

## Climate Fiction for the Classroom through Ecocriticism and Collaborative Digital Text Annotation

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### ABSTRACT

*This study took a humanities approach to climate change education, focusing on climate fiction texts in the literature classroom, namely: Barakat Akinsiku's "The God of the Sea," Sigrid Marianne Gayangos's "Galansiyang," and Jules Hogan's "Those They Left Behind" from Everything Change: An Anthology of Climate Fiction, Volume III (2021). This encompassed the Quarter 3, Week 7 literature competency in the DepEd Grade 10 curriculum context. In-depth discussion of the cli-fi texts was made possible through the crafting of a lesson exemplar, writing of discussion questions through an ecocritical lens, and using Collaborative Digital Text Annotation (CDTA) as an evaluative reading tool which engendered student responses to the text and interactions within the CDTA activity. Thematic analysis was used in interpreting the digital text annotations which revealed four different themes: drawing out story elements, connecting the text to the real world, performing evaluative reading, and expressing random reactions under which the students' responses to the cli-fi texts were classified. The researchers recommend using online applications such as Google Docs as digital annotation tools during collaborative classroom reading. Also, literature classroom facilitators should create a concrete reward system to encourage students' enthusiasm during the CDTA activities and to achieve the collaborative aspect of the CDTA. Lastly, other reading strategies for evaluating cli-fi texts must be explored.*

**Keywords:** *climate change education, interdisciplinary literature instruction, technology-based learning, ecocriticism*

### INTRODUCTION

Climate change is a grievous and urgent global concern. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) (2016) stated that it is the defining issue of the times and humans are at "a defining moment." Its impacts, including shifting weather patterns that threaten food production and rising sea levels that increase the risk of catastrophic flooding, are global in scope and

unprecedented in scale. Without drastic action today, adapting to these impacts in the future will be more complex and costly.

Education is crucial to promote awareness of this pressing issue and encourage climate action. It helps people understand and address the impacts of the climate crisis, empowering them with the knowledge, skills, values, and attitudes needed to act as agents of change (UNESCO, 2016; Queypo & Gonzales). Therefore a need for schools to serve as initiating forces in empowering the youth to climate action.

Science textbooks with chapters on climate change reveal that science education has thus far been the popular channel through which learners encounter concepts dealing with environmental issues. However, there is a need to deliver climate change education (CCE) beyond the scientific framework, as recent scholarship recognizes that understanding climate science is insufficient (Monroe et al., 2017). Interdisciplinary frameworks provide a more holistic ground on which CCE can materialize especially since sustainability issues that have been seen as merely “green” issues in traditional environmental education (EE), are now regarded as interdisciplinary societal questions that impact everyday life (Breiting & Wickenberg, 2010). Integrating humanities, social studies, and science in such interdisciplinary frameworks improves climate education (Siegnier & Stapert, 2019).

A salient argument in discussions is that fiction can help foster action and responsibility in young readers, thus contributing to future sustainability. Fiction can function as a means for letting school children encounter representations of nature regardless of circumstance. A decade into the 21st century, a genre called climate fiction, also called cli-fi, emerged as a new mode that represents and interrogates climate change. Texts of this kind should be read in classrooms to give the youth opportunities to discover and extensively discuss nature and the environmental issues depicted in such fiction (Leavenworth & Manni, 2020).

The Philippines, a biodiversity hotspot for 70 to 80 percent of the Earth’s animal and plant species, is the world’s third-worst contributor to oceanic plastic pollution. The country’s electricity rates are among the most expensive in Southeast Asia, owing to a heavy reliance on dirty and privatized energy sources (Venezuela, 2020). Sea level rise around the archipelago exceeds the global average. And yearly, seasons become extreme, increasing risks to sectors such as agriculture, which accounts for over a quarter of the country’s total employment. Filipinos need to look beyond the concept of climate change and study fiction that helps rethink human roles on the earth and explore more balanced ways to coexist with the nonhuman environment. Cli-fi texts can occur in many forms in many media, touching individuals in unexpected ways and challenging them to think anew about what it means to exist as a human in these times about all the nonhuman life pulsating within and around them.

In recent years, and in tandem with the growth of cli-fi, a specific theoretical field within literary studies called ecocriticism surfaced to tackle texts of climate fiction (Garrard, 2023). One of the main goals of ecocriticism is to study how individuals in society behave and react about nature and ecological aspects. It serves as a lens through which scholars can flesh out cli-fi and discuss the social emphasis on environmental destruction and increased technology (Harraway, 2015). Utilizing it leads to accrued knowledge about climate change from cli-fi. Lundholm (2019) pointed out that this knowledge can give rise to emotions like hope and lead to a heightened interest in environmental issues and a motivation to effect change. This can be productive for fostering problem-solving skills and collective agency, called for as environmental and sustainability education practices need transformation (UNESCO, 2016), and as the world outside the classroom needs collective efforts.

This study takes a humanities approach to climate education (Monroe et al., 2017; Oberman & Martinez Sains, 2021; Stapleton, 2018; Svarstad, 2021), focusing on the utilization of cli-fi texts in teaching literature in the context of the DepEd Grade 10 curriculum competencies, specifically, “evaluate literature as a source of wisdom in expressing and resolving conflicts between individuals or groups and nature” and “draw similarities and differences of the featured selections in relation to the theme.” Cli-fi narratives can be set in the past, present, or near future of the planet as it is, sometimes, characterized by efforts to imagine the impact of drastic climatological change on human life and perceptions (Irr, 2017; Kaplan, 2016; Ryan, 2018; Santa Ana, 2018). To analyze these texts, the study employed the lens of ecocriticism, which seeks to evaluate texts and ideas in terms of their coherence and usefulness as responses to the environmental crisis (Kerridge, 1998, p. 4).

Building on ecocriticism, the competencies in the Grade 10 English curriculum, and critical climate education, the study aimed to critically read the representations of and interrogations on climate change in selected short stories, namely: Barakat Akinsiku’s “The God of the Sea,” Sigrid Marianne Gayangos’s “Galansiyang”, and Jules Hogan’s “Those They Left Behind” from *Everything Change: An Anthology of Climate Fiction, Volume III* (2021). With the analyses of the stories as input, the researchers also constructed a lesson plan for the subject for use in the literature classroom. In addition, the study explored the effects of collaborative digital text annotation as a teaching and learning strategy in developing climate change awareness and action. Their responses to the text and interactions through collaborative digital text annotation were the basis for describing their perceptions such as drawing out elements, connecting the text to the real world, performing evaluative reading, and expressing random reactions. At the nexus of climate change education, critical pedagogy, and e-learning, the study aimed to contribute to the corpus of practices of teaching literature that is attuned to the issues of the times with the vision that literature is a promising instrument for transformation (Tabunan, 2022).

**Objectives of the Study**

This study aimed to analyze selected climate fiction through ecocriticism and develop lesson plans for use in the classroom with collaborative digital text annotation as a strategy. Specifically, it sought to answer the following questions: How do the selected climate fictions represent and interrogate climate change? How have students responded to the texts with collaborative digital text annotation as a strategy in the literature classroom? What are the students' perceptions of collaborative digital text annotation?

**METHODOLOGY****Research Design**

The qualitative research design is used in this study. Qualitative research is intended to deeply explore, understand, and interpret social phenomena within their natural setting (Creswell, 2012). Meanwhile, Bandhari (2020) defines qualitative research design as a method that seeks answers to questions and involves the collection of evidence.

The qualitative method is a systematic approach used to describe the respondents' ideas and give them meaning. Furthermore, this design relates to the perceptions, opinions, or beliefs of the studied respondents, which cannot be measured by numbers (Florentino, 2020). Utilizing the document analysis technique of this design, the researchers analyzed an in-depth description of the connecting the text to the real world, drawing out story elements, performing evaluative reading, and expressing random reactions of Grade 10 students in Narvacan National Central High School.

**Data Collection and Instrument.**

Non-numerical data for this study came from the annotations on the digital copies of the two cli-fi pieces, made accessible to the students through Google Docs, namely: "Galansiyang," and "Those They Left Behind" from *Everything Change: An Anthology of Climate Fiction, Volume III*. Initially, the researchers chose three cli-fi texts in consideration of the students' cognitive level and the relatability of the texts. These texts were then analyzed through ecocriticism as a prerequisite to the lesson exemplar developed for teaching the cli-fi texts. The cli-fi text, "The God of the Sea," served as the model text for teaching collaborative digital text annotation reading strategy in preparation for the students' independent reading and annotating of the remaining two texts. Learners' responses to the two texts and interactions through collaborative digital text annotation served as the qualitative data to assess the students' perception mainly drawing out story elements, connecting the text to the real world, performing evaluative reading, and expressing random reactions.

Collaborative digital text annotation activities were conducted to generate students' responses in the form of annotations. The digital copies of the two cli-fi texts ("Galansiyang" and "Those They Left Behind") contained probe questions that are ecocritical to generate quality annotations from students.

The researchers inserted simplified ecocritical prompts in the digital copy of the texts. For "The God of the Sea," the prompt was "Do the characters present/display ethical behavior towards nature and other nonhuman life forms?" The question for "Galansiyang" was "How do you see issues of environmental disaster and crisis reflected in the literary text?" For, "Those They Left Behind," the question asked was "What cultural attitudes towards nature are represented in the text?"

After analyzing the three chosen cli-fi texts through the lens of ecocriticism, the lesson exemplar was developed and implemented for a week, precisely every 3:00-4:00 pm. On the first day, annotation as a reading strategy was introduced. The students were given physical copies of the model text, "The God of the Sea" by Barakat Akinsiku, to read and annotate. Afterwards, Collaborative Digital Text Annotation was presented along with the digital copy of the model text, "The God of the Sea," in Google Docs.

On the second day, climate fiction as a genre of literature concerned with the environmental crisis was highlighted and exemplified still by the model text, "The God of the Sea" by Barakat Akinsiku. The students were tasked to analyze the story's elements: characters, setting, plot, theme, conflict, and point of view.

For the third day, the whole period was designated for students to annotate "Galansiyang" by Sigrid Marianne Gayangos individually.

The first half of the fourth day was allotted for discussing the students' exemplary responses from their annotations in the "Galansiyang" text, and the second half for continuing their practice of collaborative digital text annotation with a different text, "Those They Left Behind" by Jules Hogan.

On the last day, the students were divided into twelve groups, with the first six groups assigned to analyze the story elements of "Galansiyang" and the remaining six groups for "Those They Left Behind." Presenters from each group were tasked to present their analysis of each element of the stories and their group's experience using collaborative digital text annotation to engage with the cli-fi texts.

### **Analysis of Data**

This study utilized thematic analysis as a method in the data analysis. Braun and Clarke (2006) defined this as the process of identifying the patterns or themes reflected in the gathered non-numerical data. Unlike many qualitative methodologies, it is not tied to a particular epistemological or theoretical

perspective. Due to its flexibility as a method, this is advantageous, given the diversity of work in learning and teaching contexts.

## RESULTS AND DISCUSSION

### Ecocritical Analysis of the Three Cli-fi Texts

#### "The God of the Sea" by Barakat Akinsiku

Barakat Akinsiku's "The God of the Sea" (2021) concerns a disillusioned child demystifying climate issues. It reflects the conflict between man and nature by drawing out plastic pollution as an actual situation related to climate change and highlighting the treatment of human characters towards non-human animals—as represented by the baby whale—in the story.

The child protagonist of "The God of the Sea," Layi, begins her narration of the story in a state of confusion about her neighbors' distress as the sea comes to flood their beach community. This exposition of the plot immediately illustrates the external conflict of man versus nature, and the climate fiction genre of the selection is manifested in the section:

Once we stepped outside, it looked like the world was indeed coming to an end. People were running about, carrying massive trunks on their heads and talking in fast, clipped tones. I saw a mother drag a half-sleeping toddler with one hand while strapping a baby on her back with the other. Another lady, whom I recognized as Sister Rosie from next door, packed pots and cooking utensils into an iron bucket before deftly placing it on her head. Others shouted at the top of their voices, knocked on the doors of sleeping neighbors, and gathered personal belongings in haste. (p. 57)

True to a naïve perspective of a child, this lack of awareness of her surroundings is shown again in another one of her narrations: "The sand is wet and it seemed the sea was running after us." The passage contains a personification of the sea and is critical to unlocking the later theme of disillusionment or enlightenment by education. In the middle of the story, Layi is allowed to satiate her curiosity by enrolling at the Community Model School. She gains climate education when Miss Chidera from the Institute of Oceanography teaches them about the dangers of plastic pollution and the importance of recycling:

"These bottles in particular are very dangerous to the marine environment because they are not biodegradable and can lead to the death of sea animals," she explained. "We must learn to sort them from our waste and take them for recycling." (p.72)

Another important ecocritical point of discussion in the story which delivers its man versus nature conflict is the exploitation of marine life presented in the portion of the text describing in gruesome detail the slaughter of the baby whale:

The carcass of the biggest fish I had ever seen was on the shore, surrounded by more than a dozen people who were busy butchering and cutting off body parts. It was about the length of a fisherman's canoe and was huge and fat. I later learned that it was a baby whale. Its peeling flesh was black, shiny, and reflecting the glint of the afternoon sun. (p. 75)

This becomes an eye-opening event for Layi as it is the final piece to her understanding of the puzzling phenomenon of flooding in their locality and the story ends with her questioning whether Olokun, the god of the sea even really exists, which is apparent of her disillusionment of their community's cultural myths. She realizes that the marine calamity was not caused by an invisible god but by the ignorance and environmental irresponsibility of the locals.

Presenting themes of disillusionment by education, plastic pollution, and marine life exploitation, Akinsiku expertly mirrors the discord between man and nature in the West African country, Nigeria.

### **“Galansiyang” by Sigrid Marianne Gayangos**

“Galansiyang” (2021) by Sigrid Marianne Gayangos is a post-apocalyptic story set in the Philippines. It was anthologized in a project by the Arizona State University's Center for Science and the Imagination. The project, *Everything Change: An Anthology of Climate Fiction Vol. 3*, collected short stories on climate change written by talented international writers to respond to the worsening climate crisis. The story elucidates the conflict of man versus nature through parallels drawn between the sufferings and oppression of groups of people and the treatment of the land. It also shows hope's role in the external/environmental conflict within the text and in real life.

The story begins with the characters acclimating the reader to the status of the story's setting, followed by an etymology of the protagonist's name in the lines:

*The pollutants are thicker than usual, Amihan, she said, stressing out each syllable of my name. My name was taken from the old tongue of the Forgotten Years. Amihan. It meant the northeast monsoon winds that indicated the beginning of the Christmas season, back when Earth had its regular cycle of seasons. (p. 173)*

In the context of Gayangos's story, the old tongue of the Forgotten Years refers to the previous language used by humanity, which the characters are prohibited from speaking. This restriction in language use reflects the new convictions and stricter attitudes of the survivors regarding how they interact with nature. Gone were the days when humans lived luxuriously without thought to limited resources. The new leaders of the fictional communities in Gayangos's work do not condone complacent and materialistic behaviors, as they have learned from their ancestors' grave mistakes. The future after the environmental apocalypse that Gayangos writes is not futuristic (there are no flying cars, no technological takeover), but rather, a voyage back in time, with tribute to past civilizations when the priority of humanity is simply gathering the basic needs to survive. In a way, the characters of the story are now oppressed as they are discouraged from following their passions and callings that are more imaginative as Amihan expresses: "I wanted to be a storyteller like my mother, but there was simply no room for that kind of luxury in the time I lived in" (p. 172). From this, the parallel may be drawn—Amihan's oppression may be understood to be an echo of her ancestors' foul and oppressive treatment of the environment.

Despite living in a seemingly hopeless and unromantic age of extreme practicality in lifestyle, the story also presents the more optimistic theme of hope at the plot's resolution when the titular character, the Galansiyang, appears.

Then came a most unexpected sound, a chorus of high-pitched squeaky chirps that was unlike the musical crickets in my mind. A dark flock of starlings flew overhead, slowing down briefly as if looking for a place to roost. Katha squeezed my hand in excitement. And even before the word came out of my mouth, she exclaimed it first. *Galansiyang!* There they were, with the conspicuous red eyes and the unabashed chirping, announcing their return. The sky had become darker, and the stars were in their millions. There was another call from the flock of birds—a long, low, quavering cry that made me shiver. We stood there, Katha and I, aware of our nebulous future, thinking of the many tomorrows that we would soon create. (p. 190)

Galansiyang is the Asian glossy starling (*Aplonis payanensis*) found in the Philippines' subtropical or tropical mangrove forests. In literature, birds are often symbols of hope. In Gayangos's choice to end the story with the appearance of a galansiyang, she is encouraging an optimistic and proactive attitude as regards the climate crisis.



### **“Those They Left Behind” by Jules Hogan**

"Those They Left Behind" (2021) by Jules Hogan transpires in the futuristic wasteland, the Earth. Anthologized in the Arizona State University's Center for Science and the Imagination's project entitled, *Everything Change: An Anthology of Climate Fiction Vol. 3*, it narrates the experiences of three women characters as they navigate what remains of their home planet. The story deliberates on the representation of the conflict between man and nature by revealing the issues of environmental disaster and crisis.

Just as the Ascents left behind Earth, the minorities in Hogan's story, the characters with disabilities are discarded. The author, therefore, draws an obvious parallel between the oppression of minorities and the treatment of the land in the lines:

They left behind the sick, the disabled, the blind, and the paraplegic and Deaf unless you had some other immense talent. They left behind people with low incomes, the un-bootstrapped. The imprisoned or once so, the very old, the very young. They left those who scored poorly on standardized tests or personality tests or those with a psychiatric condition. Those who tended to be radical, in any political direction, or who struggled with addiction: gambling, sex, alcohol, drugs, reality television, pornography, salty foods, cycling, and rhetorical debate. Those who participated in socially adverse behaviors, such as sexual depravity or smoking. (p. 195)

“Those They Left Behind” dives deeper into the catastrophic anthropogenic contribution of men’s materialism in the environmental crisis as reflected in the repetitive sections:

They left behind towers of refuse, castles of waste. Soda bottles, pen caps, plastic bags that read thank you, thank you, thank you. Batteries: lithium-ion, computer, car, double-A, triple-A, watch, solar. Shiny snack wrappers and chip packets—Frito, Dorito, corn chip, Lay’s, baked, BBQ, salt and vinegar, Cajun twist. Lightbulbs with broken filaments, icebergs of Styrofoam, rumpled silk ties, black plastic bags of chicken bones, unused sheet metal, and wooden packing pallets. We scavenged and scrapped like vultures surrounded by all these relics. (p. 196)

The paragraph lists the huge amount of waste and consumer products left behind by humanity for all their selfish and heedless materialistic existence on the planet. Those left behind on Earth—people not privileged to join the "Ascent" in

their migration to Mars—were left to deal with the trash and the consequences of humanity's materialism.

Lastly, another significant environmental issue poetically revealed in the story is plastic or marine pollution as manifested in the section:

The ocean was her most giant mosaic, built from strips of trash in every shade of blue, under a rich sunset sky. Her mother missed the ocean, knew. She grew up on the archipelago of Florida but moved inland for more opportunities when she had a daughter. What luck, thought. There was no opportunity here. (p. 208)

Hogan, with her expert weaving of the three protagonists' experiences, reveals in her fiction the real and serious issues of environmental disaster brought by humanity's materialism and overconsumption of nature's resources.

### **Grade 10 Students' Perceptions**

After collating the students' annotations on "Galansiyang" and "Those They Left Behind," the researchers synthesized the main themes under which each annotation is suited to be categorized. The following discussion is designed to clarify and support the findings of this study. Representative student annotations follow a description of each theme to illustrate the theme.

**I am drawing out story elements.** In reading the cli-fi texts, students' ability to comprehend the actual text is much needed. Comprehension is reflected through students correctly identifying the elements within the stories. Based on the data gathered, most of the responses concern the six story elements: characters, setting, conflict, theme, plot, and point of view. As student-participants expressed:

This setting is depicted in the story a couple of times. It is where Lola and Amihan had several conversations about stories about the forgotten years and mainly the rules to follow.

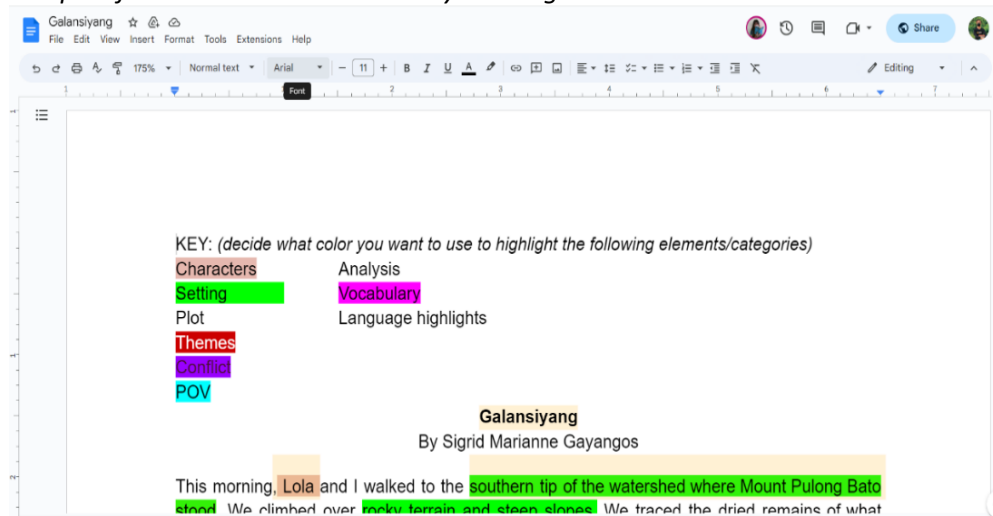
"Galansiyang" is about a girl named Amihan who speaks the old language considered inadequate and improper, And Katha who speaks the proper or correct language. But, even with these noticeable differences, they can still be together.

These sample annotations show that students drew out story elements during their CDTA activities. The ability to identify the elements of a story aids in the students' comprehension and leads to their more profound understanding and appreciation of cli-fi texts. Students also used Google Docs's highlighter feature and

created a corresponding legend to classify the different story elements as they appear in the texts read.

**Figure 1**

*Sample of the students' annotation system legend*



**They were connecting the text to the real world.** This theme was revealed in annotations displaying students' ability to connect the climate issues reflected in the text to real-world scenarios. This demonstrated their consciousness and in-depth understanding of the pressing and occurring global environmental issues and crises.

Even though the Earth in this story is polluted and almost [uninhabitable]. The nature still holds power over humanity. For this reason, the Earth is still the leading provider of limited resources and is still the place we call home. But the question is, what—or instead—who caused destruction that nature became what it is in the story? We humans, with the wrongdoings of humanity, environmental factors, political dispositions, and human interventions. This is when nature became afflicted, damaged, and oppressed.

We see environmental issues as a serious problem like in the text, but if the environmental issues are severe deforestation, pollution, and food scarcity, people will change their perception of the problem. They will take action to address the problem.

The students' belief in climate change as a real issue is mirrored in these representative annotations. Climate change awareness provides the knowledge, abilities, values, and attitudes necessary for readers of cli-fi to act as agents of change by assisting them in understanding and addressing the catastrophic effects of climate change.

**They were performing evaluative reading.** The students also performed evaluative reading of the cli-fi texts as evinced in annotations containing their political opinions and insights. As one participant asserted:

The story of "Those They Left Behind" affected my perception in a few ways. First, I realized how lucky I am to have a stable home and family. Second, it showed me how strong and resilient people can be in adversity. Finally, it made me more empathetic towards refugees and other displaced people's issues of environmental disasters and crises are reflected in the literary text through the character's experiences of leaving their homes behind, often due to natural causes such as floods or earthquakes. Additionally, we see how environmental problems can exacerbate existing social and economic inequalities, as those already marginalized are often the most affected by climate change and other environmental issues.

Unveiling the fact that minorities tend to bear the brunt of climate change and critiquing how climate change is deeply intertwined with global patterns of inequality, the students' ability to think critically is indeed the cornerstone skill in climate change education as this skill not only helps students to analyze, draw inferences, synthesize, and evaluate concepts and information in literary texts, but more importantly, it allows the learners to express their opinions on scientific or social issues, make decisions, construct plans, and solve perceived problems such as the climate crisis.

**They were expressing random reactions.** This theme described the students' extra reactions and thoughts as they engaged with each text. It served as the students' free ground in enthusiastically expressing their feelings and relating to the texts' characters and events.

"RIP LOLA :("

"I'm kinikilig HAHAAHAHA"

"OMG!!!! Naoko is gay and I think slayyyyyyyyyable"

These responses may seem too informal and nonsensical at first, but on the contrary, these display the 21<sup>st</sup>-century students' enjoyment of the selected short story pieces. Literary appreciation is The main goal of teaching any literature genre (Taan & Lasaten, 2021). Creating a non-judgmental atmosphere during collaborative annotating activities reduces students' anxiety when reading challenging literature, and students' love for reading blossoms.

### **Grade 10 Students' Impressions on Collaborative Digital Text Annotation**

As representative students of 21<sup>st</sup>-century learners, students have displayed a genuine inclination toward using Collaborative Digital Text Annotation as a reading strategy. According to Lee & Spratley (2010), 21<sup>st</sup>-century adolescent readers may struggle with text for several reasons, including problems with vocabulary knowledge, general knowledge of topics and text structures, knowing what to do when comprehension breaks down, or proficiency in monitoring their reading comprehension. The use of CDTA as an evaluative reading strategy presents an opportunity to monitor these problem areas better, as participants of this study attest:

Since it was my first time using Google Docs, it was super hard to use features that I could not follow that much. But it introduced me to a new way of reading, especially since casually interacting with my classmates was possible.

The CDTA made my reading experience about the text fun. I understood the text better than before because of the guiding comments from my classmates. Given that the texts were cli-fi, my thinking ability deepened and was extensively practiced. The texts are also great tools to share about climate change issues as it is given less importance to society now.

It was more complicated to read online at first. I was always biased towards physical books over e-versions and have adopted a purist reading mentality since I prefer reading texts on paper. The experience of reading together with my classmates in Google Docs was surprisingly cute. Reading became less lonely and even though figuring out the colors for highlighting critical information and interacting with my unhinged classmates was crazy chaotic at the beginning, once we finalized and used our annotating system, I appreciated the organization of ideas.

Integrating digital strategies such as collaborative digital text annotation in literature classes maximizes value, symbolism, and efficiency. I had fun reading while also acknowledging the perceptions and comments of my classmates; it made me understand the elements in the story. It was also easier to connect myself with the texts because I was writing my thoughts freely; it felt like conversing with the characters.

The collaborative digital text annotation (CDTA) strategy is fun and effective for us, students, to improve or enhance our reading abilities. I find it fun because I can read and annotate with my classmates since we are typing and viewing the same document, and we can see and discuss each other's responses. And I find it compelling because if I am going to assess myself through my CDTA journey, I must say that I improved. After all, this strategy is new to me and refreshing.

Integrating collaborative e-learning in the literature classroom through CDTA produced positive feedback from the Grade 10 students, proving that the learners benefit significantly from new simulative learning/teaching strategies.

Literature alone does not often encourage the formation of an ecologically conscious lifestyle. However, enthralling them in the cli-fi texts and allowing them to express their perceptive ideals about environmental situations where they recognize some parts of themselves would make a significant difference. Climate fiction texts constitute a social commentary on the world. The previous generations' influence on stopping climate change is pushed onto the protagonists, like how their responsibility for the Earth is pushed onto today's generation. Through narratives of loss, struggle, and destruction of the natural and cultural landscape, students may have been influenced to rethink their role in the environmental debates going on in the present political and social landscape. This helps students internalize their accountability and understand their role in creating lasting solutions for climate change.

The collaborative digital text annotation strategy for reading literature is feasible from the students' perspective due to the various advantages they experienced through the CDTA activities. Firstly, the students were exposed to climate fiction texts to expand their literature knowledge. Secondly, it allows the students to collaborate on their responses from other students as they can monitor their classmates' responses. The last advantage would be the easy access of the text, given that it is digital, and anyone can read and annotate at any moment.

Due to its networked competencies, digital text annotation encourages students to cross boundaries between learning spaces to make literary experiences

more integrated, enjoyable, and personally meaningful. For this instance, web annotation and many tools available in their learning ecologies create and sustain learners' connections with people, resources, and ideas in the openly networked world. Students benefited from the strategy because they were willing to spend more time on collaborative digital text annotation. After all, it is a convenient learning aid that produces a stable environment. The annotations can be used to diagnose student learning and make teaching adjustments. In summary, integrating a feedback process may allow students to put more effort into creating a more engaging environment and devote more time to reviewing and changing the ecology.

### CONCLUSIONS

This study focused on three short stories, namely: Barakat Akinsiku's "The God of the Sea," Sigrid Marianne Gayangos's "Galansiyang", and Jules Hogan's "Those They Left Behind," which represent and interrogate climate change by formulating discussion questions on them for the literature classroom. After that, these discussion questions served as input for formulating and designing a lesson exemplar for use in the Grade 10 English classroom. In particular, the lesson exemplar was anchored on the competency: "Evaluate literature as a source of wisdom in expressing and resolving conflicts between individuals or groups and nature." Students after that dealt with the literary texts through collaborative digital text annotation. Their responses to the texts underwent thematic analysis. Lastly, their perceptions of collaborative digital text annotation were described.

The collaborative digital text annotation activities revealed the students' ability to draw our story elements, connect the text to the real world, perform evaluative reading, and express random reactions because of employing Collaborative Digital Text Annotation in Grade 10 students' evaluative reading of climate fiction in the literature classroom. This substantiates the benefits of new internet-based, stimulative, and collaborative learning/teaching strategies for 21<sup>st</sup>-century learners. Finally, in line with a humanities approach to climate education, an in-depth discussion of climate fiction is a fruitful endeavor that provides the youth opportunities to extensively discuss environmental issues and foster their motivation to effect change.

### RECOMMENDATIONS

In the umbrella of the emerging themes on students' perceptions and appreciation of the respondents, it is recommended that literature classrooms intensively discuss climate fiction texts and that literature teachers utilize the collaborative digital text annotation (CDTA) strategy for 21<sup>st</sup>-century learners'

engagement with texts of this and other genres. Moreover, the researchers also recommend that literature teachers explore and generate different themes to which students' responses will belong. Google Docs is an accessible collaborative platform, a conducive space for students to annotate digital texts. Future researchers may conduct studies on the CDTA strategy, exploring other online collaborative tools such as LivingWriter, Microsoft Online, Dropbox Paper, and Zoho Docs. Furthermore, since CDTA can be implemented only in internet-friendly classrooms with technologically equipped students, the researchers recommend using other reading strategies in teaching cli-fi texts.

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