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## **“Using Culturally Responsive Educational Practices to Help Campus Communities Reach Their Zero-Waste Goals”**

Ellen Gurrola

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“Using Culturally Responsive Educational Practices to Help Campus Communities Reach Their  
Zero-Waste Goals”

by

Ellen Gurrola

A capstone project submitted in partial fulfillment of the requirements for the degree of  
Master of Arts in Education: Natural Science and Environmental Education

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## DEDICATION

To my spouse, children, in-laws, and many friends for your continuous support and inspiring me to push myself. To my educator colleagues throughout the years and Macalester students, staff, and faculty without whom I could not have done this work. And to my older sister for never being too busy to proof and review all my papers over the years, while always providing encouragement and positive feedback. Without her reassurance I wouldn't have achieved this accomplishment.

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## CHAPTER ONE

### Introduction

Sustainability is a topic that is continuously growing in popularity. Discussions around climate change, global warming, farming, or food and water insecurity occur around the globe daily. Many organizations want to show they are climate pledge friendly or B corps certified, which means they are incorporating a certain amount of environmentally friendly practices or distributing sustainable products through their company or organization. College and University campuses are not exempt from efforts to show they are doing their part to be more environmentally aware. One way they do this is to decrease the quantity of waste produced on campus.

Many campuses across the United States are continually seeking ways to encourage their students, staff, and faculty to reduce waste by sorting trash, composting, or recycling correctly. However, for zero-waste efforts to be meaningful, campuses also have to consider minimizing their overall waste stream. In doing this, they also need to examine how they are educating people about zero-waste. Specifically, how unsustainable waste management contributes to both environmental and social problems, and the ways staff, faculty and students on college and university campuses are being asked to contribute to solutions. For my research, I am exploring the following question: “How can the use of culturally responsive educational practices build a campus community that can successfully achieve zero-waste?”

This chapter will begin by defining what the term zero-waste means throughout this paper. Followed by an explanation of the importance of environmental justice and my personal



experiences with sustainability and zero-waste. The final part of this chapter will share my professional experiences and reasoning for completing this research and project.

### **Achieving Zero-Waste**

According to The Zero-Waste International Alliance of The Environmental Protection Agency, zero-waste can be defined as, “The conservation of all resources by means of responsible production, consumption, reuse, and recovery products, packaging, and materials without burning and with no discharges to land, water, or air to threaten the environment” (<https://www.epa.gov/>). I will use a 90% or higher diversion rate for defining zero-waste in this paper (United States Environmental Protection Agency, 2022). This means campuses are attempting to reduce what goes to landfills by increasing how much they are recycling, composting, repairing, or distributing and reusing through other methods. In order to achieve this diversion goal, it is essential that all members of the campus community participate in these efforts. Many people have a basic understanding of what is recyclable, compostable, or trash. Unfortunately, this does not always translate to what is placed within waste bins in dorms or common spaces. Therefore, educating campus communities on how to correctly sort their waste is extremely important.

Campuses often create their own waste sorting signage based on items they distribute on campus. If they use all compostable dishware at their dining hall or restaurants on campus, then it is easier to direct and customize signage on how to sort it correctly. However, they have minimal control over items students are purchasing and bringing to campus. This can vary depending on the locations of campuses (urban versus rural) and access the campus community has to surrounding retailers and restaurants. The convenience of plastic bags or to-go coffee cups

can sometimes outweigh a person's desire to be zero-waste. It can be hard to understand why people throw perfectly good things away or cross-contaminate waste bins, sending more pounds of waste to landfills and incinerators. An example of cross-contamination would be if a person throws a soiled pizza box into a recycling bin, then all of it will most likely end up being included with the trash instead of being recycled. The reasoning for cross-contamination could be due to a lack of understanding/education, laziness, an accessibility and resources deficit, feelings of hopelessness, or a variety of other reasons. Efforts to build more sustainable mindsets within campus communities will hopefully translate to actions students, staff, and faculty can carry with them to positively influence the larger parts of society as a whole.

Improper waste management is harmful to the environment and further damages the Earth and resources we all share. Achieving zero-waste will not save the planet and stop the climate crisis, but it is still essential and can make a difference in the lives of many. The approach college and university campuses take towards sustainability, and zero-waste education can play a significant role in their success or failure to reach a 90% diversion rate. Part of zero-waste education is teaching people to sort waste accurately, but part of it is also helping people to examine their behaviors and purchasing habits. However, this paper will focus mainly on the approaches taken toward zero-waste efforts on campuses. By recognizing how an individual can be very knowledgeable about sustainability topics, but that does not always mean they will go about educating the campus community about it in a way that is inclusive and respects the different culture and backgrounds people are coming from.

## ***Waste Diversion and Environmental Justice***

Waste sorting is important from various perspectives, including an environmental justice lens. In 2006, Urban Revitalization Strategist Carter gave a TedX Talk and stated, “No community should be straddled with more environmental burden and less environmental benefits than any other” (TED, 2006, 2:50). Carter goes on in her talk to explain that this means many Black, Indigenous, People of Color (BIPOC) and/or low-income communities often suffer more negatively due to environmental injustices than white and affluent communities. BIPOC and low-income communities are often positioned in neighborhoods closer to landfills, incinerators, factories, or power plants. These all contribute to polluting the environment, meaning many marginalized communities are often disproportionately experiencing the negative effects of unnecessary and incorrectly sorted waste than nearby white and/or affluent communities (Yakubu, 2018). Students, staff, and faculty can work towards not contributing to environmental injustices by learning to avoid unnecessary purchases, correctly sorting waste, and reducing food waste on campuses. Increased trash also puts unnecessary burdens on custodial workers, which could be avoided if individuals take more time to become educated and aware of how to correctly sort and reduce what they throw away on campus. Everyone doing their part is essential to achieve zero-waste and further prevent more pollution from entering the environment.

## **Personal Experiences**

### ***Childhood and Culture***

As a child, I was always drawn to the outdoors. I loved being in nature and exploring it. I lived within walking distance of multiple parks and green spaces. I had access to organic foods and clean water. My parents showed me how to recycle, purchase in bulk through co-ops, avoid

toxic chemicals in our yards, and even drive far outside of the cities to buy poultry to eat from organic and sustainably focused farmers. However, they taught my siblings and me to do this because it was best for ourselves. They would emphasize how it would ideally keep us healthy and give us a better life. I do not recall them ever discussing doing it for the environment or others.

As I entered adulthood, I began to realize how even though these were positive environmental practices, my parents' approach fostered an individualistic mindset, which I have worked hard to combat over the years. Unfortunately, it is something ingrained in many people throughout the United States. Cultures play vital roles in how people view and experience the world. Some countries and cultures place more of an emphasis on individualism and others on collectivism, which can impact people's willingness to correctly sort or reduce their waste. It is essential to help others understand the role the waste they produce takes in polluting the environment. Furthermore, a careful and considerate approach to zero-waste education is important because it can quickly come across as judgemental or exclusive.

### ***Family and Culture***

My spouse and I have been together since 2013, and merging our lifestyles has not always been easy. His parents are immigrants; however, he was raised in the United States in multifamily housing. They did not always have access to resources like composting or recycling to reduce their waste. Furthermore, he did not have the same access to fresh produce from sustainable sources as I did. Does this mean their lifestyle was worse for the environment than mine? No. I sometimes get frustrated pulling cans and bottles out of the recycling because he throws them in the trash out of habit. Nevertheless, his overall zero-waste practices are probably

stronger than mine in many ways. He does not leave food waste on his plate. He mends and repairs instead of buying new, and he takes outstanding care of his items to ensure they last as long as possible and do not end up in landfills.

One of the most complex parts of starting a family and expanding our lives together has been my upbringing from an individualist perspective and his from a collectivist perspective. We lived with his parents in a townhome after our first child was born. This helped me critically reflect on the culture in which I was raised. I realized how much easier it is to show consideration towards others when you are not so focused on how you personally will benefit from it. Sure, my in-laws might sometimes buy bottled water more often than they need to, but they also buy many things in bulk, cook for large gatherings using resources they already have, and limit their flying and traveling. I also recognize that sometimes bottled water purchases come from people having experienced a lack of access to clean water. I do not have that experience and understand how this can create a level of ignorance on my part in attempting to educate others about abstaining from purchasing bottled water.

Lack of freshwater due to hurricanes or droughts is happening regularly worldwide because of the climate crisis. Some parts of the world also have a lack of accessibility to potable water or the infrastructure to provide it. This is just one way many marginalized populations are forced to buy things like bottled water. Zero-waste education requires sensitivity and self reflection by individuals through whose perspective it might be taught. Personal experiences and backgrounds can strongly influence educational approaches, and this can be both positive and negative.

## **Professional Experiences**

### ***Science Teacher***

I spent the first ten years of my career as a public school science teacher. Being an educator taught me a lot about analyzing the lens through which I view things. I learned to examine my own biases and background and how that shaped my interactions with others and how I approached curriculum and instruction. This was difficult and often required deep reflection and time to process through professional developments or difficult conversations with others. However, I did this because I recognized its importance in order to educate every student in my class from every race, ethnicity, gender, socio-economic status, country, or upbringing and culture. I also discovered how crucial it is to build community and create environments where people can share their personal experiences and learn from one another. My years as a science teacher challenged me to find ways to engage all of my students, and now I have the same motivation to engage an entire campus community around zero-waste initiatives and learning.

### ***Sustainability Coordinator***

I started working at Macalester College in 2022. One of the questions the interview panel asked me was to explain what challenge I thought the Sustainability Office on campus might face. I could only speak to my experiences as a middle school science teacher in locations where they sorted waste. However, I knew that sixth through eighth graders often incorrectly sorted their waste despite signage and educators telling them how to do it correctly. I shared this knowledge believing it was not the answer they sought. Nevertheless, after starting as the Sustainability Coordinator, I quickly learned that college campuses face the same hurdles I had experienced at a middle school. Many students in pre-k/kindergarten through twelfth grade in the

United States never learn how to sort waste correctly, and that carries over into colleges/universities and throughout the rest of society. Many staff and faculty in K-12 schools and on college campuses also need more waste sorting content exposure or reminders and suggestions of improving their sustainable behaviors.

### **Chapter One Summary**

My background as an educator using culturally responsive teaching practices and experience as a Sustainability Coordinator helped me realize the need to combine zero-waste education through a culturally responsive approach. In order to help college and university campuses find success in reaching their sustainability-related goals. They can get one step closer to achieving zero-waste and reducing their overall waste stream by building a curriculum and culture across campus that is inclusive and applicable to all students, staff, and faculty. In chapter two, I will provide a literature review of how a culturally responsive approach can build a campus community that can successfully work towards zero-waste goals and reduce its overall waste stream. Chapter three will provide a description of my Capstone project, and chapter four will be a critical reflection on the creation of my project presentation.

## CHAPTER TWO

### Literature Review

#### Introduction

There can be many approaches colleges and universities take to educate their campus communities about zero-waste. This literature review will examine the impact of taking a culturally responsive approach toward zero-waste education on a college or university campus. It will do this by asking, “*How can the use of culturally responsive educational practices transform a campus community to successfully achieve zero-waste?*” For this purpose, I will examine themes in Hammond’s book, *Culturally Responsive Teaching and the Brain*, and how they can be applied to sustainability-related topics. Following a brief overview explaining what culturally responsive teaching is and ways it can be taken into consideration when educating others, the literature review will explain the role of individualism and collectivism in motivating people towards positive environmental changes in their behaviors and how those who are promoting zero-waste efforts across a college campus can learn to educate others in a way that earns the right to demand engagement and effort (Hammond, 2015).

The second part of this review looks at hope and policy and the struggle to combat the helplessness people feel towards taking action regarding zero-waste behaviors in relation to the climate crisis. It will analyze the difficulty in determining the level of personal responsibility versus that of those who make policies. Thirdly, it challenges the reader to consider the approach they take toward zero-waste education and explains how to be “a warm demander”. This is followed by the fourth section, reviewing equity and access of those who want to participate in zero-waste efforts. The fourth section identifies challenges that can be encountered in removing



barriers to create more equity and access, allowing everyone to engage in zero-waste practices. The final section provides ways culturally responsive educational practices can be applied to creating zero-waste content. Some of the research presented in this literature review comes from countries outside the United States, and some from within.

### **Culturally Responsive Teaching**

The term Culturally Responsive Teaching has been utilized since the mid-1990s. It has become a popular term used in education in recent years and has taken on various labels and meanings over time. It may be referred to as culturally responsible, congruent, relevant, and multicultural education (Irvine & Armento, 2001, as cited in Harmon, 2012). At the core of culturally responsive teaching is the idea that recognizing prior experiences and cultural backgrounds empowers individuals to engage their own knowledge and intellect for effective learning, which influences their skills and behaviors (Gay, 2000). It is a topic studied and discussed by many educators in the United States. However, it is an area that is often lacking when it comes to environmental and sustainability-related education. Culturally responsive teaching is essential as part of getting community participation to reach zero-waste goals on college campuses. “Researchers have determined that education is perhaps the single most important criterion for social change in society. Education has become both a privilege and a right for most American citizens” (B. Green & S.L. Green, 2015, p 1). In order to impact social changes and behaviors around waste habits, the education around it needs to be engaging and meaningful for everyone.

### ***Environmental Education***

Environmental Education is part of a system in the United States whose roots are built upon systemic racism (Emdin et al., 2021). Recognizing this and understanding that people come from many cultural backgrounds and have different approaches to understanding sustainability can be pivotal in zero-waste education. Honoring cultures and embracing learning from various perspectives and backgrounds allows for the best learning conditions and results (Hammond, 2015). Classroom teaching practices for traditional educators have had to evolve over the years with societal shifts (B. Green & S.L. Green, 2015). It is vital that zero-waste education parallels this and works towards growth and change to better our society as well. It is easy to discuss culturally responsive teaching, but integrating it into a learning community requires skill and careful consideration.

### **Culturally Responsive Teaching Summary**

A strong understanding of culturally responsive teaching is a critical piece of this review. Combining zero-waste literature and culturally responsive teaching literature builds a unique and helpful approach colleges and universities can use for addressing zero-waste. Providing space for individuals to come together and share a variety of experiences and perspectives is a crucial part of being culturally responsive. Furthermore, it can begin by reflecting on the different mindsets influenced by one's culture and upbringing.

### **Collectivism & Individualism**

For people to care about reducing or correctly sorting waste, they need to recognize why it matters. People will have different reasons and approaches to why zero-waste matters or is important to them. Faculty, staff, and students gather at college campuses bringing a wide range

of lived experiences and different learning environments. These backgrounds have shaped their perspectives and worldviews (Hammond, 2015). Some might have positive experiences regarding participating in and learning about zero-waste efforts, while others might have negative experiences. These experiences are part of what can be referred to as deep culture. People can experience the same events but have very different responses to how those events have influenced or shaped them (Hammond, 2015).

### ***Deep Culture***

Deep culture can trigger strong emotional responses. Some have had sustainable practices very centered as they have grown up due to their cultures, and others have not. Kessler (2021) performed a case study and statistical analysis by looking at how teens in 24 different countries viewed climate change as a threat to the world's future and found that deviations ranged from 80% to 41%, with a mean of 56% viewing it as a large threat (Kessler, 2021). Many of these teens bring these mindsets with them if they attend college, which means some students on campus probably see zero-waste as a high priority when addressing climate change. Others might see it as a low priority.

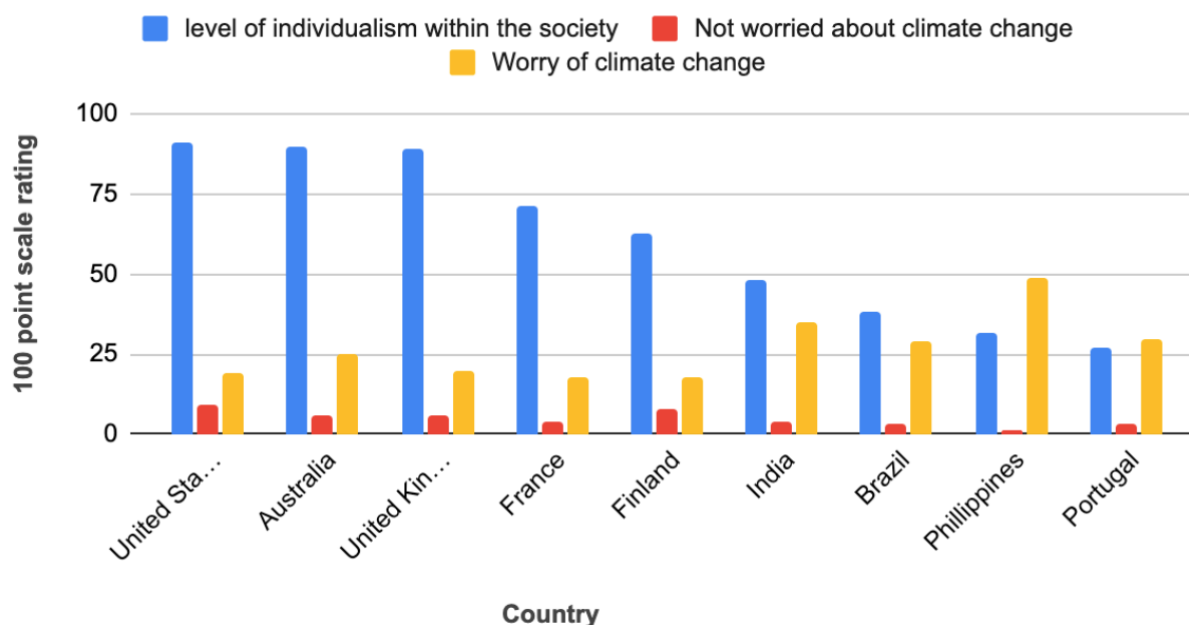
### ***Campus Community***

At the shallow and surface level, cultures will vary regarding things like holidays, art, acceptable food sources, or theories of wellness and disease. Despite these differences, cultural archetypes do exist, which can be understood as the similarities found across deep cultures. These two main types can be identified as collectivism and individualism. Individualism might focus more on independence and individual achievement, whereas collectivism might focus on interdependence and group success (Hammond, 2015).

The effects of the individualistic or collectivist mindset can be seen by comparing the level of individualism in a society, a dimension of Hofstede's Cultural Dimensions Index based on a 100-point scale, to the climate worry of children and young people worldwide (Hammond, 2015). A study, which collected data from 10,000 young people between the ages of 16-25, included a survey domain about climate-related worry (Hickman et al., 2021). Figure 1 shows the correlation between societies with an increased emphasis on individualism and decreased worry about climate change among young people. Moreover, countries with higher levels of collectivism show an increased worry about climate change amongst young people. It should also be noted that most countries with a higher collectivist culture are also many Latin American and African countries (Hammond, 2015).

**Figure 1:**

*Cultural Dimensions Index Compared to Climate Worry Among Children and Young People Across Countries*



Many in the United States, compared to other places in the world, do not take into daily consideration how their basic needs, like food and water, are met (Amel & Manning, 2019). The emphasis on individualism in the United States does not always allow people who grew up in the United States to think about shared resources or how their choices affect others. An essential part of culturally responsive teaching is helping those who grew up in cultures centering individualism to shift to a collectivist mindset (Hammond, 2015). Campuses and universities who successfully shift this mindset can also further their sustainability efforts (Amel & Manning, 2019).

### **Collectivism & Individualism Summary**

In summary, campus communities can make significant strides in achieving zero-waste if students, staff, and faculty are taught to work collectively towards this goal. Individuals on campuses can connect across deep culture by recognizing being part of systems rooted in environmental harm while understanding that sorting waste is futile if, as a community, they are not able to collectively push for change at a higher level with governance and policies on their campuses and beyond (Amel & Manning, 2019). Those leading zero-waste efforts in campus communities can help hold others accountable to high standards. However, there also needs to be a focus on building trust and rapport (Hammond, 2015). This culturally responsive approach is often called a “warm demander” in education. Furthermore, it means focusing on relationship building with students, offices, and departments across campus in order to be able to take a “tough love” approach to educating around zero-waste.

### **A Warm Demander**

Something collectivist cultures rely on differently than individualistic cultures are social interactions like conversations and storytelling to educate their communities (Hammond, 2015). When trying to educate a campus community about the importance of zero-waste, it is beneficial to take time to get to know how they learn and are motivated. Various psychological factors that can influence how humans view and respond to climate change, which can include cultural identity and social pressures. Even members of campus communities who care deeply about reducing their waste might feel uncomfortable acting on it because they do not want to offend friends or colleagues (Amel & Manning, 2019).

Colleges cannot control the deep culture everyone in their community is bringing to campus with them. Nevertheless, they can take time to understand how a person's culture programs the brain to make sense of the world and use that to approach zero-waste education in a way that is culturally responsive. Human beings are constantly responding to information from their environment and taking cues from the world around them to shape their actions (Hammond, 2015). Even so, it can be difficult for people in the United States who don't experience climate change threats in their day-to-day lives to take it seriously sometimes (Amel & Manning, 2019). One might think differently about their use of water or contributions to waste if they could see the depletion of an aquifer correlating with their water use or landfills running out of space and polluting the surrounding soil and water. Unfortunately, it is often out of sight and, therefore, out of mind. Zero-waste education can be triggering to students, staff, or faculty who do have these lived experiences, especially those coming from countries outside of the United States.

Extreme flooding, fires, or heat waves can be seen regularly on the news. Individuals who might have firsthand experiences in these disasters could have a different response than those who have not. Hammond (2015) discusses the amygdala and how it is like a “guard dog” of the mind. It is part of what can trigger someone's fight or flight response. Listening to a person casually discuss or display climate disasters in connection to zero-waste could trigger an individual's amygdala and shrink their working memory at that time, which means they might not be able to process the information being presented. Therefore the intended outcome will not be achieved (Hammond, 2015).

### ***Cultural Agnosia***

Individuals must examine their own cultural frame of reference and biases when teaching others (Hammond, 2015). This includes educating others on how to be more sustainable and explaining how to achieve zero-waste. Those who are developing curriculum and educating others about it need to avoid having cultural agnosia, which is the inability to recognize the value of another's cultural genius as an asset to teaching and learning (Emdin et al., 2021). Space needs to be created for everyone to be comfortable sharing their experiences and understanding of sustainability topics. Emdin (2021) explains the importance of recognizing this within education, stating the following:

“Educational institutions have long aided the erasure of diverse cultures from their spaces and encouraged the assimilation of students whose backgrounds do not align with that of the dominant culture. It's important to recognize that cultural agnosia persists within our schools because they are supported by systems that continue to oppress and marginalize Black and indigenous youth.” (p 402).

Hammond (2015) explains how in order to bring out the best engagement and learning in students, then they need to feel like their educators are in alliance with them. She identifies three essential components of what Psychologist Bordin refers to as a therapeutic alliance. One of the components is “a shared understanding and agreement to tackle a specific goal” (p 93). Higher education institutions need to step back and examine the purpose of their existence and whether they want to simply create contributors to the economy or learners who seek to find ways to improve humanity through avenues such as sustainability (Kopnina, 2020). And then, once they are in agreement, they have to be conscious of how they go about doing it. Reflection needs to occur in all forms of education (B. Green & S.L. Green, 2015), including within zero-waste and figuring out how to meet the needs of culturally diverse learners and not in a way that is performative or perpetuates Western imperialism. There is a history of those who sought to assimilate Western initiatives by undermining groups of people by labeling them as underdeveloped nations and forcing out the culture of those who are Indigenous to the land and have their own way of interacting and understanding it (Kopnina, 2020). Space needs to be created where people feel safe and comfortable sharing their sustainable practices without feeling like one way of approaching zero-waste is superior to another.

### **A Warm Demander Summary**

In summary, these concepts of building community and trust by being a warm demander can be applied to all parts of zero-waste education on college campuses. For example, if there is a desire to bring more sustainable practices to the athletics department, then take time to visit and understand their department. Get to know what is important to them and what some of the challenges they face are. Taking those initial steps is a way of earning the right to demand



engagement and effort, but the keyword is that it must be earned. If part of zero-waste efforts means a ban on plastic water bottles, provide the support and structures to help departments meet these demands. Take a genuine interest and learn how the steps to achieving a 90% diversion rate affect those of the campus community as either groups or individuals. A warm demander can hold high standards regarding zero-waste but must provide the scaffolding and support needed to meet the standards (Hammond, 2015). This is why community efforts across campus are so critical in shifting from an individual mindset to a collective one and has a significant role in helping colleges or universities achieve zero-waste.

### **Policy & Hope**

When looking at climate change, it is easy to think that throwing a plastic bottle in the trash versus recycling will not make much of a difference within the larger scale of environmental impacts. However, choosing to be more conscious of one's waste production still matters. Students, staff, and faculty are arriving on campuses with various backgrounds and understanding of waste sorting. Some people might have extensive knowledge of the topic, but that does not always translate to action when it comes to putting a compostable cup where it belongs or avoiding using one at all (Amel & Manning, 2019).

Anyone conducting zero-waste education on college campuses needs to reflect on whom they are learning and taking feedback from and whom they are continually asking to assimilate. In 2019 the United States EPA estimated that only 4% of wasted food from households was composted (United States Environmental Protection Agency, 2023). It has become normalized across the United States for such large quantities of food waste to end up in landfills, combustion facilities, or down the drains to sewer systems, thus contributing further to greenhouse gas

emissions and pollution of the environment (United States Environmental Protection Agency, 2023). However, focusing on reducing food waste or trash ending up in landfills by individuals on campus communities will not result in zero-waste. There needs to be changes in policies at both the campus level and the government level. For example, there are faults on the consumer's side that need to be improved when it comes to food waste. However, producers also need accountability regarding agricultural practices and federal regulations.

The United States has not experienced famine like other regions of the world (Hickey & Ozbey, 2014). Nonetheless, it does not mean they are immune to food shortages and climate change impacts. The 2023 EPA report says it is nearly impossible to regulate individual food waste in homes through legislation, which can be extrapolated to college campuses. (United States Environmental Protection Agency, 2023). However, campus communities can unite to push for policies within their campus. Some send food waste to pig farms, have “meatless Mondays,” or make farm-to-fork pledges to support local farms. These are positive things, but campus communities must be educated on what needs to happen on a larger scale. They can also push for legislation to create systemic changes and not allow loopholes, whether at the campus leadership level or state level, regarding things like farmers with negative environmental practices (Hickey & Ozbey, 2014).

Education on campuses plays a critical role in helping campuses reduce waste. A study at Syiah Kuala University in Indonesia looked at how education influenced waste management behaviors (Yusuf & Fajri, 2022). The university hosted activities on campus to promote sustainable practices and created a course all first years completed to improve their understanding of environmental issues. The study compared students studying the social sciences

to those studying the physical sciences. Students in both departments showed a high understanding of environmental engagement and knowledge, with students in physical sciences slightly above. However, students studying social sciences had slightly higher scores when it came to environmental behaviors. Researchers attributed this to social sciences being more engaged in behaviors due to their interest in social interaction, causing them to gain more knowledge and experiences through the campus community (Yusuf & Fajri, 2022). This is another example of why it is crucial to understand who your audience is and how to engage them in learning.

Knowledge is important, but that does not mean it automatically translates to personal action or improved environmental practices (Braun et al., 2017, Liobikien and Poskus, 2019, as cited in Yusuf & Fajri, 2022). Yusuf and Fajri (2022) showed that students' involvement with two types of environmental campus programming, including interactive learning and a required first-year curriculum, led to increased positive engagement, knowledge, and behavior towards sustainability and zero-waste practices. Daily efforts to reduce and correctly sort waste are an important part of zero-waste goals. However, it can still feel insignificant when it comes to the climate crisis. This is why transformative action is important for a community. An action might require a change of approach to committee selection or stakeholder input in decision-making policies (Levy & Bowleg, 2023). All campus community members need to be heard and feel part of the decision-making authority. Sometimes policy changes can end up causing more harm to the people they are meant to help (Tsuji, 2021). They can end up increasing inequalities regarding climate change instead of decreasing them (Bowleg & Levy, 2023). This is why it is

vital to establish a strong community to work collectively towards zero-waste from a variety of perspectives and cultures.

Inequities can be seen when top-down approaches are taken for policy. This is notable in cases like HIV, COVID-19, and climate change (Bowleg & Levy, 2023). A case study completed in the UK looked at what happened to air quality when policies were put in place to improve poor air quality (Mitchell et al., 2015). Data from 2001-2011 showed that air quality increased, but not equally. There became a more significant gap in environmental inequality as low-income and marginalized communities were not able to meet the policy minimum requirements, while communities with more wealth and privilege were (Mitchell et al., 2015). As systems are changed and addressed, then structures are also required to make sure it is not a top-down approach and that there is proper representation from all members (Bowleg & Levy, 2023).

### ***Socratic Hope***

To avoid feeling helpless when it comes to systemic changes and policies, members of campus communities can work together to put aside an individualistic mindset and push together for collective action and positive environmental policy changes. Duncan-Andrade's (2009, as cited in Hammond, 2015) explains Socratic Hope in terms of education, which he describes as hope between the teacher and student to examine the unjust society and system they are in, but use the pain to motivate them to use collective action to create a path towards justice through positive action and engagement. There are many benefits for college and university campuses to reduce their waste and effectively separate it, which is a strategy recognized throughout the world in an attempt to address environmental concerns (Qu et al., 2023).

Correctly sorting recycling, and reducing food waste play significant roles in lowering GHG emissions (Costello et al., 2017). However, studies have shown that by simply achieving zero-waste, organizations are not necessarily reducing greenhouse gas emissions (GHG) or energy use (Costello et al., 2017). A college diverting 90% of its waste cannot be assumed to have a lower carbon footprint than those who do not. Significant greenhouse gas emissions often require changes at the higher management level within institutions.

**Institutions and Stakeholders.** Administrators and stakeholders at higher educational institutions have a strong influence on the daily behavior of students and can provide more support through facilities and other avenues to improve waste separation and reduction (Qu et al., 2023). However, government departments and policies hold the overall influence in encouraging universities to reduce their carbon footprint and manage waste streams (Qu et al., 2023). There is currently no universally accepted method or standard for educational institutions to use specific characteristics to calculate their carbon footprint (Jaglan et al., 2022). This means many are making decisions at their own discretion, which can involve some biases. A case study completed during a college football season found that to even try and accomplish a zero-waste sports event by diverting 90% of the waste would require comprehensive examinations of the supply chains, coordinating with staff or volunteers, proper investment in easily accessible waste bin placements, and educating fans (Costello et al., 2017). Universities have achieved zero-waste athletic games, but it requires a lot of work. A shift in culture is difficult, and many people at sporting events desire foods like hot dogs, which cause a higher carbon footprint. Attendees might also argue that big oil companies and investors will continue to perpetuate the climate crisis even if they abstain from a hot dog.

These colleges and universities exist for the students who attend them. Furthermore, the attitude of those students and their willingness to engage in waste reduction and correct waste separation directly impacts the ability of a campus to achieve zero-waste (Qu et al., 2023). The task is to shift an entire campus community's mindset and help them remember that through collective action, they can create a path toward justice through positive action and engagement by having Socratic hope (Duncan-Andrade, 2009, as cited in Hammond, 2015). As individuals, it is difficult to make substantial changes regarding changing policies. Furthermore, it can be increasingly challenging within a community of diverse ideologies. However, if individuals do nothing, they will subject themselves to all being collectively worse as the climate changes (Kahan, 2013). Simply getting a campus community to acknowledge the unjust society everyone resides within can be a first step towards collective action.

### **Policy & Hope Summary**

In summary, some things are within someone's direct control, and others are not. Students, staff, and faculty will bring with them positive experiences with waste sorting and sustainability or negative experiences. They will also have varying levels of knowledge and understanding. However, they can still find ways to come together and, through connections, build a community that pushes for changes at higher levels both within the institution and beyond in support of a common good.

### **Equity & Access**

It is crucial not to underestimate the amount of effort needed in order to shift one's mindset or change perspectives and views. A person's working memory is where people store the knowledge they learn about correctly sorting waste. However, all that can be for nothing if

something is upsetting or triggering about the way zero-waste education content is delivered or perceived (Hammond, 2015). Even things as simple as waste signage can be culturally inclusive or exclusive. Sustainability education interventions can significantly influence waste stream management. However, a positive attitude towards waste sorting among college students also matters (Qu et al., 2023).

Those who are creating or leading zero-waste efforts need to be flexible and open in their approach. In the book *We Got This*, Minor discusses how “when we are inflexible with our approach to school, kids, and their families and communities are unheard. This is one of the great evils of modernity. Whole communities are rendered silent simply because we have refused to hear them” (Minor, 2020, p 11). Each student, staff, and faculty member within a campus community deserves to be heard. Some might be hesitant to speak up or share their thoughts or feelings due to negative experiences in the past. However, an open approach and the willingness of those leading sustainability initiatives on campus to listen can make a difference. Waste systems have existed for a long time and are often very complex and confusing. This makes it difficult and can put significant pressure on individuals' efforts to change their behaviors because it often requires pushing back or fighting the unjust systems (Amel & Manning, 2019). Although, that does not mean it has to be impossible. As Minor (2020) explains: “Systems don’t change just because we identify them; they change because we disrupt them” (Minor, 2020, p 31). University campuses can find ways to push back against unsustainable and unjust systems by increasing knowledge and programming around sustainability and zero-waste (Qu et al., 2023). Again, some of the most effective ways for a campus to lower GHG levels through waste management are to correctly recycle and eliminate food waste (Costello et al., 2017).

### *Circular Economy*

A crucial part of tackling environmental concerns is to push for systemic changes. However, it is just as essential to manage incoming waste effectively. Shifting the campus norms from a linear economy to a circular economy is critical (Jaglan et al., 2022). A circular economy is where an item, product, material, and in rare cases a service survives within the economy as long as possible before being considered waste (Barreiro-Gen & Lozano, 2020). This means products are often reused, repurposed, or recycled and repaired with an intent to rethink and reduce consumption or production. One survey completed by multiple participants across the world found that numerous organizations use circular economy models, however, often without the terminology or label (Barreiro-Gen & Lozano, 2020). A circular economy can sometimes mean lower energy consumption, although the product typically ends up in the landfill after a prolonged period. And sometimes, it means the production of higher-quality products to maintain a circular economy can require more energy to produce (Moreau et al., 2017).

Encouragement to repair items can happen at a national level through initiatives like an NGO sponsored “Fix the Stuff” campaign or within local coffee shops and even on college campuses (Bradley & Persson, 2022). Fix it events can empower citizens, and case studies show how if done intentionally, they can go beyond greenwashing and be more socially inclusive, especially for groups who might be marginalized within many sustainability and zero-waste initiatives (Bradley & Persson, 2022). Individuals can work to model environmentally positive behaviors for those within their sphere of influence (Amel & Manning, 2019). Participating in repair events and doing it in an inclusive way is one way to approach behavior changes regarding zero-waste and further educational efforts through programming.



### *Environmental Justice*

When planning a curriculum that is culturally responsive, an educator should look at how to remove barriers to success for any groups with whom they work (Minor, 2020). This same approach can be applied to planning an effective zero-waste curriculum. For example, do there need to be more structured opportunities to collaborate with peers? More visuals and charts? Find more ways for students to use their voices? (Minor, 2020). Alternatively, one could expand that to include staff and faculty. To focus on those who might not get their voices heard as often or are part of groups that have been continually marginalized within environmental spaces due to assimilation.

For example, in Canada a few years ago, legislation was passed that allowed for the development of Indigenous land under the guise of public interest (Tsuji, 2021). There was barely any purposeful involvement from the First Nations perspective. The bill for the project could decrease GHG through hydroelectric power. However, it would most likely end up costing Indigenous people more money without being able to also enjoy much of the environmental benefit (Tsuji, 2021). Space can be provided to ensure all voices are heard and included, benefiting everyone. Research continues to show that environmental impact assessments or environmental policies are more successful when they include residents within the communities of concern. Trust between stakeholders and community members can be built through transparent communication and understanding (Yakubu, 2018). In some situations, sometimes the best action might be no action based on the needs of the community and hearing all perspectives (Yakubu, 2018). These principles can be applied and modeled within higher educational institutions.

## **Equity & Access Summary**

In summary, people will want to work collectively towards change if they feel motivated by the same purposes. Empowering people within the community to bring about change is a big step towards achieving goals to reduce waste on campuses. In order to do this, it requires transparency and trust, which is sometimes difficult to achieve between key decision-makers and students, staff, or faculty. However, it is possible and can happen with the right amount of effort. Systemic change is not easy to address, and it takes time. It first requires acknowledging areas where inequities exist and leaders within communities committing to help change them.

## **Application**

Everyone has cultural backgrounds that influence the way their brain makes sense of the world. And it occurs regardless of race or ethnicity (Hammond, 2015). This means everyone is coming to college or university campuses with these different cultures and hopefully creating a community. Achieving zero-waste and aiming to reduce overall waste means campuses need a plan on how to build community understanding, knowledge, and action regarding sustainability. Research has shown that “in transformative agency, the main element that engaged students, teachers, and communities in a transformative way was that the projects started from shared concerns about social issues that affected them” (Stetsenko, 2019, as cited in Erstad et al. 2021 p 17).

Coming together for a common goal or cause can be a powerful tool to unite a community. Hammond suggests in her book using a strategy called ignite, chunk, chew, review (Hammond, 2015). This means that by igniting, you are getting the attention of the learner's brain. Ensuring those same brains are getting the right amount of information at a time and not

too much is chunking. Consider presenting information with only seven new things, plus or minus one at a time, to allow the working memory to process. Chewing means providing space for the learner to actively process the information. And review means the learners have the opportunity to apply what they have learned. These instructional strategies allow for learning to be more culturally responsive (Hammond, 2015). Furthermore, using these strategies can help structure zero-waste programming on campuses in an effective manner.

## **Chapter Two Conclusion**

In conclusion, culturally responsive teaching around zero-waste education is essential because many universities and colleges across the country vary in sizes, demographics, locations, beliefs, and values. These factors can influence the campus community and should hold significance when developing curricula and methods for zero-waste education on campuses across the United States. Looking at the topics of collectivism and individualism, policy and hope, along with equity and access through a culturally responsive approach, can dramatically influence zero-waste efforts amongst students, staff, and faculty. It is an essential part of aiding campuses to achieve a 90% or higher diversion rate. Though individuals on the campus community might come from a range of individualistic to collectivist views, some commonalities can be found within their deep cultures, and learning opportunities can be provided that ensure students, staff, and faculty from all backgrounds have the opportunity to connect with and learn how to achieve zero-waste.

Unfortunately, the systems of injustice within the United States will often build on feelings of hopelessness. However, colleges and universities can strive to do better and work collectively within their communities to bring positive policy changes within their campus and

government levels when it comes to waste reduction. In order to accomplish this, curriculum and instruction around the topic should share a range of perspectives and experiences rather than just a “one size fits all approach.” A critical analysis of barriers different individuals or groups might face in order to achieve zero-waste is critical. However, it is also important that those voices most affected get a say in these changes. Focusing on a culturally responsive approach to zero-waste by addressing individualism and collectivism, maintaining hope and pushing for policy changes, removing barriers, and increasing access, can create a path toward reducing and diverting 90% of the waste on a college or university campus.

Chapter one focused on the inspirations that led to studying zero-waste on college campuses through a culturally responsive lens. Chapter two provided a critical review of research around approaches to zero-waste in correlation with the work of Hammond’s book *Culturally Responsive Teaching and The Brain*. The next chapter will explain a project in which this research is presented to college students, in an effort to help them learn how to better educate their peers about zero-waste.

## CHAPTER THREE

### Project Description

#### Introduction

My project entailed using what I learned from the literature review to create a presentation for college students in a course called Psychology of Sustainable Behavior. I compiled my research to be shared with the students to help answer the question, “How can the use of culturally responsive educational practices transform a campus community to successfully achieve zero-waste?” The students in this course can use the information from my presentation to prepare for class projects they will complete in small groups. The objectives of their projects are to reduce overall waste and increase waste diversion in a building or area of their choice on campus. My presentation allows them to consider their own experiences with zero-waste and determine how they want to approach educating others about the topic.

Prior to my presentation to the class, students are provided the opportunity to hear from custodians and facilities managers. They can ask questions and hear from the perspectives of those doing the frontline work when it comes to addressing campus waste. I had visited this class before and quickly realized how important it was to provide space for the students to ask and share their questions or concerns regarding zero-waste within the community.

In this chapter, I will explain how I planned my presentation and set students up for success in carrying out their projects. I did this using a modified version from a format suggested by Minor (2020) and culturally responsive teaching practices from Hammond (2015). This chapter will provide an overview of the five step process Minor (2020) recommends educators use when exploring new methods to get a desired outcome. The five steps are: Imagine how the

change happens, select a population to study, create a five-day plan, measure the impact, and share the findings. I will then share in detail how I applied them to be used by students as they experiment with motivating students to reduce and divert their waste across campus.

### **Presentation Overview**

I began my presentation slides by following the first of five steps suggested by Minor (2020): Imagine how the change you want to occur might happen. This strategy is sometimes described as scenario-writing and appears in Knowles (1992). In this case, the envisioning part meant students imagining how our campus would achieve zero-waste.

The second step in Minor (2020) is to select a small population of students to study, which can be modified for this project to include faculty and staff on campus. The population of study may vary depending on the location where students decide to focus their projects. Thirdly, Minor (2020) suggested making a five-day plan for how to implement the changes chosen. The fourth step is to determine how to measure the impact of their projects. Lastly, they will have the opportunity to communicate their findings to key stakeholders on campus (Minor, 2020). Furthermore, they can reflect on whether they used a culturally responsive approach and determine if that influenced their waste reduction and diversion.

I created this presentation over a semester but have been reflecting and thinking about it since visiting the Psychology of Sustainable Behaviors class twice last year. I noticed various ways the students' projects in this course could help to further zero-waste efforts across campus. However, I also realized some areas could be improved as students planned for and implemented their projects. The class professor gave me the idea to present my research to the students in the course before they completed the projects.

### *How Change Happens*

My literature review contains key points on how to bring about change. One concept I referenced is the idea of Socratic hope and finding solidarity with others who can recognize systemic failures. I wanted to create a space for students to imagine a campus they hope and dream of. I began my presentation by asking students to imagine what it might be like to attend a zero-waste campus. What would it feel, sound, look, or taste like? In my presentation, I then explained how their class projects are an opportunity to provide research on how our college can achieve zero-waste. One critical piece to achieving zero-waste is building a community of understanding, which can be done by taking time to understand the perspectives and experiences of others.

**A Culturally Responsive Approach.** I recognized the importance of modeling how my own experiences shaped my views of sustainability and specifically zero-waste. So, in my presentation, I shared parts of my journey from chapter one of this paper. I then explained what culturally responsive teaching is and how it connects to zero-waste education on college and university campuses. I recognized that the students in this course were probably unfamiliar with the work of Hammond (2015), and I took time in my presentation to explain the main concepts. I shared the differences between the collectivist and individualistic mindsets. I also showed the graph I created (Figure 1) and where I recovered the data displayed.

In the presentation, I set aside time for students to share their reflections or questions about the graph, which leads into why an understanding of how the brain works is essential when conducting zero-waste education. And why learning and sharing from one another's experiences and cultural backgrounds can play a significant role in addressing zero-waste efforts across

campus. I followed this by reviewing the basics of zero-waste on college campuses and how it is considered a 90% or higher diversion rate, no college or university has achieved it yet, and there is currently much flexibility regarding how campuses review zero-waste calculations. This is important information for students to consider when deciding how they want to conduct their project. Another critical factor for students to be aware of is the campus demographics.

### ***Selecting a Population to Study***

In my presentation, I knew that for students in the Psychology of Sustainable Behavior course to take a culturally responsive approach, they would need further information on the demographics of the campus community. This would help them know and understand the population with whom they are working. Furthermore, it allows the students to take this data into consideration as they plan their projects. It is also step two from the five-step process Minor (2020) suggests.

Students will be able to use new information they learned along with their prior knowledge to decide on a location to complete their project. Students might select studying a dorm population, the athletic center, or the dining hall to promote waste reduction and diversion. Minor (2020) recommends selecting a small group of certain students in a class to determine if what is being implemented will benefit the whole class. This can be translated into studying a small population on campus to see if the different approaches to educating about zero-waste can be completed at a larger scale to further the campus's zero-waste goals.

For the class zero-waste projects, the primary audience is students. However, staff and faculty might have opportunities to be involved. The size of the student body on campus is 2,175 students as of the 2022-2023 academic year (Office of Institutional Research & Assessment,



2022). And it sits on around 53 acres of land. There are 65 students who identify as nonbinary, 324 first-generation students, 368 Pell Grant recipients, 703 US students of color, and 284 international students from 94 different countries (Office of Institutional Research & Assessment, 2022). The median family income is \$125,600 according to data collected for Title IV federal funding, as it appears on the NYTimes website (<https://www.nytimes.com/interactive/projects/college-mobility/macalester-college>). Students will also be able to consider how they personally fit into the campus demographics and how that might influence their methods of educating others.

### ***The Five-Day Plan***

The above information shows that students come from various cultures and experiences. Some are from countries or homes that focus more on collectivism, while others are from those that prioritize individualism (Hammond, 2015). To transform the campus community to zero-waste, students, faculty, and staff need to feel engaged, and this can happen by finding shared concerns about social issues that affect them (Stetsenko, 2019, as cited in Erstad et al. 2021). My presentation encourages students in the course to disrupt status quo approaches to zero-waste and challenges them to use the research I presented and incorporate it as they develop a plan for their projects.

In the past, these types of projects have varied in the length of time data was collected. Some were only three days, which limited the ability to track the project's impact to address zero-waste goals. Minor (2020) suggests tracking data for at least five days to get an idea of what making the changes might look like on a larger scale. Tracking and measuring data and changes

for five or more days will allow more time to accurately see if the changes are improving zero-waste practices within the community.

### ***Measuring The Impact***

It is crucial to gather and collect accurate information throughout the project in order to track any differences. Minor (2020) states, “Anyone can make change, but to make persisting change, we’ve got to be able to measure and articulate its value” (p. 53). Students will need to prove their ideas are worth pursuing at a larger scale by showing that their project can help make gains towards achieving zero-waste. In my presentation, I offered for the Sustainability Office to support students in various ways by offering resources. These included quantitative and qualitative data, information about prior zero-waste projects, and access to the Post Landfill Action Network (PLAN). The Post Landfill Action Network is an organization that works with campuses to help them achieve zero-waste. Macalester is part of PLAN’s three step ATLAS fellowship program which works with student leaders to facilitate the establishment and implementation of zero waste commitments on college campuses across the United States (PLAN, 2023). Being enrolled in PLAN means that Macalester can access various resources and support. The campus is currently pursuing the third stage of the program, which includes hiring three fellows who will work together to create an action plan to achieve zero-waste.

### ***Sharing Findings***

The projects students complete in Psychology of Sustainable Behavior have the potential to influence parts of Macalaster’s zero-waste action plan. Students will be able to present their project findings to key stakeholders on campus who play significant roles in decisions involving waste reduction and diversion across campus. This is also where policy and hope come into the

picture. In my presentation, I explained how recognizing that we are an educational system functioning within a much larger governance system is essential. Stakeholders at the student project presentations will have varying levels of investment and involvement when it comes to the goal of achieving zero-waste on campus.

However, in my presentation, I also explained how recognizing the injustices within the system can be a way to work towards building a collectivist mindset. I shared the definition of Socratic hope and how my literature review found that small steps toward zero-waste can still make a difference because doing nothing will mean that everyone either continues to experience or begins to feel the further ramifications of climate change. In the past, some stakeholders were not able to prioritize attendance for the student presentations. However, I anticipate more substantial attendance this year due to improved relationships and collaborations with them across campus.

### **Chapter Three Summary**

The success of my presentation can be determined by whether or not any groups achieve zero-waste for the area on campus they studied. It can then be determined whether or not to implement their project ideas on a larger scale within a zero-waste action plan for the campus. This opportunity provides students with motivation and expands the engagement of students beyond The Sustainability Office within zero-waste efforts across the campus. However, students will need to carefully consider the approach they take to completing their projects. My presentation provides them with the resources needed to be aware of a culturally responsive approach and engages them in the five steps Minor (2020) recommends following as they imagine the potential of a zero-waste campus, select a specific population/location to study,

come up with a plan to collect data for five or more days, review the results to determine the impact and share their findings to get investment in their ideas from key stakeholders. Chapter four of this paper will share my reflections throughout the process of creating my presentation and a review of how I developed my ideas and information I learned into a final product.

## CHAPTER FOUR

### Conclusions

#### Overview

For this final chapter, I thoughtfully contemplated my journey throughout the undertaking of my Capstone. I remembered how I had already written my first chapter, but after seeing the book *Culturally Responsive Teaching and The Brain* sitting on my desk one evening. I sat down and rewrote my entire first chapter in one sitting. Thinking about my experiences working in secondary education classrooms, being in an office on a college campus, and time spent at home with my family are all part of what inspired me to pursue the question, “How can the use of culturally responsive educational practices build a campus community that can successfully achieve zero-waste?” Chapter four presents my thoughts and considerations as I did my capstone project.

This chapter is separated into four sections. In each of these sections, I will share my learnings. The first section will focus on my significant learnings, highlighting some of the unexpected insights I gained throughout the process. The second section will consist of key takeaways from my literature review, followed by the third section explaining my project’s possible impacts and limitations. Lastly, it will conclude by exploring the possibility of future research within our campus community and how other campuses might benefit.

#### Major Learnings

Reflecting on what I have learned throughout this process, I realize how significantly the discussions outside of my research and writing contributed to my understanding of the question, “How can the use of culturally responsive educational practices build a campus community that

can successfully achieve zero-waste?” Each time I shared with someone new what my research topic was, they would often be inspired to share with me personal experiences with zero-waste from their perspective and/or cultural background. It continually motivated me to complete my project and reinforced my understanding of the need for culturally responsive educational practices within zero-waste efforts in campus communities across the United States.

### **Reflections of Literature Review**

Initially, I was unsure of what to expect when I began my literature review. I had plenty of content on culturally responsive teaching and an overwhelming amount of resources and case studies about zero-waste. However, I was not sure how well the research would fit together. Surprisingly, it coincided better than I had envisioned. Noticing the correlation between the collectivist and individualist mindset from a culturally responsive perspective and from a sustainability perspective was uncharted territory for me. However, the research around these two mindsets in education and zero-waste echoed one another.

My most impactful discovery was when I compared the Index of Cultural Dimensions to the case study centering on climate change worry in youth between the ages of 16-25 years old. When I created the graph from two data tables, I thought there might be some similar patterns, but I was surprised at the overlap. The graph reinforced my speculation of students with a collectivist mindset being more willing to sort their waste and be invested in sustainability efforts. Because they care about others and the negative impacts climate change will have within communities.

## **Impacts and Limitations**

I have had the opportunity to share my findings with various different groups, including others who work in sustainability on college campuses, K-12 educators, and city council members. However, one limitation is that it is very niche because the focus is so heavy on college campuses and universities. Many principles from my research can be applied to zero-waste efforts for K-12 students or various cities. However, it specifically focuses on young adults on college campuses across the United States.

At first, I was concerned my topic was too narrow, yet the further I explored it, the more detailed research and information I could find. My presentation to the Psychology of Sustainable Behavior course provides further opportunities to put the research into practice. Ideally, the zero-waste projects students in the course conduct will inspire further investigation or influence the campus's zero-waste goals. The research in my literature review stated how significantly more effective working from those most impacted instead of a top-down approach can be. These projects provide that opportunity and could impact the campus's zero-waste efforts and policies.

## **Future Research and Benefits**

I had the opportunity to expand my audience and share my findings with K-12 educators. However, I am hopeful to be able to conduct further investigations into the impacts of a culturally responsive approach to zero-waste education. The next steps in this process would be continuing to collaborate with our office staff and interns as we develop an action plan to reach our zero-waste goals. I also will continue to find opportunities to share my research at sustainability-focused conferences for college campuses and universities across the United States. This research could encourage them to reflect on their campus's approach to zero-waste

and analyze the success and inclusivity of their program, which could lead to more collaborations and discussions around this topic. When everyone is included and working collectively towards a common goal, it benefits us all.

#### **Chapter Four Summary**

This chapter was difficult to write because it was challenging to think beyond the completion of this paper and presentation. I had not thought about what would happen after because it seemed so far away. However, I feel a renewed sense of inspiration and understanding now that it is completed. I believe that even asking those who work in sustainability within other college campuses, “How can the use of culturally responsive educational practices build a campus community that can successfully achieve zero-waste?” will inspire part of them to do a critical reflection on the topic. This chapter, along with chapters one through three, continually referenced the importance of building community and collectivism. This process helped me discover many unexpected findings and ideas. However, it continually reminded me of the importance of striving together toward a common goal. Furthermore, I hope that those who read this will have a similar desire.



Amel, E., & Manning, C. (2019). Fostering collective effort toward ecosystem conservation.

*E3S Web of Conferences*, 119, 6. <https://doi.org/10.1051/e3sconf/201911900006>

Barreiro-gen, M., & Lozano, R. (2020). *How circular is the circular economy? analysing the implementation of circular economy in organisations*. Wiley.

<https://doi.org/10.1002/bse.2590>

Bradley, K., & Persson, O. (2022). Community repair in the circular economy - fixing more than stuff. *Local Environment*, 27(10-11), 1321-1337.

<https://doi.org/10.1080/13549839.2022.2041580>

Carter, M. [TedEd]. (2013, July27). Greening The Ghetto [Video]. YouTube.

[https://www.youtube.com/watch?v=q2TewSL\\_Egk&t=17s](https://www.youtube.com/watch?v=q2TewSL_Egk&t=17s)

Costello, C., McGarvey, R., & Birisci, E. (2017). Achieving sustainability beyond zero waste: A case study from a college football stadium. *Sustainability*, 9(7), 1236.

<https://doi.org/10.3390/su9071236>

Emdin, C., Adjapong, E., & Levy, I. P. (2021). On science genius and cultural agnosia: Reality pedagogy and/as hip-hop rooted cultural teaching in STEM education. *The Educational Forum (West Lafayette, Ind.)*, 85(4), 391-405.

<https://doi.org/10.1080/00131725.2021.1957636>

Erstad, O., Miño, R., & Rivera-Vargas, P. (2021). Educational practices to transform and connect schools and communities. *Comunicar*, 29(66), 9-19.

<https://doi.org/10.3916/C66-2021-01>

- Gay, G. (2000). *Culturally responsive teaching: Theory, research, & practice*. New York: Teachers College Press, 215-216
- Green, B., & Green, S. L. (2015). If you want a revolution, the only solution, evolve: The use of culturally responsive teaching in today's classrooms. *Black History Bulletin*, 78(1), 12-16. <https://doi.org/10.1353/bhb.2015.0009>
- Hammond, Z. L. (2015). *Culturally responsive teaching and the brain*. Corwin Press.
- Harmon, D. A. (2012). *Culturally responsive teaching though a historical lens: Will history repeat itself?*
- Hickey, M. E., & Ozbay, G. (2014). Food waste in the united states: A contributing factor toward environmental instability. *Frontiers in Environmental Science*, [2https://doi.org/10.3389/fenvs.2014.00051](https://doi.org/10.3389/fenvs.2014.00051)
- Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., & Van Susteren, L. (2021). *Climate anxiety in children and young people and their beliefs about government responses to climate change: A global survey*. Elsevier BV. [https://doi.org/10.1016/s2542-5196\(21\)00278-3](https://doi.org/10.1016/s2542-5196(21)00278-3)
- How Communities Have Defined Zero Waste. (2022, October 26). *united states Environmental Protection Agency*. <https://www.epa.gov/transforming-waste-tool/how-communities-have-defined-zero-waste>

- Jaglan, A. K., Cheela, V. R. S., Vinaik, M., & Dubey, B. (2022). Environmental impact evaluation of university integrated waste management system in india using life cycle analysis. *Sustainability (Basel, Switzerland)*, *14*(14), 8361.  
<https://doi.org/10.3390/su14148361>
- Kahan, D.M. (2013). Ideology, motivated reasoning, and cognitive reflection. *Judgment and Decision Making*, *8*, 407-424. <https://doi.org/10.1017/S1930297500005271>
- Kessler, E. L. (2021). Climate change concern among youth: Examining the role of civics and institutional trust across 22 countries. *Education Policy Analysis Archives*, *29*(August - December), 124. <https://doi.org/10.14507/epaa.29.4849>
- Knowles, M. S. (1992). Applying principles of adult learning in conference presentations. *Adult Learning*, *4*(1), 11-14. <https://doi.org/10.1177/104515959200400105>
- Kopnina, H. (2020). Education for the future? critical evaluation of education for sustainable development goals. *Journal of Environmental Education*, *51*(4), 280-291.  
<https://doi.org/10.1080/00958964.2019.1710444>
- Levy, J., & Bowleg, M. (2023). New frameworks for engaging communities to confront HIV, COVID-19, and climate change health inequities. *Am J Public Health*, *113*, 175-176.  
<https://doi.org/10.2105/AJPH.2022.307188>
- Minor, C. (2020). *We got this: Equity, access, and the quest to be who our students need us to be*. Heinemann.

Mitchell, G., Norman, P., & Mullin, K. (2015). Who benefits from environmental policy? an environmental justice analysis of air quality change in Britain, 2001-2011.

*Environmental Research Letters*, 10(10), 105009.

<https://doi.org/10.1088/1748-9326/10/10/105009>

Moreau, V., Sahakian, M., Van Griethuysen, P., & Vuille, F. (2017). *Coming full circle: Why social and institutional dimensions matter for the circular economy*. Wiley.

<https://doi.org/10.1111/jiec.12598>

Office of Institutional Research & Assessment. (2022). *Macalester College 2022-23*

*Common Data Set*. <https://www.macalester.edu/ir/institutionaldata/>

PLAN. (2015). *ATLAS: The Road to Zero Waste*. <https://www.postlandfill.org/atlas/>

Preventing Wasted Food at Home. (2023, April 4). *United States Environmental Protection*

*Agency*. <https://www.epa.gov/recycle/preventing-wasted-food-home>

Qu, D., Shevchenko, T., Shams Esfandabadi, Z., & Ranjbari, M. (2023). College students' attitude towards waste separation and recovery on campus. *Sustainability (Basel, Switzerland)*, 15(2), 1620.

<https://doi.org/10.3390/su15021620>

Tsuji, S. R. J. (2021). Indigenous environmental justice and sustainability: What is environmental assimilation? *Sustainability (Basel, Switzerland)*, 13(15), 8382.

<https://doi.org/10.3390/su13158382>

Yakubu, O. (2018). Delivering environmental justice through environmental impact assessment in the united states: The challenge of public participation. *Challenges*, 9(1), 9. <https://doi.org/10.3390/challe9010009>

Yusuf, R., Fajri, I., M. (2022). *Differences in behavior, engagement and environmental knowledge on waste management for science and social students through the campus program.* <https://doi.org/10.1016/j.heliyon.2022.e08912>