IMPACT OF PLACE-BASED LEARNING ON THE KNOWLEDGE AND ATTITUDES OF FIRE SAFETY AMONG STUDENTS

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A PROJECT SUBMITTED TO THE DEPARTMENT OF HEALTH, SAFETY AND ENVIRONMENT, FACULTY OF EDUCATION, UNIVERSITY OF BENIN, BENIN CITY. IN PARTIAL FULFILMENT OF THE REQUIREMENT OF THE AWARD OF THW BACHELOR OF SCIENCE B.Sc. (Ed) DEGREE IN ENVIRONMENTAL EDUCATION.

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CERTIFICATION

We the undersigned names hereby certify that this project work was carried out by **Ejiroghene Favour OGHENEKARO** with the matriculation number **EDU2005954**, in the department of Educational Management, Faculty of Education, University of Benin, Benin City, Edo State, Nigeria. In partial fulfilment of the requirements for the award of a bachelor of science B.sc(ED) degree in Environmental Education.

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DEDICATION

The research work is dedicated to God Almighty from whom alone I drew strength, courage and inspiration needed to complete this program

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ABSTRACT

This study investigated the impact of place-based learning (PBL) on the knowledge and attitudes of students toward fire safety in the University of Benin. The research employed a quasi-experimental design involving two groups: an experimental group exposed to place-based learning and a control group that received traditional instruction. A structured questionnaire was used to assess students' knowledge and attitudes toward fire safety before and after the intervention. Data were analyzed using descriptive statistics and inferential tests, including independent sample t-tests.

Findings revealed a statistically significant improvement in the knowledge scores of students in the experimental group compared to their counterparts in the control group, indicating that PBL positively influences students' understanding of fire safety concepts. However, no statistically significant difference was observed in the attitude scores between the two groups, suggesting that the PBL intervention did not have a measurable effect on students' attitudes within the study's timeframe.

The study concludes that while place-based learning is an effective method for enhancing students' knowledge of fire safety, more sustained or emotionally engaging interventions may be required to bring about meaningful changes in attitudes. It is recommended that fire safety education in higher institutions integrate experiential and context-specific learning strategies to foster both cognitive and behavioral development in students.

Keywords: Place-based learning, fire safety, knowledge, attitude, university students, experiential learning, safety education.

CHAPTER ONE

INTRODUCTION

Background to the Study

Fire is one of the essential elements which provide us heat and light. Fire in its most common form, has the potential to result in conflagration, which can lead to physical damage, which can be permanent through burning (Helmenstine & Anne Marie, 2009). It is widely accepted that fire is one of the greatest threats not only to building occupants but also to building fabrics and contents (Salleh & Ahmad, 2009). Fire disasters occur throughout the world resulting in injuries, numerous deaths and substantial damage to homes and businesses (World Fire Statistics Bulletin, 2012). The most destructive incidents that have resulted in loss of life and property involve fire disasters in secondary schools and tertiary institutions (Xin & Huang, 2013). Fire outbreaks have also been reported in some academic environments in Nigeria and other African countries. In Nigeria, several academic environments have also been reported to be engulfed by fire in the past. Recent situations are buildings at Redeemers University, Ede, Osun State; UNN located in Enugu State and Nile University situated in the Country's capital city, Abuja (Sholanke, 2019). Many of these incidents have said to have occurred due to lack of fire safety knowledge among students and residents.

Babatunde et al (2020) defined fire safety as all the procedures involved in preventing, detecting and controlling a fire before it causes any disaster. The knowledge of fire safety is important especially among students as it equips them with the necessary knowledge and skills in preventing and responding to fire incidents even outside the walls of the school. According to Monk (2011), prevention through education is the single, most modifiable strategy that fire services organization can adopt to reduce the risk of fire to children. Fire safety education programs are implemented around the world to improve children's fire safety knowledge and skills (Kendrick et al. 2007; Satyen, Barnett & Sosa 2004).

The basic knowledge of fire safety mainly includes identification of inflammable and explosive dangerous goods, inspection of fire hazards, fire development and spread mechanism, firefighting methods, use of fire extinguishers, initial firefighting, organization of evacuation - self-help and mutual aid (Chen, 2020). The basic knowledge of fire safety just discussed all deal with practical interaction of the subject with students. The conventional fire safety education programs focus on delivering factual information through lectures, instructional videos and fire drills and this method often lacks engagement and fails to instill lasting knowledge and behavioral change in students. This challenge is necessary for the exploration of innovative teaching strategies that encourages positive learning and also influences the behaviors and attitudes of students. One of such approach is Place-based learning.

Place-based learning is a pedagogical approach that emphasizes the connection between a learning process and the physical place in which the teachers and students are located (Yemini, 2023). The integration of place-based education in fire safety can provide students with practical knowledge on how to use and operate firefighting equipment such as fire extinguishers, fire alarms, fire hydrant and hydrant system that have been installed in their immediate environment. By actively engaging students in identifying fire hazards and carrying out fire safety measures in their immediate surroundings, place-based education can transform fire safety concept from theoretical knowledge to practical knowledge that students can apply in their daily lives.

This study investigates the impact of place-based education on students' knowledge and attitudes towards fire safety, in a bid to enhance understanding and enable effective behaviour in a case of an emergency.

Statement of the Problem

Fire safety for residential students is a concern to campus housing administrators, campus environmental health and safety professionals, local fire departments and parents (Griffin, 2011). Adolescent fire starting is a major issue defined by a lack of knowledge and education around fire prevention and safety (Hwang, 2008). A study by the Fire Disaster Prevention and Safety Awareness Association of Nigeria(FDPSAAN) revealed that there is significant low level of awareness on fire safety in Nigeria. About 20% of 140million people in the country have basic fire safety knowledge while 80% lack such knowledge

(Fire Disaster Prevention and Safety Awareness Association of Nigeria, 2008). In spite of the fire safety education programs available, it is unclear why reports indicate a lack of safety knowledge.

The traditional fire safety education programs exemplify an instructional strategy that is built on knowledge. Although this approach to instruction enhances knowledge, it is disconnected from students' everyday learning experiences and real-world situations. Students are subjected to a state of lack of activity and are deprived of the chance to engage and contribute. This approach has led to the failure among students to retain essential fire safety knowledge and adopt proactive attitudes towards fire prevention and emergency preparedness.

The problem this study seeks to address is the lack of effective and practical fire safety education strategies that can bridge the gap between knowledge and behavior. It seeks to study place-based education as a more interactive approach that can impact the knowledge and attitudes of students on fire safety.

Research Questions

1. Does place-based learning impact on students' knowledge of fire safety?
2. Does place-based learning impact on students' attitudes on fire safety?

Research Hypotheses

Based on the research questions, the following hypotheses were formulated;

1. Place-based learning does not significantly impact students' knowledge of fire safety
2. Place-based learning does significantly impacts student’s attitudes on fire safety

Purpose of Study

The main purpose of this study is to investigate the effectiveness of place-based learning in improving fire safety knowledge and attitudes among students.

Specifically, this study seeks to;

1. Evaluate the impact of place-based learning on students' attitude towards fire prevention and emergency preparedness.
2. Investigate the extent to which place-based learning improves students' understanding and retention of fire safety concepts.
3. Compare the outcomes of place-based learning with those of traditional fire safety education methods.

Significance of Study

The findings of this study will be beneficial to educators, school administrators and policymakers in providing valuable insights to improving fire safety education for students by making the lessons more practical, engaging and impactful thereby enhancing

not only knowledge but also causing behavioral change. If place-based education is found to be effective, it could enhance teaching in other areas of safety education.

Scope and Delimitation of the Study

This study will be conducted in the University of Benin, Edo state, involving both male and female students in the various faculties in the institution. The study will be delimited to fire safety education and will not address other forms of safety education although related findings may provide wider implications.

Definition of Terms

1. Place-based Learning: is a pedagogical approach that emphasizes hands-on, experimental and practical learning experiences that take place in the students' immediate environment, connecting academic content to the real world.
2. Fire Safety: refers to all the procedures involved in preventing, detecting and controlling a fire before it causes any disaster (Babatunde et al.)
3. Knowledge and Attitudes on Fire Safety: refers to students' understanding, perception and sense of responsibility for fire prevention and emergency preparedness.
4. Traditional Fire Safety education: refers to the conventional methods of teaching fire safety, that does not involve practical learning, typically delivered through lectures, instructional videos and fire drills.

CHAPTER TWO

LITERATURE REVIEW

The literature review is discussed under the following sub-headings;

- Concept of Place-Based Learning (PBE)
- Theoretical Foundations for Place-Based Learning
- Concepts of Situated Learning Model
- The Concept of Fire Safety
- Definition of fire
- Classes of fire
- Stages of fire
- Knowledge of Fire Safety Among Students
- Factors Influencing Fire Safety Knowledge and Attitudes
- Impact of Place Based Learning On Students Knowledge and Attitudes

Concept of Place-Based Learning (PBE)

Place-based learning is a pedagogical approach that emphasizes the connection between a learning process and the physical place in which teachers and students are located (Yemini, 2023). As defined by Elfer (2011), Place-based education is an educational approach that uses places and resources as a basis for cross-disciplinary learning. PBE is an umbrella term for pedagogical practices that prioritize experiential, community-based

and contextual/ecological learning to cultivate greater connectivity to local contexts, cultures and environment (Gruenewald, 2003). The priorities of PBE generally centre around active learning modalities to create a greater attachment to local communities and context, while allowing students to become proactive investigators of the multiple environments- cultural, ecological, social, political, economic- in which they both learn and live (Nichols, 2016).

Traditional education often fails to bridge the gap between students and their environment, focusing primarily on classroom-based instruction. Place-based education helps to bridge this gap by actively engaging students in a way that integrates theoretical knowledge with real-world experiences. Emphasizing real-life experiences, increases academic achievement, helps students' appreciation for the natural world and creates an improved commitment to serving as active, contributing citizens (Sobel, 2004).

Place-based learning can happen anywhere and anytime, even virtually. With the limitations that teachers often feel when trying to organize traditional field trips- such as time, permission and budget- virtual field trips offer an opportunity to take learners outside the classroom and deliver content and media to mobilize devices by providing location sensors through GPS and WLAN (Zimmerman, 2014).

Theoretical Foundations for Place-Based Learning

Theoretical framework for Place-based education is rooted in Situated Learning Theory. Situated learning theory (Lave, 1988; Brown et al. 1989; Lave and Wenger, 1991) holds that all learning is a function of the sociocultural or environmental context in which it occurs and thus knowledge and skills are most effectively taught in settings through activities that authentically involve or engage such knowledge and skills. Place-Based learning is an example of a Situated learning method. Situated learning theory emphasizes the importance of learning within authentic contexts where individuals engage in meaningful interaction with one's environment.

Situated learning theory was first proposed by Jean Lave and Etienne Wenger and follows the work of Dewey, Vygotsky and others who claim that students are more inclined to learn by actively participating in the learning experiences. From educational point of view, the core idea behind the different uses of this term is to create a situational context for learning that strongly resembles possible application situations in order to assure that the learning experiences foster 'real-life' problem solving. Learning is, therefore, characterized by practice theory as social, occurring through participation and the continually evolving relations between people, action and the world.

Concepts of Situated Learning Model

a) Learning: the skills and knowledge gained as a result of participating in a community of practice.
b) The Context: the environment within which the situated aspect of learning occurs

c) Novice: the learner and new comer in the community of practice who will learn from the experts
d) Experts: the set of individuals who know about the subject learned.
e) Interaction: involving a social community that replicates real-world situations.
f) Community of practice: a group where learners create, interpret, reflect and form meanings(constructs)

Zheng (2010) compared situated and traditional learning and found a positive correlation between situated learning and learner's performance. Catalono(2015) explored the efficacy of situated learning to facilitate the transfer of knowledge from an instructional situation to its application in environments outside the classroom. Their findings suggest that learning based in situated environments transfer more frequently and provides usable knowledge to real-world contexts.

The Concept of Fire Safety

The concept of fire safety refers to a set of precautions, procedures and measures taken to prevent fires, minimize the risk of fire-related accidents and ensure the safety of individuals and property in the event of a fire (Patricia, 2025). Fire safety measures include those that are intended to prevent ignition of an uncontrolled fire, and those that are used to limit the development and effects of a fire after it starts. They also include those that are planned during the construction of a building or implemented in structures that are already standing and those that are taught to occupants of the building. The basic

knowledge of fire safety mainly includes identification of inflammable and explosive dangerous goods, inspection of fire hazards, fire development and spread mechanism, firefighting methods, use of fire extinguishers, initial firefighting, organization of evacuation -self-help and mutual aid (Chen, 2020). Fire safety education aims to equip individuals, particularly students with the knowledge and skills to prevent and respond to fire-related incidents.

Definition of a Fire

Fire is a spontaneous chemical process of combustion that causes rapid oxidation of any substance, generating light, heat and a variety of reaction production (Martin, 2019). For a fire to occur, 4 variables must be in place, they are- oxygen, heat, fuel and chain reaction. These 4 variables represent the fire tetrahedron. Effective fire safety management controls the variables that affect a fire. In the presence of these variables, fire is self- sustaining. Removal of one of these variables will result in the fire being extinguished.

Oxygen: The atmosphere contains approximately 21% oxygen by volume. During combustion, the oxygen necessary for oxidation is sufficiently provided from the surrounding air.

Fuel: Fuel is the propagating element of fire. It is a combustible solid, liquid or gas. The type of fuel present can significantly affect the fire's temperature, speed and overall

behavior. Common types of solid fuels include paper, wood, coal, cloth. Flammable and combustible liquids include gasoline, fuel oil, paint and kerosene. Flammable gases include natural gases, acetylene and propane.

Heat: Heat is the element used to start a fire, maintain and increase it's spread. A heat source is necessary for ignition to occur.

Chemical chain reaction: The chain reaction are a product of the combustion process. The chain reaction makes the burning process self-sustaining. The chemical reactions ultimately produce byproducts such as carbon monoxide, carbon dioxide and carbon.

Classes of Fire

Fire is classified into 5 general classes based on the type of fuel consumed and the agents used in extinguishment. The different types of fire extinguishers include water extinguisher, foam extinguisher, dry chemical powder, wet chemical powder, carbon dioxide extinguisher.

1 Class A fires involve ordinary combustibles such as wood, paper, cloth, rubber, and some plastics. Water is usually the best extinguishing agent.

2 Class B fires involve flammable and combustible liquids and gases such as gasoline, oil, paints alcohols, and grease. Common extinguishing agents include foam, carbon dioxide, and dry chemicals.

3 Class C fires involve energized electrical equipment. Electrical equipment such as circuits, transformers, wires and motors. Dry chemicals and inert gases are the most effective extinguishing agents.

4 Class D fires involve combustible metals such as magnesium, sodium, titanium, powdered aluminum, potassium, and zirconium. Class D fires require specialized dry chemical extinguishers.

5 Class K fires most often occur where cooking media (fats, oils, and greases) are used mostly commercial kitchens. Wet chemical extinguishers are required in any location that cooks oils, grease, or animal fat.

STAGES OF FIRE

1 Incipient Stage(Ignition Stage): This is the initial stage of a fire. In this stage combustion has begun when heat is applied to a fuel source causing it to reach it's ignition temperature. The fire is small and contained at this stage. The products of combustion that are released during this stage normally include water vapor, carbon dioxide and carbon monoxide.

2 Free-burning Stage(Growth Stage): This stage follows the incipient stage. At this point the self- sustained chemical reaction is intensifying. The fire grows in size as more fuel is consumed and more heat is generated. This is the stage where the fire starts to pose a greater risk to people and property.

3 Smoldering Stage: This stage follows the growth stage. As the free-burning fire continues to burn, the chemical reaction will eventually consume all the available oxygen within the compartment and ultimately convert it into carbon monoxide and carbon dioxide. A smoldering fire is characterized by sufficient amounts of fuel at lower oxygen concentrations. During the smoldering stage, an extreme hazard called a backdraft can develop. A backdraft occurs when oxygen is introduced into a smoldering compartment fire. A backdraft can be so violent that an explosion can occur.

FIRE PREVENTION AND PROTECTION: Fire prevention refers to the strategies and measures designed to reduce the risk of fire incidents while fire protection are strategies designed to mitigate the impact of fires when they occur.

FIRE FIGHTING EQUIPMENTS are fire protection devices used by firefighters to suppress and extinguish fires. They include, fire extinguishers, fire blankets, sprinklers, fire hose reel, fire hoses, fire hydrants, smoke alarms, fire buckets, fire hose, fire suit, fire cabinet.

FIRE HAZARDS: Threats to fire safety are commonly referred to as fire hazards. A fire hazard may include a situation that increases the likelihood of a fire or may impede escape in the event of fire. Fire hazards to look out for include electrical hazards (faulty wiring, overloaded circuits, damaged electrical cords and malfunctioning electrical equipment), flammable liquids and chemicals, open flames (unattended candles, incense), flammable materials and flammable gases.

EMERGENCY EVACUATION refers to the organized and timely escape of people from a hazardous or potentially dangerous environment to a safe area. The sequence of an evacuation is in the following phases: detection, decision, alarm, reaction, movement to an area of refuge, transportation.

Place Based Learning and Fire Safety

School-based fire safety programs are implemented around the world to improve children's fire safety knowledge and skills (Kendrick, 2007). Research shows that Place-based education fosters students' connection to place and creates vibrant partnership between schools and communities as well as boosting student achievement and improving environmental, social and economic vitality (Cruz, 2018). Place-based education naturally produces critical thinking and problem-solving skills by exploring and tackling local issues across subject areas. Through hands-on, experiential learning, place-based learning empowers students to actively engage with their surroundings, strengthening a deeper understanding of real-world issues (Mclnerney, 2011). Unlike traditional classrooms where students passively receive information, in place-based education models, students actively generate and create knowledge (Yemini, 2023).

Through place-based learning, fire safety concepts can be cultivated in students, enabling them to establish proper perception of incidents, for instance, conducting fire drills, visiting fire stations, making use of fire extinguishers, identifying fire hazards or engaging with local fire safety concepts into a more relatable context. Research by

Adegoke (2015) found that students who participated in hands-on activities like fire drills, demonstrations and fire extinguisher training had better retention of fire safety knowledge compared to those who only learned through textbooks or lectures. Reviews have shown place-based education leads to outcomes such as connection to the environment, improved environmental values and the likelihood of taking environmental action (Semkem, 2017).

KNOWLEDGE OF FIRE SAFETY AMONG STUDENTS

Knowledge of fire safety among students refers to the level of understanding students have regarding fire prevention measures, proper action to take in case of a fire, and the potential dangers associated with fire including identifying fire hazards and knowing escape routes within the environment. Students' awareness of fire safety, fire knowledge level, attitude and behavior towards fire safety directly affect the fire safety of college campus (M. Kobes, 2010). A considerable body of research has assessed students' awareness of fire safety often revealing gaps in understanding. According to research statistics, more that 80% of the fires are caused by weak awareness, lack of common sense and illegal operation (Zhang, 2014). Adolescent fire starting is a major issue defined by a lack of knowledge and education around fire prevention and safety (Hwang, 2006).

Adeloye (2016) found that while students understood the basic concepts of fire (such as flames and heat), they lacked deeper understanding about fire prevention and risks like

electrical fires or the dangers of inflammable materials. In a study by Massawe (2016), students demonstrated limited knowledge about basic fire safety measures such as how to operate fire extinguishers, the significance of smoke alarms and the importance of regular fire drills. Liu et al (2020) found that most students have basic understanding of fire safety but often lack knowledge of specific protocols such as evacuation routes, the use of fire extinguishers or the importance of fire drills. Bureau (2017) found that while students typically know how to "stop, drop and roll" in case of a fire, they struggle with more complex fire safety concepts such as identifying fire hazards in different environments. A study conducted in the UK by Sullman (2019) revealed that university students although more mature, exhibited a lack of detailed knowledge about fire safety with many unaware of the correct actions to take during a fire emergency.

Research has shown that many students lack knowledge of fire safety which has led to the cause of many fire accidents around the world.

FACTORS INFLUENCING FIRE SAFETY KNOWLEDGE AND ATTITUDES

Various factors such as age, demographics, access to fire safety education programs, media, method of delivery in fire safety education, community regulations and enforcement can affect fire safety knowledge and attitudes. Barros (2016) identified that students from urban areas often demonstrate a better understanding of fire safety compared to those from rural areas. Urban schools tend to have more structured fire safety programs, while rural schools may not have as many resources or dedicated safety

training. The study also found age as a determinant of fire safety knowledge as younger students were more likely to remember fire safety knowledge unlike older students, especially university students who demonstrated a more theoretical understanding than practical knowledge.

Media exposure influence fire safety knowledge and attitudes. While media can sometimes portray safety risks and disasters in a dramatic and sensationalized manner, it can also be a source of valuable information about fire prevention(David et al. 2016). The method of delivery is also an important factor in knowledge retention. A study by Nair et al. (2021) suggested that hands-on activities, like fire drills or practical training with fire extinguishers, are more effective in imparting fire safety knowledge compared to classroom-based lessons. Interactive methods, such as virtual simulations or gamified training, have also shown promise in engaging students and improving retention of fire safety knowledge.

IMPACT OF PLACE BASED LEARNING ON STUDENTS KNOWLEDGE AND ATTITUDES

Literature has shown that place based learning has impacted students' knowledge and attitudes better than traditional classroom approach. When students engage with their local environment, they develop a deeper and more integrated understanding of various

subjects. Students experiences can shape and are shaped by place (Sun & Maliki, 2015). Place-based education empowers students to tackle complex environmental challenges by bridging theory and practice. Engaging in real-world problem-solving scenarios fosters critical thinking, creativity, and the application of knowledge (Sobel, 2004)

Place based education enhances knowledge retention. Grueneweld (2003) found out that students who learned about geography through field trips and local projects were able to retain and apply geographic knowledge more effectively than students who only studied theoretical content in a classroom. When students participate in a learning experience, they are more likely to remember information. Sobel (2004) demonstrated that students who engaged in place based environmental education programs gained greater knowledge about ecosystems compared to those who studied environmental issues in a traditional classroom setting. According to Barron & Darring-Hammond (2008), place based learning increased students' motivation and engagement, as students could see the relevance of their studies in a real-world.

The core idea of place-based learning is to create a situational context for learning that strongly resembles possible application situations in order to assure that the learning on experiences foster real-life problem solving. Against this background, traditional school learning is criticized because it creates context for learning that strongly differ from real-life application contexts

CHAPTER THREE

METHODOLOGY

The methods and procedures used in this study are outlined as follows

- Research design
- Population of the study
- Sample and sampling technique
- Research instrument
- Validity of the instrument
- Reliability of the instrument
- Method of data collection
- Method of data analysis

Research Design

The quasi experimental research design was adopted for this study. The research design is appropriate to investigate the knowledge of fire safety among undergraduate students in the University of Benin. The quasi-experimental design is use to show the cause-and-

effect relationship that exists among variables, that is the independent (manipulated) and dependent (resultant) variable. It gives insights and direction into the effectiveness of the interventions or policies, as well as help researchers understands the impact of certain variables on outcome. In this, research, the quasi-experimental design is suitable because it measures changes in knowledge levels over time and assess the effectiveness of the intervention in improving students' understanding of fire safety.

Quasi Research Design

RI: O1 X O2

R2: O1 O2

Where:

R1: Experimental group

R2: Control Group

O1: Pretest

X: Treatment (Health Education Workshop)

O2: Posttest

Population of the Study

The population of this study consisted of all the students of the University of Benin, while its target population comprises of all 100 level students in the department of health, safety and environmental education (H.S.E), with a total population of 160 students across two course areas, health education and Environmental Education (Department of Health, Safety and Environmental education 2023/2024 session). With a total number of fifty (50) student's undergraduate students evenly collected from 100 students of both course areas.

Sample and Sampling Technique

A purposive sampling technique was adopted for this study. Purposive sampling is a non-probability sampling technique in which researchers purposely select individuals that possesses the specific characteristics or qualities of interest to the study. This method is used to gather in-depth information and explore specific dimensions of a phenomenon. The respondents were categorized into two, the experimental group and the control group. Those who responded in the experimental group category received a treatment (a demonstration) while those under the control group did not receive any treatment. A total of fifty (50) respondents were chosen from both course areas.

The sampling method is best explained in the table below;

Sampling Method

S/N Selected groups

Number of Respondents

1. Experimental group 25

2. Control group 25

3. Total 50

Research Instrument

The Instrument for this study is the questionnaire of 20 items used to elicit information from respondents. The questionnaire will be divided into two sections. Section A covers demographic data of the respondents while section B tests the respondents knowledge about causes and effects of flooding.

Validity of the Instrument

The face and content validity of the research instrument was done by submitting the constructed questionnaire to the project supervisor and two other experts in the Department of Health, Safety and Environmental Education. The appropriate suggestions and corrections were effectively incorporated in the final draft.

Reliability of the Instrument

The test re test method of reliability was used for this study. Firstly, the instrument was administered to 20 respondents who are part of the study and after 2 weeks, the

instrument was again re-administered to the same respondents. Their score will be collated using the Pearson Product Moment Correlation Coefficient.

Method of data collection

The Researcher personally administered the instrument firstly to the Experimental and control group (Pre-test) to test their knowledge of the causes and effects of flooding, after two weeks a workshop was conducted to educate and demonstrate to the respondents (experimental group) about sanitation and hygiene, before administering the second phase of the questionnaire to the experimental group, The control group was also given questionnaire but was excluded from the workshop (post-test). Both phases of the administration of the questionnaire are done in order to elicit firsthand information from the respondents.

Method of Data Analysis

Data collected through the administration of questionnaires was analyzed using descriptive statistics for easy interpretation. Descriptive statistics are brief informational coefficients that summarize a given data set, which can be either a representation of the

entire population or a sample of the population. It involves summarizing, organizing, and presenting data meaningfully and concisely. This enabled the researcher to meaningfully describe independent factors in the study, as well as helping to indicate the number and percentage of respondent rank, and rank variables under this study.

CHAPTER FOUR

PRESENTATION OF RESULT AND DISCUSSION OF FINDINGS

This chapter presents the analysis of data collected for this study. The presentation and analysis was based on the separate consideration of each research question formulated. The following are the results which are shown in tabular forms and discussed.

Hypotheses testing

The following null hypotheses were test at 0.05 level of significance.

Ho1: Place-based learning does not significantly impacts student knowledge of fire safety

Table 1: Independent sample t-test on impact of place based Education on the knowledge towards fire safety among university of Benin students

Group Statistics

	group	N	Mean	Std. Deviation	t	df	Sig.
K	exp	25	7.7000	1.48605	2.89	48	0.00
	control	25	5.9200	2.69134			

The first hypothesis (Ho_1) states that *place-based learning does not significantly impact students' knowledge of fire safety.* However, the results indicate a statistically significant difference between the experimental group (**M = 7.70, SD = 1.49**) and the control group (**M = 5.92, SD = 2.69**), with a **t-value of 2.89** and a **p-value of 0.00**. Since the p-value is less than 0.05, the null hypothesis is rejected. This suggests that place-based learning significantly enhances students' knowledge of fire safety.

Ho2: Place-based learning does not significantly impacts students attitudes on fire safety

Table 2: Impact of place based Education on the attitude towards waste segregation among university of Benin students

Group Statistics

	group	N	Mean	Std. Deviation	t	df	Sig.
A	exp	25	32.4400	2.95917	0.54	48	0.58
	control	25	31.9200	3.74077			

The second hypothesis (Ho_2) states that *place-based learning does not significantly impact students' attitudes toward fire safety.* The results show that the experimental group (**M = 32.44, SD = 2.96**) and the control group (**M = 31.92, SD = 3.74**) have relatively close mean scores, with a **t-value of 0.54** and a **p-value of 0.58**. Since the p-value is greater than 0.05, the null hypothesis is not rejected. This indicates that place-based learning does not have a statistically significant impact on students' attitudes toward fire safety.

Discussion of Findings

The findings of this study aimed at assessing the impact of Place Based Learning on students' knowledge and attitudes towards fire safety revealed mixed results. Statistical analysis comparing the mean scores of the experimental and control groups provided insights into the extent to which Place-based learning influenced students outcomes and how these align with existing research in the field.

The first null hypothesis stated that place-based learning does not significantly impact students' knowledge of fire safety. However, the results showed that students in the experimental group had significantly higher mean scores in knowledge than those in the control group. This led to the rejection of the null hypothesis and suggests that PBL had a positive and statistically significant effect on students' understanding of fire safety.

This finding supports existing literature that emphasizes the cognitive benefits of experiential learning approaches. According to Smith (2002) and Sobel(2004), place-based learning promotes deeper understanding by connecting academic content with real-world experiences relevant to the learners' immediate environment. These connections enhance comprehension and retention, particularly in practical subjects such as safety education.

Similarly, Lieberman and Hoody (1998) observed that when students engage with learning activities rooted in their local context, they are more likely to apply knowledge meaningfully. In the context of fire safety, situating learning within familiar environments—such as the school building, local fire service, or neighborhood—may have made the content more tangible and applicable, thus enhancing knowledge acquisition.

Furthermore, Lim & Calabrese Barton (2006) emphasized the role of student participation and active engagement in knowledge construction, both of which are fundamental principles of PBL. The use of community-based scenarios, role plays, or

field observations likely contributed to the higher knowledge scores observed in the experimental group.

The second null hypothesis proposed that place-based learning does not significantly impact students' attitudes toward fire safety. Unlike the knowledge outcome, the results showed no statistically significant difference in attitude scores between the experimental and control groups. This led to the retention of the null hypothesis, indicating that PBL did not produce a significant shift in students' attitudes within the study timeframe.

While this result may appear to contradict previous studies, it is consistent with the understanding that attitudinal change often requires a longer period and deeper emotional or social engagement. Scholars such as Powers (2004) and Knapp (2005) note that while PBL can promote greater student motivation and personal investment, such outcomes are not always immediately measurable, especially through standardized quantitative instruments.

Moreover, Gruenewald (2003) highlights the importance of emotional relevance, empowerment, and reflection in influencing attitudes. If the PBL experience in this study was relatively short or lacked opportunities for personal reflection and community interaction, it may have been insufficient to produce significant shifts in students' attitudes.

It is also possible that the tools used to measure attitudes were not sensitive enough to capture subtle changes, as noted by Sobel (2010), who argued that traditional assessments may not fully reflect affective learning outcomes associated with PBL.

The findings of this study aligns with the view that Place-based learning is a comprehensive educational model that supports multiple dimensions of learning but its full impact is best realized when implemented over time, with strong emotional, social, and cultural connections to place

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter deals with the conclusion drawn from the analysis, the summary of the study and the various recommendations based on the findings made

Summary

The purpose of this research was to investigate the impact of place-based learning (PBL) on students' knowledge and attitudes toward fire safety among students of the University of Benin. To guide the study, the following research questions were formulated:

1. What is the impact of place-based education on students' knowledge of fire safety?
2. What is the impact of place-based education on students' attitudes toward fire safety?

The objectives and significance of the study were clearly outlined, and key terms relevant to the research were properly defined. In addition, a comprehensive review of related literature was conducted. This included an overview of fire safety education, definitions and importance of fire safety, students' knowledge and attitudes toward fire safety, the role of place-based learning in enhancing safety education, and various educational strategies to promote PBL.

The research methodology covered the research design, target population, sampling procedures, research instrument development, validation and reliability of the instrument, as well as the methods for data collection and analysis. Data collected were presented and analyzed using descriptive and inferential statistics.

From the analysis, the findings revealed that place-based learning had a statistically significant impact on students' knowledge of fire safety. Students in the experimental group, who were exposed to PBL, achieved significantly higher mean scores in knowledge tests than those in the control group. Consequently, the first null hypothesis was rejected, confirming that PBL positively influences fire safety knowledge.

However, results showed no statistically significant difference in the attitudes of students between the experimental and control groups. Thus, the second null hypothesis was retained, suggesting that while PBL improved knowledge, it did not significantly influence students' attitudes toward fire safety during the study period.

Conclusion

In conclusion, this research has provided valuable insights into the role of place-based learning in fire safety education. The findings indicate that PBL can significantly enhance students' understanding and knowledge of fire safety concepts, as demonstrated by the higher performance of the experimental group. This supports the argument that learning situated in real-world, context-specific environments fosters better comprehension of practical safety measures.

However, the lack of significant change in attitudes suggests that attitudinal transformation may require longer-term interventions, deeper emotional engagement, and reflective practices that extend beyond the immediate instructional period.

Overall, this study reaffirms the importance of integrating place-based strategies into fire safety education and encourages further exploration into how such methods can also influence students' behavioral and attitudinal outcomes over time.

Recommendations

Educational institutions, especially at the university level, should incorporate place-based learning(PBL) strategies into safety education programs. Since PBL significantly improved students' knowledge of fire safety, it can be an enhancing practical approach for enhancing practical understanding of safety related topics

Given that the study found no statistically significant impact of place-based learning on students' attitudes toward fire safety, it is recommended that future interventions span a longer duration. Sustained engagement with context-specific learning activities may be more effective in producing enduring attitudinal shifts

Educators should be adequately trained in the design and facilitation of place-based learning experiences.

Suggestions for further Studies

1. Conduct studies over an extended period (e.g., an entire academic year) to assess whether repeated exposure to place-based learning yields significant improvements.

2. Increase the sample size across multiple schools or districts to enhance the external validity and statistical power of the findings.

3. Incorporate qualitative data (interviews, focus groups, classroom observations) to capture the subtler, more complex shifts in student engagement and attitudes that might not emerge in standardized tests.

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APPENDIX

DEPARTMENT OF HEALTH SAFETY AND ENVIRONMENTAL EDUCATION
FACULTY OF EDUCATION,
UNIVERSITY OF BENIN

THE IMPACT OF PLACE BASED EDUCATION ON THE KNOWLEDGE AND ATTITUDES OF FIRE SAFETY AMONG STUDENTS

Dear Respondents,

I am a 400 level undergraduate student of the above department carrying out a study on the Impact of Place Based Education on the Knowledge and attitudes of fire safety among Students.

You are therefore requested to kindly help as much as possible to supply the needed information. Your responses shall be treated with outmost confidence.

Please read the questions carefully and tick [√] in the box provided that corresponds to the answer of your choice. At the right hand column there are options labeled yes or no. Indicate your response to the statements by ticking the appropriate column labeled.

SECTION A: DEMOGRAPHIC

Instruction: Please tick [√] the option that best suits your opinion.

- **Age of the respondents:**

18 - 25 [ ]

26 - 35 [ ]

36 - 45 [ ]

46 and above [ ]

Gender:

Male [ ]

Female [ ]

- **Marital Status:**

Single [ ]

Married [ ]

Divorced [ ]

Widowed [ ]

- **Course area:**

Health Education [ ]

Environmental Education [ ]

SECTION B: RESPONDENTS' RESPONSE

Research Item 1: The Level of Students' Knowledge of Fire Safety

Instruction: Please read the questions carefully and tick appropriately under any of the columns as noted. Do not tick more than one option in a question in this section.

1. Which of the following human activities can contribute to fire hazards in urban environments?

(a) Agricultural practices

(b) Improper waste disposal

(c) Overcrowding in buildings

(d) Afforestation

2. What is one of the major effects of a fire on the local community?

(a) Increased agricultural productivity

(b) Destruction of property and loss of livelihoods

(c) Growth of tourism

(d) Improved transportation infrastructure

3. Which community measure can help prevent the effects of fire hazards?

(a) Ignoring fire safety regulations

(b) Implementing fire drills and awareness programs

(c) Reducing fire exits in buildings

(d) Decreasing the number of fire stations

4. What is a public health concern related to fires?

(a) Increased supply of food

(b) Air pollution and respiratory diseases

(c) Improved sanitation

(d) Better access to healthcare

5. Which of the following is an effect of fire disasters on education in Nigeria?

(a) Increase in school attendance

(b) Closure of schools and disruption of learning

(c) Greater availability of educational materials

(d) Improved educational infrastructure

Research Item 2: The Impact of Place-Based Education on Fire Safety Awareness

Instruction: Please read the questions carefully and tick appropriately under any of the columns as noted. Do not tick more than one option in a question in this section.

Guide:
SA: Strongly Agreed
A: Agreed
D: Disagreed
SD: Strongly Disagreed

	IMPACT OF PLACE BASED EDUCATION ON STUDENTS	**SA**	**A**	**D**	**SD**
6.	Place-based education has improved my understanding and appreciation of fire safety in my community				
7.	Place-based education has helped education has helped me see real-world application of fire safety in my surroundings.				
8.	Place-based education has helped me develop a greater sense of responsibility for fire prevention				
9.	I will seek out opportunity for hands-on learning related to fire safety because of my experiences with place-based education				
10.	Place-based education has increased my motivation and engagement in fire safety activities				

Research Item 3: The Impact of Place-Based Education on the Knowledge of Causes and Effects of Fire Hazards

Instruction: Please read the questions carefully and tick appropriately under any of the

columns as noted. Do not tick more than one option in a question in this section.

11. Which of the following is a common effect of fire hazards in urban environments?
(a) Improved academic performance
(b) Destruction of buildings and infrastructure
(c) Increased community gatherings
(d) Enhanced emergency services

12. How can fire hazards impact students' health?

(a) By improving air quality
(b) By increasing the risk of burns, respiratory issues, and injuries
(c) By providing better public health awareness
(d) By promoting mental well-being

13. What infrastructure issue can increase the risk of fire hazards on campus?
(a) Well-maintained fire exits
(b) Blocked fire exits or inadequate fire suppression systems
(c) Adequate emergency alarms
(d) Sufficient ventilation systems
14. Which group is most likely to be affected by fire hazards on campus?
(a) Faculty members
(b) Administrative staff
(c) Students living in dormitories
(d) Alumni

15. Which of the following measures can help mitigate fire hazards on campus?
(a) Ignoring fire safety regulations

(b) Regular fire drills and awareness programs
(c) Removing fire extinguishers from public spaces

(d) Overcrowding in classrooms and dormitories

APPENDIX II

RELIABILITY REPORT

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.724	15