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## CLIMATE CHANGE EDUCATION IN INDONESIA: A LITERATURE REVIEW

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### Abstract

Recently, climate change issue become critical to be researched due to its badly effects to human life. In response to this issue, UNESCO declared the importance of education and training in addressing climate change in providing education services. However, the climate change issue in education sector is still limited to research. Thus, the purpose of this study is to discover the trends of climate change topic in educational research, especially in context of teaching English as foreign language in Indonesia. A content analysis method, both quantitative and qualitative research are used in this study. A number of education research reports published for the past 10 years were examined, especially regarding topic of climate change issue in English Education. The research reports were form open sources by using keywords; climate change, English, and Education. However, the researchers found limited research about climate change issue in English education reports in Indonesia. It indicated that climate change topic was rarely studied in English education context, including in language classroom activities or lecturer material. It means that climate change issue in English education context still needed to be explored in future researches. Thus, the researcher suggests other researcher to conduct more studies about inserting climate change topic in their research.

**Keywords:** Climate Change, English, Education, EFL, Indonesia, Content Analysis.

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### A. INTRODUCTION

Education is necessary to support climate action. It helps people comprehend and react to the implications of climate change by providing them with the information, know-how, values, and attitudes necessary to be change agents. The global community is aware of how crucial education and training are to preventing climate change. Governments are urged to inform, enlighten, and involve all stakeholders and important groups in climate change policies and initiatives under the UN Framework Convention on Climate Change, the Paris Agreement, and the associated Action for Climate Empowerment (ACE) agenda (UNESCO, 2022).

UNESCO has issued a caution ahead of the first simultaneous assembly of environment and education ministers at COP26 in Glasgow. According to recent



UNESCO data from 100 countries, climate change is mentioned in only 53% of the world's national education curricula, and even then, it is almost always assigned a very low priority. Furthermore, just approximately one-third of the teachers polled by UNESCO and Education International felt qualified to teach about the effects of climate change, and only about one-third felt qualified to characterize the repercussions in their region or location.

According to UNESCO (2022), a more environmentally conscious education will equip all students with key traits such as knowledge and awareness, as well as socio-emotional talents and behaviors such as teamwork and critical thinking. Students will comprehend the complexities of environmental and climate challenges, how they are intertwined, and how to assist others in resolving problems in their own circumstances. It teaches students how their actions and decisions affect the environment, as well as the information and skills needed to deal with challenging environmental problems. It also teaches children about the things they may do now and in the future to preserve the ecosystem healthy and sustainable.

Because students are struggling to understand climate change and convince their community to be more concerned about it, education is crucial (Jorgenson et al., 2019). Students must be literate about climate issues. According to Luthfia et al. (2019), individuals who are more knowledgeable about climate change will be more motivated to participate and do their part to mitigate its effects. Until they comprehend the connection between climate and human life, people who understand climate literacy will have a basic understanding of the climate system, including the factors of climate change generated by nature and humans. They will be able to evaluate the credibility of scientific climate arguments and use that information to support their policies until they grasp the need of taking effective action to limit the effects of climate change on their daily life (Research, 2009). Climate change concepts must be internalized in the classroom in order to increase public awareness of the situation. People's readiness to deal with the impacts of climate change will be shaped by education (Menlhk.go.id, 2021). Because students will be trained to think critically, they will be better prepared to cope with challenges that happen on a regular basis



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(Septaria et al., 2019).

One strategy for spreading knowledge about climate change concerns in higher education is the use of narrative. As a result, a variety of UNESCO programmes are now available to support climate change narratives in education. With hopefully, this initiative will raise people's knowledge of the effects of climate change issues and the precautions that need to be done to avoid them. People can change their attitudes and habits through education, which will enable them to make wiser judgments. Students can learn about the consequences of global warming and how to prepare for them in the classroom. Additionally, it encourages them to take initiative in addressing climate change problems.

Despite the fact that recent research has linked climate change to science or geography, everyone should be aware of the issue, even language students. They must contribute to environmental preservation. One strategy is to discuss climate change while studying a language. Whatever occurs, climate change will have an influence on young people's lives. Climate change is the responsibility of everyone, even English teachers. Teachers have the opportunity and responsibility to enlighten local and broader communities about climate change, to inspire students' imaginations, abilities, and energies, and to join others globally in demanding and participating in one of humanity's most significant transformations.

A review of the literature indicates that research on teacher knowledge and comprehension of climate change are becoming more popular in both developed and developing nations, as climate change affects everyone everywhere (Herman et al., 2017). The study examined secondary science teachers' knowledge and teaching of climate change science in Florida and Puerto Rico, and the findings indicate that the majority of instructors had misconceptions regarding climate change. This conclusion backs up Plutzer et al., (2016), who used samples from the United States, Hegde et al., (2012), who used samples from India, Boon (2010), who used samples from Australia, and Bozdoan (2011), who used samples from Turkey.

According to Crookes (2021), the consequences of climate change on students' lived experiences must be acknowledged in English language classrooms if ELT is to



develop a critical language pedagogy that draws on the learners' daily circumstances as articulated in the themes of their reality.

Making power issues a top concern when learning a language and developing literacy skills is known as critical language awareness (Micay-Hurtado & Poole, 2022). It demonstrated how a critical language awareness (CLA) approach to teaching ELT is considered problematic if it downplays the seriousness of climate change and its numerous implications on both current students and those studying English in the future. It is past time for ELT to consider both how we can foster ecological sustainability and ecological well-being, as well as how our practices and pedagogies contribute to the (re)production of ideas, identities, and behaviors that harm the environment and create climate change.

The significance of climate change in Indonesia Literacy is also stipulated by UNEP (in the book Kementerian Pendidikan dan Kebudayaan, 2017) as the key to addressing many of the twenty-first century's difficulties, such as meeting basic demands for water and food, producing enough energy, suppressing diseases, and dealing with climate change. It is a reaction to the fact that Indonesia, with a score of 46, is designated as a high-risk country. Indonesian children, according to the report, are especially vulnerable to vector-borne diseases, air pollution, and coastal flooding; however, investments in social services, specifically health and nutrition, education, social protection, and financial inclusion, can make a significant difference in their ability to protect their futures from the effects.

Climate literacy can be linked to a specific scope of science literacy and so fits within the framework of its application in science literacy (Azevedo & Marques, 2017). Climatic literacy education as a whole should be improved more, particularly in terms of learning that is linked to each recent climatic event. Aside from learning how the climate phenomenon originated, kids could be taught how to prevent climate change and adapt to present climate changes. Teachers' roles are crucial in teaching climate change because they may help students become critical in learning new information about phenomena, resulting in an assertive individual who is committed to taking steps to better their environment (Chang, 2015).



However, past studies on climate change literacy in education found limited studies on climate change education in Indonesia. Gunamantha and Dantes (2019) assessed primary school students' knowledge, attitudes, and behavior about climate change. They discovered that while the majority of respondents were aware of climate change, their views and behavior were favorable. According to the findings, children's climate change literacy should be increased primarily by teaching strategies on relevant resources to promote early awareness of climate change mitigation and adaptation action. Nabilah and Hariyono (2021) investigated the general picture of climate literacy among high school students in Surabaya, as well as each indication in the climate competency aspects. The students' climate literacy capacity was assessed by manually assigning points based on test responses according to the scoring guidelines in the scoring rubric and achievement results with categories such as very high, high, moderate, low, and very low. The data show that high school students in SMAN 22 Surabaya have a moderate climate literacy capacity, with a percentage score of 64%.

Furthermore, Andersson (2010) asserted that the Indonesian public may be unaware of climate change and its repercussions. This is because climate change is not an urgent issue in this developing country. In Indonesia, the majority of public debates are centered on the country's economic progress and poverty elimination. According to one study, 81.9% of surveyed Indonesian families have paid attention to climate change, yet only 38.9% have taken reactive activities, while 28.2% have taken proactive steps. According to the discussion above, there is still a lack of information on the integration of climate change issues in education, particularly in English language education and at the university level. Thus, this study is conducted to review the literature about the climate change education in context of English language education in Indonesia.

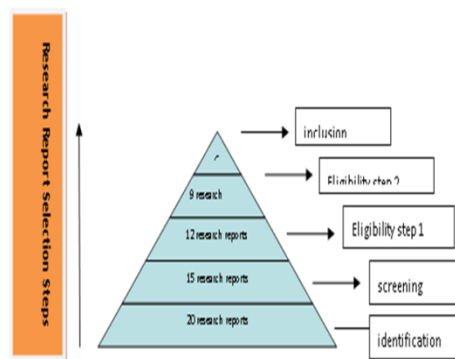
## B. METHOD

A systematic review was done to identify and categorize this VBE-related material. It is an evidence-based strategy that employs methodical and transparent processes for gathering, analyzing, and evaluating research findings while minimizing

bias (Jesson et al, 2011). As a framework, this research followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology, which involved scanning the all resource of journal from the internet. The review method was divided into four stages: (1) identification, (2) screening, (3) eligibility, and (4) inclusion, as well as data abstraction and analysis.

As the initial step, the researcher searched the articles that relevant to the research objective. The keywords utilized in this article search were: "Climate Change Issue in English Education in Indonesia." The total of the full-text manuscripts were identified and then examined for availability during the screening stage. According to the election results, 15 full-text manuscripts were available among the 20 papers discovered. Additionally, the 12 papers were re-selected during the eligibility stage. The selection procedure is now divided into two stages. The title and abstract of the article are used in the first step of eligibility screening. The article's title and abstract are used in the first step of eligibility screening. Articles that pass the first phase of selection are re-selected in the second phase, with full-text manuscript eligibility determining eligibility. As a result, 3 articles were disqualified and 9 articles were chosen. In the second phase of eligibility, the papers were re-selected. As many as 5 articles failed to meet the criteria in the second step. As a result, only 4 articles were chosen.

The selected papers were coded and used as source material for the literature review described in this study. The researcher then examined several aspects of the articles, including the theories, processes, and analyses employed, as well as the result. The researcher then reviews and discusses the theoretical results of several articles in the results section.





### C. FINDING AND DISCUSSION

#### 1) Finding

The result of the the data analysis shows that there were very limited literature about the implementation of climate change in language education in Indonesia. The researchers only found four of articles which discusses about the implementation of climate change education and those articles were published in different years. Two of them were published in 2022, one was in 2020, and one was in 2006. The detail about the names of the authors, the titles and the years are displayed in the following tables.

*Table 1. Authors, Titles, and Years of Publishing of Articles about the Climate Change Implementation in English Education.*

No	Author	Title	Year published
CE 1	Martha Betaubun Nasrawati	English for Specific Purpose: Revitalizing Climate Change Awareness Using Digital Literacy and Gamification for Engineering Faculty in Papua	2020
CE 2	Sahril Nur Ismail Anas Reski Pilu	The Call for Environmentally-Based Language Teaching and Green Pedagogy: Climate Actions in Language Education	2022
CE 3	George M. Jacobs, Anita Lie, Susan Amy	An Indonesian Example of Teaching English via Environmental Education	2006
CE 4	Lestari Setyowati Sari Karmina Ahmad Heki Sujiatmoko Nova Ariani	Feeling nature in writing: environmental education in the EFL writing course	2022

The above finding indicates that the literature about the implementation of climate change education in Indonesia is rarely investigated and published. Furthermore, the researchers also analyse the research objectives, participants, and the research location. The finding shows the researchers conducted the studies for various objectives and the participants came from various levels and location. The detail of the information about the research objectives, participants/objects, and location are presented in the following table.

*Table 2. Research Objectives, Participants/Objects, and Location of the Research.*



No	Research Objectives	Participants/Objects	Location
CE 1	to determine respondents' perceptions related to climate change awareness and pro-environmental behavior (PEB) in regions that have AQI in Papua.	164 students of engineering faculty	Papua
CE 2	To analyze the multimodal discourse of the Environmental Education (EE) imperatives in using content and language integrated learning (CLIL) strategy.	Unstated	Virtual (Zoom mediated Webinar)
CE 3	To describe the development of an English coursebook that drew upon environmental education for the content.	Unstated	Unstated
CE 4	to investigate the students' level of environmental attitude, the students' writing performance when writing with environmental issues, and their opinion when writing about an environmental topic.	23 students of the Department of English at a state university in Malang, Jawa Timur,	Jawa Timur

Meanwhile, the finding about the research method, the instruments, and the finding of the articles are presented in the following table. The finding indicated that the researchers used various research method and instruments. They also claimed various finding in their articles.

*Table 3. The Research Method, the Instruments, and the Finding of the Articles.*

No	Research method	Instrument	Finding
CE 1	Survey method	questionnaires	learning through digital literacy and gamification has a positive potential to be applied through policy and developed into a learning model to increase awareness of climate change and PEB





CE 2	Thematic analysis	themes, sub-themes, and categories	: 1) including environmental issues in language curriculum, syllabus, and textbook development, 2) providing environmentally relevant materials and resources, 3) providing environmental language teacher professional development, and 4) accelerating environmental literacy programs at all levels of education. In other words, the inclusion of green pedagogy and environmental sustainability initiatives
CE 3	literature review	Unstated	unstated
CE 4	Mixed method, Cross-sectional design	Questionnaires, writing test, documentation, scoring rubric, and chat interview.	most of the students can write the introduction well, make relevant topic sentences well, give a relevant explanation well, and write a proper conclusion by using a recommendation to save and protect the environment.

## 2) Discussion

The finding of this research indicated that the study about the implementation of climate change issue in English language education is still very limited. There were only four articles discussed about the implementation of climate change education in English education. Among four articles, there is only one article discussed about the integration of climate change issue to English Education students at university level. The rest of the articles were discussed about the implementation climate change education to engineering students, and two of the articles did not mention about the objects of the research because they are kind of literature review. This finding suggests that integrating climate change education at a higher level, particularly at the language education level, is still an issue that needs to be addressed in Indonesia. Natural Sciences Years 7-9 (kemendikbud, 2024).

Furthermore, the finding in the previous section indicates that the studies and literature about the implementation of climate change education in Indonesia, <https://journal.ar-raniry.ac.id/ICELT>



especially in context of language learning is still needed to be explored. The finding indicated that researchers and educators in Indonesia were lack of interest in presenting climate change issues in their teaching material or in their literature. As a result, there were no evidences about how to integrate climate change issues to English language learning classroom or the curriculum or syllabus about the climate change integration in language classroom activities. It is in line with the statement by Andersson (2010) who claimed that the population in Indonesia may not understand climate change and its consequences. This is due to the fact that climate change is not a pressing issue in this emerging country. The majority of public debates in Indonesia are focused on the country's economic development and poverty eradication.

The finding also indicates that the English learners in Indonesia have limited sources and references about the climate change issue in language education context. Therefore, it implies that the literature about the climate change issue are urgently needed by the language learners in Indonesia. Because students are struggling to understand climate change and convince their community to be more concerned about it, education is crucial (Jorgenson et al., 2019). Students must be literate about climate issues. According to Luthfia et al. (2019), individuals who are more knowledgeable about climate change will be more motivated to participate and do their part to mitigate its effects. Until they comprehend the connection between climate and human life, people who understand climate literacy will have a basic understanding of the climate system, including the factors of climate change generated by nature and humans. They will be able to evaluate the credibility of scientific climate arguments and use that information to support their policies until they grasp the need of taking effective action to limit the effects of climate change on their daily life (Research, 2009). Climate change concepts must be internalized in the classroom in order to increase public awareness of the situation. People's readiness to deal with the impacts of climate change will be shaped by education (Menlhk.go.id, 2021). Because students will be trained to think critically, they will be better prepared to cope with challenges that happen on a regular basis (Septaria et al., 2019).

According to Crookes (2021), the consequences of climate change on students'



lived experiences must be acknowledged in English language classrooms if ELT is to develop a critical language pedagogy that draws on the learners' daily circumstances as articulated in the themes of their reality. Climate literacy can be linked to a specific scope of science literacy and so fits within the framework of its application in science literacy (Azevedo & Marques, 2017). Climatic literacy education as a whole should be improved more, particularly in terms of learning that is linked to each recent climatic event. Aside from learning how the climate phenomenon originated, kids could be taught how to prevent climate change and adapt to present climate changes. Teachers' roles are crucial in teaching climate change because they may help students become critical in learning new information about phenomena, resulting in an assertive individual who is committed to taking steps to better their environment (Chang, 2015). It is in line with the statement by UNESCO (2022) that a more environmentally conscious education will equip all students with key traits such as knowledge and awareness, as well as socio-emotional talents and behaviors such as teamwork and critical thinking. Students will comprehend the complexities of environmental and climate challenges, how they are intertwined, and how to assist others in resolving problems in their own circumstances. It teaches students how their actions and decisions affect the environment, as well as the information and skills needed to deal with challenging environmental problems. It also teaches children about the things they may do now and in the future to preserve the ecosystem healthy and sustainable.

#### D. CONCLUSION

Based on the finding and the discussion in the previous sections, it can be concluded that the literature about the implementation of climate change issues in English education context in Indonesia is very limited. Thus, the researchers suggest that the researcher and educators in Indonesia pay attention on the implementation of climate change education in language education. The English students in Indonesia need literature about the climate change issues to educate them about the environmental issues and doing action to combat the environmental issues such as climate change issues around them.



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