

Climate change awareness in ELT: Ethnography in connected learning and ecojustice pedagogy

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Abstract

This research article explores the integration of climate change education in the context of English as a Foreign Language teacher education. As climate-induced disasters are on the rise, the mitigation of climate change necessitates an interdisciplinary approach to climate education. While science education has extensively addressed climate change education, the field of language education and literacy has not taken drastic measures to participate in climate change education. The article heeds the call for more research on climate change education in second/foreign language and literacy programs. Using the connected learning and ecojustice pedagogy, we engaged 20 preservice teachers in exploring climate change issues within a semester-long creative writing course. Analyses of classroom discussions, reflective writing, and picture book projects showed that the preservice teachers' awareness of climate change issues developed as they delved into the projects that required their understanding of the global climate issues with the local connection. The article concludes by arguing that connected learning and ecojustice pedagogy support the development of climate change awareness while facilitating preservice teachers' multimodal writing skills. Finally, this article recommends that language educators engage in interdisciplinary participation to address climate change

issues through curricular engagements that support multimodal-based climate literacy learning.

Keywords: climate change, connected learning, EFL, multimodality, teacher education

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In the past years, we have witnessed various catastrophes in many parts of the world, from the heatwaves in India, epic wildfires in California and Australia, extreme drought in East Africa, to the deadly floods that swept through Western Germany and parts of Belgium. The magnitude of the destruction and the number of disaster victims are clear warnings of the impacts of climate change on our society. As one of the global issues facing society, climate change requires transnational interventions and interdisciplinary collaboration. The Paris Agreement, ratified by over 194 parties and enforced in 2016, is a manifestation of a collaborative commitment to reduce the speed of the rising of the earth's temperature and mitigate the impact of climate change. One of the crucial consequences of this agreement is the focus on affirming the role of education and training for public awareness of climate change. United Nations Educational Scientific and Cultural Organization has prioritised sustainable education with the mission of raising climate awareness among youths (United Nations Educational Scientific and Cultural Organization, 2013). Furthermore, to strengthen the commitment toward achieving sustainable education, (United Nations Educational Scientific and Cultural Organization, 2020) prioritises transforming learning environments by developing "concrete, time-bound plans on how to implement the whole-institution approach to ESD" (p.28).

Climate change education has been shown to be a factor in increasing climate change awareness and belief in anthropogenic climate change, even for the conservatives who are more likely to believe that climate change is a natural process and deny humans' contribution to climate change (Jessani & Harris, 2018; Krange et al., 2019). A survey conducted by (Hess & Maki, 2019) showed that conservatives who took a climate-related course showed an increase in climate change belief despite a sceptical position at the beginning. Research in teacher education shed light on the impacts of curricular engagement on preservice teachers' and in-service teachers' understanding of climate change issues. They

are crucial agents of change in fostering climate change awareness (Borgerding & Dagistan, 2018; Dike & Amadi, 2016; Kuthe et al., 2020).

Despite the important role of teacher education in supporting the teaching of climate change, scholars argue that the efforts are still limited. (Boon, 2016) posit that initial teacher education has not sufficiently exposed preservice teachers to the knowledge about climate change and strategies to teach it in school. Moreover, a survey conducted by (Demant-Poort & Berger, 2021) with Greenlandic and Canadian preservice teachers showed that the preservice teachers believed climate change should be taught in elementary and secondary schools. However, many of them felt unprepared to teach climate change. Some of them who had the confidence to teach the issues of climate change were those who had taken a specific course or program related to climate change. This confirms (McNeal et al., 2017)'s research findings that show confidence as the deciding factor for middle school teachers to teach climate change issues.

The dearth of research about climate change is still prominent in language education. The field of language and literacy has not sufficiently addressed the issues of climate change. (Panos & Damico, 2021) found that less than one percent of journal articles and conference presentations addressed the issues of environment and climate change between the years 2008 to 2019.

Galvanized by the impacts of climate change and the lack of the integration of climate change issues in the teaching of English as a Foreign Language, we sought ways to incorporate climate change education in a preservice teacher program. In our exploration of effective curricular engagement for sustainable climate change integration, we drew from the theoretical framework of connected learning and ecojustice pedagogy. These two areas of research informed our curriculum as well as methodological decisions.

Framework of connected learning is a pedagogical approach based on the notion of boundary crossing learning practices. Core principles of connected learning include the involvement of collaborative and collective inquiry in knowledge creation and the active process of learning which integrates formal and non-formal networks (Ito et al., 2013). Connected learning framework captures the dynamic process of learning situated beyond the walls of the classroom. It explains the increasing complexity, connectivity, and velocity of the new era of networked technologies (Kumpulainen & Sefton-Green, 2014). Connected learning is an approach to learning and design which (Wortman & Ito, 2019) define as "interest-driven, supported by peers and mentors, and connected to academic, economic, and civic opportunities" (p.1). Connected learning recognizes the potentials of new media ecology for its affordances in making engaging and meaningful learning accessible to learners.

We combined connected learning with ecojustice pedagogy which emphasized the social justice issue embedded in climate change impacts. Researchers focusing on sociocultural aspects of climate change argue that the existential threats of climate change affect certain communities more severely

than others. Low income communities of colors continue to feel the most devastating effects of climate change (Anguelovski et al., 2016). The disproportionate impacts of climate change have spurred a closer look at the social justice issue in climate change mitigation. (Damico, 2021) argued for literacy educators to make a connection between teaching about the environment with social justice issues as part of the sociocultural aspects of climate change.

An integration of ecojustice pedagogy requires openness and willingness to change. The willingness to change within the school community includes curriculum reconceptualization and professional development based on ecopedagogy. In our research context, ecojustice pedagogy emphasized on raising awareness about sociocultural aspects of climate change impacts and using our connected experience to explore the ways we engaged with the issues. Following (Monroe et al., 2019)'s advice on the effective strategies for climate change education, we used connected learning that provided the space for students to work in a team project which allowed them to explore issues of climate change from various textual sources, to use appropriate multimodal affordances and to choose the themes based on their personal perspectives.

The incorporation of multimodality in the curricular engagement was aimed at increasing criticality and creative use of resources through multimodal text analysis, curation, and production. Research has shown evidence of the positive influence of multimodal literacy in the learning process. (Li, 2020) argues that multimodality increased students' use of higher order cognitive skills. In the area of literacy teacher education, (Damico et al., 2018)) highlight the critical multimodal aspects of climate change literacy by examining preservice teachers' ability to evaluate the reliability of climate change information on the internet. Evaluating online sources requires the ability to identify multimodal aspects of information (Silvhiany, 2019; Silvhiany et al., 2021). In this research, multimodal affordances support preservice teachers' process of understanding climate change through the curation of multimodal resources and designing their climate change stories based on personal connections.

In this article, we address two major issues. The first one focuses on the issues the students focusing on their multimodal productions. The second concerns with how connected learning and ecojustice pedagogy support students' climate awareness.

This research heeds the call for an interdisciplinary approach to climate change education, especially from the perspective of English language teaching. Moreover, it shows how socioscientific issue of climate change is integrated into EFL teacher education course, which is expected to prepare prospective teachers to teach in the context of the changing world.

METHOD

The article is based on a classroom ethnography study in an EFL teacher education course. The creative writing course, where this study was conducted, was delivered online because of the restrictions in place during the pandemic school closure. The course employed both synchronous and asynchronous discussions throughout the semester. Considering the context of this course, traditional qualitative data collection was not viable. Thus, the research adapted data collection strategies to meet the physical distancing requirements. It employed virtual research data collection method which has recently been enhanced by digital platforms thanks to the development of communication technology (Kulavuz-Onal, 2015; Lenihan & Kelly-Holmes, 2015; Tao et al., 2017).

Participants of the study were 20 preservice teachers of English taking a creative writing course in their junior year of college. The ecojustice pedagogy was particularly integral to the first part of the semester focusing on team-based climate change projects. Working on a small group, preservice teachers collaborated on a picture book depicting climate-change and environmental related issues.


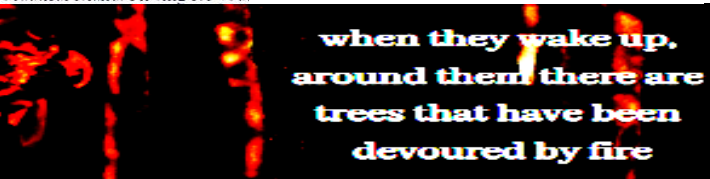
During the pandemic, there has been a heightened need to use virtual data collection strategies when physical distancing regulated our interactions (Roberts et al., 2021; Taguchi, 2021). Our research data include video-recorded discussion sessions during the 90-minutes synchronous zoom meetings, Forum Discussions in LMS (Learning Management Systems/e-learning platform), and artifacts of students' projects.

Video recorded discussions contained the whole class as well as group discussions on model texts and creative writing strategies. Forum discussions in the LMS were collaborative spaces for the groups to discuss their projects. In addition to the verbal and written data, multimodal data from the students' artifacts were essential to understanding the emerging climate change awareness among the preservice teachers.

We employed thematic analysis, which allowed detailed and nuanced account of data. Following Saldana's analytic cycles (Saldana, 2016), the data analysis procedure involved two cycles. The first cycle focused on close reading and rereading of the data with the aims of generating low level codes through in vivo coding, descriptive coding, and values coding. The second cycle of analysis emphasized on finding patterns among the codes to create categories or themes. The themes were then elaborated into assertions that connected theoretical perspectives and the findings of the study.

Preceding the data analysis, we transcribed the video recordings and put them in the table for coding. As for the multimodal data, we took screenshots of the picture books and put it in the table for coding, then we conducted a thematic and content analysis. Table 1 describes example of the codes emerged from the analysis.

Table 1. Example of Coding from the Data Sources

| Data Source | Data | Coding |
|------------------------|---|---|
| Synchronous Discussion | “We really have to address the rising sea level problem. There are more and more places disappearing because of the high sea level. These people have to live in constant flood in their home because they don’t have the place to go.” | Rising sea level flood |
| LMS Discussion | “I have seen a documentary from a news channel about a possibility that most of Pekalongan city will be drowned in a few years because of the rising sea level and flood. I wonder what will happen to the people in this area. Many villages have been abandoned and the people moved. However, some stayed in the flooded area because they couldn’t afford to move to another place.” | Problems associated with rising sea level |
| Picture Book |  <p>Charlotte lay still staring at the clouds in the night sky. Her mother’s strokes at the top of Charlotte’s head makes her sleepy.</p> <p>“They say that the world is sinking because of human actions. I want to throw all that into place. Mommy. However, is it too late?”</p> <p>“No, sweet pea... Continue your dream and create a beautiful island. I’ll sing for you.”</p> | The sinking world Hope for the future |
| Picture Book |  <p>when they wake up, around them there are trees that have been devoured by fire</p> | Wild fire |

FINDINGS

Findings are organized into two major themes. The first one focuses on preservice teachers’ climate literacy and the emerging climate change focus in their writing. The second finding reveals the interconnection between connected learning, ecojustice pedagogy, and the preservice teachers’ multimodal productions and their climate literacy.

Focused Climate Change Issues and the Climate Literacy

Before embarking on their book project, preservice teachers engaged with the discussions of various kinds of textual resources on climate change. In line with (Schneider-Mayerson et al., 2020)’s emphasis on the persuasive effects of reading climate fiction on belief and attitudes about climate change, we believed that engagements with examples of climate change stories could enhance preservice teachers’ understanding of the climate change issues. The texts consisted of children’s literature, short stories on climate change, online news, videos of climate change disasters and climate activists’ protests, and personal stories in social media platforms such as Instagram. Preservice teachers analyzed these multimodal texts to evaluate the credibility of the information and gain insights on climate change. Through the curation of the sources, the preservice

teachers learned about the issues surrounding climate change causes and impacts. These sources contributed to their understanding of the issue that inspired their book creation.

Analysis of the preservice teachers' picture books design revealed the issues that they considered important to raise in their group project. Table 2 describes the title of the books the preservice teachers created and the emerging issues related to environment and climate change as appeared in each book.

Table 2. Preservice Teachers' Book Creations and Climate Change Emerging Issues

| Title of the Book | Description of the Book | Emerging Issue |
|--|---|--|
| Polar Bear | A story about the impact of melting ice on the polar bears' habitat that limits their access to food | Melting ice Increased temperature |
| Flood: Do and Don't | A nonfiction book that depicts the devastating incident of flood followed by the suggestions on how to keep our environmental clean | Flood |
| Forest Fire | A story focusing on the combination of capitalism and unsustainable development that destroys forest | Fire & Habitat destruction |
| Canned Fish | A story about a boy who loiters everywhere he went. One day he slipped on the banana peels he trashed and bonked his head. He dreamed about going underwater and saw many fish with the body made of tin (can) because they were poisoned by the trash thrown in the ocean. | Trash in the ocean |
| Bob | A story about a baby Koala living in a eucalyptus forest in Eastern Australia. He and his mother were trapped in the fire | Forest fire Increased temperature |
| Where does the little squirrel go? | A story about a squirrel whose home was at the brink of destruction because a big excavator was coming to take down the trees in the forest | Habitat destruction Economic development consequences |
| Charlotte's Adventure: The Lucid Dream | A story about a dystopian future describing a girl and her mother who lived in a floating house surrounded by water. | Flood Raising sea level |
| Itchy Hands through the Mud | A story about the Lapindo mudflow that covered over 816 hectares of land through the eyes of the little girl who became an environmental refugee | Flood Rising sea level |

Each group member shared their personal connections with environmental and climate issues. Many of them shared the personal impact of the flood because of the high intensity of rain and bad drainage. The flood affected preservice

teachers who lived in the city as well as rural areas. It has become such a shared common problem that they discussed how climate change contributed to the incident of drought in some places and high intensity of rain in other places. This concern led to the creation of a short non-fiction material which was aimed to provide a simple text for students, particularly at the early level of learning English. Nonfiction book "Flood: Do and Don't" is a simple book that shows what people should do to avoid flooding. The group who wrote this book had a mission to provide an accessible book for young learners of English to learn about the environment.

Another book about flood is "Charlotte's Adventure: The Lucid Dream". As shown in Figure 1, the preservice teachers wrote about a dystopian world in which flood and rising sea level have drowned most of the land. Characters in this story have to deal with the changing world and hope for a better future. The story is in line with the model texts, for example some short stories from *The Anthology of Climate Change Fictions* published by Arizona State University and other climate change fictions, which raised the issue of a drowning world. The group writing this picture book wanted to raise awareness about the calamitous future we might experience if we did not take drastic measures to mitigate climate change.



"There's an island, it's so beautiful Mommy. I met a lot of friends and they were always waiting for me."

"Did they tell you about our world?"

Charlotte lay still staring at the clouds in the night sky. Her mother's strokes at the top of Charlotte's head makes her sleepy.

"They say that the world is sinking because of human actions. I want to throw all that into place. Mommy. However, is it too late?"

"No, sweet pea... Continue your dream and create a beautiful island. I'll sing for you."

Figure 1. Excerpt from the Story "Charlotte's Adventure: The Lucid Dream"
(Source: participants' picture book, 2022)

As revealed in Figure 2, forest fire is another common topic preservice teachers raised in their story. The story "Forest Fire" depicts a greedy person who cut down trees and repurpose the land for commercial use. The story "Bob" is about a Koala whose Eucalyptus Forest burns during the long dry season in Australia. In this story the preservice teachers brought out the issue of drought as the impact of climate change.



Figure 2. Excerpts from the story “Bob” depicting Australian wildfire
(Source: participants’ picture book, 2022)

Another issue raised in the projects was habitat destruction related to economic development. The story “Where does the little squirrel go?” depicts the tension between animal habitat and the destruction of forest for development. In this picture book, the main character, the squirrel, faced the reality of almost losing his tree home when a bulldozer prepared to bulldoze the forest to clear the ground for building. The writers emphasized the role of humans and their machinery advancement in the destruction of the environment and its natural habitats.

The picture books created by the preservice teachers have shown their awareness of the issues surrounding climate change. They addressed common problems of climate change that many scientists have discussed in scientific forums as well as written in popular media such as online magazines and institutional Instagram accounts (e.g. NASA Instagram & NatGeo Instagram).

The picture book projects have become effective means of strengthening preservice teachers’ climate literacy. Inquiry process involved in these projects provided the opportunities to engage in literacy practices that increase their knowledge of the cause and process of climate change through close examination of model texts, textual connections, and writing (Kuthe et al., 2020; Yasukawa, 2022).

Connected Learning, Ecojustice Pedagogy and Multimodality in the Preservice Teachers' Emerging Climate Literacy

Ecojustice pedagogy implemented in this course is this research is in line with Martusewicz's conception of ecojustice education as the means to unpack the complex discursive process of constructing understanding relations of domination between human beings and the natural world (Martusewicz, 2018). As pedagogy emphasizes on raising awareness on the unequal effect of climate change, it is crucial that digital inquiry such as the picture book projects acted as local actions based on global thinking (Castek & Dwyer, 2018).

Table 3. Interrelation between connected learning and ecojustice issue

| Connected Experiences | | Environmental/Ecojustice Issue |
|--|--|---|
| <i>Preservice Teachers' Personal Connections</i> | <i>Preservice Teachers' Textual Connections</i> | |
| Forest fire incidents in Southern parts of Sumatra and Kalimantan, Indonesia | News about bush fire in Australia (online newspaper and TV broadcasting) | Forest fire affecting rural and urban communities |
| Big flood in the city and village that affected students' houses | "Acqua Alta", a dystopian short story about big flood in Venice Recorded TV news about high tides causing flood in Venice | Flood affecting communities in different parts of the world |
| Melting glaciers | Devastating pictures of a starving polar bear in a National Geographic | Animal starvation |
| Environmental Refugee of Lapindo Mudflow | The New York Times article about climate refugees in the USA | Forced mobility Environmental refugees |
| Rising sea level in coastal area of North Jakarta | CNN and Kompas TV featured documentaries of people displacement from their village because of rising sea level | Erasure of coastal villages Climate refugees |

Connected learning was manifested in all processes of the project. Literacy practices involved the intertwining of personal connections, textual connections (both paper and digital multimodal texts), and the world connections, i.e. the local global environmental issues. The preservice teachers connected their experiences to understand the issues they brought up in their project. As shown in table 2, preservice teachers focused on the local issue of forest fire in Southern parts of Sumatra and Borneo, which also resonated with the global incident of wildfires in Australia and California.

In their books, the preservice teachers highlighted common issues from the local perspective with reference to the global ecojustice issues. Issue of flooding, for example, is an increasingly common problem in almost all parts of Indonesia. It is also a problem existing historically since the year of 782 in Venice and has become worse due to climate change. Building textual connections allowed the preservice teachers to perceive the climate change issue from different contexts through an active reading process. Table 3 shows the emerging interrelations between connected experiences and ecojustice environmental issues discussed by the preservice teachers.

In the initial process of the project, the preservice teachers were immersed in various multimodal texts that facilitated their learning of climate change issues. Despite the rising concern about the impact of climate change, this issue is not something commonly discussed in language teacher education programs. Considering this reality, the multimodal analysis of texts related to climate change, including video and online articles about this topic, preceded the beginning of the writing process to set foundational knowledge about climate change.

These textual immersions were connected to each of the preservice teachers' personal experiences. The construction of knowledge and understanding of climate change issues were made possible by the meaningful reflection of their own experiences. The synchronous meeting discussion as well as the LMS forum discussion revealed that the preservice teachers developed an ecojustice awareness, particularly on the impact of climate change on their own life and the community. One of the comments addressed the impact of climate change on the rising sea level in many cities in Indonesia.

"We really have to address the rising sea level problem. There are more and more places disappearing because of the high sea level. These people have to live in constant flood in their home because they don't have the place to go."

(Excerpt from synchronous discussion, Code No. 1)

This comment and other comments related to displacement of villages in Jakarta became the impetus to explore the broader issue of climate refugees because of the displacement. The preservice teachers made active connections with other resources as they thought about the impact of rising sea level and flooding in Indonesian communities, especially the coastal areas. For example, preservice teacher shared about the current condition of a city in Java,

"I have seen a documentary from a news channel about a possibility that most of Pekalongan city will be drowned in a few years because of the rising sea level and flood. I wonder what will happen to the people in this area. Many villages have been

abandoned and the people moved. However, some stayed in the flooded area because they couldn't afford to move to another place."

(Excerpt from LMS Discussion, Code No. 2)

In addition to the discussion on the local catastrophic effects related to sea-level rising in coastal areas in Indonesia, the discussion also addressed the problem of climate refugees in the United States. The article published by the New York Times raised the devastating impact of climate change in the coastal city of New Orleans where some villages located in a large bayou area disappeared because of the rising sea level. Studying this text by taking notes on the investigative journalism and ecojustice problem depicted in the article allowed the preservice teachers to not only build ecojustice literacy but also to learn how to write convincing stories. Furthermore, the discussions showed that ecojustice awareness emerged as the course allowed the preservice teachers to engage with multimodal resources and critical discussions of climate change phenomena.

Table 4. Multimodal affordances in the book project

| Multimodal Tools & Affordances | Literacy Connections |
|---------------------------------|---|
| Hand drawing | Drawing picture to support meaning making in the text |
| Ibis Paint | Digital drawing of book illustrations |
| Songs from the movie soundtrack | Mixing lyrics and poetical writing to create interesting dialog and to enhance artistic writing |
| Canva | Curating images and fonts, composing words and images to create coherence and interesting stories |
| Images | Selecting and appropriating images available online to create the stories |

In the process of immersive learning with multimodal climate change texts, the preservice teachers engaged in a multimodal literacy process. Reading and writing is not an isolated act as we may believe. Rather, it is a socially organized practice which incorporates the use of symbols and technology, and the sharing of knowledge in the form of thought, insight, and questioning for particular purposes. In this creative writing, preservice teachers relied on collaboration and multimodal affordances to create their books. As shown in Table 4, they used both hand drawing and digital tools, such as Ibis Paint and Canva to create illustrations for the books.

Each group approached the project differently. Some of them started off the project with elaborated story lines before deciding on which multimodal tools to use in creating their books. Some other groups ventured with various kinds of

multimodal digital tools to construct stories representing the environmental impact of human activities contributing to climate change. The use of digital tools combined with traditional drawing and other curation of digital sources have supported the preservice teachers' creativity in constructing environmental and climate change stories for their intended audience. As (Agustarina et al., 2022) suggested, the creation of learning material related to the issue of climate change is necessary for not only the development of preservice teachers' awareness of this issue but also for their preparedness in dealing with climate change issues in the content area they will be teaching in the future.

DISCUSSION

At present, climate change is considered the most critical issue affecting global community. One communication strategy deemed effective to engage people to discuss climate change issues is sharing personal stories of how climate change effects individual person. An experimental study on the mediating role of emotion conducted by (Gustafson et al., 2020) showed the evidence that listening to the personal stories regarding the impact of climate change on the individual level could positively impact the listeners' belief and risk perception about climate change. The integration of ecojustice pedagogy enabled the preservice teachers to immerse themselves with stories of climate change impacts and connected their textual experiences with their own personal experiences. The climate change issues emerged in the preservice teachers' picture book projects reflect the culmination of their learning about climate change issues and what they considered crucial to discuss.

The picture books on climate change have woven the textual and personal connections into the persuasive means of communicating environmental and climate change impacts on the Earth's inhabitants. In line with other research on the positive influence of climate related literature discussion on students' increased awareness of environmental and climate change issues (Muthukrishnan, 2019; op de Beeck, 2018; Putri & Silvhiany, 2022), this article highlights that preservice teachers' engagement with writing books about environmental and climate change issues had allowed the preservice teachers to develop a critical understanding of injustices occurring in the society where people experience unequal impact of climate change.

Personal stories and short stories are usually just used as learning materials in EFL classroom, in this study, stories were constructed from personal, textual and world connections. The intertwining of these connections resulted in the creation of climate change picture books for the intended audience of various levels, making the book projects important experience for the prospective teachers to learn about integrating climate change into the curriculum (Pratiwi & Silvhiany, 2023)

The immersion on the process of designing climate change picture books within connected learning in Team-based projects has been rendered an innovative learning space in which entanglements of personal and textual connections, resources, and tools were available. Using an activity-centered approach of ecology, (Carvalho & Yeoman, 2018) framed this space as complex networked learning environment in which technological innovations alter our practices. Due to proliferation of digital tools in youths' communicative practices, it is imperative that courses in language education incorporate multimodal productions as part of literacy-related projects. The supportive role of technology in ELT for both teachers and students has been widely acknowledged (Fitri et al., 2022) and become the essential aspect of multimodal projects. Furthermore, The inclusion on the multimodal projects reflects the methodological emphasis of ecopedagogy, that is, the affective, aesthetic, creative dimension that are often overlooked in traditional EFL curriculum (Norat et al., 2016). The multimodal engagement in this research has promoted the shift from digital consumption to production. This pedagogy takes heed of (Mirra et al., 2018)'s call for the need to cultivate "a broader set of digital skills and dispositions" beyond the digital consumption and toward critical digital production, distribution, and invention.

CONCLUSION

Climate change encounters in the curricular activities incorporating ecojustice pedagogy has supported preservice teachers of English's awareness of climate change issues while facilitating their multimodal writing skills. Multimodality in online learning environment allowed preservice teachers to more adequately express the climatic issues they found in the texts and to create stories about human-induced environmental problems. Extending upon connected learning and multimodal engagement, this article highlights the role of digital technology as crucial affordances of literacy learning that increased collaborative and active construction of meaning through digital story production.

Implication of the study includes the possibility for language education to engage in interdisciplinary participation to address climate change issues through curricular engagements that support multimodal-based climate literacy learning. ELT teacher education has shown to have the flexibility to foster integrated climate change education. Thus, ELT can contribute to the achievement of the sustainable development goals (SDGs), particularly on climate change education and improving the quality of education.

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