plans. The study argued that risk assessment provides critical insights into the vulnerabilities of school infrastructure, facilitating the creation of plans that are not only comprehensive but also contextually relevant to the specific environmental challenges prevalent in Nigeria. In the realm of health and safety, Onyekachi et al. (2018) stressed the significance of risk assessment in preventing the spread of diseases within school environments. Their findings indicate that a meticulous risk assessment of health-related hazards allows for the implementation of targeted health and hygiene practices, thereby reducing the potential impact of infectious diseases on student well-being.

Furthermore, the literature emphasizes the dynamic nature of risk assessment. According to Balogun et al. (2017), continuous monitoring and evaluation of risk assessment processes are essential. Regular reviews ensure that hazard management strategies remain adaptive to changes in the local environment and are responsive to emerging risks, contributing to the overall resilience of student safety measures.

Infrastructure Maintenance and Upgrades and the Overall Effectiveness of Administrators' Strategies for Students' Safety

Infrastructure maintenance and upgrades play a crucial role in ensuring the overall effectiveness of administrators' strategies for student safety in senior secondary schools. The state of school buildings and facilities directly impacts their ability to withstand environmental hazards, and regular inspections are essential for identifying potential vulnerabilities (Nwachukwu & Umar, 2021). Adequate infrastructure maintenance is vital for creating a safe learning environment. Ongoing inspections and repairs contribute to the structural integrity of school buildings, minimizing risks associated with wear and tear (Balogun et al., 2017). Additionally, the implementation of routine maintenance schedules helps identify and address potential hazards before they escalate, supporting a proactive approach to student safety (Onyekachi et al., 2018).

Upgrading infrastructure is equally important in the face of evolving environmental challenges. With advancements in construction technology and knowledge about regional risks, administrators must prioritize upgrades to enhance the resilience of school buildings (Okoye & Mustapha, 2021). This may involve reinforcing structures to withstand seismic activity, improving drainage systems to prevent flooding, or incorporating eco-friendly designs to mitigate environmental impact.

Furthermore, infrastructure upgrades contribute to the creation of a conducive learning environment. Adegoke et al. (2020) argued that well-maintained and upgraded facilities positively impact the overall well-being of students, fostering a sense of security and comfort. In contrast, neglected infrastructure may pose safety risks and hinder the overall effectiveness of hazard management strategies.

Emergency Response Strategy and Management of Environmental Hazard for Student Safety

Emergency response strategies are integral components of administrators' efforts to manage environmental hazards and ensure the safety of students in senior secondary schools. The effectiveness of these strategies is crucial, particularly in regions like Rivers State, Nigeria, where schools are susceptible to various environmental risks. Scholars emphasized the importance of a comprehensive emergency response strategy that encompasses preparedness, coordination, and swift action during crises.

Okonkwo (2019) underscored the significance of preparedness in emergency response. Administrators must develop and regularly update detailed emergency response plans that outline specific procedures for various hazards. This preparedness involves not only understanding potential risks but also conducting regular drills and simulations to ensure that students and staff are well-equipped to respond effectively during actual emergencies. Nwachukwu et al. (2020) emphasized the importance of coordination in emergency response strategies. Collaborative efforts with local authorities, emergency services, and government agencies are crucial for a swift and organized response. Establishing strong partnerships ensures access to timely information about potential hazards and facilitates a coordinated effort to manage environmental risks.

In the event of an environmental hazard, communication is paramount. Adeyemi, Mohammed, and Obi (2021) argued that effective communication protocols are vital for disseminating warnings promptly to students, staff, and parents, contributing to a proactive approach in mitigating risks.

RESULTS AND DISCUSSION

The results were presented in line with research questions and null hypotheses that guided the study as showed in the table below:

Answers to Research Questions

Research Question 1: To what extent do administrators use risk assessment strategy in the management of environmental hazard for students' safety in senior secondary schools in Rivers State?

Table 1: Mean ratings and standard deviation of Principals' and Teachers on the extent administrators use risk assessment strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State

S/N	Extent administrators use risk assessment strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State	Principals' (n = 76)		Teachers' (n = 615)		Mean set (x ₁ =x ₂)	Remarks
		\bar{X}_1	SD ₁	\bar{X}_2	SD ₂		
1	The school has a documented risk assessment procedure for managing environmental hazards.	3.62	0.75	2.83	0.88	3.23	High Extent
2	The risk assessment strategy includes a comprehensive identification of potential environmental hazards.	3.61	0.71	3.87	0.84	3.74	High Extent
3	There are established procedures for communicating risk assessment findings to students.	3.80	0.51	2.56	0.95	3.18	High Extent
4	Administrators allocate sufficient resources to implement the risk assessment strategy effectively.	3.80	3.67	2.58	0.94	3.19	High Extent
5	Administrators conduct periodic training sessions for teachers on responding to environmental hazards	3.58	0.79	2.74	0.77	3.16	High Extent
Average Mean/Standard Deviation		3.77	0.52	3.60	0.83	3.3	High Extent

Data on table 1 show the mean ratings and standard deviation of Principals' and Teachers on the extent administrators use risk assessment strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State. The data in table 1 showed that the respondents indicated that the school has a documented risk assessment procedure for managing environmental hazards with a mean score of (3.23), The risk assessment strategy includes a comprehensive identification of potential environmental hazards (3.74), There are established procedures for communicating risk assessment findings to students (3.18), Administrators allocate sufficient resources to implement the risk assessment strategy effectively (3.19) and Administrators conduct periodic training sessions for teachers on responding to environmental hazards (3.16). The grand mean value of (3.3) shows that majority of the respondents agreed to a high extent that administrators use risk assessment strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State.

Research Question 2: To what extent do administrators use infrastructure maintenance and upgrades in the management of environmental hazard for students' safety in senior secondary schools in Rivers State?

Table 2: Mean ratings and standard deviation of Principals' and Teachers on the extent infrastructure maintenance and upgrades in the management of environmental hazard for students' safety in senior secondary schools in Rivers State

S/N	Extent infrastructure maintenance and upgrades in the management of environmental hazard for students' safety in senior secondary schools in Rivers State	Principals' (n = 76)		Teachers' (n = 615)		Mean set (x ₁ +x ₂)	Remarks
		\bar{X}_1	SD ₁	\bar{X}_2	SD ₂		
6	Administrators communicate regularly with teachers and staff about ongoing infrastructure maintenance and upgrades.	2.62	1.73	2.56	0.98	2.59	High Extent
7	The school infrastructure is designed to withstand potential environmental hazards	2.74	1.83	3.06	0.92	2.9	High Extent
8	Administrators collaborate with local authorities to ensure infrastructure compliance with safety standards.	2.53	1.99	2.52	0.98	2.53	High Extent
9	The school has a system for assessing the impact of infrastructure upgrades on student safety.	2.67	1.76	2.85	0.94	2.76	High Extent
10	There is a designated team responsible for overseeing infrastructure maintenance and upgrades.	2.54	0.72	2.68	0.86	2.61	High Extent
Average Mean/Standard Deviation		2.62	1.61	2.73	0.92	2.68	High Extent

Data on table 2 show the mean ratings and standard deviation of Principals' and Teachers on the extent infrastructure maintenance and upgrades in the management of environmental hazard for students' safety in senior secondary schools in Rivers State. The data showed that the respondents indicated that administrators communicate regularly with teachers and staff about ongoing infrastructure maintenance and upgrades with a mean score of (2.59), The school infrastructure is designed to withstand potential environmental hazards (2.9) administrators collaborate with local authorities to ensure infrastructure compliance with safety standards (2.53), The school has a system for assessing the impact of infrastructure upgrades on student safety (2.76) and there is a designated team responsible for overseeing infrastructure maintenance and upgrades (2.61). The grand mean value of (2.68) shows that majority of the respondents agreed to a high extent that infrastructure maintenance and upgrades enhance management of environmental hazard for students' safety in senior secondary schools in Rivers

Research Question 3: To what extent do administrators use emergency response strategy in the management of environmental hazard for students' safety in senior secondary schools in Rivers State?

Table 3: Mean ratings and standard deviation of Principals' and Teachers on the extent administrators use emergency response strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State

S/N	Extent administrators use emergency response strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State	Principals' (n = 76)		Teachers' (n = 615)		Mean set (x ₁ +x ₂)	Remarks
		\bar{X}_1	SD ₁	\bar{X}_2	SD ₂		
11	There are established communication protocols for disseminating emergency information to teachers, students, and parents	2.61	1.13	2.71	1.18	2.66	High Extent
12	Administrators conduct regular drills and simulations based on the emergency response strategy	2.84	1.03	2.63	1.02	2.74	High Extent
13	The emergency response strategy considers the unique geographical and environmental characteristics of Rivers State	2.58	1.09	2.64	1.08	2.61	High Extent
14	Administrators involve relevant stakeholders in the development and evaluation of the emergency response strategy.	2.81	1.06	2.80	1.14	2.81	High Extent
15	The emergency response strategy includes provisions for students with special needs during crises	2.84	1.02	2.78	1.06	2.81	High Extent
Average Mean/Standard Deviation		2.74	1.02	2.71	1.08	2.73	High Extent

Data on table 3 show the mean ratings and standard deviation of Principals' and Teachers on the extent administrators use emergency response strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State. The data showed that the respondents indicated that there are established communication protocols for disseminating emergency information to teachers, students, and parents with a mean score of (2.66), Administrators conduct regular drills and simulations based on the emergency response strategy (2.74), The emergency response strategy considers the unique geographical and environmental characteristics of Rivers State (2.61), Administrators involve relevant stakeholders in the development and evaluation of the emergency response strategy (2.81), and The emergency response strategy includes provisions for students with special needs during crises (2.81). The grand mean value of (2.73) shows that majority of the respondents agreed to a high extent that administrators use emergency response strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State.

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

HO₁: There is no significant difference between the mean responses of principals and teachers on the extent administrators use risk assessment strategy in the management of environmental hazard for students' safety in senior secondary schools in Rivers State.

Table 4: Independent Sample t-test on the extent administrators use risk assessment strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State

	N	\bar{x}	SD	df	t-cal	t-crit.	Sig. level	Decision
Principals	76	3.42	0.19	689	0.00	1.96	0.05	Not Significant
Teachers	615	3.41	0.19					
Total	691							

Table 4 shows that the calculated t-value of 0 is less than the critical table value of 1.96 at a degree of freedom of 689. Since calculated table value 0.00 is less than the critical table value of 1.96, the null hypothesis is therefore upheld and concludes that there is no significant difference between the opinions of principals and teachers on the extent administrators use risk assessment strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State.

HO₂: There is no significant difference between the mean responses of principals and teachers on the extent administrators use infrastructure maintenance and upgrades in the management of environmental hazard for students' safety in senior secondary schools in Rivers State.

Table 5: Independent Sample t-test on the extent infrastructure maintenance and upgrades in the management of environmental hazard for students' safety in senior secondary schools in Rivers State

	N	\bar{x}	SD	df	t-cal	t-crit.	Sig. level	Decision
Principals	76	3.09	0.17	689	0.09	1.96	0.05	Not Significant
Teachers	615	3.33	0.17					
Total	691							

Table 5 shows that the calculated t-value of 0.09 is less than the critical table value of 1.96 at a degree of freedom of 689. Since calculated table value (0.09) is less than the critical table value of 1.96, the null hypothesis is therefore accepted and concludes that there is no significant difference between the opinions of principals and teachers on the extent infrastructure maintenance and upgrades play in the overall effectiveness of administrators' strategies for students' safety in senior secondary schools in Rivers State.

HO₃: There is no significant difference between the mean responses of principals and teachers on the extent administrators use emergency response strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State

Table 6: Independent Sample t-test on the extent administrators use emergency response strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State

	N	\bar{x}	SD	df	t-cal	t-crit.	Sig. level	Decision
Principals	76	2.87	1.87	689	0.04	1.96	0.05	Not Significant
Teachers	615	2.73	1.07					
Total	691							

Table 6 shows that the calculated t-value of 0.04 is less than the critical table value of 1.96 at a degree of freedom of 689. Since calculated table value (0.04) is less than the critical table value of 1.96, the null hypothesis is therefore accepted and concludes that there is no significant difference between the opinions of principals and teachers on the extent administrators use emergency response strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State

DISCUSSION OF FINDINGS

Extent administrators use risk assessment strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State

Data on table 1 show the mean ratings and standard deviation of Principals' and Teachers on the extent administrators use risk assessment strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State. The data in table 1 showed that the respondents indicated that the school has a documented risk assessment strategy for managing environmental hazards with a mean score of (3.23), The risk assessment strategy includes a comprehensive identification of potential environmental hazards (3.74), There are established procedures for communicating risk assessment findings to students (3.18), Administrators allocate sufficient resources to implement the risk assessment strategy effectively (3.19) and Administrators conduct periodic training sessions for teachers on responding to environmental hazards (3.16). The grand mean value of (3.3) shows that majority of the respondents agreed to a high extent that administrators use risk assessment strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State. The calculated t-value of 0 is less than the critical table value of 1.96 at a degree of freedom of 689. Since calculated table value 0.00 is less than the critical table value of 1.96, the null hypothesis is therefore upheld and concludes that there is no significant difference between the opinions of principals and teachers on the extent administrators use risk assessment strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State

The findings agreed with Adegoke et al. (2020) indicating that the risk assessment process goes beyond a mere formality and involves a thorough examination of various hazards that could impact student safety within the school (Nwachukwu & Umar, 2021). emphasized the importance of effective communication in ensuring that students are well-informed about potential hazards and are aware of the necessary safety measures. The finding further aligns with the proactive nature of the risk assessment process as (Onyekachi et al., 2018) emphasized the commitment to ensuring that school staff is well-prepared and equipped to handle potential risks.

Extent infrastructure maintenance and upgrades in the management of environmental hazard for students' safety in senior secondary schools in Rivers State.

Data on table 2 show the mean ratings and standard deviation of Principals' and Teachers on the extent infrastructure maintenance and upgrades in the management of environmental hazard for students' safety in senior secondary schools in Rivers State. The data showed that the respondents indicated that Administrators communicate regularly with teachers and staff about ongoing infrastructure maintenance and upgrades with a mean score of (2.59), The school infrastructure is designed to withstand potential environmental hazards (2.9) Administrators collaborate with local authorities to ensure infrastructure compliance with safety standards (2.53), The school has a system for assessing the impact of infrastructure upgrades on student safety (2.76) and there is a designated team responsible for overseeing infrastructure maintenance and upgrades (2.61). The grand mean value of (2.68) shows that majority of the respondents agreed to a high extent that infrastructure maintenance and upgrades play in the overall effectiveness of administrators' strategies for students' safety in senior secondary schools in Rivers State. The calculated t-value of 0.09 is less than the critical table value of 1.96 at a degree of freedom of 689. Since calculated table value (0.09) is less than the critical table value of 1.96, the null hypothesis is therefore accepted and concludes that there is no significant difference between the opinions of principals and teachers on the extent infrastructure maintenance and upgrades play in the overall effectiveness of administrators' strategies for students' safety in senior secondary schools in Rivers State. Okonkwo (2019) agreed with this finding that there is a need for upgrades in school infrastructure based on identified safety needs which suggests a strategic approach to enhancing safety through infrastructure improvements. The data also indicated a positive perception that administrators consider the environmental resilience of infrastructure in upgrade decisions (Okafor, 2019). This finding highlights an awareness of the need to align infrastructure upgrades with the unique environmental challenges faced by schools in Rivers State.

Extent administrators use emergency response strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State

Data on table 3 show the mean ratings and standard deviation of Principals' and Teachers on the extent administrators use emergency response strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State. The data showed that the respondents indicated that there are established communication protocols for disseminating emergency information to teachers, students, and parents with a mean score of (2.66), Administrators conduct regular drills and simulations based on the emergency response strategy (2.74), The emergency response strategy considers the unique geographical and environmental characteristics of Rivers State (2.61), Administrators involve relevant stakeholders in the development and evaluation of the emergency response strategy (2.81), and The emergency response strategy includes provisions for students with special needs during crises (2.81). The grand mean value of (2.73) shows that majority of the respondents agreed to a high extent that administrators use emergency response strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State. The calculated t-value of 0.04 is less than the critical table value of 1.96 at a degree of freedom of 689. Since calculated table value (0.04) is less than the critical table value of 1.96, the null hypothesis is therefore accepted and

concludes that there is no significant difference between the opinions of principals and teachers on the extent administrators use emergency response strategy in the management of environmental hazard for student safety in senior secondary schools in Rivers State

The data revealed a favorable view (mean score of 3.28) regarding established communication protocols for disseminating emergency information to students, emphasizing the significance of timely and effective communication in crisis situations (Adegoke et al., 2020). Respondents expressed a positive perception (mean score of 3.37) that administrators conduct regular drills and simulations based on the emergency response strategy (Owan, 2012). This indicates a commitment to ensuring that both students and staff are well-prepared and trained to respond effectively during actual emergencies.

CONCLUSION

The study on Administrator's Environmental Hazards Management Strategies for Student Safety in Senior Secondary Schools in Rivers State sheds light on the proactive measures taken by school administrators to ensure the safety of students amidst environmental hazards. The findings indicate a positive perception among both Principals and Teachers regarding the implementation of risk assessment strategies, the role of infrastructure maintenance and upgrades, and the use of emergency response strategies. The documented risk assessment strategies reveal a foundational framework for identifying and mitigating potential environmental hazards. Infrastructure maintenance and upgrades play a crucial role in enhancing overall safety, emphasizing the importance of continual investment and strategic planning in school facilities. The positive perceptions among administrators and teaching staff provide a strong foundation for further improvements in safety protocols and emergency preparedness. This study contributes valuable insights that can inform future policies and practices aimed at strengthening the resilience of senior secondary schools in Rivers State against environmental hazards.

Recommendations

Based on the findings of the study, the followings recommendations were made:

- Government Regulatory Bodies should mandate periodic assessments and audits of risk assessment strategies in schools.
- School administrators should establish dedicated facility management teams within schools to oversee routine inspections, maintenance, and upgrades of infrastructure.
- Schools administrators should collaborate closely with local emergency services such as fire departments, police, and medical services to ensure alignment of school emergency response strategies.

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