INVESTIGATING THE RELATIONSHIP BETWEEN SECONDARY SCHOOL STUDENTS' EXPERIENCES WITH CLIMATE CHANGE-INTEGRATED LEARNING AND THEIR KNOWLEDGE, BELIEF, AND ATTITUDE TOWARD CLIMATE CHANGE

A THESIS

by

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FACULTY OF TEACHER TRAINING AND EDUCATION SRIWIJAYA UNIVERSITY

2024

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Certify that thesis entitled "Investigating the Relationship Between Secondary School Students' Experiences with Climate Change-Integrated Learning and Their Knowledge, Belief, and Attitude Toward Climate Change" is my own work and I did not engage in any plagiarism or inappropriate quotation contrary to the ethics and regulations set forth by the Ministry of Education of the Republic of Indonesia, Number 19, 2010, regarding plagiarism in higher education. Therefore, I acknowledge that I deserve to face legal consequences if I am found to have plagiarized this work.

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DEDICATION

I dedicate this thesis to my grandparents, Nenek, Kakek, Mbah Samiran, and Mbah Kus, whose prayers and support I constantly feel following me. I hope I am worthy of your hope. To my siblings, Afif and Abyan, thank you for being the reasons I never give up, as my dream is not just mine, but ours. And finally, to my mom and dad, Nurdiya Ekayanti and Alm. Abu Naim, who serve as reminders again and again that I am capable and have love to turn to. Thank you for being reminders that my faith in God is what will always carry me to the finish line. I am grateful for your constant belief in me and endless sacrifices. All that I have and will accomplish is because of you.

MOTTO

"A fool's mind is at the mercy of his tongue, and a wise man's tongue is under the control of his mind." – Imam Ali (AS)

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ABSTRACT

Climate change presents significant risks to humanity and the environment, particularly affecting younger generations, hence, educating students about it is crucial for fostering knowledge and positive attitudes, with integrating climate change topics into EFL classrooms aiding in understanding its importance. This study investigates the relationship between secondary school students' knowledge, beliefs, attitudes, and experiences with climate change-integrated learning, utilizing Pearson correlation and regression analysis. A survey of 707 secondary school students revealed a positive relationship between their knowledge about climate change, their experience with climate change-integrated learning in EFL, and their attitude toward climate change. However, there is a negative correlation between beliefs and attitudes. This study emphasizes the importance of incorporating climate change-integrated learning into curricula to help future generations address this global challenge.

Keywords; Correlation, Climate Change in ELT, Knowledge, Belief, Attitude, Experience

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CHAPTER I

INTRODUCTION

This chapter presents the background of the study, the problems of the study, the objectives of the study, and the significance of the study.

1.1 The Background of the Study

Climate change, propelled by human activities like burning fossil fuels and deforestation, is a critical global issue with far-reaching consequences (Deep, 2023). It is recognized by the observation of extensive, long-term patterns in temperature, precipitation, and other factors like pressure and humidity levels in the environment (Abbas et al., 2022). The concept of climate change also encompasses fluctuations in the entire climate system, involving the atmosphere, biogeochemical cycles (such as the Carbon cycle, Nitrogen cycle, and Hydrological cycle), land surface, ice, and both living and nonliving components of the Earth (Ahmed, 2020). Human activity, particularly the burning of fossil fuels leading to the rise in greenhouse gas emissions, is altering Earth's climate, warming it by trapping heat in the atmosphere (Benz et al., 2021). While natural processes play a role, human activity stands out as the primary cause of climate change (NASA, 2023). Therefore, addressing climate change requires urgent and concerted efforts at local, national, and global levels to mitigate its impacts and safeguard the planet for future generations.

The 2023 Intergovernmental Panel on Climate Change (IPCC) Report portrayed a grim outlook for the future, emphasizing significant negative effects of climate change influenced by human activities. These effects range from elevated global mean sea levels and irreversible damage to ocean ecosystems to species extinction, reduced food and water security, and heightened occurrences of extreme heat events. In response to climate change, the 195 member countries of the United Nations Framework Convention on Climate Change (UNFCCC) collectively pledged to the Paris Agreement in December 2015. The primary objective is to restrict the increase in global temperatures to less than 2°C above pre-industrial

levels, with additional efforts directed towards achieving a limit of 1.5°C (United Nations, 2022). Restricting the rise in global temperature to 1.5°C above preindustrial levels would be far less expensive than the possible harm that could arise from doing nothing about climate change (Hoegh-Guldberg et al., 2019). Ultimately, this highlights dire consequences of human-influenced climate change, underscoring the urgency of limiting global temperature rise to avoid catastrophic impacts.

As a consequence of climate change, temperatures are on the rise, resulting in more frequent and intense heat waves that pose health risks of heat-related morbidity and mortality (Margolis, 2021). Research indicates that the heat index, a combination of temperature and humidity, is projected to lead to more days with a heat index above 100 degrees Fahrenheit (Li et al., 2020; Casanueva et al., 2020; Xie et al., 2022). Between 2000 and 2016, 125 million more people were exposed to heatwayes, leading to increased hospitalizations and deaths, primarily linked to cardiovascular diseases. The prevalence of these diseases rose by 77.12% worldwide between 1990 and 2019 (Li et al., 2023; Gianfredi et al., 2024). The intense heat waves pose health hazards, particularly for the younger generation and the elderly (NASA, 2023). Currently, around 559 million children encounter frequent heat waves, while around 624 million children face one of three other elevated heat conditions, including extended heatwave periods, intensified heatwave severity, or extremely high temperatures. (United Nations Children's Fund, 2022). This underlines the imperative for urgent and comprehensive action on climate change.

Basic human needs are in danger due to the substantial effects of climate change on food security and water scarcity. The percentage of the world's population that faces severe water scarcity rises from about 30% (water quantity only) to about 40% (both quantity and quality) when water quality factors such as temperature, salinity, pollution, and nutrients are taken into account (Van Vliet, 2021). Approximately half of the world's population faces severe water shortages for at least some part of the year, and two billion people do not currently have access to clean drinking water. Given the effects of climate change and population growth, it is anticipated

that these figures will rise (IPCC, 2023). Climate change also not only presents a threat to food safety and security by increasing the risk of foodborne diseases but also through extreme weather events that lower global agricultural production. This diminishes the overall availability of enough and nutritionally adequate food for the world's population (Gianfredi et al., 2024; Myers et al., 2022; Duchenne-Moutien et al., 2021). According to the U.S. Environmental Protection Agency (EPA, 2023), the consequences of climate change on food and water scarcity particularly affect children under the age of eighteen. While they spend more time outside and drink more water per pound of body weight than adults do, their developing bodies and quicker breathing rate expose them to more risks, such as heat, poor air quality, and water contaminants, raising the possibility of waterborne illnesses.

In Indonesia, climate change poses a serious threat given how vulnerable the country is to its effects. The effects of climate change, such as rising sea levels, droughts, floods, and changes in temperature and precipitation, are highly likely to affect Indonesia. Although poverty has decreased due to economic growth, the nation is still vulnerable to climate variability because of its high population density in vulnerable areas and heavy reliance on natural resources. The estimated effects could be between 2.5 and 7% of GDP, with the poorest people bearing the most of the burden (World Bank Climate Change Knowledge Portal, 2024). A study by the Yale Program on Climate Change Communication (YPCCC) in collaboration with Development Dialogue Asia, Communication for Change, and Kantar Indonesia found that 79% of Indonesians worry about deforestation, but they have little knowledge about climate change. While many notice local weather changes, not everyone fully understands the implications of climate change. This lack of awareness is concerning, especially given Indonesia's vulnerability (Shirvell, 2024). Ultimately, the deterioration of the environment adversely affects not only the well-being of marginalized communities but also our food resources, overall health, and quality of life (Jung & Dos Santos, 2022).

Young people face heightened vulnerability to climate change due to various factors. Children's health, safety, and survival are not the only things at risk from climate change effects in the short term; because of their young age, they will also

be more likely to experience the long-term and severe effects (Treichel, 2020). Additionally, the mental health effects of climate change can cause worry, eco-anxiety, and a sense of helplessness in young people, especially those between the ages of 18 and 24 (Gunasiri et al., 2022). If climate mitigation strategies are not implemented, the combined effects of rising infectious disease rates, food insecurity, and unstable political environments will result in 131.000 more child deaths annually by 2030 (Williams et al., 2021). Confronted with the existential threat of climate change, young people have been taking on the role of change agents, although they lack support from older generations, including political leaders (Heys et a;., 2021). Moreover, mitigating and adapting to climate change requires a multidisciplinary approach, with a key role in education and human development (Lombardi, 2022).

In response to this, it is imperative that young people learn early on how their actions affect the environment and how important it is to practice responsible environmental citizenship in order to defend basic human rights in society (Stavreva Veselinovska & Kirova, 2013). Education holds a pivotal role in tackling climate change, emphasizing the importance of adaptation learning support, general education, and a supportive policy environment (Feinstein & Mach, 2020; Hemstock, 2020). Nevertheless, delivering climate change education faces obstacles, including the necessity for simplified communication of scientific information and the significance of interactive, sustained learning (Reis & Ballinger, 2020). Despite that, education has the potential to reduce vulnerability to climate impacts and enhance human development (O'Neill, 2020). Ghanbari (2023) underlined further how crucial education is in influencing students' views and attitudes regarding climate change. Perwitasari (2023) concluded by emphasizing the necessity of integrating Education for Sustainable Development (ESD) into climate change education, as this can greatly enhance students' comprehension, aptitude, and consciousness regarding climate change.

Research on the awareness of climate change among Indonesian students indicates a lack of understanding and inconsistent perceptions (Nugroho, 2020). Puspita et al. (2020) observed that although junior high school students in Bogor

City demonstrated a good knowledge of the health impacts caused by climate change, their attitude towards the issue was less supportive. Hamid et al. (2021) noted that while students were aware of climate change, this did not translate into protective behavior. Nabilah & Hariyono (2021) further confirmed the lack of climate literacy among high school students, particularly in identifying scientific issues. According to Jaro'ah et al. (2023), youth frequently make false connections between short-term and long-term climate change. The widespread misconception that regular weather or seasonal fluctuations are the same as climate change adds to the confusion. Therefore, enhanced education and awareness programs are crucial to fill the knowledge gap and encourage positive attitudes towards climate change.

Students' belief towards climate change determines their willingness to support addressing climate change. Jurek et al. (2022) and Kolenatý et al. (2022) both underscore that having knowledge about climate change positively influences students' beliefs in the efficacy of mitigation actions and their willingness to act. Heddy (2021) provides additional support for this, emphasizing how moral convictions influence students' attitudes, engagement, and perceptions of climate change. Studies examining students' beliefs toward mitigating the effects of climate change indicate a lack of confidence in their ability to take action (Pickering et al., 2020). A course on climate change education has been found to dramatically alter students' belief of the causes and effects of climate change in China (Tang, 2022).

Students' attitude towards climate change also has a crucial role to fill the gap of climate change education. Research indicates that youth are increasingly concerned about climate change, with a significant majority expressing worry, attributing it to human causes, and acknowledging its current impact (Harker-Schuch et al., 2021). This concern is often channeled into activism, with young people taking to the streets and advocating for climate justice (Gasparri et al., 2021). Balundė et al. (2020) further discussed the pro-environmental behaviour of adolescents may be influenced by their biospheric values, environmental self-identity, and individual norms promoting environmentally friendly behavior. In addition, children's participation in projects run by young people gives them a sense of control and raises their awareness of climate change in general. Children's

proactive efforts are essential to helping them understand and become conscious of climate change (Trott, 2020).

Consequently, integrating climate change education into English language teaching can enrich students' understanding, beliefs, and attitudes regarding climate change. Hameed (2023) acknowledges the significance of integrating environmental education into language teaching, as previously discussed by Bhusal (2021). The incorporation of environmental concerns in English language instruction is seen as crucial, as language learning extends beyond linguistic competence to encompass practical application. This approach not only enhances language proficiency but also fosters the development of informed and critical thinkers (Bhusal, 2021). Research indicates that the incorporation of environmental education (EE) into EFL/ESL classrooms improves students' comprehension of worldwide ecological crises and their engagement in resolving these concerns (Corpuz et al., 2022; Reddy et al., 2021; Setyowati et al., 2022; Bercasio et al., 2021).

Although research on climate change literacy has significantly increased in the past two decades, with a noticeable spike from 34 to 112 between 2013 and 2021 (Suhaimi and Mahmud, 2022), less than 1% of literacy conference presentations and journal articles address the topic of climate change, as indicated by Panos and Damico (2021) and Silvhiany et al. (2023). Furthermore, there remains a significant gap in understanding young people's relationship with climate literacy (Suhaimi and Mahmud, 2022). In comparison to research focusing on adults, there is indeed a scarcity of studies on youth and climate change (Pereira & Freire, 2021; Lee et al., 2020; Neas et al., 2022). This disparity is especially evident when discussing more complex subjects, such as the reasons behind activism and the ways in which youth understand and react to climate change (Neas et al, 2022). There is a lack of literature specifically in the context of climate change-integrated learning. Varela et al. (2020) and Sánchez-Almodóvar et al. (2023) both focus on secondary students, but not specifically see how the perspective correlates with their learning experiences at school especially in EFL context. Jarrett & Takacs (2020) examined the perspectives of secondary students in Hong Kong regarding their grasp of scientific concepts related to climate change, but does not specifically target students' climate change integrated-learning experiences. Moreover, young people are vulnerable to the impacts of climate change and also play an essential role as responsible parties in the future (Jaro'ah et al., 2023). Therefore, this study aims to fill the gap by investigating the relationship between secondary school students' experiences with climate change-integrated learning, their knowledge, belief, and attitude toward climate change.

1.2 The Problems of the Study

- 1) Is there any correlation between secondary school students' experiences with climate change-integrated learning and their attitude towards climate change?
- 2) Is there any correlation between secondary school students' knowledge towards climate change and their attitude toward climate change?
- 3) Is there any correlation between secondary school students' belief and their attitude towards climate change?

1.3 The Objectives of the Study

- 1) To find out whether there is a correlation between secondary school students' experiences with climate change-integrated learning and their attitude towards climate change.
- To find out whether there is a correlation between secondary school students' knowledge towards climate change and their attitude toward climate change.
- 3) To find out whether there is a correlation between secondary school students' belief and their attitude towards climate change.

1.4 The Significances of the Study

- For students, this study is significant as it deepens their understanding of how climate change issues are discussed in the EFL classroom. The aim is to foster the active engagement of students and explore potential actions they can take in response to global environmental challenges.
- 2) For teachers, the study is valuable as it offers insights into tailoring instructional strategies based on students' views on climate change,

- integrating relevant discussions in language education may enhance student engagement and the overall classroom experience.
- 3) For academicians, this study helps the field of education by shedding light on the correlation between climate change-integrated learning experiences and students' knowledge, beliefs, and attitudes. It provides valuable guidance for crafting curricula and educational strategies to foster environmental literacy among students.
- 4) For researchers, this study contributes to a relatively unexplored area within the intersection of climate change and language education, serving as a valuable reference for future research endeavors or further investigation and offering insights into the potential of climate change education in shaping students' knowledge, belief, and attitude.

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