BOARD # 80: The 100-mile diet adaptations: Addressing climate anxiety through educational technology and experiential learning

Dr. Gerald Tembrevilla, Mount Saint Vincent University

Gerald Tembrevilla obtained his PhD in science (physics) education at the University of British Columbia. He served as a postdoctoral fellow in the Faculty of Engineering at McMaster University. Currently, he is an Assistant Professor at Mount Saint Vincent University in Halifax, Canada and teaching and researching on the integration of learning technologies to improve hands-on science, scientific argumentation skills, and investigating the complicated impacts of learning technologies and design on K-12 STEM curriculum, pedagogy, and institutional policies in the Philippines and Canada.

Mohosina Jabin Toma, University of British Columbia, Vancouver

Mohosina Jabin Toma is a PhD student in the Department of Curriculum and Pedagogy at the University of British Columbia (UBC), Vancouver, Canada. Her research focuses on K-12 STEM teacher education and the integration of educational technology in STEM education. In her PhD research, she is exploring the integration of generative artificial intelligence (GenAI) into K-12 STEM education.

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Dr. Gerald Tembrevilla
Gerald Tembrevilla is an Assistant Professor in the Faculty of Education at Mount Saint Vincent University in Halifax, Canada. He teaches and conducts research on the integration of emerging, learning, and collaborative technologies to enhance hands-on science, experiential learning, scientific argumentation skills of K-12 students, preservice, and practicing teachers. He also investigates the complicated impacts of such technologies in the design, assessment, and implementation on K-12 STEM curriculum, pedagogy, and institutional policies in the Philippines and Canada.

Mohosina Jabin Toma
Mohosina Jabin Toma is a PhD student in the Department of Curriculum and Pedagogy at the University of British Columbia (UBC), Vancouver, Canada. Her research focuses on K-12 STEM teacher education and the integration of educational technology in STEM education. She has two thesis-based master's degrees, three peer-reviewed journal articles, and three conference presentations. In her PhD research, she is exploring the integration of generative artificial intelligence (GenAI) into K-12 STEM education.

Abstract
This full paper promotes Computers in Education's (CoED) broad-based forum for exchanging ideas in all areas that involve computers and educational technology. Particularly, this paper focuses on supported pedagogy and diversity-equity-inclusion (DEI) initiatives through the exploration and integration of a 100-Mile Diet adaptation project within a Canadian Initial Teacher Education (ITE) science education methods course. The 100-Mile Diet was introduced by a Vancouverite couple in British Columbia who embarked on a year-long journey to eat only food sourced within a 100-mile radius of their home. This local food experiment supports sustainable farming and strengthens community connections while promoting the broader local food movement. In this paper, the 100-Mile Diet adaptation aims to address two central questions: In what ways can a 100-Mile Diet adaptation project in a science education methods course for early childhood and elementary preservice teachers (PSTs) address climate anxiety by linking climate change, place identity, and educational technology? Furthermore, how can the integration of educational technology enhance PSTs' engagement with their local communities and broader climate challenges?

In the 12-week course, I introduced the 100-mile diet during the first two sessions to prepare PSTs for their project planning. PSTs individually or in groups designed and implemented their own versions of the diet, analyzing its impact on carbon footprints and ecosystems. They documented their work over two to four weeks using technology tools like digital diaries, social media vlogs, Google Suite, Excel, and multimedia presentations. Over three academic terms (2022-2024), I collected 55 adaptations, eventually narrowing them to 26 unique examples based on originality, depth of analysis, and alignment with assignment goals. These adaptations were evaluated using a five-level rubric validated by co-author from a separate Canadian institution, focusing on creativity in technology integration, student engagement, and experiential learning with transdisciplinary connections. The analysis also aligned with key experiential learning principles, ensuring robust evaluation and insights.

The 26 unique adaptations connected climate change, place identity, and educational technology to demonstrate how digital tools can foster engagement to address climate anxiety including local and global sustainability challenges. Through personalized or community-based projects, PSTs investigated the impact of sustainable food sourcing on carbon footprints and climate resilience. The Technological Pedagogical Content Knowledge (TPACK) framework guided the use of digital tools such as Canva, Flipgrid, and Google Suites, which supported collaborative inquiry, data visualization, and reflective practice. PSTs adaptations established transdisciplinary connections across STEM and non-STEM subjects, while also emphasizing DEI by incorporating accessibility and availability of educational technology and support, Indigenous knowledge, and culturally relevant teaching strategies. The results indicated that PSTs deepened their understanding of sustainability through reflective practices, including food tracking and storytelling, while simultaneously developing critical thinking and technological competencies. The study concludes that the 100-Mile Diet Adaptation project offers a valuable and pedagogical model yet at an exploratory stage for integrating climate education and educational technology in teacher preparation programs, inspiring sustainability-focused pedagogy and greater community engagement.

Introduction

In this full paper, I address two key questions: How can a 100-mile diet adaptation project in a science education methods course for early childhood and elementary preservice teachers (PSTs) help address climate anxiety by exploring the connections between climate change, place identity, and educational technology? Additionally, how can educational technology be utilized to strengthen PSTs' engagement with their communities and local-global climate challenges?

With a Google map, calculator, and grocery list, one can see that the average fruit or vegetable travels more than 2,400 km from farm to family dinner table. Research indicates that such travel adds 17 times more emissions to the atmosphere than if the food had been bought locally [1]. In March 2005, Vancouver couple Alisa Smith and James MacKinnon embarked on a culinary experiment: to survive for a year on food produced within 160 km or 100 miles of their home in Vancouver, B.C. [2]. The year-long experiment turned into a book on the 100-mile diet, reality TV shows, and a series of invited talks across North America. A local food movement that included the growing, cooking, and living of the 100-mile diet ethos grew and expanded [3].

The 100-mile diet experiment led the couple to a greater realization of the importance of sustaining local farming and building relationships with the community and its resources. Meanwhile, over the past two decades, a body of scholarship has emerged on the relationship among place attachments, identities, and climate change [4]. Place attachments are considered powerful emotional bonds that form between people and their physical surroundings. They inform one's sense of identity, create meaning in their lives, facilitate community, and influence action. Place attachments have stronger relevance to diverse pedagogical and philosophical underpinnings like rootedness and belonging, placemaking and displacement, global climate change, and more [5].

The core of this literature suggests that climate change will have a lasting effect not only on the physical character of places but also on the related meanings, identities, and emotional bonds [6]. Moreover, the climate crisis has detrimental impacts on the mental health and well-being of children and young people, and emerging research points to the wider connections between climate change and climate anxiety [7].

Integrating climate change education into Canadian Initial Teacher Education (ITE) programs, particularly for elementary preservice teachers, is crucial in preparing educators to address the climate crisis effectively. Providing PSTs with tools and knowledge on sustainability, local food systems, and place-based learning equips them to foster environmental responsibility and critical thinking among young learners [8]. This approach not only raises awareness about climate issues but also empowers students to take meaningful actions in their communities. Such approach cultivates a generation that values sustainability and environmental stewardship.

Deliberately integrating educational technology [9] with DEI accommodations in place into the documentation, visualization, analysis, and reporting of PSTs' 100-mile diet adaptations is equally important. By using tools such as Google Sheets, Canva, and Flipgrid, PSTs can explore diverse ways to engage with their data, making sustainability concepts and educational technology more accessible. This deliberate use of technology accommodates PSTs' varied STEM backgrounds. It ensures inclusive participation regardless of their prior experience or

accessibility to digital tools. Such an approach helps bridge the gap between theory and practice and also fosters critical reflection and deeper engagement with climate education through multimodal learning experiences.

The Pedagogical Frameworks in Science Methods Course: 100-Mile Diet Adaptations

I adapted the 100-mile diet concept in my science education methods course to help PSTs develop personalized or community-based sustainability solutions. PSTs explored how their adaptations could reduce carbon footprints, promote sustainability, and make climate change education more tangible. The 100-mile diet adaptation became a core assignment in the Educ 5471 course (25%), an exploratory model for integrating sustainability education, climate action, and educational technology in Canadian teacher education.

The assignment emphasizes the integration of pedagogical frameworks such as place identity, climate change literacy [4], educational technology in teacher education [9, 10], transdisciplinarity [11] , and experiential learning [12]. PSTs engage in an inquiry-driven project, developing personalized or community-based approaches to sustainable food sourcing while linking environmental education with local contexts.

Place Identity, Climate Change, and Climate Anxiety

Research highlights how place identity influences emotional bonds with specific locations and shapes responses to environmental change. Devine-Wright [4] noted that climate change disrupts physical landscapes and the meanings, identities, and relationships tied to them. For instance, Hess et al. [13] examined how sea ice retreat in the Arctic disrupts traditional ways of life, while Marshall et al. [14] explored how occupational disruptions, such as those experienced by fishermen, can impact identity and adaptability.

Addressing place identity is crucial in climate adaptation. Displacement due to climate threats can lead to psychological distress and identity loss. Neglecting local identities in policy decisions often results in community alienation and resistance [4]. By promoting place-based education, such as the 100-mile diet adaptation, I aim to empower PSTs to explore climate resilience through personal and community connections, fostering emotional resilience against climate anxiety.

Educational Technology: Technological Pedagogical Content Knowledge (TPACK)

The TPACK framework [15] underpins my approach to technology integration in the 100-mile diet adaptation project. TPACK emphasizes the intersection of content knowledge, pedagogical knowledge, and technology knowledge to design meaningful learning experiences. I use this framework to guide PSTs in designing inquiry-based learning that emphasizes deliberate use of technology, creativity, relevance, and student engagement [9, 16, 17].

By integrating TPACK with climate change, place identity, and experiential learning, PSTs can create holistic learning environments that address global challenges while grounding instruction in local contexts. This framework prepares PSTs to design innovative, engaging curricula while fostering critical thinking and sustainability awareness.

Transdisciplinarity, Experiential Learning, and Diversity-Equity-Inclusion (DEI)

Experiential learning [12] and transdisciplinarity [11] are central to the 100-mile diet adaptation, especially for promoting DEI. For example, the 100-mile diet adaptation personalizes sustainability education by encouraging PSTs to explore climate literacy through local food systems. Experiential learning, defined as reflective learning through direct experience, connects theoretical concepts with lived experiences [18]. As PSTs engage with personalized projects, they bring diverse experiences and perspectives. These projects create richer and more inclusive learning environments on complicated, abstract and controversial issues like climate change.

Climate change, often described as a wicked problem, requires solutions rooted in multiple knowledge domains. Transdisciplinarity allows for the integration of cultural, scientific, and experiential insights—critical for addressing complex challenges [11]. As such, collaborations between disciplines and issues, particularly in engineering and STEM-related education contexts can take various forms, each reflecting a different level of knowledge integration [19]. These forms include intradisciplinarity, where sub-discipline knowledge is integrated; multidisciplinarity, where distinct disciplinary expertise addresses different aspects of a shared problem; interdisciplinarity, where knowledge from different fields is combined to address all facets of a problem; and transdisciplinarity, where disciplinary boundaries are transcended to create new, shared understandings among diverse contributors. I chose transdisciplinarity specifically for this research on the 100-mile diet adaptation because it emphasizes the creation of emergent knowledge through collective insights. It aligned with the project's goals of fostering collaboration and deeper conceptual understanding among preservice teachers working across multiple fields. While interdisciplinarity also combines insights from multiple disciplines, I favored transdisciplinarity for its capacity to generate novel perspectives and holistic comprehension, which are essential for addressing complex issues like climate change and sustainability education effectively.

Methodology

In the first two meetings of the 12-week course, I introduced the 100-Mile Diet to ground PSTs in their future project planning. PSTs then worked individually or in small groups to design and implement their own versions of the 100-Mile Diet. They explored how their choices impacted carbon footprints and local ecosystems, documenting their experiences over two to four weeks or longer using technology-enhanced formats such as digital diaries, social media vlogs, Google Suites of applications, Excel-based data tracking, and multimedia presentations.

Throughout the course, PSTs documented, analyzed, and synthesized their adaptations. Over three academic terms (2022-2024), I collected 55 unique adaptations from 128 PSTs. Initially, the assignment was designed for individual completion, but several PSTs requested to work in groups, leading to a lower total number of adaptations compared to the number of students enrolled. Class interruptions due to winter storms, etc. occasionally shortened the term, resulting in variations in the number of adaptation outputs across the three years.

For this final paper, I narrowed down the list and reported 26 unique adaptations, chosen for their sufficient substance and comprehensiveness in meeting the definition of 'adaptations.' Unique adaptations were defined as those that: 1) were not duplicated from the three years of output

submissions, 2) contained substantial data and analysis, and 3) properly aligned with the assignment descriptions. I evaluated each of the 26 adaptations (Appendix 1) using a five-level rubric (Appendix 2), which I developed and refined over the three years as the course instructor. The evaluation took place one year after the third-year course implementation. I obtained consent from individual students for the use of their adaptations for research and educational purposes at both the start and end of the course.

The rubric was validated by co-author from other Canadian ITE institution. My evaluation focused on identifying success indicators using a five-level rubric (Level 5 – Exceptional; Level 4 – Proficient; Level 3 – Developing; Level 2 – Emerging; and Level 1 – Insufficient) across three categories: creativity in technology integration, student engagement, and experiential learning with transdisciplinary connections across STEM and non-STEM subjects. The 26 unique adaptations selected had no ratings of Level 2 across the three themes. The analysis was further aligned with the Seven Essential Elements for Experiential Learning in Undergraduate Engineering Education [12].

Results

Creativity, TPACK, Technology Integration, and DEI

The evaluation revealed five commonly used technologies among PSTs for the 100-Mile Diet Adaptations due to their accessibility, ease of use, and versatility for both content delivery and student-driven inquiry (Fig. 1). Canva was widely used for visual storytelling, infographics, and poster design, simplifying complex sustainability concepts. Google Docs, Sheets, and Slides offered collaborative spaces where PSTs could document, reflect, and synthesize their experiences with real-time peer feedback. Flipgrid served as a video-based reflection tool, encouraging diverse forms of expression, while Padlet provided a multimedia bulletin board for collaborative idea curation. Excel was essential for data analysis, particularly in STEM contexts requiring numerical data visualization.

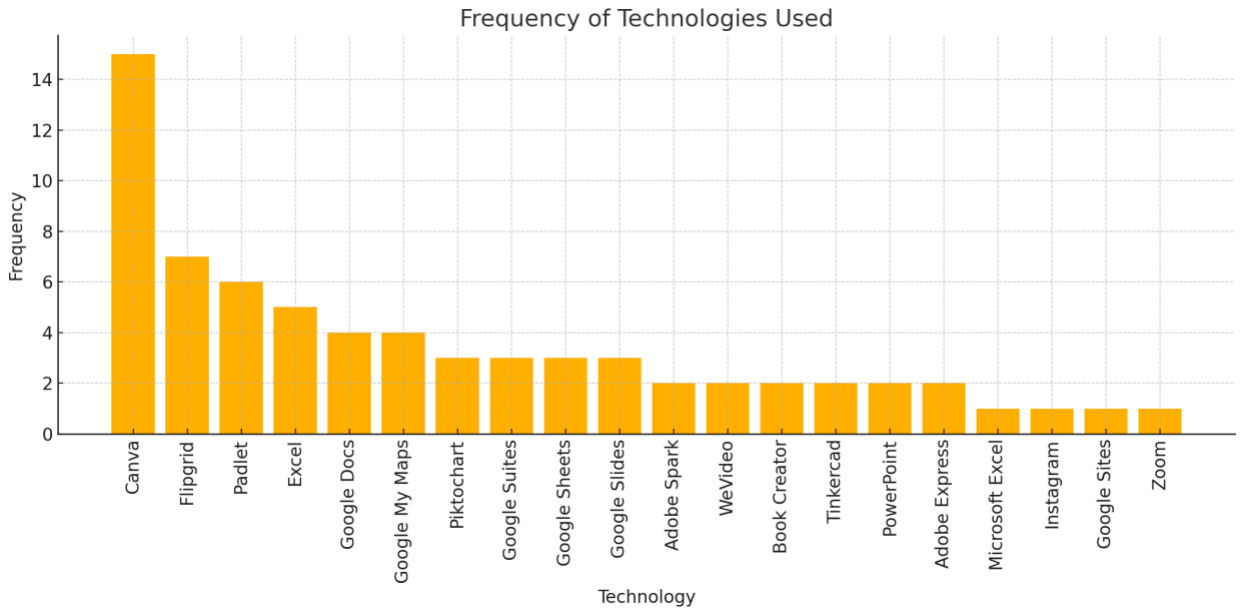

Figure 1: The list of technologies and their frequency of integration

The use of these technologies aligns with the TPACK framework by emphasizing purposeful technology integration that balances content knowledge, pedagogy, and technological tools. Canva and Flipgrid supported diverse learning preferences, while Google Suite tools fostered collaborative engagement. Padlet offered an inclusive platform for students to share ideas anonymously, reducing performance anxiety. The accessibility of these tools ensured all PSTs could participate in the 100-Mile Diet Adaptation project effectively. It empowered them to design rich, personalized learning experiences while embracing DEI principles and accommodations in teacher education. Moreover, the 100-Mile Diet Adaptations exemplified diverse and purposeful uses of educational technology to document, visualize, synthesize, and report PSTs sustainability inquiries.

For instance, the “Eat Your Vegetables” project engaged with Google Docs for ongoing inquiry-based journaling, where PSTs recorded their daily reflections on the benefits of vegetable consumption. Flipgrid was used for video reflections, allowing PSTs to share personal insights and discoveries throughout the adaptation. To summarize their findings, the PSTs utilized Piktochart. It allowed them to create visually engaging infographics that presented health benefits, sustainability impacts, and personal takeaways in a concise, learner-friendly format suitable for elementary teaching.

In the “Recipes from Farmers Market” adaptation, technology was harnessed not only for data collection but also for interactive storytelling and cultural representation. Google My Maps was employed to create an interactive map showcasing local farmers' markets, detailing personalized recipes, including jam cookies, and highlighting specific shops and food products across the province. Canva was used to design a digital recipe collection paired with market stories and reflections, visually emphasizing local food connections while engaging PSTs with the artistic aspects of content presentation. This approach fostered interdisciplinary connections between environmental education, cultural storytelling, and digital literacy skills.

The “Household Food Waste” adaptation took a more data-driven approach by leveraging Excel for cost analysis of food waste patterns and Google Sheets for tracking waste reduction strategies over a set period. PSTs collected quantitative data on weekly household food waste and visualized reduction trends through charts and graphs. Canva was further used to design infographics that synthesized key findings, highlighting practical tips for waste reduction while making the data accessible for younger learners. This technology integration not only helped PSTs critically engage with personal consumption patterns but also offered a scalable model for engaging elementary students with sustainability education through authentic, data-driven inquiry. Each of these adaptations effectively aligned with the TPACK framework by balancing content knowledge (sustainability concepts), pedagogical strategies (inquiry-based and project-based learning), and the purposeful integration of educational technology for both personal reflection and classroom application.

Experiential Learning and Transdisciplinarity

The PSTs' 26 adaptations of the 100-Mile Diet showcase key elements of transdisciplinarity [11] and experiential learning [12]. They emphasized hands-on engagement, reflection, and personal connections to sustainability concepts (Table 1). Each adaptation involved direct participation in sustainability practices, such as locally sourcing ingredients, tracking food origins, and

documenting seasonal eating habits. These activities allowed PSTs to experience firsthand the complexities of climate-conscious food choices.

Table 1: A summary of the 26 unique 100-mile diet adaptations

No.	Title	Brief Description	Technology Integration
1	30-day intermittent fasting	A sharing of a 30-day intermittent fasting journey and the positive changes of the journey.	Padlet, Canva, Adobe Spark
2	A good pair: Kitchen and a garden	Discover a student belief that ingredients pairing well in the kitchen also thrive together in the garden.	Google Docs, Flipgrid, Piktochart
3	A Keto diet journey	A Keto diet journey with daily menus, simple rating guidelines, and reflections on valuing the food we consume.	Excel, Google Suites
4	An interview with the expert	Explore the science, art, and controversial issues in agriculture, including gender, technology, and globalization in the Maritimes.	Microsoft Excel, Google Sheets
5	Authentic Mi'kmaq Recipes	This project explores the 100 Mile Diet through Mi'kmaq recipes using locally sourced ingredients, while examining how weather influenced Mi'kmaq hunting practices and decision-making.	Canva, WeVideo, Book Creator
6	Backyard gardening	Adaptation to learn about cold frame construction and year-round garden planning.	Google My Maps, Canva
7	East Coast Beach walks	Beach Walks is a discovery on how daily walks can lower your carbon footprint, boost well-being, and cover distances.	Instagram, Piktochart, Padlet, Canva
8	Eat your vegetables	Compilation of compelling arguments based on daily experiences why you need to eat vegetables through an inquiry.	Google Slides, Flipgrid, Excel
9	Eating Locally and Seasonally for Nutrition and Resilience	This project showcases a successful small-scale farm that fosters community engagement, collaboration with other farms.	Tinkercad, Google Sites, PowerPoint
10	Food science and history	Exploration of pedagogical decolonization by merging food science and history on trans-atlantic tradeand Indigenous food knowledge.	Book Creator, Canva, Adobe Express
11	Household food waste	Exploring the cost of household food waste and sharing simple, practical strategies to reduce it year-round.	Google Docs, Canva, Piktochart
12	Local ingredients	A journey of sourcing local ingredients and integrating critical concepts into the classroom through his 100-Mile Diet project.	Google Slides, Padlet
13	Logging grocery items	Tracking the countries of origin for the foods at local grocery store over time without without altering usual shopping or eating habits.	Excel, Google Sheets, Canva
14	Love Local: Vegetarian Recipe Book	Explore student's Love Local: Vegetarian Recipe Book for seasonal,plant-based recipes sourced from local farmers markets .	Google My Maps, PowerPoint, Flipgrid
15	My 100-Mile Diet Version	A journey of dining at childhood favorites with loved ones, sharing the importance of supporting local food businesses.	Adobe Spark, Canva, Flipgrid
16	My journey with Cooper	Journey with a pet dogCooper, celebrating friendship, and the importance of fresh air inspired by Rachel Carson's bond with Roger.	Google My Maps, Google Suites
17	Never ending over packaging	An exploration of over-packaging as a global issue, emphasizing awareness and commitment while sharing ways families can take action together.	Canva, Google Docs, Flipgrid
18	Nova Scotian Apples	Inspired by childhood memories of backyard apples, it investigates how local stores source apple varieties, questioning the authenticity of 'local produce' claims.	Zoom, WeVideo
19	Real meaning of enjoying nature	Does tracking time, distance, and calories matter? The true value lies in enjoying nature walks alone, with friends, or with a pet dog.	Padlet, Canva, Flipgrid
20	Recipes from Farmers Market	Features personalized jam cookies, farmers market recipes, and an interactive map highlighting local sweets, sandwiches, and shops across NS.	Adobe Express, Google Docs, Canva
21	Season of eating in the province	Exploration on the feasibility of eating seasonally during winter, focusing on the availability of local produce and proteins.	Tinkercad, Canva, Padlet
22	Self-care with caring horses	A 1-week journey of self-care, discovering the importance of prioritizing joy through the love for horses and the outdoors.	Flipgrid, Canva, Google Docs
23	Strive for Five	Exploring the 'Strive for Five' campaign, promoting local food consumption while integrating nutrition education across ELA, social studies, and sustainability topics.	Excel, Canva, Google Slides
24	Vegetable: a centerpiece of every meal	A collaborative inquiry that encourages making vegetables the centerpiece of every meal.	Google My Maps, Excel, Canva
25	Waste no more	Waste No More is a resolution to reduce food waste through sustainable household habits, addressing Canada's 58% food loss issue.	Padlet, Canva, Google Sheets
26	Where do foods in Canada come from?	Exploring where food in Canada comes from by examining flyers from major grocery chains, highlighting how far food travels to reach kitchens across the country	Google Suites

For example, projects like “Backyard Gardening” and “Local Ingredients” emphasized practical, place-based learning by engaging PSTs in growing and sourcing their own food. Meanwhile, “Logging Grocery Items” and “Season of Eating in the Province” highlighted data-driven inquiry by encouraging participants to track food origins and availability. These hands-on experiences strengthened the connection between personal food habits, local resources, and global climate challenges, encouraging critical reflection on sustainability practices.

In the “Logging Grocery Items” adaptation, a PST discovered significant gaps in ingredient transparency and accuracy on food labels. For example, red curry paste was sourced from Poland, and some labels only vaguely described products as "processed in Canada," without specifying ingredient origins. Even locally perceived products, such as rice cakes and coffee grounds (Van Houtte’s ground coffee), lacked clear sourcing information. This analysis emphasized the need for increased transparency in food labeling, empowering consumers to make informed decisions, support local producers, and promote sustainable food choices.

Similarly, in the adaptation focused on tracing apples originally grown in the province, a PST highlighted the importance of community engagement and valuing family culture in connection with land, local industry, and environmental sustainability. Inspired by a family orchard, the PST deepened their connection to local producers and growers, emphasizing the importance of local food systems. The activity reinforced the relevance of supporting local agriculture and understanding food miles. The PST also integrated this experiential learning into elementary science curricula, aligning with learning outcomes such as analyzing the interconnectedness of local habitats from both scientific and Indigenous perspectives. While effective, the PST acknowledged the need to be sensitive to students' diverse backgrounds, including food insecurity. By doing so, the PST emphasized and fully engaged in the importance of inclusive teaching practices. Ultimately, this approach not only enhanced student engagement but also nurtured respect for local food systems, family heritage, and environmental stewardship.

The inclusion of culturally significant projects, such as “Authentic Mi’kmaq Recipes”, also highlighted how experiential learning can be tailored to incorporate diverse perspectives or promote place identity and culturally responsive teaching practices. The Mi'kmaq are an Indigenous people from Atlantic Canada, traditionally living in the region of Mi'kma'ki, which spans across Nova Scotia, New Brunswick, Prince Edward Island, and parts of Newfoundland and Quebec [20]. This approach not only deepened participants' understanding of sustainability but also modeled pedagogical strategies that can be replicated in future classrooms. Thus, this approach also fostered hands-on learning experiences for PSTs themselves and their future elementary students.

Student Engagement on Place Identity, Climate Change, and Climate Anxiety

The preservice teachers' (PSTs) 100-Mile Diet adaptations highlight the powerful role of place identity in confronting climate change and addressing climate anxiety. Projects such as “Never Ending Over Packaging” explored global sustainability issues. It emphasized the environmental impact of excessive packaging and empowering families to take collective action. Similarly, “Backyard Gardening” connected directly to climate change adaptation by focusing on cold frame construction and year-round planting. It allowed and helped PSTs prepare for unpredictable weather patterns caused by climate shifts. These hands-on projects not only

cultivated awareness but also encouraged PSTs to think critically about how their personal choices impact the environment and thus, demonstrating the importance of fostering local resilience in the face of global challenges.
Further reinforcing these themes, “Love Local: Vegetarian Recipe Book” and “Eating Locally and Seasonally for Nutrition and Resilience” emphasized community collaboration and sustainable food practices. By sourcing recipes from local farmers' markets and small-scale farms, PSTs highlighted how food choices can reduce carbon footprints while supporting local economies. The “Waste No More” adaptation addressed climate anxiety by transforming awareness into action, challenging Canada’s food waste crisis through sustainable household habits. Together, these projects empowered PSTs to address climate change in practical approach. It fostered a sense of agency while connecting deeply to their local communities and food systems.

Conclusions and Future Directions

The 100-Mile Diet Adaptation project demonstrates the significance of integrating the TPACK framework into teacher education by leveraging educational technology to enhance creativity, collaboration, and critical thinking among preservice teachers (PSTs). Tools such as Canva, Flipgrid, Excel, and Padlet enabled me to guide PSTs in documenting, analyzing, and presenting their inquiries into local food systems effectively. By bridging STEM and non-STEM perspectives, these technologies ensured accessibility for PSTs from diverse backgrounds, fostering an inclusive learning environment. This integration not only amplified engagement but also simplified complex concepts like sustainability and climate change for future elementary learners.

The project highlights the relevance of place identity and climate change education [4, 5, 21] in addressing climate anxiety. I encouraged PSTs to explore their connections to local communities and food systems. I and PSTs emphasized the importance of reducing carbon footprints and fostering environmental resilience in concrete ways. Projects such as “Backyard Gardening” and “Eating Locally and Seasonally for Nutrition and Resilience” demonstrated how engaging with local resources and practices can empower PSTs to confront global challenges through localized, meaningful actions. By grounding abstract concepts in tangible experiences, PSTs developed a deeper understanding of sustainability and the interconnectedness of environmental and cultural practices.

DEI were central to the project’s design, ensuring that PSTs from underrepresented and diverse STEM and Non-STEM backgrounds could actively participate and contribute meaningfully. The integration of place-based learning, Indigenous knowledge, and culturally relevant pedagogies allowed PSTs to draw on their personal and community contexts. This approach also bridged gaps between STEM and non-STEM learners. It provided tools and strategies to address the varied technological proficiencies among PSTs [8, 10, 22].

Experiential learning [12] was another cornerstone of the 100-Mile Diet Adaptation. It allowed PSTs to take ownership of their projects while fostering critical reflection on sustainability and climate action. By engaging in hands-on activities such as reducing food waste, creating vegetarian recipe books, and exploring over-packaging, PSTs connected their personal experiences with broader environmental themes. The transdisciplinary approach [11] of the

project also encouraged collaboration across fields. The approach illustrated the importance of integrating science, technology, and local knowledge in elementary teaching practices.

Future directions for this work could include longitudinal studies to assess the impact of these adaptations on PSTs' future classrooms and the long-term effects of experiential learning on sustainability education. Additionally, greater focus on the emotional dimensions of climate anxiety and strategies to address these issues in teacher education would further enhance the project's relevance. Expanding the scope of educational technologies used, such as augmented and virtual reality or interactive simulations, could also provide new avenues for engagement and reflection.

Ultimately, the 100-Mile Diet Adaptation project underscores the transformative role of educational technology, experiential learning, and transdisciplinary approaches in preparing future educators. By fostering place-based and culturally responsive teaching practices, this project equips PSTs with the skills to address global challenges through localized, inclusive, and sustainable education. It serves as a potential model for how teacher education programs can inspire environmental stewardship and innovative pedagogy in elementary classrooms.

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Appendix 1: Expanded Summary of the 26 100-Mile Diet Adaptations

Number	Title	Brief Description	Technology Integration
1	30-day intermittent fasting	A sharing of a 30-day intermittent fasting journey and the positive changes of the journey.	Google Slides for progress documentation, Flipgrid for reflective video logs, Excel for data tracking and visualization.
2	A good pair: Kitchen and a garden	Discover a student belief that ingredients pairing well in the kitchen also thrive together in the garden.	Tinkercad for visualizing companion planting, Canva for recipe integration, Padlet for idea sharing.
3	A Keto diet journey	A Keto diet journey with daily menus, simple rating guidelines, and reflections on valuing the food we consume.	Excel for meal tracking, Canva for daily menus, Google Slides for progress summaries.
4	An interview with the expert	Explore the science, art, and controversial issues in agriculture, including gender, technology, and globalization in the Maritimes: An interview with the expert	Zoom for expert interviews and transcription, WeVideo for editing interview highlights.
5	Authentic Mi’kmaq Recipes	This project explores the 100 Mile Diet through Mi'kmaq recipes using locally sourced ingredients, while examining how weather influenced Mi'kmaq hunting practices and decision-making in First Nations and Inuit societies in Atlantic Canada.	Canva for recipe cards, WeVideo for cultural video narratives, Book Creator for compiling historical insights and reflections.
6	Backyard gardening	Adaptation to learn about cold frame construction and year-round garden planning.	Tinkercad for cold frame modeling, Google Sites for documenting the year-round garden plan, PowerPoint for visual presentations.

7	East Coast Beach walks	"East Coast Beach Walks" a discovery on how daily walks can lower your carbon footprint, boost well-being, and cover distances as far as Halifax to Cape Breton Island.	Google My Map and Google Suites for visualizing walk distances, for reflections, and activity tracking.
8	Eat your vegetables	Compilation of compelling arguments based on daily experiences why you need to eat vegetables through an inquiry-based documentation.	Google Docs for inquiry-based journaling, Flipgrid for video reflections, Piktochart for infographic summaries.
9	Eating Locally and Seasonally for Nutrition and Resilience	This project showcases a successful small-scale farm in the province that fosters community engagement, collaboration with other farms, and food education, aiming to inspire local and seasonal eating.	Google Suites for farm resources, project documentation, and seasonal food mapping.
11	Food science and history	Exploration of pedagogical decolonization by merging food science and history with critical discussions on transatlantic trade, Brassica oleracea, and Indigenous food knowledge.	Google Slides for interactive lessons, Padlet for collaborative timeline creation.
11	Household food waste	Exploring the cost of household food waste and sharing simple, practical strategies to reduce it year-round.	Excel for cost analysis, Google Sheets for waste reduction tracking, Canva for summary infographics.
12	Local ingredients	A journey of sourcing local ingredients and integrating critical concepts into the classroom through his 100-Mile Diet project.	Google My Maps for local food mapping, PowerPoint for synthesis, Flipgrid for sharing classroom integration strategies.
13	Logging grocery items	Tracking the countries of origin for the foods I purchased at my local grocery store over a month, without altering my usual shopping or eating habits.	Microsoft Excel for data logging, Google Sheets for origin tracking for data visualization and synthesis.
14	Love Local: Vegetarian Recipe Book	Explore student’s Love Local: Vegetarian Recipe Book for seasonal, plant-based recipes	Book Creator for recipe compilation, Canva for designing

		sourced from local farmers markets in NS.	recipe book layouts, Adobe Express for video storytelling of recipe experiences.
15	My 100-Mile Diet Version	A journey of dining at childhood favorites with loved ones, sharing vignettes that reveal the importance of supporting local food businesses and nurturing relationships.	Padlet for storytelling vignettes, Canva for visual presentations, Adobe Spark for digital storytelling reflections.
16	My journey with Cooper	Heartfelt journey with a 12-year-old dog Cooper, celebrating friendship, care, and the importance of fresh air, inspired by Rachel Carson's bond with Roger.	Adobe Spark for digital storytelling, Canva for photo collage creation, Flipgrid for reflective narration.
17	Never ending over packaging	An exploration of over-packaging as a global issue, emphasizing awareness and commitment while sharing ways families can take action together.	Instagram for vlogs, Piktochart for packaging awareness infographics, Padlet for collaborative reflections, Canva for creating sustainability posters.
18	Apples grown in the province	Inspired by childhood memories of backyard apples, this project investigates how local grocery stores source apple varieties, questioning the authenticity of their "local produce" claims.	Padlet for community reflections, Canva for apple variety comparison charts, Google Sheets for local store data tracking.
19	Real meaning of enjoying nature	Does tracking time, distance, and calories matter? The true value lies in enjoying nature walks alone, with friends, or with a pet dog.	Padlet for reflective journaling, Canva for photo sharing, Flipgrid for personal narration.
20	Recipes from Farmers Market	An adaptation that features personalized jam cookies, farmers market recipes, and an interactive map highlighting local sweets, sandwiches, and shops across NS.	Google My Maps for interactive market mapping, Canva for recipe visualization and collection of market stories and reflections.
21	Season of eating in the province	Exploration on the feasibility of eating seasonally in the province during winter, focusing on the	Excel for seasonal availability tracking, Google Suites for data

		availability of local produce and proteins.	visualization interactive mapping of local produce.
22	Self-care with caring horses	A 1-week journey of self-care, discovering the importance of prioritizing joy through the love for horses and the outdoors.	Adobe Express for creating a visual story, Google Docs for journaling experiences, Canva for wellness infographics.
23	Strive for Five	Exploring the "Strive for Five" campaign, promoting local food consumption while integrating nutrition education across ELA, social studies, and sustainability topics.	Canva for campaign poster design, Google Docs for interdisciplinary lesson plans, Flipgrid for student reflections.
24	Vegetable: a centerpiece of every meal	A collaborative inquiry that encourages making vegetables the centerpiece of every meal.	Flipgrid for daily reflections, Canva for recipe documentation, Google Docs for collaborative lesson planning.
25	Waste no more	Waste No More" is resolution to reduce food waste through sustainable household habits, addressing Canada's 58% food loss issue.	Google Docs for journaling sustainable practices, Canva for infographic design, Piktochart for food waste reduction statistics.
26	Where do foods in Canada come from?	Exploring where food in Canada comes from by examining flyers from major grocery chains, highlighting how far food travels to reach kitchens across the country's diverse provinces and territories.	Google My Maps for supply chain visualization, Excel for flyer analysis, Canva for food origin infographics.

Appendix 2: 5-Level Rubric for Assessing the 100-Mile Diet Adaptation Project

Criteria 1: Creativity in Technology Integration

> **Level 5 (Exceptional):** Innovative use of multiple digital tools, creatively enhancing the presentation, documentation, and analysis of the adaptation. Clear alignment between tools and project objectives.

Level 4 (Proficient): Effective use of diverse technologies with some creative elements. Tools are relevant and used to support project clarity and analysis.

Level 3 (Developing): Basic use of technology tools with moderate creativity. Some connection between tools and project goals, though underutilized.

Level 2 (Emerging): Limited use of technology tools with minimal creativity. Tools are used but with limited impact on the project's clarity or depth.

Level 1 (Insufficient): Minimal or no use of digital tools. Tools lack relevance and do not enhance the project.

Criteria 2: Student Engagement

Level 5 (Exceptional): High level of ownership, active reflection, and personal connection to the project. Engagement evident throughout all stages of the project.

Level 4 (Proficient): Consistent student involvement and reflective thinking. Personal connections to the project are clear.

Level 3 (Developing): Moderate student participation with some reflection. Limited personal connection to the project.

Level 2 (Emerging): Inconsistent participation and limited reflection. Minimal personal connection to the project.

Level 1 (Insufficient): Minimal participation and reflection. Lack of personal investment or ownership.

Criteria 3: Transdisciplinary Connections Across STEM and Non-STEM Subjects

Level 5 (Exceptional): Extensive integration of multiple disciplines, including both STEM and non-STEM subjects, with clearly defined interdisciplinary links.

Level 4 (Proficient): Strong integration of multiple subjects with some interdisciplinary connections evident and well-articulated.

Level 3 (Developing): Basic integration of multiple subjects with moderate interdisciplinary connections.

Level 2 (Emerging): Limited subject integration with few interdisciplinary links present.

Level 1 (Insufficient): Minimal or no interdisciplinary connections between subjects.