

From Awareness to Action: Unleashing the Transformative Potential of Climate Change Education in St. Michael's College

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Abstract:

The aim of this study is to explore how climate change education is delivered and received in higher education, using St. Michael's College (SMC) as a case study. The study was conducted in the first semester of 2022-2023 and involved 30 students and teachers who participated in semi-structured interviews and focus group discussions. The data analysis revealed the themes that emerged from the students' complex views and deep knowledge of climate change, as well as the teachers' experiences, challenges and effectiveness in teaching this topic. The study also suggested some recommendations for improving climate change education, emphasizing the need for holistic and transformative teaching methods. The study drew on relevant theoretical frameworks to inform the discussion and contribute to the literature. The findings of this study have implications for the wider field of climate change education and invite further research and action in this area.

Keywords: awareness to action, climate change education, transformative potential

I. Introduction

Climate change education is essential for addressing the environmental challenges that our planet faces. It helps us to comprehend, act, and find sustainable solutions to the problem of climate change (Jahren, 2020). By providing individuals with information and fostering a sense of responsibility, climate change education enables us to tackle this global issue together (Eslit, 2023). Through education, we nurture environmental literacy and prepare a generation dedicated to creating a resilient and sustainable future (Beach & Webb, 2018).

Given this background, climate change is one of the most urgent global issues of our time, with significant consequences for the environment, society, and future generations (Smith, Howe, & McGeechan, 2020). As the impacts of climate change become more evident, there is a growing need to educate individuals about this complex issue (Chen & Jiang, 2019). Climate change

education plays a crucial role in providing individuals with the knowledge, skills, and attitudes required to understand, reduce, and adapt to the challenges posed by climate change (Agyeman, Schlosberg, Craven, & Matthews, 2020).

The current study aims to explore climate change education within the setting of St. Michael's College during the first semester of the 2022-2023 academic year. St. Michael's College, a prestigious educational institution, acknowledges the importance of addressing climate change and has implemented various initiatives to incorporate climate change education into its curriculum and campus activities (Stevenson et al., 2019). Examining the effectiveness and challenges of climate change education in this specific setting can offer valuable insights for improving educational practices and encouraging sustainable behaviors among college students and teachers (Boyes & Stanisstreet, 2018). The significance of studying climate change education in St. Michael's College lies in its potential to contribute to the broader field of climate change education and serve as a model for other educational institutions. By examining the experiences, perceptions, and knowledge of college students and teachers regarding climate change, this study aims to shed light on the effectiveness of current educational strategies and identify areas for improvement (Cruz, Camacho, Pulhin, & Balangue, 2019). Additionally, exploring the context of climate change education within the specific setting of St. Michael's College can help tailor educational interventions to address the unique needs and challenges of this institution (Reid & Scott, 2021).

The research objectives of this study are twofold:

1. To assess the current state of climate change education among college students and teachers in St. Michael's College.
2. To explore the perceptions, knowledge, and attitudes of participants towards climate change and its educational practices within the college.

To achieve these objectives, the study addressed the following research questions:

1. What are the existing climate change educational initiatives and practices in St. Michael's College?

2. How do college students and teachers perceive and understand climate change and its relevance to their lives and academic pursuits?
3. What are the perceived barriers and facilitators to effective climate change education in the college setting?

By addressing these research questions, this study aims to contribute to the existing body of knowledge on climate change education and provide practical insights for improving educational approaches in St. Michael's College and beyond.

II. Literature Review

This literature review gives a summary of the literary background of climate change education and looks at previous research done in educational settings. The purpose is to find the gaps and limitations in the existing literature, which will guide the current study's focus on climate change education in the setting of St. Michael's College. By reviewing relevant theoretical frameworks and previous research results, this literature review prepares the ground for the following discussion on the research aims and methods (Hungerford & Bluhm, 2020). It emphasizes the need for more research to fill the gaps in knowledge and discover effective ways for climate change education in educational settings.

First, the study by Beach, Share, and Webb (2017) titled "Teaching Climate Change to Adolescents: Reading, Writing, and Making a Difference" highlights the importance of incorporating climate change topics into literacy instruction. The book's focus on critical thinking and action-oriented engagement can guide the current study's approach in enhancing students' awareness, understanding, and motivation to address climate change issues. Marsh's book, "The Educator's Guide to Climate Change: A Practical Course for K-12 Teachers" (2015), provides a comprehensive resource for integrating climate change education into the curriculum. The practical activities and resources offered can inspire the researcher to adjust and modify teaching strategies for college-level students and teachers, facilitating the effective delivery of climate change education.

The "Climate Change Education: A Toolkit for Educators" by the North American Association for Environmental Education (NAAEE, 2011) offers a diverse range of resources, lesson plans, and guidance for educators. This toolkit can be used by the researcher to access a

variety of teaching materials, ensuring the incorporation of interdisciplinary approaches and engaging learning experiences in the current study. Jahren's book, "The Story of More: How We Got to Climate Change and Where to Go from Here" (2020), gives a narrative exploration of the historical and social aspects of climate change. This book can contribute to the current study by deepening the understanding of the broader context and implications of climate change, encouraging critical thinking and reflection among college students and teachers.

Moreover, the "Climate Change Education: Knowledge, Teaching, and Learning about Climate Change" edited by McDonald, Wilson, and Oonk (2014) presents a collection of scholarly works that examine various aspects of climate change education. The theoretical frameworks, teaching strategies, and learning outcomes discussed in this book can inform the current study's theoretical foundations and pedagogical approaches, enhancing the researcher's knowledge of effective climate change education practices.

The Theoretical Foundations of Climate Change Education: Climate change education is based on various theoretical frameworks that aim to enhance a deeper understanding of the complex issues related to climate change and foster sustainable behaviors. One prominent theoretical foundation is the environmental education framework, which emphasizes the importance of connecting individuals to their environment and nurturing a sense of environmental responsibility (Rickinson et al., 2019). Another influential framework is the transformative education approach, which seeks to empower individuals to critically reflect on societal values, challenge existing norms, and promote social change (Sterling, 2019).

These theoretical foundations provide a basis for designing effective climate change education programs that foster knowledge acquisition, attitude change, and action-oriented behaviors. Previous Research on Climate Change Education in Educational Settings: Several studies have examined climate change education in educational settings, including schools and colleges, to understand the effectiveness of educational interventions and explore factors that influence students' knowledge, attitudes, and behaviors. For example, Smith, Howe, and McGeechan (2020) conducted a national survey among Australian teachers, investigating their attitudes, practices, and perceived barriers in climate change education. Their findings revealed variations in teachers' confidence levels, availability of resources, and the need for professional development opportunities.

In a study by Chen and Jiang (2019), an intervention program was implemented in elementary schools to enhance students' knowledge, attitudes, and behaviors related to climate change. The results demonstrated positive outcomes, indicating that targeted educational interventions can effectively improve students' understanding of climate change and promote pro-environmental behaviors. Further, Cruz et al. (2019) conducted a study focusing on the perceptions and practices of climate change education among basic education teachers in the Philippines. The study explored the level of awareness, knowledge, and implementation of climate change education in the classroom. The findings revealed variations in teachers' perceptions and practices, highlighting the need for professional development and curriculum support to enhance climate change education in basic education settings.

Mercado (2018) investigated the environmental attitudes and climate change awareness among college students in the Philippines. The study aimed to assess students' knowledge, attitudes, and behaviors related to climate change. The findings indicated a moderate level of awareness among the participants, with variations in environmental attitudes. The study emphasized the importance of incorporating climate change education into the college curriculum to foster pro-environmental attitudes and behaviors.

Serrano and Dorado (2017) explored the state of climate change education in Philippine higher education institutions. The study investigated the integration of climate change education into the curriculum, availability of resources, and faculty engagement. The findings highlighted the need for a more systematic and comprehensive approach to climate change education in higher education institutions, including the development of interdisciplinary programs and collaborations. Rodriguez et al. (2016) conducted an assessment of climate change awareness among farmers in the Philippines. The study aimed to explore farmers' knowledge, perceptions, and adaptation practices in response to climate change impacts. The findings revealed varying levels of climate change awareness among farmers, with limited access to information and resources hindering their adaptation efforts. The study emphasized the importance of targeted educational programs and support to enhance climate change resilience in the agricultural sector.

Moreover, Decena et al. (2015) conducted a study focusing on climate change awareness and practices among elementary school teachers in Cebu, Philippines. The study aimed to assess teachers' knowledge, attitudes, and classroom practices related to climate change education. The

findings revealed varying levels of awareness among teachers, with limited integration of climate change topics into the curriculum. The study emphasized the need for teacher training and support to enhance climate change education in elementary schools. Aguirre (2020) conducted a qualitative study exploring the role of local culture in climate change education within a Philippine community. The study aimed to understand how local cultural beliefs, practices, and values influence climate change awareness and adaptation efforts. The findings highlighted the significance of integrating local knowledge and cultural contexts into climate change education programs to enhance community engagement and resilience.

Similarly, Rumbaoa and Leano (2019) conducted a qualitative study to understand climate change perceptions and adaptation strategies among fisherfolk communities in the Philippines. The study aimed to explore the community's understanding of climate change impacts, their perceptions of vulnerability, and the adaptation strategies employed. The findings highlighted the importance of context-specific and community-driven approaches in climate change education and adaptation planning. Leano et al. (2018) conducted a qualitative study to explore community perceptions and adaptation strategies to climate change in rural Philippines. The study aimed to examine the community's understanding of climate change, their perceptions of impacts, and the strategies implemented to cope with and adapt to the changing climate. The findings highlighted the importance of community-based approaches that integrate local knowledge, resources, and social networks in climate change education and adaptation initiatives.

Additionally, Decena et al. (2015) conducted a study examining the climate change awareness and practices of elementary school teachers in Cebu, Philippines. The study aimed to assess the level of awareness among teachers, their understanding of climate change concepts, and their incorporation of climate change education in their teaching practices. The findings shed light on the varying degrees of awareness and highlighted the need for further professional development opportunities to enhance climate change education in elementary schools. Aguirre (2020) conducted a qualitative study exploring the role of local culture in climate change education within a Philippine community. The study aimed to understand how local cultural beliefs, practices, and values influence climate change awareness and education efforts. The findings highlighted the significance of incorporating local cultural perspectives and practices into climate change

education programs to enhance community engagement and promote sustainable adaptation strategies.

Rumbaoa and Leano (2019) conducted a qualitative study to understand climate change perceptions and adaptation strategies among fisherfolk communities in the Philippines. The study aimed to explore the community's understanding of climate change, their perceptions of its impacts, and the strategies they employed to adapt to these changes. The findings provided insights into the community's knowledge, concerns, and adaptation practices, highlighting the need for context-specific approaches to climate change education and adaptation planning.

Leano et al. (2018) conducted a qualitative study examining community perceptions and adaptation strategies to climate change in rural Philippines. The study aimed to explore the community's understanding of climate change, their perceptions of its impacts, and the strategies implemented to cope with and adapt to these changes. The findings revealed community-level perceptions, adaptation practices, and identified key factors influencing adaptive capacity. The study emphasized the importance of community-driven approaches and participatory methods in climate change education and adaptation initiatives.

Additionally, Basco et al. (2017) conducted a qualitative study focusing on understanding climate change awareness and perceptions among Filipino farmers. The study aimed to explore farmers' understanding of climate change, their awareness of its impacts on agriculture, and their perception of adaptation strategies. The findings provided insights into farmers' knowledge gaps, concerns, and adaptation practices, highlighting the need for targeted climate change education and support to enhance farmers' resilience and adaptive capacity. Bacalla and Buscato (2016) conducted a qualitative study examining climate change adaptation strategies among agricultural communities in the Philippines. The study aimed to explore the various adaptation measures implemented by farmers to cope with the impacts of climate change on agricultural practices. The findings shed light on the different strategies employed by agricultural communities, including changes in farming practices, water management, and diversification of livelihoods. The study highlighted the importance of context-specific adaptation approaches and the need for policy support to enhance climate resilience in the agricultural sector.

The aforementioned studies covered a range of topics, including the awareness and practices of teachers (Decena et al., 2015), the role of local culture in climate change education

(Aguirre, 2020), perceptions and adaptation strategies of fisherfolk and rural communities (Rumbaoa & Leano, 2019; Leano et al., 2018), as well as the awareness and perception of farmers and agricultural communities (Basco et al., 2017; Bacalla & Buscato, 2016). These studies provide valuable insights into climate change education in various contexts, emphasizing the significance of context-specific approaches, community engagement, and the integration of local culture. Building upon these findings, the researcher aimed to contribute to the existing literature by examining climate change education at St. Michael's College, exploring the perceptions and practices of college students and teachers, and identifying areas for improvement in climate change education strategies.

While previous research has made significant contributions to the field of climate change education, there are notable gaps and limitations that warrant further investigation. Firstly, there is a need for more studies focusing on specific educational settings, such as colleges, to explore the unique challenges and opportunities for climate change education in higher education contexts (Decena, Dorado, & Nunez, 2015). Moreover, while many studies have assessed the impact of climate change education on knowledge and attitudes, there is a need for more research examining the translation of knowledge into action (Stevenson et al., 2019). Understanding the factors that facilitate or hinder the implementation of sustainable behaviors among students and teachers is crucial for effective climate change education. Lastly, there is a call for more qualitative research that delves into the lived experiences, perspectives, and narratives of individuals involved in climate change education (Creswell, 2014). Qualitative approaches can provide rich insights into the complexities of climate change education and offer nuanced understandings of participants' beliefs, values, and socio-cultural contexts.

III. Theoretical Framework:

The theoretical framework of this study is based on the Social Cognitive Theory (SCT) and the Theory of Planned Behavior (TPB) (Bandura, 1986; Ajzen, 1991). Social Cognitive Theory emphasizes the role of observational learning, social influence, and self-efficacy in shaping individual behaviors. According to SCT, individuals acquire knowledge and skills through observation and modeling of others, and their behaviors are influenced by their perceptions of their own capabilities to perform those behaviors (Bandura, 1986).

In the context of climate change education, SCT provides a foundation for understanding how students' attitudes, beliefs, and behaviors related to climate change are influenced by their social interactions, exposure to role models, and their self-perceived efficacy to engage in pro-environmental actions. The Theory of Planned Behavior posits that human behavior is determined by an individual's intention to perform the behavior, which is influenced by their attitude toward the behavior, subjective norms (perceived social pressure to perform or not perform the behavior), and perceived behavioral control (Ajzen, 1991). Applied to climate change education, TPB helps us understand how students' intentions to engage in climate-friendly behaviors, such as reducing carbon footprint or advocating for environmental sustainability, are shaped by their attitudes, perceived social norms, and their sense of control over their actions.

By adopting these theoretical frameworks, this study aims to explore the factors influencing students' perceptions, attitudes, and actions related to climate change. The Social Cognitive Theory and Theory of Planned Behavior provide a comprehensive framework for understanding the cognitive, social, and motivational processes that underlie students' engagement in climate change education. The integration of these theories helps to guide the data collection, analysis, and interpretation of findings, enabling a deeper understanding of the complex factors influencing climate change education outcomes in the context of St. Michael's College.

IV. Methodology

The current study used a qualitative research design to explore the perceptions and practices of college students and teachers regarding climate change education at St. Michael's College (Cruz et al., 2019; Mercado, 2018; Serrano & Dorado, 2017). A qualitative approach was chosen to delve into the participants' lived experiences, perspectives, and understandings of climate change education in a nuanced and comprehensive manner. This design allowed for in-depth exploration, capturing rich data and providing insights into the complexities and nuances of the participants' thoughts, beliefs, and actions related to climate change education (Rodriguez et al., 2016).

The selection of participants for this study followed specific criteria to ensure relevance and diversity. The sample included 30 participants consisting of college students and teachers from St. Michael's College (Decena et al., 2015; Aguirre, 2020; Rumbaoa & Leano, 2019). The criteria for participant selection included their active involvement in climate change education initiatives

or coursework and their willingness to share their experiences and perspectives (Leano et al., 2018). The sample size of 30 participants was justified based on qualitative research principles of achieving data saturation, where additional participants were unlikely to provide significant new insights (Basco et al., 2017; Bacalla & Buscato, 2016).

With a focus on in-depth exploration and detailed analysis of participants' experiences, a sample size of 30 allowed for thorough examination while still maintaining the necessary depth and richness of data collection (Basco et al., 2017; Bacalla & Buscato, 2016). It provided an adequate number of participants to capture diverse perspectives and experiences, ensuring a comprehensive understanding of climate change education within the context of St. Michael's College.

Data collection method: A Semi-structured interviews were conducted with the students as part of the data collection process (Cruz et al., 2019; Mercado, 2018; Serrano & Dorado, 2017). These interviews provided an opportunity to engage in-depth with individual students and explore their perspectives, experiences, and knowledge related to climate change education. The semi-structured format allowed for flexibility in questioning, enabling the researchers to probe further into specific topics while still ensuring consistency across interviews. The interviews were audio-recorded with participant consent and later transcribed for analysis.

Focus group discussions were also conducted with the teachers to gather their insights, experiences, and perceptions regarding climate change education (Decena et al., 2015; Aguirre, 2020; Rumbaoa & Leano, 2019). These discussions provided a platform for group interaction, facilitating the exchange of ideas and the emergence of collective perspectives. The teachers were invited to share their views on various aspects of climate change education, including curriculum, pedagogical approaches, challenges, and opportunities. The discussions were guided by a moderator using a predefined set of topics and questions, allowing for both structured and open-ended discussions. The sessions were audio-recorded with participant consent and later transcribed for analysis.

These data collection methods aimed to capture a range of perspectives and insights from both students and teachers, providing a comprehensive understanding of climate change education in the context of St. Michael's College. The use of semi-structured interviews allowed for individual exploration, while focus group discussions fostered collaborative knowledge sharing

among teachers. Together, these methods facilitated the collection of rich and diverse data that formed the basis for the analysis and findings of the study.

Data analysis techniques: The recorded interviews and focus group discussions were transcribed verbatim, ensuring that the spoken words of the participants were accurately captured (Cruz et al., 2019; Mercado, 2018; Serrano & Dorado, 2017; Decena et al., 2015; Aguirre, 2020; Rumbaoa & Leano, 2019). The transcriptions provided a written record of the data, which served as the foundation for subsequent analysis. Following transcription, a coding process was undertaken to organize and categorize the data. Coding involved identifying meaningful units of information, assigning descriptive labels or codes to them, and creating a coding framework that captured the various themes and topics discussed by the participants.

Thematic analysis was employed to analyze the coded data and identify recurring themes, patterns, and insights within the dataset (Cruz et al., 2019; Mercado, 2018; Serrano & Dorado, 2017; Decena et al., 2015; Aguirre, 2020; Rumbaoa & Leano, 2019). The researchers engaged in a rigorous process of reviewing the coded data, searching for connections, and grouping related codes into overarching themes. Through an iterative process of coding and theme development, significant themes emerged that captured the participants' perspectives, experiences, and understandings of climate change education. The themes were further refined and supported by relevant excerpts from the data.

The combination of transcribing and coding, followed by thematic analysis, allowed for a systematic and comprehensive examination of the collected data. It enabled the identification of key themes and patterns that emerged from the participants' narratives, providing valuable insights into the perceptions and practices of students and teachers regarding climate change education at St. Michael's College. The data analysis techniques employed in this study ensured a rigorous and systematic approach to deriving meaning and generating findings from the qualitative data.

V. Validity and reliability

In order to ensure the validity and reliability of the research findings, various strategies were employed (Creswell & Creswell, 2018). To enhance validity, a rigorous data collection process was implemented, including semi-structured interviews and focus group discussions

(Patton, 2015). The use of open-ended questions and member checking increased the credibility and trustworthiness of the data (Lincoln & Guba, 1985). In terms of reliability, clear research protocols were established and intercoder reliability checks were conducted to ensure consistency and standardization in data analysis (Miles et al., 2020). Additionally, detailed descriptions of the research context and participants' characteristics were provided to enhance the transferability or generalizability of the findings (Creswell & Creswell, 2018; Lincoln & Guba, 1985). These measures contribute to the overall validity and reliability of the study.

VI. Findings

The findings of the study revealed several important aspects of climate change education in St. Michael's College, as demonstrated through the perspectives of the students and teachers who participated in the research.

Students' perceptions and understanding of climate change: The study found that students exhibited varying levels of awareness and understanding of climate change (Cruz et al., 2019; Mercado, 2018; Rodriguez et al., 2016; Basco et al., 2017). While some students demonstrated a solid grasp of the concepts and implications of climate change, others had limited knowledge or held misconceptions. Factors such as prior exposure to climate change education, personal experiences, and cultural influences played a role in shaping students' perceptions. The findings highlighted the need for comprehensive and targeted climate change education to enhance students' understanding and awareness.

Teachers' experiences and challenges in delivering climate change education: The study uncovered a range of experiences and challenges faced by teachers in delivering climate change education (Cruz et al., 2019; Serrano & Dorado, 2017; Decena et al., 2015). Teachers expressed the need for additional training and professional development opportunities to effectively teach climate change concepts. They also highlighted constraints such as limited resources, time constraints, and inadequate curriculum support. The findings underscored the importance of providing support and resources to empower teachers in delivering climate change education.

Effectiveness of current climate change education efforts in SMC: The study examined the effectiveness of current climate change education efforts in St. Michael's College (Serrano & Dorado, 2017; Decena et al., 2015; Bacalla & Buscato, 2016). The findings indicated that while

some positive outcomes were observed, such as increased awareness and knowledge among students, there were also areas for improvement. The answers revealed the need for a more comprehensive and integrated approach to climate change education, with a focus on active engagement, practical application, and real-world connections.

Recommendations for improvement and enhancing climate change education: Based on the findings, the study put forth several recommendations for improving and enhancing climate change education in St. Michael's College (Serrano & Dorado, 2017; Bacalla & Buscato, 2016; Leano et al., 2018). These recommendations included strengthening curriculum integration, providing professional development opportunities for teachers, fostering partnerships with local communities and stakeholders, promoting student engagement through hands-on activities and experiential learning, and utilizing innovative teaching approaches and resources. The idea emphasized the importance of a multi-dimensional and collaborative approach to enhance the effectiveness of climate change education efforts (Smith, Howe, & McGeechan, 2020).

Overall, the findings of the study provided valuable insights into students' perceptions, teachers' experiences, the effectiveness of current climate change education efforts, and recommendations for improvement. These findings serve as a foundation for informed decision-making and action to enhance climate change education at St. Michael's College and contribute to broader efforts in addressing the challenges of climate change at the local level.

VII. Discussion

This study aimed to gain a thorough understanding of climate change education in colleges through qualitative interviews and focus group discussions. It examined three main areas: current educational initiatives and practices at SMC, the views and knowledge of climate change among students and teachers, and the obstacles and enablers to effective climate change education. The results provide important insights into the college's efforts, the varied opinions of the college community, and the challenges and opportunities in implementing climate change education (Steffens & van Zomeren, 2021). Here are the details:

The study revealed the current climate change educational initiatives and practices at St. Michael's College (SMC) through qualitative interviews and focus group discussions. As one student participant stated, "*SMC offered a variety of climate change-related courses and*

workshops, creating opportunities for us to delve into the topic and develop a deeper understanding of its implications.” These efforts showed the college’s dedication to addressing climate change and providing students with opportunities to learn about the subject (Reid & Scott, 2021).

The study also investigated the perceptions and understanding of climate change among college students and teachers at SMC and its relevance to their lives and academic pursuits. A teacher participant emphasized that *“Incorporating climate change discussions into the existing curriculum allowed students to see the relevance of this issue to their academic pursuits and future careers.”* This indicated that climate change education was not only important for addressing global challenges but also relevant to students’ educational paths (O’Brien & Selboe, 2020). The research captured a variety of views and understandings, providing insights into the complex ways in which climate change was perceived by the college community.

The study identified various obstacles and enablers to effective climate change education in the college setting. Both students and teachers recognized challenges such as limited time in the curriculum and the need for additional resources and training. A teacher participant stated that *“We faced challenges in balancing the depth of content with the limited time available in our courses.”* However, participants acknowledged the significance of supportive institutional structures and collaboration among departments in facilitating effective climate change education (Harwood & Allen, 2021). As one student passionately expressed, *“When departments collaborated and shared resources, it enhanced the multidimensional understanding of climate change, making the learning experience more comprehensive.”* These insights emphasized the complex factors that influenced the successful implementation of climate change education at SMC.

With these fascinating results in hand, the researcher embarked on an exciting journey to explore the integration of the findings with relevant literature, uncover emerging themes and patterns, and unravel the significant implications for climate change education at St. Michael’s College (SMC). Along this intellectual journey, the study also revealed the strengths and limitations encountered. The captivating insights that emerged from this compelling endeavor are now revealed.

A. Integration of findings with relevant literature:

The results of this study align with previous research on climate change education in educational settings, both globally and within the Philippines. The study is consistent with the literature regarding students' varying levels of awareness and understanding of climate change (Cruz et al., 2019; Mercado, 2018; Rodriguez et al., 2016; Basco et al., 2017). It also reflects the challenges faced by teachers in delivering climate change education, such as limited resources and the need for professional development (Cruz et al., 2019; Serrano & Dorado, 2017; Decena et al., 2015). By integrating the results with relevant literature, this study enhances the existing knowledge base on climate change education and provides a deeper understanding of the specific context of St. Michael's College.

B. Key themes and patterns emerging from the analysis

The thematic analysis of the data revealed several key themes and patterns. These included students' varying levels of awareness and understanding of climate change, teachers' experiences and challenges in delivering climate change education, the effectiveness of current climate change education efforts, and suggestions for improvement (Reid & Scott, 2021). Within these themes, sub-themes such as cultural influences, integration into the curriculum, teacher training, and student engagement emerged. These patterns provide a comprehensive view of the climate change education landscape at St. Michael's College and contribute to a broader understanding of climate change education practices.

C. Implications of the findings for climate change education in SMC

The results of this study have significant implications for climate change education at St. Michael's College. Firstly, the study emphasizes the need for tailored interventions to address the varying levels of awareness and understanding among students. It highlights the importance of developing a curriculum that integrates climate change education across disciplines and encourages active student engagement (Reid & Scott, 2020). The findings also stress the need for ongoing professional development opportunities for teachers, as well as ensuring sufficient resources and support for effective teaching of climate change concepts. These implications can guide the development and implementation of strategies to improve climate change education at SMC.

D. Strengths and limitations of the study

This study has several strengths. Firstly, the use of a qualitative research design allowed for a detailed exploration of participants' perspectives and experiences. The inclusion of both students and teachers as participants provided a comprehensive view of climate change education at SMC. The sample size of 30 participants was suitable for a qualitative study, allowing for rich and detailed data collection. Additionally, the integration of literature and the use of rigorous data analysis techniques enhanced the credibility and validity of the results (Krasny & Dillon, 2019).

However, the study also has limitations. The results may not be generalizable to other educational settings due to the specific context of St. Michael's College. The sample size of 30 participants may not capture the full range of experiences and perspectives within the college. Furthermore, the study relied on self-reported data, which may be subject to biases and inaccuracies. Despite these limitations, the findings provide valuable insights into climate change education at SMC and can serve as a foundation for further research and improvements in practice.

Overall, this study contributes to the understanding of climate change education at St. Michael's College by integrating the results with relevant literature, identifying key themes and patterns, discussing implications for practice, and acknowledging the strengths and limitations of the study. The insights gained from this research can inform the development of targeted interventions and strategies to improve climate change education in the college and contribute to broader efforts in addressing the challenges of climate change at the local level.

VIII. Summary of findings

The results of this study reveal various aspects of climate change education at St. Michael's College. Students' perceptions and understanding of climate change were found to vary, emphasizing the need for targeted interventions to increase awareness and knowledge. Teachers encountered challenges in delivering climate change education, such as limited resources and the need for professional development. The study also assessed the effectiveness of current climate change education efforts at SMC, identifying areas for improvement. The findings provide valuable insights into the current state of climate change education in the college and serve as a basis for enhancing educational practices.

Contributions to the field of climate change education: This study makes several contributions to the field of climate change education. Firstly, it adds to the existing body of literature on climate change education in educational settings, particularly in the context of the Philippines. The results provide a nuanced understanding of the specific challenges and opportunities faced by students and teachers at St. Michael's College. Additionally, the study offers insights into effective strategies for integrating the curriculum, professional development, and student engagement in climate change education. These contributions contribute to the ongoing discourse on effective educational practices for addressing climate change (UNESCO, 2020).

Suggestions for future research: Based on the results of this study, several suggestions for future research in the field of climate change education can be made. Firstly, further investigation is needed to explore the long-term impact of climate change education on students' attitudes, behaviors, and actions related to environmental sustainability (Pedretti & Hodson, 2018). Additionally, research focusing on the role of educational institutions in fostering climate resilience and adaptation strategies is essential. Furthermore, examining the effectiveness of different pedagogical approaches and teaching methods in climate change education can provide valuable insights for instructional practices. Lastly, exploring the perspectives of stakeholders beyond students and teachers, such as administrators and community members, can offer a holistic understanding of climate change education initiatives. Future research in these areas can deepen our understanding of effective climate change education practices and inform policy and decision-making processes.

IX. Conclusion

Having completed this research, the profound importance of climate change education in higher education becomes strikingly evident. The findings reveal the complex tapestry of students' perceptions and understanding of climate change, the experiences and challenges faced by teachers in delivering climate change education, and the effectiveness of current efforts. Through the integration of relevant theoretical frameworks, this study emphasizes the critical need for comprehensive and integrated approaches that bridge knowledge gaps and foster transformative learning (Stevenson, Peterson, Bondell, Mertig, & Carrier, 2019). Its implications extend far beyond the boundaries of St. Michael's College (SMC), resonating with the broader discourse on

climate change education. The study serves as a resounding call to educational institutions to adopt a transformative paradigm that equips students with the necessary knowledge, skills, and values to become agents of change in addressing the pressing climate challenges of our time. With its rich insights and thought-provoking recommendations, this research opens the door to future investigations, policy development, and innovative pedagogical practices that will shape a sustainable future for generations to come.

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