

**“Not Everyone Has the Same Privileges”: Filling the Gaps in the United Nations
Sustainable Development Goals Through Environmental Justice Lessons**

By

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Abstract

One of the seventeen United Nations Sustainable Development Goals is to provide quality education as a way to “promote lifelong learning opportunities for all” while also ensuring that children especially have access to inclusive and equitable education opportunities by 2030 (United Nations, 2022). This framework does not support the education that will be necessary as the climate crisis worsens because of its lack of clear standards among other issues as well as the complete absence of the discussion of environmental justice (EJ). EJ is largely

absent from the goals, targets, and indicators of the SDGs despite the fact that many environmental problems are problems of justice, and some researchers have concluded that the exclusion of an explicit discussion of justice in any of the SDGs could lead to negative consequences for EJ. The subject of environmental education (EE) and its teachings can serve as the intersection between general education and environmental justice that the SDGs severely need, as the foundational teachings of EE dictate that the field is extremely interdisciplinary and center EJ. This research project proposes environmental education lesson plans that focus on EJ through systems-thinking, open-ended questions, and place-based learning to serve as a basis of pivotal EE teachings that reflect the original intention and definition of “environmental education” created in the 1977 Tbilisi Conference.

Introduction

In light of how quickly climate change is affecting our planet, the United Nations created the Sustainable Development Goals (SDGs) in 2015 to form a coalition of countries focused on tackling the pressing matters of the environment while simultaneously creating a better future for the people of today by 2030 (United Nations, 2022). Though the SDGs serve as a way to shed light on areas in dire need of global action, they have been critiqued for failing to actually address the interdisciplinary nature of the issues, lacking any kind of quantifying measures or programs, and prioritizing capitalism and colonization through a push for growth and development (Swain, 2018). The UNSDGs have been deemed incompatible by many in conjunction with meaningful environmental policy because of their focus on increasing GDP, a measurement whose pursuit has been documented to ignore environmental impacts, create conflict over resources, and thus play a part in creating environmental justice issues that need to be mitigated (Costanza, et al., 2014; Goossens, et al., 2007). Several authors highlight that the inclusion of weak language and escape clauses created a situation in which the only thing that all the authors of the SDGs could agree on was that nothing would bind them to creating the changes they pointed out (Easterly, 2015; Menton, et al., 2020).

Goal 4 of the seventeen created by the United Nations is to provide quality education as a way to “promote lifelong learning opportunities for all” while also ensuring that children especially have access to inclusive and equitable education opportunities (United Nations, 2022). Education plays a pivotal role in combating climate change because it directly affects the next

generation of thinkers and equips them to make informed decisions about the world around them, which is something that will become more necessary as the climate crisis worsens (United Nations, 2022). While the number of children who do not receive adequate education has drastically decreased over the years, approximately 60 million children worldwide are still not in school, a statistic that has increased in severity recently due to the complications of the COVID-19 pandemic (Roser, 2021). This number is currently predicted to rise sharply depending on the severity of warming in the future, and the effects will mainly be felt by children and families who live in poverty and are Black, Indigenous, or people of color (EPA, 2021). A 2021 report conducted by the EPA entitled *Climate Change and Social Vulnerability in the United States: A Focus on Six Impact Sectors* found that minority groups (including Black and African American people, Hispanic and Latino people, American Indian and Alaska Native people, and Asian people) are all more likely to live in areas that “project the highest levels of climate change impacts with 2°C of global warming or 50 cm of global sea level rise,” signifying that the inequities in education will only worsen as these impacts are likely to be felt disproportionately in BIPOC communities (EPA, 2021, pg 6).

Some of the symptoms of climate change have already impacted learning in the United States as “one in 4 teachers, principals, and district leaders say that climate change is impacting their school or district to some extent,” according to a study done by EdWeek (Prothero, 2022). A grassroots study conducted by Undaunted K-12 records school closures reported by local or state news agencies in 2021 and 2022 due to heat or other extreme weather conditions to document how many schools are not equipped to continue educating students in the face of climate change (*#Lostlearningtime*, n.d.). Other research has found that in the past 10 years the amount of school closures due to inclement weather has doubled, and this is directly a justice issue (Meckler & Phillips, 2022). Many schools that are affected by hot or inclement weather are in low-income areas and/or are composed of majority students of color that don’t have the funding to make the changes necessary to infrastructure. There is a large movement of teachers who formed TeachSDGs, an organization of educators who pledge to prioritize teaching the global goals in their lessons, starting at the preschool level all the way through to university (Williams, 2020). The existing dedication of educators to provide quality education to students is noble, and being able to obtain an education in today’s world is very important, but a framework

that has been identified by many as missing throughout the SDGs, and the one that will be focused on for the duration of this paper with respect to education, is environmental justice (EJ).

The term environmental justice grew out of the grassroots movements organized by people of color in the 1970s and '80s to fight against the environmental racism that communities of color systemically face in the U.S., and EJ was defined by sociologist Robert Bullard, a prominent researcher who studies community data of environmental racism, as “the principle that ‘all people and communities are entitled to equal protection of environmental and public health laws and regulations’” (Mohai et al., 2009, p. 407). EJ is largely absent from the goals, targets, and indicators of the SDGs despite the fact that many environmental problems are problems of justice, and some researchers have concluded that the exclusion of an explicit discussion of justice in any of the SDGs could lead to negative consequences for EJ (Lele, 2017; Menton et al., 2020).

In UNSDG 4 of Quality Education, these shortcomings are especially evident, and education is largely not recognized for the tool and social driver that it is through the SDGs, particularly when it comes to including environmental justice. Though EJ is interdisciplinary and has ample opportunities to be included in any of the SDGs, education provides a particularly fruitful place to begin because it allows students to practice self-determination theory and take agency in their lives (Ryan & Niemec, 2009). Self-determination theory posits that education requires the autonomous motivation of students, alongside educator, parental, and cultural support, in order to provide “positive academic motivation and healthy development of youths” (Chirkov, 2009, p. 253). Environmental education (EE) seeks to give the targeted age group (ages 12-15, grades 6-9) the tools they need to practice this by making individual choices, understanding larger systems, and giving students more control. More specifically, EE and its teachings can serve as the intersection between general education and environmental justice that is critically needed in the SDGs, as the foundational teachings of EE dictate that the field is extremely interdisciplinary and center EJ (Gvishiani et al., 1977; Stevenson, 2007).

Though other measures had been taken to solidify the necessity of environmental education, the importance of EE on a global scale became established at the world’s first Intergovernmental Conference on Environmental Education in Tbilisi, Georgia in 1977 (Gvishiani et al., 1977; Krzeni, 2015). The Tbilisi Declaration, which outlined the goals and guiding principles for EE, created a thorough and expansive definition of EE that is as follows:

Environmental education, properly understood, should constitute a comprehensive, lifelong education, one responsive to changes in a rapidly-changing world. It should prepare the individual for life through an understanding of the major problems of the contemporary world, and the provisions of skills and attributes needed to play a productive role towards improving life and protecting the environment, with due regard given to ethical values. By adopting a holistic approach, rooted in a broad, inter-disciplinary base, it recreates an overall perspective which acknowledges the fact that natural environment and man-made environment are profoundly inter-dependent. It helps reveal the enduring continuity which links the acts of today and the consequences for tomorrow. It demonstrates the inter-dependencies among national communities and the need for solidarity among all mankind. (Tbilisi Declaration, UNESCO, 1978)

This definition not only redefined EE and brought it back into mainstream conversation, but also had the capacity to bridge the gap that exists between the needs of humans and the needs of the environment in a way that would completely and intentionally reform education, extending it beyond the bounds of the traditional education system and into the community. The Tbilisi Declaration did not depend on adhering to specific educational standards nor did it prioritize a “sustainable” economic growth as the SDGs currently do (Krzeni, 2015; United Nations, 2022). The contributors to the conference did create a general framework of how to incorporate environmental education in every nation-state with specific recommendations, which increased the amount of environmental education pushes by the U.S. government and eventually led to the passing of the National Environmental Education Act (NEEA) of 1990 along with the creation of the Office of Environmental Education through the EPA to implement the program NEEA outlined (EPA, 2022; McCrea, 2006).

The motivations and definition of EE through the 1990 program changed drastically from the Tbilisi Declaration: it created a federal grant program that awarded money to support EE and had a specific focus on environmental literacy in citizens, but it also altered the Tbilisi definition of EE and drowned the concept in a new layer of ambiguity (Potter, 2010). The NEEA focused more on how to monetarily support educators in their endeavors, as government acts tend to do, but created a weakness in EE’s greatest strength, its expansiveness, by failing to assist educators

in their curriculum construction. The NEEA relied on states' and educators' individual implementation, essentially flattening what EE is down to just a concept that was occasionally tacked onto regular science lessons and reinforced the dominant Western science narrative (Cole, 2007; Potter, 2010). This has elicited very different EE programs depending on the state that you are in. For example, the Crawford Central School District, which directs 8 schools in the Meadville area, only has ecology curriculum requirements for one school district in the whole system, and there is no mention of EE in any of the curricula (*Secondary Curriculum*, n.d.). As a result, EE has been missing the engagement and advocacy aspects that critically discuss how “hierarchies of race and class create meaning and determine policies that unequally shape the ways diverse populations live in and experience particular places,” leaving large EE and EJ gaps in the curriculum of students in the area (Cole, 2007, p. 38).

In Meadville, Pennsylvania, there are areas of EJ that could be examined more closely by using a holistic EE approach as described in the Tbilisi Declaration. In the Allegheny College community, which resides in the town of Meadville and in Crawford County, 52% and 38%, respectively, of households struggle to put food on the table (Gushard, 2019). Of its approximately 13,000 residents, 19.6% of Meadville citizens live at or below the poverty line, which is 5% higher than the national overall poverty rate (Federal Safety Net, 2021; US Census, 2022). According to the most recent data available from Feeding America (2021), approximately 60% of people in general and a staggering 90% of children in Crawford County are eligible for SNAP and other federal assistance programs because they're unable to make enough money to support themselves. The USDA's *Food Environment Atlas* found that in 2015, 10,527.28 people—about 80% of the population—in Meadville had low access to a grocery store, meaning that that number of people in the county live more than 1 mile from a supermarket or large grocery store if in an urban area (USDA ERS: Food Environment Atlas, 2022). Because food insecurity is a prominent issue in the community, it was important to incorporate this into the lesson plans and discuss how it impacts the area with the students using the theories outlined below.

Place-Based Learning

Creating place-based environmental education lessons with boundaries that gradually introduce abstract concepts not only prevents ecophobia but also presents a great opportunity to connect children with their immediate surroundings. It is well documented that children learn

better when their lessons are grounded in where they live and what they're already interested in (Sobel, 2004). Researchers at Yale University highlight the importance of place-based learning because of the intimate connection that people feel to where they live or are from in addition to that one place holding all of the following: the biophysical environment; the personal/psychological element; the social and cultural context; and the political economic milieu (Ardoin, 2006). One's environment also becomes the area in which you understand the world, and expanding on students' definitions of the environment through discussing the structures intact in the place that they know can allow for better and more cohesive EE teaching.

Open-Ended Questions

By posing open-ended questions for students to evaluate the work they've done, they can create connections between what they think and what their peers think. It allows more time for students to comprehend the larger lessons at hand and how they connect to the subject, which is very necessary for the material taught in these lessons. This gave me practice with posing answerable questions that students can respond to without fear or judgment and create an environment that fosters "intellectual risk taking," allowing students to fully immerse themselves in the learning process (Farmer, 2007). The questions posed have a straightforward answer that may vary depending on each student's home life, but it begins the thought processes to achieve the objectives of the task through "prompting and cueing, help[ing] the students [to] recognize the relevant sameness" between their environment and their relative access to food (McBride & Bonnette, 1995). The lesson plans utilized both questions with a clear answer and questions without one, which will allow students to rationalize their ideas alongside the information presented to them and hopefully continue thinking about the lesson long after it has been taught, particularly in relation to their own surroundings and the systems that shape the world we live in.

Systems-Thinking

Systems-thinking is, plainly, a way of thinking about systems. In systems-thinking, the interconnectedness of all problems and areas is considered by thinking about first about a certain phenomena/event/circumstance's "elements (in this case, characteristics), interconnections (the way these characteristics relate to and/or feed back into each other), and a function or purpose" (Arnold & Wade, 2015; Meadows, 2008). Through systems thinking, one can hope to better understand the deep roots of these complex problems within environments by examining each part of the whole as well as considering its place within the larger system (Kioupi & Voulvoulis,

2019). This theory will be used to relate the intricate parts of the environment that students identify to the definition of environment as a whole. This will then be used to discuss food insecurity within their communities, the actions they can take to mitigate it, and how the community can move toward solutions that directly connect people to the environment like gardens.

Educating children on EJ issues is vital to fighting climate change, and doing so through a more cohesive, holistic, and community-based EE can assist in raising kids who are conscious of environmental issues, the connectedness of nature and people, and feel well-equipped to tackle environmental problems. In the spirit of doing so, I created three environmental lesson plans with the objective of teaching two of the main points of the original Tbilisi Declaration: (1) the expansive definition of “environment” and (2) that not everyone has the same opportunities when it comes to the environment. Though I do not expect the lessons to restructure the U.S. education system, the intention of my project was to see if I could create a series of lesson plans that would introduce students to the privileges present when certain people engage in their environment with the goal of helping them become better thinkers and learners about the world around them in a nontraditional setting.

Methods

The lessons draw from theories of place-based learning, open-ended questions, and systems-thinking to best accomplish this and were taught in three separate sessions at the Meadville Public Library in February 2023. In order to teach lessons to children, I needed to have specific clearances through the state of Pennsylvania. I first submitted the Employment Inquiry Release form through the Student Life Office at Allegheny College so that the PA Criminal History Clearance could be completed. I then completed the PA Child Abuse Clearance forms and submitted them to the Student Life Office for processing and was fingerprinted at the Identogo office in Meadville, PA to satisfy FBI requirements. Once this process was completed, I began writing the lessons themselves.

To create my environmental justice lesson plans, I first consulted environmental educators who have experience creating and teaching lessons. My second reader, Wendy Kedzierski, was extremely knowledgeable in guiding how to outline lessons and creating appropriate content for the age group. Rather than following Pennsylvania Academic Standards

to guide the lessons, I focused on using the guidelines created by the 1977 Tbilisi Declaration with specific consideration of goals 1, 5, 6, and 7 to best satisfy the two objectives created: (1) the expansive definition of “environment” and (2) that not everyone has the same opportunities when it comes to the environment. After creating the general objectives and structure of the lesson plans, I then consulted April Claus, an environmental educator who successfully runs her own entrepreneurial environmental programs that were created from her original lessons. Claus’s insight gave me a sense of how to pose questions to the specific age group I am targeting. After developing the lessons, I consulted with two representatives from the Meadville Public Library, Steve Utz and Dan Slozat, to organize and present my lessons appropriately to the surrounding community. To write lessons that achieved my objectives and utilized the three learning theories identified in the introduction, I found resources in which educators write about their processes of creating and teaching lesson plans as well as looking at the lessons they’ve created to better understand what goes into a successful learning experience. These sites included the North American Association for Environmental Education and Learning for Justice, and I would search these sites using terms such as “environmental justice lessons,” “food insecurity lessons,” and “environmental education tactics” to find lessons that accomplished similar goals through hands-on learning (*Food Deserts: Causes, Consequences and Solutions*, n.d.; Simmons et al., 2022). I then used the theories and reference materials gathered to create the first lesson plan.

After this literature review, I designed the materials for the lesson plans using Canva and with the goal of addressing food access issues in Meadville. Canva is a free content creating site that carries a wide variety of teaching materials, which I found through content searches like “woodland animals,” “environment,” “water,” “buildings,” “food,” et cetera in order to get the images desired for the first lesson plan’s maps, as seen in Figure 2. The map itself, Figure 1, was found through the Grow Meadville [website](#), which highlights the community garden resources found around Meadville (Grow Meadville, n.d.). I printed out the Figure 1 maps in a larger size using the Allegheny Print Shop and the Figure 2 images using the printer at the library. These materials were then used as part of the first lesson plan and served as the basis for the lessons that followed.

GROWMEADVILLE is a network of community gardens that promote growing food and bringing together community members of all ages from the Meadville area. We have been working together since 2016 to grow local and healthy produce in open spaces, and to support residents in planting, growing, and maintaining a garden. We encourage you to join us and contribute towards growing a healthier community.

- 1 Creating Landscapes for Families Garden
- 2 Seton Catholic School Garden
- 3 Parkside Psychological Garden
- 4 Chancery Lane City Garden
- 5 ARC's Garden at the UU
- 6 City Hall Garden
- 7 Christ Church Garden
- 8 Community Orchard
- 9 MAMS-MARC Edible Trail
- 10 MAMS Edible Garden
- 11 MARC Community Garden
- 12 Meadville Medical Center City Garden
- 13 First District Elementary School
- 14 Carr Hall Garden at Allegheny College
- 15 Women's Services Garden
- 16 Families Fifth Ward Garden



Figure 1. Grow Meadville map of town's garden network. *Grow Meadville*. (n.d.). Mncenter.

<https://www.meadvilleneighborhoodcenter.com/grow-meadville>



Figure 2. Images for creating the environment of Meadville.

The second lesson plan utilizes a discussion format with questions about access to resources in the environment that were modified from two other authors (*Food Deserts: Causes, Consequences and Solutions*, n.d.; Simmons et al., 2022). For the third lesson plan activity, I created Figure 3, a Google [MyMap](#) of the food resources (specifically supermarkets, gas stations,

liquor stores, fast food restaurants, convenience stores, and farmer's markets) in the same general area of Meadville that the Grow Meadville map outlines. This was done by searching for all of the food sources available in the area on a blank Google map, and each source was then plotted on the map and categorized by the aforementioned groupings. I created a QR code, Figure 4, for students to scan using their smartphone to access the map easily, and there were devices available for those who did not have a phone/tablet, courtesy of the Meadville Public Library (*QR Code Generator | Create Your Free QR Codes*, 2019). This map was used for students to understand and document the food sources available to them depending on where they live on the map using the worksheet found in Figure 5, which was adapted from the [Southern Poverty Law Center website](#) (*Food Deserts: Causes, Consequences and Solutions*, n.d.). After the lessons were finished, they were then revised after receiving feedback from my advisor and comping group and adjusted accordingly. The same process was done after teaching each lesson based on students' responses to the activities and discussion. I determined which lessons needed to be changed/reworded by how easily students came up with the connections desired from the lessons. This is elaborated on more thoroughly in the Discussion section of this paper.

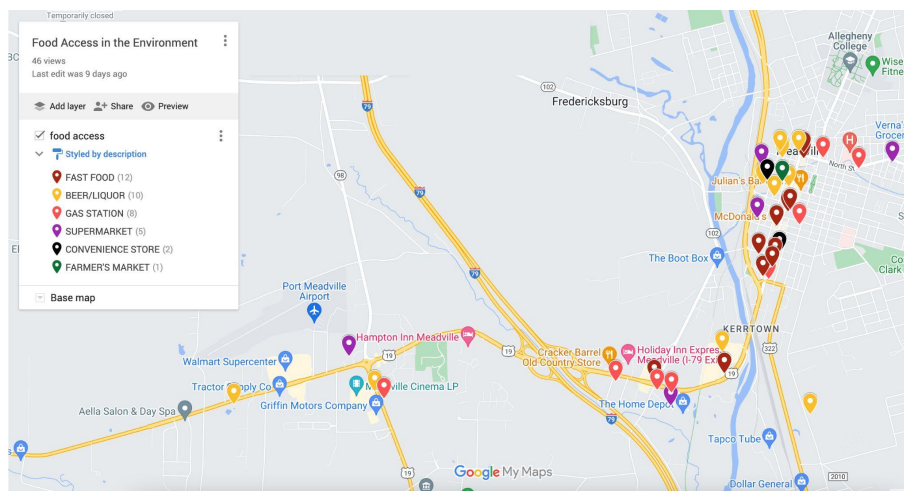


Figure 3. “Food Access in the Environment” map that documents the food stores available in Meadville, PA, which was used to discuss fresh food access in the community.

<https://www.google.com/maps/d/edit?mid=1LYqDveAA0kKzc9YurB7H7O8ilmmDATY&usp=sharing>



Figure 4. QR code created for students to scan and access Figure 3 on Google Maps.



What's in Store?

The chart below lists three different retail categories where you can purchase food and a series of questions/characteristics about each. Complete the chart.

	GROCERY STORE/ SUPERMARKET	CONVENIENCE STORE	FAST FOOD RESTAURANT
Example closest to my home			
Approximate distance from home			
Are there healthy options such as fresh fruit, vegetables, low-fat milk products, whole wheat products, and lean meats?			
Rank from 1 to 10 (10=expensive 1=economical)			
How many of these are in a one-mile radius of your home?			

Figure 5. Worksheet for activity portion of Lesson 3. Adapted from Southern Poverty Law Center website. *Food Deserts: Causes, Consequences and Solutions*. (n.d.). Learning for Justice. <https://www.learningforjustice.org/classroom-resources/lessons/food-deserts-causes-consequences-and-solutions>

All three lesson plans were taught consecutively on February 14th, 21st, and 28th from approximately 4-5 PM at the Meadville Public Library which served as a neutral public area for

the lesson to take place and is also central to the area. The target audience was adolescent age groups, approximately ages 12-15 and grade levels 6-9, in the Meadville, PA area with the following affiliated groups to maximize the number of students reached through the lessons: Pathfinders (a “site-based psychiatric rehabilitation program for youth” in the Crawford County area) and the Teen Activity Group that meets in the library weekly (*Crawford County Mental Health Awareness Program (CHAPS)*, n.d.). Four students attended the first session, six students attended the second session, and twelve students attended the third session. The full duration of one session was 60-75 minutes, and each lesson plan notes the timing needed for each portion. This was evaluated with help from two assistants who observed engagement through what they heard students talking about during each lesson in regards to the questions that were posed, general feelings about the lessons, and any other pertinent information to students’ understanding of the topics taught.

Results

Three environmental education lesson plans were created to serve the purpose of teaching the objectives of (1) the expansive definition of “environment” and (2) that not everyone has the same opportunities when it comes to the environment with adherence to the guidelines of the 1977 Tbilisi Conference in a nontraditional setting. The lessons were taught in three sessions to evaluate my proficiency as an educator and as research to inform educational practices. The lessons were effective in teaching Meadville area students that not everyone has the same opportunities in the environment.

Lesson Plan 1: “Mapping Your Environment”

Time: 25-30 minutes

Audience: 6th-9th grade students

Materials:

- Blank city maps
- Cutouts of various things (trees, animals, stores, houses)
- Glue
- Tape
- Scissors

- Colored pencils
- White board

Objectives:

- Students will be able to define the term “environment.”
- Students will build a model of their environment using materials provided.
- Students will be able to identify why they chose to include the landmarks that they did.
- Students will discuss how their environments affect their lives.

Goals:

- This lesson will encourage students to think critically about their environment and where they live. By replicating the environment that they live in, students will begin to connect where they live with how they specifically interact with their environment and how other people’s environments affect their lives as well. The takeaways from this lesson will be that students can define and explain what an environment is and what makes theirs unique as well as creating a map of their environment to take home. Students will create their environment using the materials provided and discuss how the specific places that they chose influence their understanding of the environment.

Content:

- This lesson will act as the introduction lesson for the content to follow. From this lesson, students will begin to understand how their environment creates issues of resource allocation and inequalities that stem from it as well as gain a deeper understanding of what the environment is and where they fit in it. Researchers have found that how one interacts with their environment shapes who you are as a person, and grounding environmental education lessons in place is both highly effective, helps students to learn about their immediate environment, and introduces the more complex systems at play within their communities (Wattchow & Brown, 2011). Creating age-appropriate environmental education lessons with boundaries that gradually introduce such abstract concepts not only prevents ecophobia but also presents a great opportunity to connect children with their immediate surroundings (Sobel, 1995).

Opening (5-8 minutes): Introductions

- Begin with the question, “**What places/people/things come to mind when you hear the word environment?**” Students will have time to think and respond accordingly, and answers will be written on the board in the “Before Activity” column. They will be asked to keep these responses in mind for the next activity.

Activity (10-12 minutes): Mapping Your Environment

- Students will be presented with a blank city map, cut-outs of various people/places/things that are in environments, and will be asked to create their environment however they would like and according to their definition. Allow students the freedom to form groups or pairs or work alone.

Discussion (5-10 minutes): Talking about the Environment

- Once students have finished creating their maps, the class can discuss what elements they chose to include and why. Allow students to walk around the room and look at the other maps that have been created. Then regroup and ask the following questions:
 - What elements did you see included on the maps? Did anything surprise you?
 - Did how you think of the environment change? If so, how?
 - Are there any new words to be added to the list on the board in the “After Column?”

Evaluation

- There is no formal evaluation to assess students’ learning due to the IRB-exempt requirements. However, observations of students’ participation, comments, questions, and level of understanding will be assessed throughout the lessons to measure the ability of the instructor to teach environmental education.

Connection to Tbilisi Declaration

- Tbilisi Goals
 - 1. Whereas it is a fact that biological and physical features constitute the natural basis of the human environment, its ethical, social, cultural, and economic dimensions also play their part in determining the lines of approach and the instruments whereby people may understand and better use of natural resources in satisfying their needs.

- 5. Special attention should be paid to understanding the complex relations between socio-economic development and the improvement of the environment.
- 6. For this purpose, environmental education should provide the necessary knowledge for interpretation of the complex phenomena that shape the environment, encourage those ethical, economic, and esthetic values which, constituting the basis of self-discipline, will further the development of conduct compatible with the preservation and improvement of the environment. It should also provide a wide range of practical skills required in the devising and application of effective solutions to environmental problems.
- 7. To carry out these tasks, environmental education should bring about a closer link between educational processes and real life, building its activities around the environmental problems that are faced by particular communities and focusing analysis on these by means of an interdisciplinary, comprehensive approach which will permit a proper understanding of environmental problems.

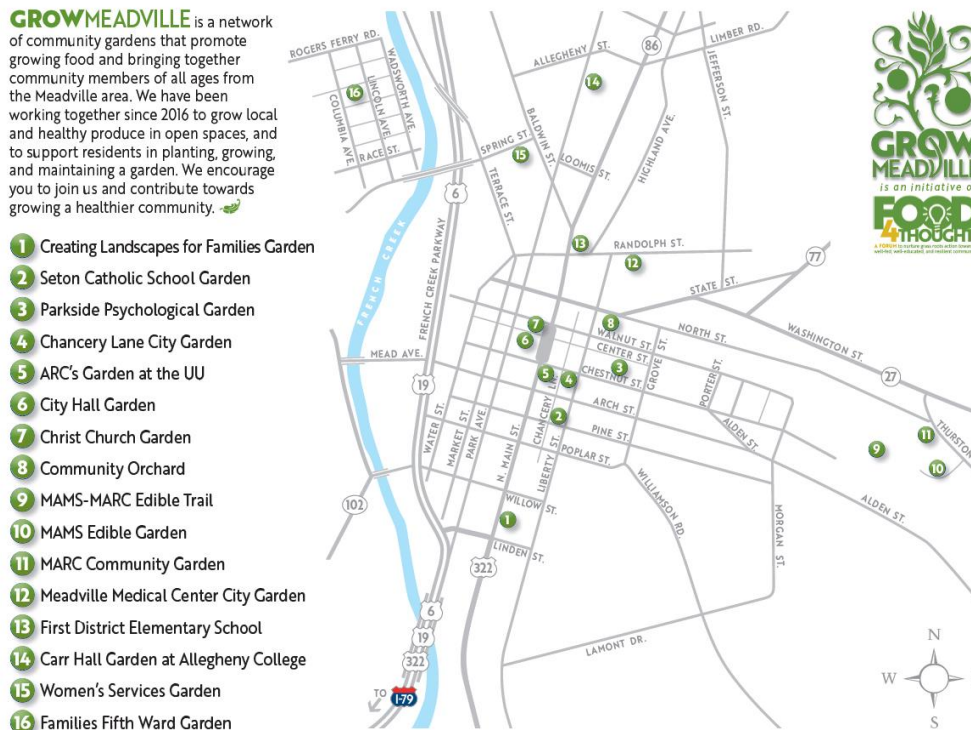


Figure 1. Grow Meadville map of town's garden network. *Grow Meadville*. (n.d.). Mncenter.

<https://www.meadvilleneighborhoodcenter.com/grow-meadville>



Figure 2. Images for creating the environment of Meadville.

Lesson Plan 2: “Identifying Garden Resources in Your Environment”

Time: 5-10 minutes

Audience: 6th-9th grade

Materials:

- Grow Meadville map from Lesson 1

Objectives:

- Students will be able to discuss what makes up an environment and how food fits into their definition.
- Students will discuss their own daily access to food in their environment and how environments can change this access to necessities.

Goals:

- This lesson will act as a bridge between the introduction of what the environment is and how food fits into students’ understanding of it. Students will share and discuss their knowledge of Meadville’s food systems and how this relates to the questions asked.

Content

- This lesson will serve as a bridge between the first and third lessons. Because big concepts are being introduced in a relatively short amount of time, it is important to guide students to what is being discussed without directly telling them. By having students

create their own maps of the environment without a clear understanding of what the definition of the environment is, students will develop a better understanding of the holistic definition through the contextualization after having completed their maps (Salomon & Perkins, 1987). The same concept is applied here through discussion so that learners can mindfully recognize how food fits into their definition of the environment, providing key information that is used in the third lesson.

Discussion

- Environments are where we live and should provide everything we need relatively close to us. Ask students to refer back to the maps that they created, and **ask if there's anything they might be forgetting on their maps.** Iterate that food is a really important part of our environments and our communities, and discuss with students that it can be easy to forget that food is part of our environments sometimes. Talk with them about where/how they get their food every day. Pose questions to the students that get them to identify how we can be disconnected from our food: **“Where do you get your food from? How does it get to you?”**
 - Supermarkets, schools, where food is grown, food is often served to us by other people, etc.
- Explain to students that for the next activity, you are going to read them statements and they can give a thumbs up for agreeing with it, a middle hand for maybe/somewhat agreeing, and a thumbs down for disagreeing with it. Read each question twice to ensure that everyone understands.
 - **It is easy to eat healthy food.**
 - **I have reliable transportation to get me somewhere that has healthy food anytime.**
 - **I live within 1 mile of a grocery store.**
- **Does this seem like everyone's environment can provide everything they need easily?** Nearly 40 million Americans don't have access to fresh produce within one mile of their home. Let's keep this in mind for the next activity.

Evaluation

- There will be no formal evaluation to assess students' learning due to the IRB-exempt requirements. However, observations of students' participation, comments, questions, and level of understanding will be assessed throughout the lessons to measure the ability of the instructor to teach environmental education.

Connection to Standards

- Tbilisi Goals
 - 1. Whereas it is a fact that biological and physical features constitute the natural basis of the human environment, its ethical, social, cultural, and economic dimensions also play their part in determining the lines of approach and the instruments whereby people may understand and better use of natural resources in satisfying their needs.
 - 5. Special attention should be paid to understanding the complex relations between socio-economic development and the improvement of the environment.
 - 6. For this purpose, environmental education should provide the necessary knowledge for interpretation of the complex phenomena that shape the environment, encourage those ethical, economic, and esthetic values which, constituting the basis of self-discipline, will further the development of conduct compatible with the preservation and improvement of the environment. It should also provide a wide range of practical skills required in the devising and application of effective solutions to environmental problems.
 - 7. To carry out these tasks, environmental education should bring about a closer link between educational processes and real life, building its activities around the environmental problems that are faced by particular communities and focusing analysis on these by means of an interdisciplinary, comprehensive approach which will permit a proper understanding of environmental problems.

Lesson Plan 3: "Food in Your Environment"

Time: 25-30 minutes

Audience: 6th-9th grade students

Materials:

- Pea and radish seeds, herb seeds
- Potting containers, preferably recycled materials
- Soil
- Map from Figure 1
- Google Map that shows food resources available in the area (Figure 3)
- Worksheet adapted from Southern Poverty Law Center “Learning for Justice” lesson
- QR code generator

Objectives:

- Students will be able to discuss the places or activities they can get involved in to help with food access in their community.
- Students will be able to identify barriers to food access that exist in their area.
- Students will be able to identify what privileges people have when interacting with their environment.
- Students will create and take home their own plants.

Goals:

- This lesson will show students the food resources available to them in their environment depending on where they live, how much money they have, what transportation is available, and how these choices affect their lives. Students will identify community resources in their area and be able to discuss how this relates to the larger definition of environment that can be seen throughout their community. This will be accomplished through an interactive map and worksheet that requires students to work together, navigate various maps, and discuss how the kind of food available demonstrates different opportunities/privileges present based on the environment that they live in. Students will also be able to discuss the actions they can take to help with food access both individually and as a community with special consideration for gardening.

Content:

- This lesson closes the session and provides students with a tangible action to take away. From this lesson, students will be able to connect their environment with issues of resource access depending on what kind of privileges and opportunities you have.

Research has shown that effective environmental education supports the development of a commitment to act on one's values by providing opportunities to participate actively in environmental improvement (Stevenson, 2007).

Opening (3-5 minutes): Introduction

- Introduce the lesson as a lesson that thinks about not only our access to food but how different people have different opportunities within our environment. Begin with the question, **“What did you eat for breakfast this morning?”** Students will have time to think and respond, and then ask students **“Where did your food come from?”** Allow for adequate thinking and response time, and then ask students to get into 3 groups for the next activity.

Activity (15-20 minutes): Choose Your Meals!

- Students will be separated into 3 groups that reflect three theoretical living scenarios that focus on how environments inform how close we are to basic necessities, like food. Each round will present different barriers that exist to access in the environment including transportation and money by examining the types of food available in each scenario's environment.
 - Group 1: You live near marker 16 on the GrowMeadville map. What is available to you for food from the Google Map? Complete the chart given as best as you can.
 - Group 2: You live near markers 2, 4, and 5 on the GrowMeadville map. What is available to you for food from the Google Map? Complete the chart given as best as you can.
 - Group 3: You live near marker 1 on the GrowMeadville map. What is available to you for food from the Google Map? Complete the chart given as best as you can.

Discussion (5-10 minutes): Talking about Food Access

- After the activity has completed, come back to the larger group to discuss as a class what they learned from the game. Ask the following questions:
 - Let's hear from each group. What kind of food were you able to eat? Where could you go?
 - nutrition, sacrificing tastes for cost, where they could buy food from
 - What impacted the food you chose to eat?

- Examples: location, money, transportation
- Do we see these kinds of issues in the Meadville area?
- I want you to think back to your maps you created in the beginning. Can you think of any ways that we could give everyone access to healthy and affordable food?
 - Examples:
 - Food pantry
 - Donating to one, volunteering if you can
 - Soup kitchen
 - Build supermarkets and other stores with fresh produce and healthy foods closer to where people live
 - Gardens! At home and in communities
 - Although these solutions may not all be within one mile, they can help us think about community oriented solutions. All of the places marked on the map are community gardens that provide fresh produce and serve as a way for the community to connect to the environment. **Have you ever visited any of these gardens before?**
 - Your environment is everything in your community and in order to live fully, we need to have access to these resources all the time. **How can gardens especially make that possible? Brainstorm three ways that gardens help us connect with our environment.**
 - Places to learn (in school to cook, to learn how to garden and cultivate your own food, to learn what is native to your area)
 - Connect with nature in the middle of an urban environment
 - Many health benefits: fresh food, time outdoors, restorative, increased health benefits!
 - Get to know your neighbors/new people
- **Take Home Activity** (about 5 minutes): Make Your Own Windowsill Garden
 - Students can create their own windowsill garden to take home with them as a way to take their learning with them and serve as a way for them to keep food

insecurity in mind. All materials necessary will be provided along with care instructions.

Evaluation

There will be no formal evaluation to assess students' learning due to the IRB-exempt requirements. However, observations of students' participation, comments, questions, and level of understanding will be assessed throughout the lessons to measure the ability of the instructor to teach environmental education.

Connection to Standards

- Tbilisi Goals
 - 1. Whereas it is a fact that biological and physical features constitute the natural basis of the human environment, its ethical, social, cultural, and economic dimensions also play their part in determining the lines of approach and the instruments whereby people may understand and better use of natural resources in satisfying their needs.
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 - 6. For this purpose, environmental education should provide the necessary knowledge for interpretation of the complex phenomena that shape the environment, encourage those ethical, economic, and esthetic values which, constituting the basis of self-discipline, will further the development of conduct compatible with the preservation and improvement of the environment. It should also provide a wide range of practical skills required in the devising and application of effective solutions to environmental problems.
 - 7. To carry out these tasks, environmental education should bring about a closer link between educational processes and real life, building its activities around the environmental problems that are faced by particular communities and focusing analysis on these by means of an interdisciplinary, comprehensive approach which will permit a proper understanding of environmental problems.

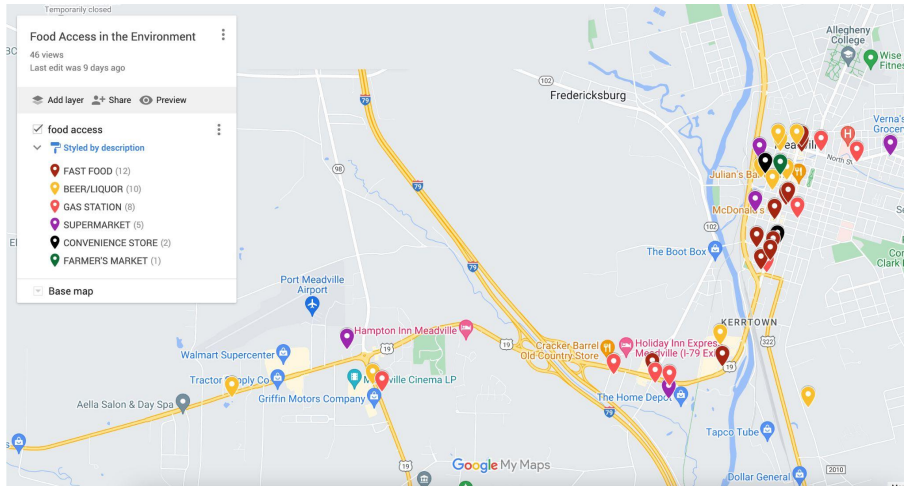


Figure 3. “Food Access in the Environment” map that documents the food stores available in Meadville, PA, which was used to discuss fresh food access in the community.

<https://www.google.com/maps/d/edit?mid=1LYqDveAA0kKzc9YurB7H7O8ilmmDATY&usp=sharing>



Figure 4. QR code created for students to scan and access Figure 3 on Google Maps.

What's in Store?

The chart below lists three different retail categories where you can purchase food and a series of questions/characteristics about each. Complete the chart.

	GROCERY STORE/ SUPERMARKET	CONVENIENCE STORE	FAST FOOD RESTAURANT
Example closest to my home			
Approximate distance from home			
Are there healthy options such as fresh fruit, vegetables, low-fat milk products, whole wheat products, and lean meats?			
Rank from 1 to 10 (10=expensive 1=economical)			
How many of these are in a one-mile radius of your home?			

Figure 5. Worksheet for activity portion of Lesson 3. Adapted from Southern Poverty Law Center website. *Food Deserts: Causes, Consequences and Solutions*. (n.d.). Learning for Justice. <https://www.learningforjustice.org/classroom-resources/lessons/food-deserts-causes-consequences-and-solutions>

Discussion

The first session of lessons took place on Tuesday, February 14th from approximately 4-5 pm. There were 4 students in attendance ranging in age from 10-15 from the library's Teen Activity Group. Overall, students responded well to the lessons, and the objectives were achieved. The assistants observed that points about privilege in the environment were driven home well and prompted good discussion among students, and the progression of the words students used as signifiers and descriptors of the environment showed that the lessons were effective in changing students' definitions and perceptions of the environment. Students went from including words like "flowers," "grass," and "animals" to words like "sidewalks," "people," and "hamburgers" after the first lesson was taught, which indicated a growth in their understanding of the environment. The module engaged students most in the hands-on portions, which brought the lessons together well. Because of the informal nature of the lessons, students were frequently moving around the room and in and out of the classroom as they saw fit. This resulted in some modifications to the lessons themselves in both content and for the varying age range. The third lesson's mapping activity was no longer appropriate for the audience that was

present, nor were the questions in the second lesson. Instead, the third lesson functioned mostly as a question and answer session about food access in Meadville, which did lead students to the same conclusion that the original third lesson would have: there are food access issues in the environment of Meadville. The lessons were adapted in future sessions accordingly.

The audience present as well as the instructor's first time fully leading a lesson provided valuable challenges which led to improvisation and learning how to operate within a classroom in terms of facilitating discussion and keeping students on task. For example, in the first module taught on February 14th, I used the word "access" to talk about food resources in the Meadville area, and one question in particular that had "access" in it got no responses from students and required me to reword it multiple times on the spot and adapt to the kids' current understanding of the environment. The session showed some of the areas of the lesson plans that needed modification, including word choice (students did not respond well to questions with the word "access" but could speak extensively about how their environment limited their food choices) and the questions asked. Again in the first module, the second lesson did not include the statements that had students answer using a thumbs up, thumbs down, or a thumb in the middle, and this made the lesson more like a lecture than a conversation with the students. While students were able to connect food to their environment from the conversation, I had to prompt them to make the connections that not everyone's environment affords them the same opportunities/options when it comes to food, indicating that that portion of the lesson needed to be changed.

The second session of lessons took place on Tuesday, February 21st from approximately 4-5 pm. There were 6 students in attendance ranging in age from 10-15 from the library's Teen Activity Group. Students again responded well to the lesson, and the objectives were achieved. Three students had been at the previous session and verbally indicated their excitement for participating in the lesson again. The students were more energetic, which made it harder to teach in a nontraditional setting. However, the lessons were still successful, and the assistants observed that connections between the environment and resource availability were made and verbalized well in addition to an evolution of how they described the environment. At the beginning of the first lesson when students were asked to give words that came to mind when they think of the environment, they gave the answers expected like "trees," "grass," and "flowers." After students completed their Figure 1 maps, their answers evolved to describe the

environment using words like “buildings,” “parks,” “grocery stores,” and “the library,” indicating that creating the maps and discussing with other students altered how they viewed/described the environment. The adaptations made to the second lesson to include the statements that required student participation (thumbs up/down/middle) prompted a lot of discussion about food accessibility between students. Multiple students raised their hands to talk specifically about the statements, including why it was sometimes easy to access healthy food but sometimes not, what qualifies as reliable transportation, and what food stores are near their homes and what they purchase there. This change in how the statements were presented prompted really productive discussion about food accessibility in the environment from the students.

One aspect that was more successful in this lesson was that students responded well to questions about offering community solutions for food insecurity and were willing to be more creative and open with their answers. They talked openly as a group about their experiences at food pantries, how grocery stores should be built closer to communities, and how the gardens in the communities could be even more successful if there were more of them. The students were also able to complete the food access worksheet, which did not happen in the first session. Thus, it was concluded that the changes made from the previous session were effective, and all of the lessons were taught fully as a result. Because of the increased amount of student participation and the discussion that stemmed from changes to the lessons in the second session, no changes were made between the second and third sessions.

The third lesson was conducted on Tuesday, February 28th from approximately 6-7 pm. There were 12 students in attendance ranging from ages 15-18, and these students were from the Pathfinders group at the CHAPS program in downtown Meadville, PA. Nine of the twelve students communicated that they were very excited to be here and learn more about the environment as it was a very big interest for them, and the group was very energetic throughout the entire session. This session was a different population sample because the students were noticeably older than those who had attended the two previous sessions, and many of the students were from the surrounding communities like Conneaut, Cochranton, and Saegertown rather than the Meadville area. This particular group of students had the most prior knowledge pertaining to the environment, and this was indicated through their responses to the first part of the lesson in which I asked what came to mind when they thought of the environment. The

answers ranged from “trees” and “farms” to things like “the military’s impact on land use,” “gardens,” and “the effects of nuclear energy and Chernobyl.” This knowledge did take me by surprise, and I began improvising by commending the group on their expansive knowledge of the environment to begin with. Despite how much they knew coming into the session, they still created detailed maps and had a good discussion about food access in the Meadville area, which I mostly facilitated as they went back and forth about who has “good” access to food in their communities and what reliable sources of transportation are available to them.

This group was very independent and often talked with their neighbors about what they were doing and how this session related to things that were being discussed both in their schools and through the CHAPS’ Pathfinders program, which was coincidentally moving into their own lessons about growing food in gardens. The students were extremely excited to create their own gardens through the activity and made the connections that were desired about the solutions that communities can take to achieve food security for all, even expanding upon them by noting that “the best thing would probably be to give everyone more money to afford food or lower prices,” which was not mentioned in the previous sessions. Because there was so much information being shared and conversations being had about food accessibility in their communities, this session was also successful in that all of the lessons were conducted fully and the objectives were achieved. However, the third session did solidify my opinion that these lessons will be the most successful when applied to ages 12-15 due to both the content at hand and the ability to build upon the prior knowledge that students have at those ages.

This project provides adequate evidence that continuing nontraditional instruction with low-income students would be effective. The students’ willingness to participate, their return to the lessons, learning the desired objectives, and their general excitement about learning about the environment was an indication of this success. Areas for further research could include conducting environmental education lessons for an extended period of time in more settings around Crawford County with hands-on participation in some of the gardens highlighted. This research could also extend to more rural communities across Pennsylvania who have similar food access issues in their environment. Specific research would need to be gathered on the communities for whom these lessons would be adapted in order to best suit the EJ issues at hand.

The gaps that are evident in EE teachings also extend to marginalized populations in real life, as access to education is already a barrier that Black, Indigenous, people of color, and poor

people face. Not teaching environmental justice in EE perpetuates this same cycle. By excluding EJ teachings through a lack of comprehensive standards by which to do so, the education system in America is continuing to erase the effects of environmental racism on BIPOC people, etc. and doing a disservice to the next generation of learners by delaying this larger system-driven thinking. It is also imperative that EE addresses the real life implications of excluding minority groups from the outdoors, which has been historically documented through extremely discriminatory policies. These include redlining, forced migration, economic segregation, and the seizure of tribal lands, that dictate where people live and the conditions which they live near (Locke, et al., 2020; Rowland-Shea, et al., 2020) . Implementing EE community programs like this research project that have an emphasis on EJ issues that impact these specific areas and people could give power to the students experiencing these issues through sharing knowledge and providing tangible forms of resistance, like gardening.

This research project's findings are significant because of the success demonstrated through environmental education lessons tailored to the environmental justice issues in the Meadville area, and the results showed that the lessons prompted critical thinking about the environment and food access within it. The lessons are clear, replicable, and can be translated to fit many communities. The use of the Tbilisi Declaration guidelines to create the EE program showed the value in following the EJ framework to supplement the areas in which the United Nations' Sustainable Development Goal of providing quality education to all students is lacking.

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