

**EVALUATING THE INCLUSION OF ENVIRONMENTAL JUSTICE AND  
EQUITY FOCUSED CURRICULUM IN ENVIRONMENTAL PROGRAMS  
AT MINORITY-SERVING INSTITUTIONS**

An Undergraduate Research Scholars Thesis

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I, Corinne Buckley, certify that all research compliance requirements related to this Undergraduate Research Scholars thesis have been addressed with my Research Faculty Advisor prior to the collection of any data used in this final thesis submission.

This project did not require approval from the Texas A&M University Research Compliance & Biosafety office.

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## **ABSTRACT**

Evaluating the Inclusion of Environmental Justice and Equity Focused Curriculum in  
Environmental Programs at Minority-Serving Institutions

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Environmental justice (EJ) is used to discuss how racially minoritized and low-income populations are disproportionately impacted by environmental hazards and has become an important consideration when evaluating environmental concerns. Despite its growing relevance in environmental fields, the extent to which EJ topics are included in environmental science higher education is still unclear. Literature on EJ in higher education programs has focused primarily on what institutional factors contribute to its inclusion, while offering little information about what specific topics are covered and the expected learning outcomes (Hazula-DeLay, 2013). In addition, recent studies looking at the inclusion of EJ curriculum have focused primarily on predominantly white institutions (PWIs), suggesting an incomplete understanding of its inclusion (Garibay et al., 2016). This study utilizes a sample of 159 minority-serving institutions (MSIs) to identify how EJ and equity curriculum is incorporated into environmental programs, to determine whether this curriculum is required, explore the topics that are covered in relevant courses, and analyze what differences exist between environmental programs that

emphasize science versus those that emphasize social science. The lack of inclusion of certain topics within curriculum may suggest to students that such topics are not essential. However, it is important that students are educated on EJ and equity topics to better understand different perspectives and how environmental hazards and social change issues are connected. In addition, given the highly political nature of the environmental field, inclusion of EJ and equity curriculum can help prepare students to face such issues in future careers.

## **DEDICATION**

*To Niamh, my number one supporter throughout this project.*

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## NOMENCLATURE

CIP	Classification of Instructional Programs
DEI	Diversity, Equity, and Inclusion
EJ	Environmental Justice
HBCUs	Historically Black Colleges and Universities
HSIs	Hispanic Serving Institutions
IES	Interdisciplinary Environmental and Sustainability
MSIs	Minority Serving Institutions
PWIs	Predominantly White Institutions
TCUs	Tribal Colleges and Universities



# 1. INTRODUCTION

Growing concerns surrounding global climate change and other environmental issues has led to an increased interest in the promotion of environmental sustainability topics, with many higher education programs incorporating sustainability into their curriculum by establishing interdisciplinary environmental and sustainability (IES) degrees (Funk et al., 2020; Garibay et al., 2016). Many of these environmental programs discuss sustainability in the context of environmental sustainability, emphasizing science focused topics such as resource management and ecology (Agyeman and Crouch, 2004). This suggests that these interdisciplinary environmental programs may lack curriculum on social science topics such as environmental justice (EJ) and equity in the context of sustainability, leaving students with an incomplete understanding of the topic (Agyeman and Crouch, 2004). While the extent of which EJ and equity topics are included in environmental and sustainability focused curriculum has received some attention, the actual topics that are covered in the curriculum remains unclear (Garibay et al., 2016). This study will address three questions, first it will identify what environmental majors are being offered at MSIs and how they emphasize science or social science. Second, this study will determine how these environmental programs are exposing students to EJ and equity curriculum and the impact an emphasis on science or social science has on the inclusion of these subjects. Finally, this study seeks to determine how these courses may prepare students to face EJ issues in their future careers by analyzing what themes are present in identified course descriptions.

## 1.1 Review of the Literature

### 1.1.1 History of Environmental Justice Movement

Although the EJ movement did not begin until the early 1980s, it emerged out of support for the nondiscrimination policies of the Civil Rights Act of 1964 (Garibay et al., 2016; Bowen and Wells, 2002). The grassroots movement led by racial minorities was concerned with the disproportionate impact of pollutants and hazardous wastes on communities of minorities and low-income (Bowen and Wells, 2002; Garibay et al., 2016). In 1982, the first African American led national protest on toxic waste disposal occurred in Warren County, North Carolina (Garibay et al., 2016). The state constructed a toxic waste landfill despite high opposition, with residents believing the site was selected due to the county's high African American and poor populations (Zavestoski, 2007; McGurty, 2007). Although the protests were unsuccessful, their actions had widespread impacts by bringing attention to and launching a national EJ movement (McGurty, 2007; Garibay et al., 2016).

The events in Warren County eventually led to the publication of *Toxic Wastes and Race* by the United Church of Christ Commission for Racial Justice in 1987 (Bullard et al., 2008). The publication was the first national study to connect demographic data to the location of toxic waste sites, revealing the significance of race in determining where toxic landfills are located (Bullard et al., 2008; Garibay et al., 2016). The term “environmental racism” emerged out of this report, describing how communities of racial minorities and low-income are unfairly exposed to environmental hazards (Bowen and Wells, 2002). While “environmental racism” continues to be used to describe the causes behind certain injustices, the phrase has been replaced by many activists and scholars with “environmental justice” to shift away from merely identifying the source of injustices and instead towards potential solutions (Kuehn, 2000).

### *1.1.2 Defining Environmental Justice*

Due to its broad nature and the constantly changing ideas of what is considered unjust, defining EJ can be somewhat difficult (Salcido, 2021). The United States government adopted the phrase “environmental justice” in 1994 when Executive Order No. 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was issued by President Bill Clinton (Kuehn, 2000). The Executive Order describes environmental justice as the “disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.” (Exec. Order No. 12898, 1994). This definition includes both environmental inequalities and the regulations surrounding them, as well as low-income communities in addition to minority populations (Kuehn, 2000). A more recent definition from the U.S. Environmental Protection Agency (2021) expands on this, describing environmental justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies”. The EJ movement has gained significant attention in previous decades and significant progress has been made toward achieving the movement’s goals (Bullard et al., 2008). However, there is still work to be done in many areas, one of these being environmental education (Hazula-DeLay, 2013).

### *1.1.3 Environmental Justice Topics in Education Curriculum*

The incorporation of EJ topics into higher education curriculum has seen some resistance, which could be a result of the topics appearing too political or less relevant than other curriculum items (Agyeman and Crouch, 2004). Multiple studies have shown that despite the need for EJ in the curriculum, environmental focused programs tend to focus on the natural science perspective,

suggesting that EJ topics need to be expanded on (Hazula-DeLay, 2013). If students are ill-equipped with knowledge of these topics, they will struggle to face conflicts involving the relationship between social inequality and the environment (Agyeman and Crouch, 2004). Educating students on EJ topics will prepare them to approach issues in a more intellectually robust manner (Agyeman and Crouch, 2004).

Previous studies on the inclusion of EJ curriculum in environmental and sustainability programs in higher education are somewhat sparse, with most research focusing on K-12 education and/or general education (Nussbaum, 2014). While there is little literature that has focused on the inclusion of EJ curriculum in higher education, a study was recently conducted comparing the value that is placed on EJ in an ideal interdisciplinary environmental and sustainability (IES) program curriculum to the emphasis on such topics in actual IES degrees (Garibay et al., 2016). This study showed that as the value placed on EJ curriculum in ideal IES programs increased, the actual emphasis placed on the curriculum decreased, suggesting a disconnect between the value placed on EJ and the actual inclusion of such topics within program curriculum (Garibay et al., 2016). Overall, there is still a lot of uncertainty surrounding to what extent higher education students in environmental focused majors are being exposed to EJ and equity focused issues in their courses.

The emphasis that environmental focused majors place on social science also plays a role in the perceived importance of EJ and equity education. Environmental majors that place a stronger emphasis on science, such as natural resources and environmental science, view EJ courses with less importance than majors with an emphasis on social science, such as environmental studies and sustainability (Garibay et al., 2016). Similar trends are seen in STEM majors overall, with STEM students placing less emphasis on social change and equity issues

than their non-STEM counterparts (Garibay, 2015). Environmental issues, however, are strongly connected to social change issues with impacts of environmental hazards disproportionately affecting communities with minorities (Hazula-DeLay, 2013). It is therefore important for all students to understand the role that EJ and equity play to better face environmental challenges.

Students in environmental programs should be educated on issues of EJ and equity in order to fully prepare themselves for their future careers. While the North American Association for Environmental Education (NAAEE) views diversity and EJ as vital components of environmental education, the extent to which these topics are being included in curriculum at colleges and universities is somewhat unknown (Garibay et.al, 2016). By understanding both the types of EJ and equity courses that are being offered as well as the material being covered in these courses, educators can adjust their curriculum to ensure students are prepared to face these challenges in their future careers.

#### *1.1.4 Minority-Serving Institutions*

While the inclusion of EJ in higher education has been briefly touched on, the role of MSIs in this argument has yet to be fully considered. MSIs play an important role in educating racially minoritized and low-income students, providing the opportunity for under-represented populations to earn a degree and prepare to enter the workforce in an environment that is targeted at specific racially minoritized populations (Center for Minority Serving Institutions, 2014). MSIs serve a disproportionately large number of students with low-income backgrounds, as well as provide a gateway into higher education for first generation students (Center for Minority Serving Institutions, 2014). MSIs can fill a role for underrepresented students that Predominantly White Institutions (PWIs) may be unable to, providing opportunities and resources to students that would otherwise be unavailable. These institutions embrace diversity, encourage the

inclusion of cultural studies, allow students to explore their identity, and invest in students in need (Harmon, 2012). There are three different types of MSIs that are the focus of this study: Historically Black Colleges and Universities (HBCUs), Tribal Colleges and Universities (TCUs), and Hispanic Serving Institutions (HSIs).

HBCUs are the oldest type of MSI, originally established to provide Black students with religious education and teach emancipated slaves basic skills following the civil war (Stage et al., 2014). Due to segregation policies, Black students were not allowed to attend institutions educating White students, resulting in an expansion of the number of HBCUs in the later 19<sup>th</sup> century (Merisotis & McCarthy, 2005). According to the Higher Education Act of 1965, HBCUs are defined as recognized institutions established prior to 1964 with the primary mission of educating Black Americans. Although HBCUs only make up 3 percent of all colleges and universities in the United States, 16 percent of all Black higher education students are enrolled at these institutions (Harmon, 2012).

The establishment of TCUs emerged in result of the American Indian Movement, with the goal of providing indigenous students with a culturally based education (Stage et al., 2014). Since most of these institutions are located on or near Native American reservations, there is a strong focus on local economic development (Merisotis & McCarthy, 2005). Although this group of institutions is primarily composed of community colleges that provide training for the workforce and prepare students to further their education, almost a third of all TCUs offer bachelor's degree options (Merisotis & McCarthy, 2005; U.S. Department of Education, n.d.). Like HBCUs, TCUs were established to serve a particular population, and therefore aim to embrace the cultures and traditions through their programs. Since these institutions are traditionally located on reservations or tribally controlled lands, they are primarily found in

extremely rural areas (Harmon, 2012). Approximately 19 percent of all American Indian students are enrolled in these 36 colleges (Harmon, 2012).

HSIs are the most recently recognized of the MSIs included in this study, serving large numbers of students who identify as Hispanic (Stage et al., 2014). Unlike HBCUs and TCUs, which established their goals for the minoritized group they serve, HSI designation is dependent on the percent of Hispanic students attending the university. Defined in the 1992 Amendments to the Higher Education Act, these institutions are identified by having 25 percent or more Hispanic student enrollment. Many HSIs were previously PWIs, but changes in demographics resulted in increased enrollment of Latinx students (Stage et al., 2014). HSIs make up 18% of all colleges and universities, with 559 institutions enrolling approximately 66% of all Latinx undergraduates (Excelencia, 2022). While the number of total HSIs has seen a slight decrease in recent years due to the pandemic, there are 393 emerging HSIs that have seen increases in Hispanic enrollment and are expected to reach the 25 percent enrollment in upcoming years (Excelencia, 2022).

#### *1.1.5 Using Course Description*

The research that is being conducted within this study is heavily reliant on the use of course descriptions. The evaluation of course materials has been used across multiple disciplines to gather various types of information, such as identifying available library resources in syllabi and using course descriptions to classify courses (Smith et al., 2012; Matsukawa et al., 2018). This study uses course descriptions to identify the EJ and equity courses being offered, as well as to determine the recurring themes in the material covered within these courses. The manner in which course descriptions are written can have an impact on student interest and intention to enroll in courses, with more difficult-to-read course descriptions resulting in a decrease in enrollment intention and student interest (Mourey et al., 2022). This is important to consider in

the context of this study, as students may choose to not take an EJ or equity course if the course description is unclear. Alternatively, students may miss opportunities to take courses that cover EJ and equity if the descriptions fail to identify these topics.

## **1.2 Study Objectives**

Using multiple levels of analysis, this study seeks to investigate environmental programs at MSIs and analyze the inclusion of EJ and equity curriculum within these programs.

Preliminary analysis of website data was first done to identify and classify environmental majors at MSIs based on their emphasis on science or social science, as well as to determine the EJ and equity course offerings for these programs. Textual analysis was then completed using course descriptions and additional course information collected via survey to better understand themes covered in EJ and equity courses. Specifically, this research seeks to address three questions:

1. To what extent are MSIs offering environmental majors, and how do they emphasize science or social science?
2. How are EJ and equity courses incorporated into the curriculum of the identified environmental majors, and how does this differ based on their emphasis on science or social science?
3. Do the themes discussed in the course descriptions of EJ and equity courses suggest that students are appropriately prepared to face such issues in their future careers?

When certain topics are not included in the curriculum, it sends a message to students that these topics are not essential (Milner & Farinde-Wu, 2019). As racially minoritized groups are frequently at the center of EJ issues, the inclusion of this curriculum at MSIs may help to empower students, as well as adequately prepare all students to face EJ concerns in their future careers.



## 2. METHODS

The sample for this project is composed of 159 public, four-year MSIs. Schools classified as HBCUs, HSIs, and TCUs made up the sample.

### 2.1 Gathering Data

First, a preliminary website search was conducted to gather information on what environmental programs were offered at each of the universities. Program descriptions were then used to assign a CIP code based on its focus (Table 2.1). Programs with a 03.0104 CIP code were classified as having a stronger emphasis on science, and programs with a 03.0103 or 30.3301 CIP code were classified as having a social science emphasis. 82 environmental programs were identified, and an email list of program directors and department chairs was compiled. Second, program curriculum and course catalogs were used to determine if there was any evidence of EJ and equity courses in the curriculum. The presence of an EJ or equity course was determined for each individual program. In some situations, an institution offered multiple environmental programs. If multiple programs included the same EJ or equity course in its curriculum, the course was counted for each program it appeared in. Information regarding whether identified courses were required or elective courses was also gathered. Courses were only classified as required if that specific course was required. In situations where a course could be selected to fulfill a certain requirement or taken as a general elective, it was classified as an elective course.

Table 2.1: Environmental Program CIP Codes

CIP Code	Name	Description
03.0103	Environmental Studies	“A program that focuses on environment-related issues using scientific, social scientific, or humanistic approaches or a combination. Includes instruction in the basic principles of ecology and environmental science and related subjects such as policy, politics, law, economics, social aspects, planning, pollution control, natural resources, and the interactions of human beings and nature.”
03.0104	Environmental Science	“A program that focuses on the application of biological, chemical, and physical principles to the study of the physical environment and the solution of environmental problems, including subjects such as abating or controlling environmental pollution and degradation; the interaction between human society and the natural environment; and natural resources management. Includes instruction in biology, chemistry, physics, geosciences, climatology, statistics, and mathematical modeling.”
30.3301	Sustainability Studies	“A program that focuses on the concept of sustainability from an interdisciplinary perspective. Includes instruction in sustainable development, environmental policies, ethics, ecology, landscape architecture, city and regional planning, economics, natural resources, sociology, and anthropology.”

Note: Data drawn from National Center for Education Statistics website.

All programs were included in the outreach process, regardless of whether EJ and equity curriculum was evident from the website data. Emails contained a brief description of the study and a link to a form requesting information about their program. Questions requested information about EJ and equity courses offerings, materials covered in these courses, course learning outcomes, syllabus information, and DEI programming (see Appendix A). Respondents were also given the option to reply directly to the email with information regarding the EJ and equity

courses offered. Three rounds of outreach were conducted to gather as many responses as possible. Of the 82 institutions that offered a relevant environmental program, 26 programs were identified as offering one or more environmental justice or equity courses through website searches. An additional 9 were identified from survey outreach, totaling 35 programs overall. 25 different courses were identified using website data and an additional 20 courses were identified through email outreach, with 45 courses total across the 35 programs.

Once all the data was gathered, preliminary analysis was conducted using only website data. This analysis primarily looked at the number of EJ and equity courses being offered within the identified programs. Results were divided between the different classifications of majors to understand how these courses are distributed across different disciplines. The second portion of the analysis utilized the course descriptions gathered online as well as additional descriptions provided via survey responses to identify themes in the material of these courses. Textual analysis was used to examine the course descriptions. The descriptions were input into the online tool Voyant to determine what terminology is frequently used in these course descriptions (Sinclair & Rockwell, 2016). Descriptions also included the names of the courses. Three different corpuses were used: EJ course descriptions, environmental equity course descriptions, and both EJ and equity descriptions. Course descriptions included in the textual analysis were included in the curriculum of 35 programs across 27 MSIs. 29 EJ course descriptions were identified at 22 of the MSIs, and 16 equity course descriptions were identified at 12 of the MSIs. The output from the Voyant analysis was then used to determine which terms appeared most frequently throughout each corpus, as well as to look at the contexts in which these terms were being used within the descriptions. The infrequency and lack of terms in EJ and equity course descriptions was also analyzed using the Voyant results to determine potential gaps in the

curriculum. The results from the analysis were then evaluated to establish frequently included themes in course offerings and determine whether these courses are fully preparing students with knowledge of EJ and equity issues.

### **3. RESULTS**

The primary aim of this study is to understand the extent of which EJ and equity curriculum is included in environmental programs at MSIs through both the courses that are being offered and the themes discussed in these courses. An understanding of the landscape is first necessary to determine whether courses on these topics are being included in the curriculum. Website findings are first summarized across all institutions included in the sample, and then broken down by specific MSI classification, framing the offering of environmental programs at MSIs. The quantitative results begin to explore how EJ and equity are included in these programs. Results from surveying are then incorporated into the analysis to establish a more comprehensive understanding of the offerings and fill in potential gaps from the preliminary website analysis. Textual analysis is then conducted on the expanded group of programs and course offerings, utilizing course descriptions to further expand on what specific themes the material focuses on and the types of issues students are being educated on.

#### **3.1 Program Offerings**

To address the first research question, the research began by determining the extent to which environmental programs are offered across this sample of MSIs. Further, within these programs, the extent to which EJ topics are included. Despite the topics growing importance, the extent of which EJ and equity topics are included in curriculum is somewhat limited. Of the 159 selected MSIs, only 82 were identified as offering an environmental focused major and included in the sample for the study (Table 3.1). Environmental Science was the most common major classification with 46 programs, followed by 32 Environmental Studies programs and 8 Sustainability Studies programs (Table 3.1). These statistics only include the programs identified

using website data. 32 percent of the majors were identified as offering an EJ focused course, and 2 programs were identified as offering an additional environmental equity focused course separate from the EJ course (Table 3.1). Across the different major classifications, 65 percent of EJ course offerings were in Environmental Studies programs. Environmental Studies programs were also the only programs identified as offering a course dedicated to environmental equity, with two equity courses identified across all programs (Table 3.1). Four EJ courses were identified as being required in the curriculum, with all other courses being identified as electives.

*Table 3.1: All Institutions Summary Data*

Type of Program	Number of Programs	Number of Programs with EJ Course	Number of Programs with Environmental Equity Course
Environmental Studies	32	17	2
Environmental Science	46	6	0
Sustainability Studies	8	3	0
All	82	26	2
Total Institutions			159

Note: Data obtained through institution websites

Of the 39 HBCUs that were included in this study, only 13 offered some form of Environmental Program. As was seen with all MSIs, Environmental Science courses were the most common course classification, followed by Environmental Studies and Sustainability Studies. Programs including an EJ course appear to be more evenly distributed between Environmental Science and Environmental Studies (Table 3.2). While a course is included in the

curriculum for four different programs, three of these four programs are at the same institution. Within those three programs, the same EJ course was identified in their curriculum. Therefore, while there were four different programs with EJ courses, there were only two different courses across these programs. The two programs in Environmental Studies that were identified as offering an EJ course were at the same institution, so the identified course was the same for both programs. The same course is also included in one of the Environmental Science programs. There were also no additional environmental equity courses identified at any of these institutions (Table 3.2).

*Table 3.2: HBCUs Summary Data*

Type of Program	Number of Programs	Number of Programs with EJ Course	Programs with Environmental Equity Course
Environmental Studies	4	2	0
Environmental Science	7	2	0
Sustainability Studies	2	0	0
All	13	4	0
Total Institutions			39

Note: Data obtained through institution websites

The HSI classification was the largest group in the study, and of the identified institutions had the highest percentage of environmental programs relative to the total number of institutions. The same trend in program classification is again identified in HSIs, with Environmental Science being the most common, followed by Environmental Studies and Sustainability Studies. Unlike HBCUs, which had a repeat EJ course across multiple programs at the same institution, none of

the courses identified for HSIs are repeats of the same course for different programs. HSIs were also the only institutions to have a separate dedicated environmental equity course (Table 3.3). Both equity courses are in addition to an already existing EJ course. Based on course descriptions provided online, these courses are additional EJ courses, but use phrases like “environmental inequality” and “environmental racism” in their titles and descriptions. Further analysis may help to determine how these equity course differ from already existing EJ courses.

*Table 3.3: HSIs Summary Data*

Type of Program	Number of Programs	Number of Programs with EJ Course	Number of Programs with Environmental Equity Course
Environmental Studies	28	15	2
Environmental Science	32	4	0
Sustainability Studies	6	3	0
All	66	22	2
Total Institutions			100

Note: Data obtained through institution websites

TCUs make up the smallest group of MSIs in this study. They do not offer as many degree options as the other colleges and universities included in this study. In addition, the number of bachelor’s degrees offered is much lower, so it was expected for these to have the smallest number of programs. Of the 20 institutions included in the study, only seven majors were identified. All of these were classified as Environmental Science programs. In addition, none of the programs were identified as having an EJ or environmental equity course (Table 3.4). The websites for these programs, however, were much more difficult to navigate and information



on the curriculum covered within each of the majors was unavailable in many cases. It is therefore possible that there were courses that were missed during the website search.

*Table 3.4: TCUs Summary Data*

Type of Program	Number of Environmental Programs	Number of Programs with EJ Course	Number of Programs with Environmental Equity Course
Environmental Studies	0	0	0
Environmental Science	7	0	0
Sustainability Studies	0	0	0
All	7	0	0
Total Institutions			20

Note: Data obtained through institution websites

### **3.2 Textual Analysis of Course Descriptions**

In order to gain a more in-depth understanding of what themes are being covered in identified EJ and equity courses, textual analysis was conducted using course descriptions. A brief analysis was first conducted looking at the titles of these courses as they offer some indication as to what these courses offer. Course descriptions were then input into the web-based analysis tool Voyant to determine trends in the terminology used and identify themes in the material covered in these courses. Utilizing both course descriptions found in online course catalogs and descriptions provided by survey respondents, 45 descriptions were identified across 29 different colleges and universities. Of these descriptions, 29 were for EJ courses, and 16 were for environmental equity courses. The EJ course descriptions were primarily composed of those

identified using online data, while almost all the equity course descriptions came from survey results.

Before inputting the information into Voyant, a brief analysis was first conducted using the course titles of the EJ and equity courses to identify potential trends. This was conducted using only course information gathered from websites, not from the information collected via the survey. Looking at the courses at HBCUs, there were no equity courses identified in the curriculum of the programs. However, one of the environmental justice courses included is “Environmental Equity and Justice.” This title suggests that environmental equity may be a central focus of this course. Most of the EJ and equity courses offered were at HSIs, and the titles for these courses offered potential insight into the focus of these courses. Three of the courses included “Health” in their titles, suggesting that these courses are either focused on the human health implications of EJ topics, or how the health of the environment is impacted by EJ issues. Across all the identified courses, “Justice” was the key word used in every title. Most courses refer to “Environmental Justice” in their titles, but a few use “Social Justice” or only “Justice.” The only equity courses identified from website data were offered at HSIs, using phrases “environmental inequality” and “environmental racism” in their titles and descriptions. This suggests these are themes that are a central focus of these courses.

Textual analysis on course descriptions as first run on both EJ and equity course descriptions, followed by separate analyses for each. Of all the course descriptions, the five most frequently used words were: environmental (143), justice (78), course (37), social (37), and issues (27). It is not surprising that environmental is the most frequently used term as this is the common focus across the courses, nor that justice is also frequently used as there were more EJ descriptions than equity descriptions included. Analysis was then run separately for the EJ and

environmental equity course descriptions. The five most frequently used words for the justice courses were almost identical to those for all course descriptions: environmental (100), justice (71), social (33), climate (18), and course (18). The results of the analysis on the equity courses produced slightly different results than the other analyses, potentially suggesting these courses have a different focus. The most frequently used words were environmental (43), course (19), science (14), environment (11), and issues (10).

In addition to indicating which terms are used most frequently, Voyant was also used to look at the contexts in which these terms are being use. The term “change” appeared across all course descriptions 23 times, with almost all uses of the term in the context of climate change. Given that these are environmental focused classes, it is not surprising that climate change is a topic that is frequently discussed. There was only one occurrence of the term in conjunction with “social” in the University of Arizona’s course Geography, Social Justice, and the Environments. It is used in discussion of “prevailing theories of social justice” and “[assessing] movements and goals for social change.” It is surprising that the phrase “social change” is only used once, when this seems to be a large focus of EJ. Instead, “social” is frequently used when discussing social justice. Of the 37 times that social appears across the course descriptions, 26 of those times it was used in collocation with “justice.” The context in which social justice is used within course descriptions suggests that the phrase is interchangeable with environmental justice. For example, Florida A&M’s course description discusses “[examining]... social justice and the impact to low income and minority communities.” Similarly, the environmental justice course at CSU Long Beach describes “[examining] social justice aspects of environmental issues.” This may explain why the term is used so frequently.

The lack of inclusion of certain terms within the course descriptions is also useful to consider as it suggests what certain gaps in the curriculum exist. As has been discussed, the EJ movement focuses on the fair treatment of all, regardless of race, nationality, income, etc. It is well known that communities with low-income and racially minoritized populations are disproportionately impacted by environmental issues. The extent of which these topics are included in course descriptions, however, is somewhat limited. The term “race” appears 10 times across all course descriptions and is normally in reference to environmental issues. For example, the course description of UC Riverside’s “Environmental Health and Social Justice” course references the term race in describing the class as “emphasizing gender, race, class, and globalization” when discussing environmental health and social justice issues. However, course descriptions rarely use the term “minority” to discuss EJ topics, with the term only appearing 2 times across all descriptions. The two instances of this term are used in discussing “the [impacts] to low income and minority communities” and in reference to Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Communities.” When discussing income, the term “class” is frequently used, often in conjunction with “race” in lists such as “race, class, and equity implications of environmental problems and policies.” The term “income,” however, only appears twice throughout all descriptions, both of which are used in the same contexts as “minority.” It is interesting to consider why these descriptions choose to use specific terms over others when discussing similar topics.

Similar trends are seen in the terminology usage for EJ course descriptions as are seen in all course descriptions. This is not surprising given that these courses make up the majority of the sample. There are, however, some interesting observations to be made about the

environmental equity course descriptions. While EJ courses frequently included the phrases “environmental justice” and “social justice” in their course descriptions, the term “equity” is only used twice throughout all environmental equity course descriptions. Both instances are used in discussion of the material the courses cover, referencing “Diversity, Equity, and Inclusion,” and “Environmental Equity and Inclusion.” Similarly, the term “inequality” only appeared four times across these descriptions. The term is consistently used in the context of environmental inequality. For example, the course description for Humboldt State’s Environmental Inequality and Globalization course discusses “environmental justice and environmental inequality on a global level and their implications for communities and nation states.” The lack of the term “inequality” is likely because all but two of the course descriptions for environmental equity courses were gathered via the survey. When the preliminary website search was completed, courses were selected that reference equity or inequalities in their course descriptions. However, those that completed the survey had a more extensive understanding of the course offerings at their institution, and therefore may be aware of a course that focuses on equity, even if it is not mentioned in the course description. Another interesting observation regarding the environmental equity courses is the high frequency of the word “science.” The term is most frequently used in the context of “environmental science.” The term is also used to discuss “[demonstrating] how science can be used to address environmental issues” and “citizen science engagement.” Many of the courses identified as environmental equity courses are actually introductory classes such as “Introduction to Environmental Science” and “Fundamentals of Environmental Science.” This could also be a potential reason as to why there was little mention of equity throughout the course descriptions and may indicate that environmental equity focused courses are actually very rare.

## 4. CONCLUSION

### 4.1 Discussion and Implications

#### 4.1.1 *Course Offerings in Environmental Programs*

Understanding the extent to which EJ and equity courses are offered within the identified majors can aid in identifying which students may be lacking in this area of curriculum. Majors identifying as Environmental Science were found to be the most abundant across all types of MSIs, suggesting there are more program offerings that emphasize science at these institutions than those emphasizing social science. The science focused programs have been found to place less of an emphasis on social change and equity curriculum than those that focus on social science (Garibay, 2015). This was supported with the results of the website analysis as 20 of the 26 programs with EJ courses emphasized social science. The same trend is seen in equity courses, with both programs containing an equity course falling within programs emphasizing social science. This suggests that trends in EJ and equity curriculum seen in previous literature extend to MSIs, leaving a gap in these programs. Additionally, this demonstrates a misalignment between the NAAEE and the training that is being provided to students. NAAEE views EJ and diversity as vital components in environmental education (Garibay et.al, 2016). However, the lack of environmental justice course offerings across the environmental majors suggests that these programs are failing to include these important topics.

#### 4.1.2 *Understanding Course Descriptions*

While understanding what courses are offered provides some insight as to where programs are lacking EJ and equity curriculum, the analysis of the course descriptions helps develop a better understanding of what students are being specifically taught about EJ and

equity, as well as areas that may be lacking in attention. Course descriptions can impact whether students are interested in a course and decide to enroll, so it is important that institutions are considering the ways in which these descriptions are written (Mourey et al., 2022). The course descriptions with the highest success in interest and enrollment are those that are easy to read (Mourey et al., 2022). In the case of more advanced courses (300- and 400- level classes), successful descriptions are easy to read, while also emphasizing the learning outcomes and the challenges of the course (Mourey et al., 2022). When considering elective courses, students are likely to use course descriptions to decide which electives they want to take. 24 of the 28 EJ and equity courses were identified as elective courses, with most having course numbers identifying them as more advanced. A majority of the course descriptions included in the study consisted of short, two to three sentence descriptions that did not fully capture the learning outcomes of the course. The course description for Urban Environmental Justice at Roosevelt University is an example of a description that communicates a sufficient level of detail in an easy-to-understand manner. It begins by providing guiding questions for the course, such as “How is environmental justice different than ‘environmentalism’ or conservation’?” The description then goes briefly into the history of EJ and the “likely...[exposure] to environmental ills” in urban environments, and finally discusses how the course “will explore cases of environmental injustice here in the Chicago area.” This description provides detailed information about what the course covers and clearly identifies the focus of the course. This demonstrates an opportunity for EJ and equity courses to improve their descriptions, and faculty may choose to reconsider how they write their descriptions to increase enrollment.

Another factor to be taken into consideration with course descriptions is the terminology used. When the website search was conducted, courses were selected based on their use of the

phrase “environmental justice” for EJ course offerings and “equity” or “inequity” for environmental equity course offerings. The additional 20 course offerings that were included in the textual analysis were identified by faculty at these institutions for including EJ and equity topics. However, the lack of inclusion of these courses in the website analysis portion suggests these courses are not easily identifiable as EJ or equity courses. While faculty are likely to be more familiar with their institutions course offerings and the topics they include, it may be difficult for someone unfamiliar with the program to recognize the inclusion of EJ and equity in courses based only off their descriptions, especially when the terminology does not identify them as such. While the course description analysis has provided a preliminary view into what material is covered in EJ and equity courses at MSIs, the specific content being included to teach these topics remains unclear.

#### *4.1.3 Inclusion of Curriculum at MSIs*

MSIs were selected to be the focus of this study as past research on EJ and equity curriculum has not taken this institutional factor into consideration. It is especially important that minoritized students are being educated on such topics. When discussing curriculum, one should consider the null curriculum, or topics that students are not taught (Milner & Farinde-Wu, 2019). When topics are not included in the curriculum, it sends a message to students that these topics are not essential (Milner & Farinde-Wu, 2019). However, it has been recognized by NAAEE that EJ is a vital component of environmental education (NAAEE, n.d.) It is therefore important that all students have access to this curriculum and recognize the importance that it holds. The inclusion of such curriculum may also help in empowering racially minoritized students. The topics of EJ and equity are of relevance to low-income communities, potentially making them attractive to the large number of MSI attendants who come from similar backgrounds (Center for



Minority Serving Institutions, 2014). It is surprising that there is a lack of inclusion of these topics at MSIs given their significant role in educating minoritized students. HSIs enroll 66 percent of all Latinx undergraduates, and 40 percent of black STEM students are graduated by HBCUs (Excelencia, 2022; Owens et al., 2013). The unique position these institutions are in provides an ideal opportunity to educate on such topics.

#### *4.1.4 Future Steps*

The findings of this study capture the prevalence of environmental programs at MSIs and provide a preliminary view into their EJ and equity course offerings. While this study began to explore the topics included in these courses, the lack of detail in many of the course descriptions leaves more to be explored in this area. This study chose to utilize course descriptions. However, future research on this subject may benefit from utilizing course syllabi to expand on the knowledge of EJ and equity course offerings. Syllabi provide details about the content included in courses and therefore would add another layer of analysis. Future studies may also choose to expand the group of institutions to include other MSI classifications. Asian American and Native American Pacific Islander-Serving Institutions, or AANAPISIs, are another group of MSIs defined in the 2008 expanded Higher Education Act that were not included in this study but could be incorporated in future work. Finally, future studies may choose to take geographic location into consideration in addition to MSI classification to see what potential differences could exist as a result.

## **4.2 Conclusion**

The results of this study suggest that there is room for improvement within EJ and equity course offerings at MSIs. Despite the growing importance of environmental sustainability, approximately half of the MSIs do not offer an environmental focused degree program,

highlighting a gap in the students who have access to these types of programs. It is difficult to place an emphasis on EJ and equity topics when the degree programs themselves are not present. Within the existing environmental programs, less than half of the programs were identified as offering one or more EJ or equity courses. Survey responses suggest that these topics are included into other general environmental courses, but the number of courses that focus specifically on EJ and equity remains low. While the extent to which EJ and equity is incorporated into their coursework remains unclear, it is promising that EJ and equity topics are being taught in these introductory courses. However, curriculum should also be including separate courses that focus solely on these topics to ensure students have an in-depth understanding of EJ and equity issues. The textual analysis of the course descriptions has provided some insight into what themes are covered in these courses. Many of these courses discuss themes of climate change and social justice, with race and class frequently mentioned in descriptions. Terms that descriptions rarely include are income, minority, and equity, suggesting that these subjects are not a focus in discussions of EJ and equity. Overall, there are still many MSIs that fail to cover EJ and equity in-depth in their environmental programs and are therefore missing out on an important area of the environmental curriculum. The lack of inclusion of these topics suggests students may not be ready to face such issues in their future careers.

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## **APPENDIX A: SURVEY QUESTIONS**

### **Section 1: Inclusion of Environmental Justice and Equity Topics**

The following survey is intended to gain a better understanding regarding the inclusion of environmental justice and equity topics in the curriculum of Environmental Science, Environmental Studies, and Sustainability Studies majors. If your institution offers multiple environmental focused majors, please complete this form multiple times for each major. Please answer the questions to the best of your knowledge. You are also welcome to e-mail the answers to Corinne Buckley.

1. Name
2. E-mail
3. Institution
4. Name of Environmental Focused Major
5. Major CIP code

### **Section 2: Environmental Justice Courses**

1. Do you offer an Environmental Justice or related course?
  - a. Yes
    - i. What is the name of the course?
    - ii. How long has this course been offered? Please indicate the first semester this course was offered
    - iii. What is the average number of students that enroll in this course each semester?
    - iv. What topics are covered in this course?

- v. What are the course objectives?
  - vi. Do you have a copy of the syllabus for the course that you can provide? If yes, we will contact you directly via email to obtain this information.
- b. No
- i. Continue to Section 3

### **Section 3: Environmental Equity Focused Courses**

1. Do you offer an additional course that targets environmental equity or related topics?
  - a. Yes
    - i. What is the name of the course?
    - ii. How long has this course been offered? Please indicate the first semester this course was offered
    - iii. What is the average number of students that enroll in this course each semester?
    - iv. What topics are covered in this course?
    - v. What are the course objectives?
    - vi. Do you have a copy of the syllabus for the course that you can provide? If yes, we will contact you directly via email to obtain this information.
  - b. No
    - i. Continue to Section 4

### **Section 4: Diversity, Equity, and Inclusion**

1. Do you require DEI programming?

2. What other (in-class or out of class) opportunities do students have to learn about DEI topics?
3. Is there anything you want to share about your DEI programming?