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Design and Development of a Web Based Platform to Educate Young Learners on Climate Change Certificate of Approval

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Abstract

Climate change is a critical such that it attracts worldwide attention and educating future generations is essential for fostering sustainable behavior. However, some existing educational tools for young learners (ages 3-7) often fail to present these complex topics in an engaging, age-appropriate manner. In Zambia, it is difficult to give concrete examples of web Based platforms that engage young learners with this information. This thesis presents the design and development of a web-based platform that introduces climate change concepts to young learners particularly in Zambia, through interactive, user-friendly methods. The platform includes games, quizzes, videos, and simple educational modules, focusing on key topics such as weather patterns, ecosystems, and human impact.

The study begins by examining existing literature on early childhood education, climate change education, and the integration of technology into learning environments. Using a combination of qualitative and quantitative methods, a baseline study was conducted to understand user needs, preferences, and interactions with primary educational technology. The design phase focused on creating a platform with colorful, touch-friendly navigation and minimal text to enhance user engagement.

According to the findings, the web-based platform effectively engages young students and provides a scalable solution for climate change education in Zambia that can be utilized in both classrooms and homes. With the possibility for additional development and implementation in many provinces and languages, this platform helps meet the growing demand for easily available, interactive digital resources in early primary education.

Since learning will occur and knowledge will be readily available, I must say that the emergence of the digital world provides an advantage.

Furthermore, tutors will benefit since they will be teaching what kids have already seen and experienced, making it simpler for them to understand the concepts. It's also the reality that there is a significant gap in the way adults and children learn. I thought of the notion of having games and films that are interesting so that learning may happen while they are doing it and their attention can be maintained.

Keywords: Demonstrate, Examining, Entertaining

1. Introduction

1.1 Introduction to Climate Change Education for Young Learners IN Zambia

One of the most important environmental problems of our day is climate change, which has far-reaching effects such as increased global temperatures, ice cap melting, an increase in the frequency of extreme weather events, and ecological disruptions. Severe droughts, deforestation, and unpredictable weather patterns are some of Zambia's climate change implications. Every aspect of society must take action to address this global catastrophe, including educating the next generation. Although many adults already understand the importance of environmental sustainability, these ideas must be instilled in children at a young age because they will be the planet's future stewards.

Instilling awareness and understanding of climate change in young learners is critical, as these formative years are a time when habits, values, and perceptions about the world begin to take shape.

However, the complicated nature of the topic of climate change presents a barrier. Young children frequently struggle to understand technical terms and abstract ideas like greenhouse gasses, carbon footprints, and global warming. Furthermore, because they sometimes rely on text-heavy content or ideas better suited for older audiences, standard school materials and teaching methods might not always be appropriate for kids between the ages of three and seven. Because of this, it is crucial to

develop materials that make these subjects understandable while preserving scientific correctness.

The significance and participatory method of addressing this problem are provided by an online learning environment. Through the use of multimedia resources including stories, interactive games, animations, and quizzes, a digital platform may make learning about climate change engaging for young students. Children may interact with the material at their own pace thanks to this format, which improves retention and comprehension. A web-based platform can also be made to be visually appealing and captivating, which is important for sustaining kids' attention spans in this age range. An online climate change education platform can help young students develop a sense of agency and responsibility in addition to providing information.

In conclusion, teaching young children about climate change via a cutting-edge web-based platform provides an efficient answer to the problems presented by conventional teaching approaches. They can do this through interesting activities. Such a platform can create the foundation for a generation of environmentally concerned people who will be crucial in protecting the world for years to come by simplifying and engrossing people in difficult subjects.

Therefore, we would advise the local government to develop measures to regulate this "sector" instead of looking at eliminating street selling. For instance, street vending was recently permitted by the Kitwe Municipal Council after 5 p.m. Establishing a type of "street vending permit" is another use for the laws made possible by the decentralization act. This permit would serve as a tiny tax on street vendors and add to the local government's revenue base. Our goal should never be to satisfy our personal needs and wants; rather, we should live for others and consider how their goals might be aligned with ours (Manju Kedia Shaha, 2012).

1.2 Background

First of all, climate change was initially dismissed as a minor concern. However, as a result, some changes started to occur, but no one paid any attention to them. In any case, I must state right away that two factors, both natural and man-made, can contribute to the same climate change that is the subject of this research. The majority of scientists have emphasized that humans are to blame for it. As machine technology advanced, they started manufacturing, which resulted in the greenhouse effect. I will, however, be able to list some of the human endeavors that might have brought Zambia and the world to where they are today.

As I previously stated, fuels were used to start the factories, and as the machinery ran, carbon dioxide was released into the atmosphere. Although this procedure was common, most were unaware of the results of earlier attempts. Carbon dioxide levels rose as this process spread throughout all of the nations. In actuality, this had such a negative impact on the typical climate change that it got worse. Prior to the realization, things had gotten worse. Following this, scientists realized and found that the impact on human lives was extremely damaging; instead, the message caused alarm on a global scale.

1.3 Problem Statement:

The lack of climate education for young students, especially those in Zambia between the ages of three and seven, persists despite the increased knowledge of climate change and its effects on a worldwide scale. Climate change education materials are either too complicated for the age group they are intended for or inaccessible. Many of the digital platforms that are currently available for environmental education are made for older kids and include material that is too complex for young children to understand.

Young children thus lose out on important early climate change education, which is essential for promoting environmental consciousness and sustainable behaviors early on. The goal of this thesis is to provide a web-based solution that takes into account the three primary categories listed below:

1. Providing interesting, age-appropriate content: There aren't many instructional resources on climate change that are especially designed for young students. There is a gap in fundamental environmental education since current resources frequently fall short in its attempts to make difficult subjects understandable and relatable to younger students.
2. Improve certain conventional teaching strategies with cutting-edge interactive techniques. Despite their value, classroom-based teaching approaches frequently use static resources like lectures or textbooks, which do not fully engage young children. Interactive, experiential learning situations that hold their interest and promote long-term memory are more beneficial to young learners at this early stage of cognitive development.

1.4 Objectives

1.4.1 General Objective: The main objective of this thesis is to design and develop a web-based educational platform that effectively educates young learners (ages 3-7) on climate change through interactive and engaging methods.

1.4.2 Specific Objectives:

1. To develop educational content that simplifies complex climate change concepts for young children.
2. To create an intuitive, child-friendly user interface.
3. To integrate gamification and multimedia to enhance engagement and understanding.
4. To ensure accessibility, with features that accommodate diverse learners (e.g., text-to-speech, animations).

1.5 Motivation and Significance of the Study

Environmental activists, academics, and world leaders have all emphasized the necessity of tackling climate change in recent years. There is increasing agreement that in order to instill in the next generation a feeling of accountability and environmental stewardship, climate change education needs to start early. While a lot of work has gone into teaching adults and older children, younger pupils—those under the age of three—have frequently been excluded from the discussion and their urgent issues have not been given enough thought. However, because these formative years are so important for cognitive and behavioral development, they are also the best times to convey fundamental ideas about environmental sustainability and climate change.

Despite their effectiveness in many educational contexts, traditional classroom methods have proven to be limited in their ability to engage young children with complex subjects like climate change. Young students' brains aren't built to retain large amounts of information or data at once, so they frequently struggle to understand abstract scientific concepts using traditional methods, which typically rely on lecture

methods. But they require something
which can draw their attention in order to accomplish the desired goals. Therefore, the difficulty is to design educational activities that are interesting for this age range, age-appropriate, and informative.
Using the digital tools and platforms that kids are already accustomed to is one of the most promising options. Today's kids are growing up in a very digital world because to the use of gadgets like computers, tablets, and smartphones. Research indicates that kids are using these gadgets more and more for learning, communication, or enjoyment. This offers a special chance to use digital platforms to deliver education in a way that appeals to young students.
By designing a web-based platform focused on climate change, we can engage children in a format that they not only enjoy but are increasingly comfortable with.

1.6 Reseach Questions

1. 1 Do climate change affect even children?
2. How can children be involved in learning about the climate change without problems?
3. What are some of the limitations they have been having in learning and how can they be overcomed?
4. Going forward what are some of the measures put in place to ensure we have a lasting solution

1.7 Theoretical Flame Work

One worldwide issue that mostly impacts children is climate change. This is because they lack the necessary knowledge about it, therefore it becomes extremely difficult for them if no one is available to mentor them. It is still true that there can be no problem without a solution. in that the world in which we live is becoming more and more digitalized almost daily. We can devise ideas that might work for them as well. To put it another way, we can still figure out how to integrate them so they can't fall behind.
I must be quick to point out that kids will even be able to comprehend the steps we can take to ensure our safety once they have complete knowledge, or at least a higher percentage. Additionally, kids will feel more confident because they will know how to look after themselves when we are away. Additionally, as they develop a solid foundation, they will be better equipped to adjust to any new information that may come their way, making them excellent teachers for the next generation.
Additionally, because the measures will expose them to the necessary knowledge, this will also increase their understanding even when they attend school. Teachers will therefore find it easier to understand the concept when they are teaching because they have seen it in action somewhere. Sometimes, because they have even gone through it, it will be simpler. Instead, it will be a kind of validation of what they have been hearing about or witnessing in Zambia or elsewhere.

1.8 Literature Review

Although it employs a greater number of people, street selling is a component of the informal sector, which is primarily found in markets in Zambian towns' expansive metropolises. The working conditions of those employed in this industry have not improved substantially in spite of this. In most markets, the structures that have been established over the years are insufficient to enable businesses to prosper. It is illogical to expect market vendors to keep selling their goods in places that aren't well-drained, endangering both their own and their clients' health. This is undoubtedly one of the causes of the majority of street vendors' forced street sales, or curbside hawking.
According to the 2008 Labor Force Survey (LFS), which is now used to report on business conditions in Zambia, over 90% of Zambians work in the country's unorganized sector. The key subject of this study will be whether or not the informal sector contributes significantly to Zambia's overall economic development, even if the majority of vendors are employed in this sector. After examining the causes and effects of vending, the research has addressed this question and offered suggestions for improving its contribution to the advancement of the country. Education frequently lags behind.
According to Anderson, the main cause of this disparity is the perceived difficulty of subjects like climate change, which are frequently thought to be too abstract for young students to understand. However, studies showing that young toddlers can comprehend and integrate fundamental environmental concepts cast doubt on this premise. For example, research by Chawla (1999) [4] shows that toddlers as early as four or five years old can identify weather and natural patterns, including seasonal changes or animal behaviors, which lays the groundwork for introducing more sophisticated concepts about climate.
The significance of employing kid-friendly, age-appropriate methods for teaching about climate change is also emphasized by UNICEF (2019) [26].
According to the report, children can be effectively introduced to environmental concepts through simple, relatable stories and practical activities like planting trees or sorting recyclables. By placing complicated topics like global warming within the framework of the child's daily experiences, these methods aid in demythologizing them. Palmer and Suggate's (2004) work, which contends that concrete, experience-based learning is crucial for early children, supports this viewpoint. Their findings support the need for real-world, experiential learning opportunities in climate education by indicating that children learn best when they can connect abstract ideas to actions and events in the real world.

Challenges in Educating Young Learners about Climate Change

Even while early environmental education has many advantages, it can be difficult to make difficult scientific subjects like climate change understandable to young students. Since young children are still developing their conceptual and reasoning abilities, it might be challenging for them to fully comprehend the abstract nature of climate change, especially its long-term, worldwide implications. Researchers like Pramling Samuelsson and Kaga (2008) [23] emphasize the value of age-appropriate teaching techniques that can simplify these complicated concepts into digestible chunks. For example, rather than talking about greenhouse gases, teachers can concentrate on more concrete examples, like describing how animals can be harmed by littering or how water conservation keeps rivers clean.
The lack of resources specifically designed for early children climate education is another significant obstacle. Although the amount of research on environmental education is increasing, most of it focuses on adults or older students, leaving a gap in resources and instructional

materials made especially for younger students. Early childhood educators frequently find it difficult to locate resources that simplify these ideas without making them inaccurately simplistic, as Anderson (2012) [1] points out. The fact that many traditional teaching resources, such textbooks or worksheets, lack the captivating, interactive components that are essential for holding young students' attention makes this issue worse.

According to UNICEF (2019) [26] and Chawla (1999) [4], addressing these issues calls for a change in the way that we teach environmental education to young children. Climate change should not be presented as a remote, complicated topic; rather, it should be explained in terms that kids can understand, such how pollution affects their immediate surroundings or how important it is to care for animals. Children are encouraged to perceive themselves as active players in preserving the environment by this method, which also makes the information easier to understand. By incorporating environmental stewardship into routine tasks like recycling, gardening, or water conservation, kids may start forming sustainable living habits early on.

2. Technology and Interactive Learning Tools in Climate Education

Technology integration in early childhood education has the power to change how young students approach difficult subjects like climate change. As digital platforms proliferate in educational settings, they present special chances to develop dynamic, captivating learning experiences that can capture young children's interest and simplify complex ideas. Research by Plowman and Stephen (2013) [21] highlights how interactive media, including games, movies, and cartoons, can encourage youngsters to learn actively. According to their research, active engagement with the subject increases the likelihood that young learners would recall it more than passively absorbing it through conventional lecture-based methods.

Particular benefits are provided by web-based platforms when it comes to teaching about climate change. They make it possible to design vibrant, eye-catching spaces where kids can investigate environmental ideas at their own speed. For example, children can experiment with various behaviors and experience the results of their choices in real time when playing digital games that mimic environmental issues, such recycling tasks or virtual gardens. This supports the conclusions of educational theorists such as Piaget (1964), who maintained that hands-on activities and exploration are the most effective ways for young children to learn. Digital platforms can help young learners understand abstract climate change issues by offering interactive learning possibilities.

Nonetheless, there are certain obstacles to overcome before implementing digital platforms in early childhood education. According to Hatzigianni and Margetts (2012) [9], one issue is that digital content needs to be thoughtfully created to meet the cognitive and developmental requirements of young children. Overly complicated or text-heavy content might overwhelm young learners and lessen the platform's usefulness. As a result, creators of climate education platforms for young children must put an emphasis on simplicity, utilizing interactive features, vivid graphics, and little text to engage kids without being overbearing.

Furthermore, research by Marsh (2004) [14] indicates that adult facilitation is crucial to the success of digital learning aids. Parents or teachers often need to guide children's interactions with digital platforms, helping them make connections between the virtual content and real-world environmental actions.

2.1 Technology in Early Childhood Education

Due in large part to the widespread use of digital devices among younger audiences and the growing awareness of how technology can improve learning, the use of technology in early childhood education has increased dramatically in recent years. Researchers such as Nicolopoulou (2010) and Papert (1993) [18] have demonstrated how digital platforms, which offer immersive, interactive, and engaging learning environments, can effectively assist cognitive growth. These platforms, which might include mobile apps and web-based programs, let kids engage with the curriculum in ways that might not be possible in conventional classroom settings. Early childhood education benefits greatly from this play-learning combination because it helps young students, who frequently find it difficult to grasp abstract concepts like climate change, make them more tangible and intelligible.

This approach is further supported by Papert's (1993) [18] concept of "constructionism," which emphasizes that children learn best when actively participating in interactive, hands-on activities that allow them to construct knowledge. Digital platforms, especially those with multimedia components, provide a secure setting for young learners to try new things, make mistakes, and grow from them. For instance, children can better understand complex subjects like ecosystems and weather patterns by using web-based applications that use animations, sound effects, and vibrant graphics. Nicolopoulou (2010) goes on to say that because young children have short attention spans and a strong demand for involvement, this kind of interactive content is particularly beneficial in this setting.

Applying game-like features—like points, levels, and rewards—to non-gaming environments is known as gamification, and it's one of the best ways to use technology in early childhood education. Gamification has been demonstrated to improve retention, motivation, and engagement in learning environments, especially for younger students. Gamified learning platforms are very good at keeping kids' attention and improving learning results, according to research by Bodnar *et al*. (2016) [2]. Children are taught about sustainability and encouraged to implement these principles in real life through digital games that mimic environmental difficulties, such as sorting recyclables or conserving energy.

Multimedia tools, animations, and interactive tests are essential elements of these platforms. Research indicates that when educational content incorporates a range of stimuli, including music, movies, and vibrant pictures, young children are more likely to interact with it. These multimedia components not only enhance the learning process but also accommodate young children's varied learning preferences. For example, although visual learners would favor animations and films, auditory learners might benefit from the sound effects and music included in digital learning resources. According to Bodnar *et al*. (2016) [2], multimedia components assist young learners build early connections to environmental stewardship by making abstract concepts—like the effects of climate change—more relatable and intelligible.

Despite these benefits, developmentally appropriate technology design is essential in early childhood education. While digital platforms provide many advantages, content needs to be carefully designed to accommodate young children's cognitive capacities (Marsh *et al*., 2015). Children may become disengaged if they are overloaded with information or games that are too complicated. As a result, it's critical to maintain digital content's simplicity, interactivity, and alignment with early childhood learning goals.

In summary, technology is essential to early childhood education because it increases student involvement and makes difficult subjects easier to understand. Digital platforms can give young students an enjoyable and efficient way to learn about climate change and other difficult subjects by combining interactive elements, multimedia tools, and gamification. To successfully include technology into early childhood education, though, developmental appropriateness must be carefully considered, making sure that the material is appropriate for the cognitive and emotional stages of young children.

2.2 Web-Based Platforms for Environmental Education

The introduction of the internet has completely changed how information is shared, especially environmental education. Numerous web-based resources have surfaced in recent years with the express purpose of educating people about sustainability, climate change, and other environmental concerns. Multimedia features like interactive maps, simulations, and quizzes are frequently used on these platforms to increase user engagement and make learning more fun. A thorough investigation into the potential of digital teaching resources to promote environmental awareness was carried out by Nelson and Hines (2016). Their research revealed that web-based platforms can reach a wide audience while providing flexible, self-paced learning opportunities.

These platforms are now indispensable resources for environmental education because of their accessibility. There is an increasing demand for services created especially for young children, even though many web-based platforms serve adults and older students. Early exposure to environmental principles through these platforms can cultivate a lifetime love of the natural world and a sense of duty to the planet. Although programs like PBS's Nature Cat and NASA's Climate Kids provide kid-friendly materials, they frequently fall short in terms of breadth and depth for thorough early learning.

The possibility of scaling web-based platforms to offer ongoing, structured climate education for various age groups was further investigated by Chen *et al*. (2018) [5]. According to their research, we can guarantee that everyone, irrespective of age or background, has access to the knowledge and resources required to become knowledgeable and involved environmental citizens by broadening the scope and depth of these platforms.

2.3 Challenges in Climate Change Education for Young Learners

Even with technology's bright future, there are still a number of obstacles to overcome in the creation and implementation of web-based climate education programs for younger students. According to Boyes *et al*. (2014), one major obstacle is the cognitive burden involved in explaining difficult scientific ideas like climate change. For young children, particularly those aged 3 to 7, it can be challenging to strike a balance between simplicity and crucial scientific correctness.

Furthermore, Moser (2010) highlights how crucial it is to control young children's emotional reactions to climate change-related subjects, such as dread or anxiety. The topic of climate change can be intimidating, so it's critical to provide instructional resources that inform without being overbearing. Storytelling and relatable characters can be especially effective in mitigating emotional responses and making the subject matter more accessible.

According to the opposing viewpoints, businesses in the informal sector are essentially distinct from those in the formal sector. "The informal sector is made up of entrepreneurs with lower productivity and less education who decide to stay informal because the costs of formalization outweigh the benefits," according to Kabaso (2012:34).

Because of this, the informal sector has been unable to reach its full potential and has made a very small total contribution to the expansion of the national economy.

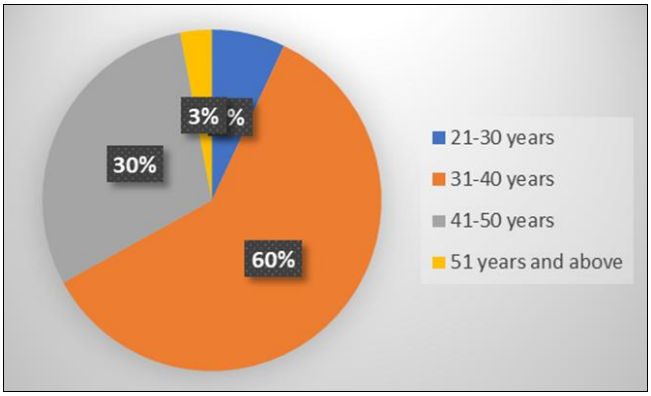

Fig 1: Respondents by Age

In reality, firms lie along a spectrum of informality, based on local conditions which are governed by existing laws and regulations, their implementation, the overall business environment and the size and efficiency of the formal sector. Understanding the characteristics of this sector within Zambia is important in providing appropriate policy prescriptions.

The informal sector in Zambia has been blamed for everything ranging from tax evasion to witchcraft! Some of the more reasonable studies argue that informality impedes growth as businesses operating outside the formal system find it difficult to access credit, therefore limiting the scale of their operations and exploitation of investment opportunities. Others argue that informal economic activity undermines the ability of governments to raise revenue and therefore denies the public sector resources that would otherwise play a complementary role to private investment through infrastructural development or improvement of the business environment (e.g. Loayza 1996; Misati 2007).

While they do not pay taxes to the government, the informal sector finds it extremely difficult to contribute to economic progress. Most people in the unorganized sector solely spend their earnings for domestic expenses. Kabaso (2012:76) asserts that "inadequate skills in financial and business management are the main reason why Zambia's informal sector fails to realize its potential and contribute to

national economic growth." In favor of Kabaso, it can be inferred that if their companies had been registered, a large number of potential businesspeople in the unorganized sector could have boosted the country's economy.

Once a company has been registered with the Zambia Revenue Authority (ZRA) or the Patents and Companies Registration Agency (PACRA). By taxing the company, the government of the Republic of Zambia will increase GDP and foster economic growth in the country. But it's now evident that there's more to this story than meets the eye. It is not appropriate to demonize those who work in the unorganized sector. There are benefits to this sector's existence in the African context, as well as reasons why they are initially forced into informal activities.

Activities in the informal sector are defined differently, but generally speaking, they are defined as small-scale, self-employed businesses with or without hired labor, usually with little organization or technology, and the main goal of creating jobs and revenue (Misati, 2007).

In Africa, particularly in Sub-Saharan Africa, the informal sector is ubiquitous and contributes significantly to local economies. Home-based enterprises, domestic helpers, petty traders, street sellers, small-scale craftspeople, and shoe shiners are examples of informal laborers in urban areas. On the other hand, subsistence farming and livestock keeping are typically associated with informal activity in rural areas. Despite not being included in official statistics, the informal sector contributes significantly to African economies. According to studies, Sub-Saharan Africa's informal sector accounts for an impressive 55% of the continent's GDP.

If South Africa and Botswana are taken out of the equation, this percentage increases even further, reaching 60%. In Sub-Saharan Africa, the informal sector makes a greater contribution than anywhere else in the world. Accordingly, its GDP share is 37.7% in North Africa, 23.9% in Asia, 30.6% in Latin America, 22.2% in the Caribbean, and 21.7% in Transition Economies (Charmes 2006, p.7,). With an astounding 77.4% of nonagricultural workers in Sub-Saharan Africa working in the informal sector, the informal sector is even more important to African economies in terms of employment (Charmes 2000, p.3).

Positive Local Economic Development (LED) outcomes are unlikely to be achieved unless the needs and potential of the informal sector are sufficiently taken into account. This is because the goal of LED is typically increased economic growth and employment opportunities at the local level, and the informal sector contributes significantly to GDP and employment in Africa. Informal employment frequently coexists with formal industries and services as a prominent sector in African cities. People are also pushed into the informal sector by other factors that arise from developing economies. These include significant entry hurdles to formal employment or a challenging corporate regulatory environment from the government.

The informal sector typically flourishes in nations with strong government regulations, when people operate underground or disregard established protocols in the formal domains because of excessively cumbersome or dishonest government regulatory processes (Manju, 2012). The idea is that without entering the informal sector, micro, small, and medium-sized businesses would not be able to survive in such a weak regulatory environment.

Furthermore, many impoverished people, particularly women, are frequently prevented from obtaining formal employment by high entry barriers, such as rigid work schedules or high educational qualifications. As a result, their sole option for making a living for themselves and their children is to engage in informal activities like home businesses, domestic work, or petty commerce (Charmes, 2000).

In conclusion, because it provides job and income options for the unemployed and impoverished, the informal sector is crucial to Local Economic Development (LED) in Zambia's poorer districts. It is more likely to be difficult to create the kind and quantity of jobs required to lower unemployment in poorer areas. Unfortunately, the formal sector in poorer regions faces significant barriers to its competitiveness and ability to create jobs. These barriers range from inadequate infrastructure to low labor skills, low capacities of local firms, or low potential to attract investment. As a result, it fails to contribute to national economic growth.

Furthermore, those living in poverty in these regions are frequently more susceptible to the high entry barriers and capacity limitations that keep them from securing the few formal sector jobs that are available. Therefore, until capacity constraints can be gradually reduced and formal economic sectors may flourish, the informal sector provides individuals in underdeveloped areas with employment and income-generating options (Charmes, 2000).

Additionally, those who are poor in these areas are often more vulnerable to the high hurdles to entry and capacity constraints that prevent them from obtaining the limited number of formal sector employment that are accessible. Therefore, the informal sector offers jobs and sources of income to people in underdeveloped areas until capacity restrictions can be gradually addressed and formal economic sectors can thrive (Charmes, 2000).

Therefore, sweeping the streets will only get rid of them momentarily. Like drugs, alcohol, and pornography, street selling will continue to exist as long as there is a need for it. Sooner or later, they will be back. Because there are many losses on both sides for little apparent benefit, oppressive actions are therefore considered counterproductive. On the supply side, the economics of the unorganized sector must be taken into consideration when discussing the underlying causes of street vending. The informal sector is a segment of the economy that functions outside of the laws and regulations that regulate the formal sector, as is covered in the majority of economics textbooks (World Bank Enterprise Survey (WBES), 2008). Even though it rarely gets the attention it merits, its size is remarkably significant in the majority of developing nations.

It serves as a means of housing workers who are unemployed in the formal sector for a variety of reasons. The formal sector is typically represented by high-tech, metropolitan jobs that are very modern. Compared to traditional rural jobs, it gives a greater income. As a result, cities draw labor from rural areas. Regretfully, the majority of migrant rural (agricultural) laborers lack the skills required for contemporary jobs. They cannot be employed in the formal sector as a result. Their only option for survival is to use their one and only resource—self—to create jobs. In the urban social ladder, they mostly serve the needs of those immediately above them (the poor relying on the less poor). These clients themselves are at the bottom of the economic scale, clinging to their jobs, and barely making ends meet on the outside of the formal urban sector. They then serve the requirements of the "real" urbanites—those who are lucky

enough to have the talents that the contemporary economy demands. Surprisingly, this final group of people might enjoy a standard of life on par with those in industrialized nations. (Boeke's dualistic economy thesis is emphasized strongly). This is the picture that world leaders want to convey when the term "global economy" is used (Kabaso, 2012).

A significant contributing factor to labor migration from rural to urban areas is the excess of labor in the rural agriculture industry. While the population continues to grow, land does not expand. Eventually, there won't be enough farmland to support all of the rural labor. Additionally, technical advancements allow for more productive land management with fewer manpower. Thus, rural workers are increasingly being forced out of the agricultural industry. Their only option is to move to the metropolis in the hopes of bettering their situation. Over-urbanization, a phenomenon in the third world where urban infrastructures are overburdened, began as a result.

Unrelenting traffic jams fill cities, squatters take over public areas, municipalities are unable to supply enough clean water, public schools are overcrowded, crime rates rise, the air is polluted, and waterways are tainted. People see that the unorganized sector is expanding quickly, with street sellers initially encroaching on sidewalks and subsequently on roads. This invasion becomes intolerable when combined with the increasing number of automobiles on the already limited number of roads. Therefore, local administrations merely comply with public demands to clean the streets of street sellers (De Soto, 2000).

Surprise is the most recent addition to the labor force in the unorganized sector! The world economy. Those in charge of globalization would rather not emphasize this unfavorable perception. In the face of fierce import competition, domestic companies reduce expenses in whatever manner they can. Contracting out a portion of the job to the unorganized sector is the simplest method (ILO, 2005). Because there is no labor protection—no minimum wage, no health insurance, no unemployment insurance, no legal contract (casual work arrangement), no work safety regulations, and the ability to recruit children—the informal sector uses cheaper labor. What happens to the workers in the "formal sector" who are now outsourced? The only option available to many of them is to work in the unorganized sector.

In fact, a significant proportion of the street vendors in several economic researches in Asia and Latin America used to be employed in the formal sector (Bhowmik, 2003).

Many nations are facing extremely high unemployment rates in the twenty-first century, and they have turned to legalizing street vending as a way for people to make money and support their families (Todaro, 2005). In nations where the majority of the people does not hold a formal job, this has also been done to prevent crime and theft. Although some economists initially believed that the informal sector would eventually disappear due to natural economic growth, this "trickle down" theory of progress has since been superseded by historical data from developed nations. Nowadays, it is widely accepted that the informal sector in developing nations should be directly addressed, if only because the natural process of decrease takes too long (Todaro, 2005).

The informal sector is seen favorably in the new economic perspectives as a brave expression of an economy in survival mode and as a vehicle for human innovation. Employees in this industry are now viewed as heroes for persevering in the face of adversity. They are men, women, and kids just doing their best to provide for their families. Street vendors, who are men, women, and children eking out a living on the harsh streets, are particularly well-suited. As such repressive urban policy seems to be the wrong tool to set on the problem, if street vending is still seen as a problem (Loayza, 1996).

According to the International Labor Organization, more than 60% of all workers in Less Developed Countries (LDCs) are employed in the informal sector (ILO, 2004). The unorganized sector contributes significantly to the economy as a whole due to its size. Consequently, street vendors make a substantial contribution to the urban economy. They should no longer be viewed as a nuisance that needs to be eliminated from public sidewalks and roads in the absence of a sustainable solution.

According to Loayza (1996), street vending causes the streets to be packed with people and activity, leading to inadequate sanitary facilities and crowded conditions. Additionally, this increases the danger of infectious diseases and puts more strain on waste management. Today's cities and towns are teeming with trash and are no longer aesthetically pleasing. This harms not just our health but also the environment. We have seen individuals converting tree trunks and building walls into restrooms.

Kabaso (2012) also noted that the type of business and locations of these firms have always been major issues. How, for instance, could we permit the selling of alcohol in inappropriate locations, such as a hospital? Another factor contributing to the pitiful state of our cities today is the packaging of the goods that the majority of vendors sell. Particularly around riverbanks, we have observed trash piled up on sidewalks, roadside ditches, and undeveloped ground. There have been occasions when we have merely grumbled to ourselves while things have become worse. encircling cities in every developing nation.

It is a component of the broader issue of developing cities becoming overly urbanized as a result of rural-urban migration. One of the many reasons for this exodus is the bias toward urban development, which directs limited resources into the metropolis at the detriment of rural economic growth. Street selling is only one aspect of the informal sector, which serves as a conduit for labor that cannot be found in the formal urban economy. Therefore, it is more of a solution than a problem. The general public's image of the unorganized sector needs to be changed. Congested urban road users and pedestrians have a poor perception of street sellers.

3. Methodology

3.0 Overview

This overview will give the full detailes which were covered in chapter 3.

3.1 Surveys and Questionnaires

Parents, educators, and environmental organizations participated in a thorough survey. The purpose of the survey was to learn more about their experiences with climate change and early childhood education. Parents were questioned about how their kids react to climate-related topics, and educators were asked about the difficulties they encounter in demythologizing complicated environmental

concerns.
Additionally, a questionnaire was created especially for kids that used simple, lighthearted language to assess their familiarity with digital learning resources and their current understanding of the world. This was essential for figuring out the target audience's baseline comprehension.

3.2 System Software Level Architectural Design

Software Architecture: The platform follows a **client-server architecture**, where the front-end interacts with the back-end via RESTful APIs. The back-end is powered by a **Node.js** server, and the front-end is built with **React.js**, ensuring a responsive, scalable, and easy-to-use system.

Focusgroups:
Focus group discussions were conducted with educators in early childhood development (ECD) institutions to explore the current methods of teaching environmental science to young
learners. These discussions revealed several gaps in existing tools, especially concerning how interactive and engaging the tools are for children in the 3-7 age range.

Interviews with Experts:
Interviews were conducted with educational technology developers and climate change experts. Their insights provided valuable information on how web-based platforms can bridge the gap between climate education and young audiences, highlighting the importance of age-appropriate content and user-friendly interfaces. were employed for collecting data interviews with closed and open-ended questions were used for primary data. For secondary data books, articles and internet materials were used.
One aspect of the research process that is especially vulnerable to deliberate or unintentional unethical behavior is data analysis. According to Jackson (1987), the researcher has a moral duty to reduce the likelihood of error by repeatedly verifying the accuracy of the data and the inferences made from it.
After analysis, the data was tabulated into tables and charts. In order to interpret the causes and effects of street vending as well as the reasons the government has permitted it, both qualitative and quantitative data analysis methodologies were used. The clear interpretation of replies as factors was thus guaranteed by quantitative analysis.

4. Findings

4.1 Demographics

This study is about n = 60 participants those who sein in streets, walkways and undesignated places.

4.2 Discussion

This seeks to present the discussion of findings of the study on the investigation established to assess how street vending is an urban problem and economic potential in Lusaka town.

4.3 How respondents described a street vendor

The majority of respondents defined a street vendor as someone who sells things on the street, either from a truck or stand or with their wares spread out on the pavement, according to the data.
A street vendor, according to another respondent, is a businessperson who sells their wares outdoors as opposed to in a store or shop. Many times, the seller was described as either using a cart that could be taken off the street at the end of the work day or having a modest stand that could be secured when not in use.
Similarly, another respondent described a street vendor as a person who, instead of selling products and items in a regular storefront setting, sells food, goods, and merchandise on the street or at an outdoor market. According to the respondent, the "store" can be a cart that the peddler can wheel from place to place and take home at the conclusion of the workday, or it can be a modest stand that can be locked and closed at the end of the day.

4.4 Findings as to why vendors sell on the street and not inside the Market

According to chapter four's table 4.6, 40% of the respondents claimed they lacked any talents that could be used to make money, hence their primary source of income was street vending. According to 60% of the respondents, they had talents but were unable to find employment, therefore they turned to street vending as a result. According to 2% of the respondents, they had no interest in school because they did not see its value, but they have since realized how difficult life is in a place like Zambia without education. According to 58% of the respondents, they were interested in going to school but were not supported, so they ended up making a living by selling goods on the streets.
Because of the enormous volume of people moving through the streets, 40% of street vendors find it easy to find consumers. However, 30% of businesses sell on the street since it is simple for them to find space there. In order to avoid paying rent in the official markets, 23% of people sell their goods on the street. Almost all of the respondents said we lack enough capital to open big businesses like big shops and workshops; as a result, they end on the street vending.
These results support De Soto's contention that traders attempt to evade the costs of formality, such as stringent laws and regulations, taxes, and the time and effort required to comply with official state procedures, which leads to the growth of the informal sector (De Soto 1989). By working on the streets, street sellers in Lusaka attempt to avoid all of these expenses. Random queries about whether the street vendors had another location where they could operate were posed to them.
The majority of traders sell to make ends meet since they are unable to obtain official employment as a result of government policies that privatize large corporations and reduce the size of the public service. Because of this, Zambia's official job market has shrunk and is now unable to employ the majority of its people.
These results support Kirshner's (2010) assertion that the forces of global integration drove down wages and, along with deregulation, liberalization, and privatization, led to the erosion of incomes, social services, and benefits, leaving many workers with no choice but to establish their own jobs in the unorganized sector in order to make ends meet. One could argue that because the majority of traders in the sample were unable to acquire formal employment, they turned to informal trading as their only other source of income.
This claim is further supported by a study by Berner *et al*. (2008:1), which discovered that survival entrepreneurs launch their businesses because they are unable to obtain wage work rather than voluntarily. Similar to this, a research conducted in Zambia by Phillips *et al*. (quoted in Gomez

2008: 11) found that up to half of the entrepreneurs in our largely young nation viewed their company as a means of survival. All of this is consistent with a study by Kabaso (2011) that found that street vending can also be economically significant in addressing the issue of food distribution and marketing for our subsistence farmers on the outskirts of our cities.

Given the unreasonable quality and quantity criteria imposed by the majority of well-known food shops, particularly those that sell foods of foreign provenance, this is particularly crucial. The purpose of Soweto Market, which is home to a diverse range of traders, is to support their development, graduation, business expansion, and shop ownership.

As a result, it could be claimed that the traders in the first group are survivalist businesspeople, whereas the traders in the second group are growth-oriented businesspeople. Notably, these are intriguing results because I had assumed that all market participants were growth-oriented simply because they paid rent. It was discovered, therefore, that the industry included both growth-oriented and survivalist entrepreneurs.

For street vendors and market vendors who sell from the market shed, trading is therefore a survivalist tactic; for market vendors who sell from stores, trading is a growth-oriented tactic. The poll also showed that 70% of market vendors had difficulties as a result of losing clients to street sellers. Thirty percent of respondents claimed to have no issues. Due of the advantages they receive by selling from the market, market traders do not mind trading from the market despite the aforementioned difficulty.

These advantages include storage facilities, a clean environment, security, and the assurance that they have a designated area from which to conduct business, even during the rainy season, in contrast to street vendors who must rely on vacant spots in the official market.

4.5 Conclusion

Regardless of the local government's provision of formal market infrastructure, it can be inferred that traders in the informal economy are diverse and that a variety of factors impact their choice of trading place. Furthermore, the results have shown that the informal sector's merchants serve a particular purpose in the economy by offering goods and services to a particular market segment. The street vendors in Lusaka meet a certain market need by offering products and services that consumers believe to be more affordable and long-lasting.

Additionally, street sellers do not take clients from the legal sector and sell openly without hiding from law authorities. This is because the majority of businesses in the unorganized sector offer services that are not available in formal businesses, such as giving their clients access to used goods at reasonable costs, while the majority of formal businesses sell new goods at exorbitant prices that the impoverished individuals who purchase from street vendors cannot afford. It is therefore impossible to defend the idea that the informal sector snatches clients from the official sector. In order to quickly attract clients, they intentionally place themselves in busy locations, such as those close to bus stops and marketplaces, in order to compete for business.

According to the report, the informal economy is a section of the consumer market that has identified a niche in the economy by viewing street selling as a superior choice, rather than being inferior or enmeshed in the official economy.

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