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A Student Led Assessment of Diversity, Equity, and Inclusion in the Environmental Science and Management Department at Portland State University

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by

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Abstract

In the summer of 2020, the world watched as Black communities and allies responded to the murder of George Floyd and Breonna Taylor. An intensification of social and racial justice awareness provoked many entities like higher education institutions (HEI) to evaluate how they support marginalized people and update their diversity, equity, and inclusion (DEI) plans. In an attempt to maintain excellence, many HEIs implement DEI plans through top-down methods where high-level administrators target recruitment and retention, campus climate, community engagement, and curriculum. These plans rarely incorporate students as co-collaborators and administer DEI changes that have little effect on students' self-belonging, community, and overall satisfaction with their education and the HEI in general—causing us to ask, what themes emerge when students are invited to collaborate on constructing an antiracist and decolonizing course curriculum?

This study follows the class ESM 410: Diversity Equity and Inclusion, created at the request of the Environmental Science and Management (ESM) department chair at Portland State University in response to the events of 2020. Six ESM students and a professor from diverse backgrounds met weekly during the winter of 2021 to share their experiences, discuss antiracist and decolonizing literature and construct, and present an action plan. The student's suggestions included transparency in university marketing, strengthening peer-peer relationships and pedagogical caring, and improving workforce preparedness. They also advised the department to decolonize the curriculum through decentralization, updating course topics and materials to reflect real-world contexts, and implementing an adaptive management strategy to improve and grow DEI continuously.

Introduction

Scientists of color have been at the forefront of scientific research yet historically excluded from equitable recognition at international, national, and institutional levels. In a recent article co-published by Nature, several authors addressed the marginalization of scientists and recognized these diverse groups as the backbone to the advancement and innovation of global scientific endeavors (Urbina-Blanco et al., 2020). In addition, an increase in intensity and awareness of social movements like Black Lives Matter, the 4th wave of Feminism, and LGBTQ+ rights has caused organizations, government agencies, universities, and more to review and update their diversity, equity, and inclusion (DEI) plans.

Heightened social awareness has led higher education institutions (HEIs), like Portland State University (PSU), to update their DEI strategic plans. When established, many universities and HEIs adopted frameworks that favored excellence over equity. Excellence refers to an institution's reputation, usually measured by its funding, faculty, research achievements, and student awards. When considered excellent, a university may have more prestige, gain more attention, and increase funding from stakeholders. The problem with defining an institution's excellence with measurements like funding, GPA, and standardized test scores is that top-level students are prioritized for admittance and university support. Underrepresented groups may not have access to the same resources (tutors, financial support, familial support) that enabled their wealthy white counterparts to reach the top of their classes. On the other hand, educational equity would entail admitting underrepresented and underprepared people into the university, which may "dilute" the institution's excellence (Astin, 1990). However, many measurements of excellence do not factor in student self-belonging, sense of community, satisfaction with the education, and accessibility and quality of university support and resources.

Executive Order 11246, signed by Lyndon B. Johnson in 1964 in response to the Civil Rights movement, aimed to provide equal opportunities for all. Since its initial stage, it has grown into a tool that supports DEI and the restructuring of university institutions away from excellence as a goal (Crosby et al., 2006). This executive order has paved a pathway towards diversifying the student body and faculty on HEI campuses. However, there is still a large gap between the number of white students and students of color who receive a bachelor's degree in science and engineering fields in the United States (National Science Foundation, 2016). Data sourced from the DOE confirms that Black, Indigenous, and People of Color (BIPOC) communities have grown in science departments across higher education institutions (Integrated Postsecondary Education Data System, 2011), suggesting that institutional barriers and structure have not successfully facilitated the expansion of more diverse, equitable, and inclusive campus and curriculum.

Frequently HEIs implement a top-down approach when establishing DEI plans. Top-down DEI development refers to high-level administrators (University President, Provost, Department Chair, etc.) constructing projects, processes, and structures that create a more diverse, equitable, and inclusive university as a whole. There are four overarching areas where HEIs focus on DEI development: (1) recruitment and retention, (2) campus climate, (3) community engagement, and (4) course curriculum. The advancement of recruitment occurs by building

university marketing campaigns that attract diverse students and faculty (Carey, 2013). Once hired, using cluster hiring (Muñoz et al., 2017), an HEI will work towards retaining their recruited students and faculty by supporting them through funding, campus resources, and building community. Recruitment and retention of diverse peoples aids in assembling an inclusive campus climate. However, researchers have concluded that methods like institutional diversification through a top-down structure overworks faculty of color (and other marginalized groups) and rarely changes the spaces in which students of color use (Brayboy, 2003). However, literature does show that staff diversification is an essential aspect of achieving DEI goals, and increased numbers of diverse people on campus formulate a broader scope of extracurriculars, clubs, and activities.

Campus climate goals also include generating equitable access to resource and support centers such as a financial aid office, LBTQ+ resource centers, food support, childcare, veteran assistance, and more. To expand the capacity of resource centers and initiate community engagement, HEIs may enlist community organizations and diverse stakeholders to provide feedback and engage directly with students. An example of this is the Pacific Northwest Louis Stokes Alliance Program (PNW LSAMP), which directly supports underrepresented students through mentorship, internships, and educational opportunities across various Oregon HEIs (PNW Alliance, 2021). Partnering with programs and organizations like LSAMP not only increases retention and constructs an inclusive environment but also grows student-community engagement, in turn providing students with workforce experiences and opportunities.

The fourth overarching area for DEI growth and the focus of this study is the course curriculum. The predominant purpose of HEIs is to provide students with a well-rounded education that prepares them for the workforce. Many HEIs have recognized that their course curriculum does not meet or align with targeted DEI goals and are beginning to make efforts toward constructing an antiracist and decolonizing curriculum. Higher-level administrators and faculty assess and reconstruct curriculum yet often neglect to include students as collaborators. When accompanied by developing a decolonizing and antiracist curriculum, with students as collaborators, reaching DEI target goals and breaking the systemic and institutional barriers can be catalyzed (Turner, 2013). Lack of student voice and involvement causes us to question—what themes emerge when students are invited to collaborate on constructing an antiracist and decolonizing course curriculum action plan?

ESM410: Diversity, Equity, and Inclusion

This study follows students who were invited to participate in the class ESM 410: Diversity, Equity, and Inclusion, which was created at the request of the Environmental Science and Management (ESM) department chair at Portland State University.

In 2017, an undergraduate student, supported by three faculty members, conducted a series of surveys and interviews to assess students' perspectives of diversity, equity, and inclusion within the ESM department. The study found that 12% of survey participants had felt discrimination, exclusion, or endured racism during their academic experience. In tandem, interviewed students also noted experiences with microaggressions in the classroom and PSU as a whole and expressed a need to directly address DEI issues. Since this 2017 study, the department has made small strides to incorporate DEI into the department and curriculum, yet students want more.

On May 25, 2020, George Floyd was murdered, causing Black communities to ignite into action. The demand for social justice provoked many entities, like the ESM department, to utilize this awakening as an opportunity to reassess how they serve, and support underrepresented and marginalized students. As a result, the ESM department chair enlisted the aid of another faculty member to organize a class where students could lead an assessment of departmental DEI. In a series of open-ended questions, the department chair described why students were recruited for this process. Firstly, they explained that students' motivation and commitment to building a more diverse and inclusive environment was a critical capacity to employ. Secondly, the chair observed that as humans and insiders, we might neglect to recognize our shortcomings.

> "I felt and still feel that as humans, we are invested in our own work and sometimes have a hard time seeing our own failings, flaws, and challenges. I've seen recommendations for faculty to review their syllabi, assess the cases and histories they use as examples for their courses, to develop an inclusive and accessible curriculum, but we struggle to have the knowledge to do so. Further, the changes we need are systemic, and overhauling a course here and there does not create systemic change. So having a group that can look, somewhat from the outside, at our systems and make recommendations makes sense." (Department Chair)

Faculty have recognized the need to evaluate their syllabi, update course materials, and more, yet struggle to chart a pathway forward. Involving students provides an outside perspective and facilitates avenues forward that represent students' needs and interests. Finally, the current top-down approach to implementing DEI into the department lacks influence. Presently, the

department mainly only discusses DEI in faculty meetings. While important, this does not allow for student input nor effectuate DEI.

During the 2021 Winter Term, in a ten-week course, four seniors, three juniors, and one professor from diverse backgrounds constructed avenues for the ESM department to evolve its curriculum and course work into antiracist and decolonizing. Each student, either pursuing a major or minor in the ESM Department, had already completed numerous environmental courses before joining the class, ensuring that participants had similar baseline knowledge and experiences with the curriculum and the ESM department as a whole. As a result, the class created an action plan that configures a course of action toward an antiracist and decolonizing curriculum and department.

Literature review

The discourse is mainly authored by faculty for faculty and incorporates limited student input about suitable methods to engage and empower students of diverse backgrounds with the existing curriculum. Within the discourse of higher education, there is a lack of discussion about developing a more diverse, equitable, and inclusive curriculum sourced directly from student's needs and interests. Few documented strategies outline a bottom-up structure, where students are the main drivers for departmental and institutional changes. Bottom-up processes allow students to directly comment on the spaces they use the most (classrooms, libraries, health, and resource centers), leading toward a more inclusive and equitable environment for students of color and other underrepresented groups. The absence of critical work toward creating an antiracist and decolonizing curriculum could inhibit the benefits of diversification (Smith and Schonfeld, 2000).

Co-Development of Curriculum

There are two main models for curriculum development in higher education: the product and process model (O'Neill, 2015). Under each model, there are many sub-models and theories that describe curriculum development. These models are broadly regulated by national standards, then by the higher education institution's specified frameworks, and finally by the department's climate and processes (Carey, 2013). In a product model, the curriculum is developed by administrators and handed down to teachers. There is a greater emphasis on structure, assessments to measure mastery, and memorization of content. The typical model used in the STEM fields is the scientific product model, where students use the curriculum as a map to

achieve standardized learning outcomes. Students work to comprehend discipline-specific processes that can later be applied in their careers.

Until recently, these models of curriculum development have excluded students as collaborators. In Jeroen Bron and Wiel Veugelers' *Student voice in curriculum development*, they outline five arguments as to why student involvement in curriculum development is critical. The first, the normative argument, states that students are entitled to participate in curriculum creation because they are citizens and can contribute knowledge based on their lived experiences. The second argument is that many students engage in complex work outside of the classroom, deeming them developmentally able to participate (Bron and Veugelers). Numerous students have jobs, financial and familial responsibilities, social maturity, and lived experiences that provide them with the agency to collaborate on curriculum development. Thirdly, the political argument states that students come from a myriad of backgrounds. Diversity objectives for the student population should be mirrored in curriculum development by including marginalized students' cultural context and voices. The fourth argument suggests that inviting students to participate in curriculum designing will provide valuable collaborative decision-making experiences. Faculty can view student involvement as an exercise that practices joint participation and democracy in decision making.

Bron and Veugeler's five arguments are well accepted in the discourse of student involvement; however, there is still some discussion about when students should be involved in co-development. Bovill et al. (2016) describe the differences of co-creation *of* the curriculum vs. co-creation *in* the curriculum. Co-creation *of* the curriculum suggests that students and faculty develop a course before it occurs, while co-creation *in* the curriculum occurs in tandem with the course (Bovill and Woolmer, 2019). Most higher education institutions involve students *in* the curriculum (in tandem) because challenges to student involvement may include "overcoming resistance, navigating institutional norms, and ensuring inclusivity" (Gilio-Whitaker, 2019).

This study bears similarities to the co-creation *of* (before) the curriculum. However, data collected in this study characterizes student's involvement in curriculum development "*after "* completing many of the curriculum requirements. "*After*" co-creation describes students' reflecting on their academic experiences to better the curriculum for future students. Within this study, students discussed ways to create a decolonizing and antiracist curriculum using pedagogical approaches.

Decolonizing Pedagogy

The United States has a long extensive history with assimilation, integration, and colonization of Indigenous peoples. In 1830, Andrew Jackson enacted the Indian Removal Act, which forced Indigenous people from their ancestral lands (Gilio-Whitaker, 2019). Tribes were relocated via the Trail of Tears resulting in thousands of deaths. This was followed by numerous acts that erased, dehumanized, and assimilated Indigenous people into conforming to white-settler culture.

Education in the United States is rooted in centralizing the knowledge and perspective of white European settlers. During the early 19th century, in an attempt to “civilize” and assimilate Indigenous people, the federal government systematically forced Indigenous children to leave their families and attend off-reservation boarding schools (Gregg, 2018). These schools were operated by Christian missionaries, where children were taught to behave, talk, and appear like their white counterparts. The generational trauma from cultural and physical genocide has created distrust in the United States education system among Indigenous people. Structures that erased and assimilated Indigenous culture and still repress Indigenous students from equitable access to higher education.

In 2018, Native American students accounted for less than 1% of the 16.7 million undergraduates enrolled in postsecondary school (Brayboy, 2003). DEI plans in higher education outline methods such as financial support, housing accommodations, and creating programs and centers that solely support Indigenous students. These efforts fall under the institutional goals of diverse recruitment and retention, constructing an inclusive campus climate, fostering community engagement. However, many DEI plans continue to neglect to outline strategies to decolonize their course curriculum.

The discourse of decolonizing curriculum through pedagogy emphasizes that "decolonization is not an event, it is a structure" (Tuck and Yang, 2012). Through continuous acknowledgment, engagement, and learning, decolonization of the course curriculum can occur. This includes the addition of Indigenous authors in course readings, using accurate historical timelines and contexts that discuss Indigenous peoples’ erasure, and acknowledging that all education occurs on stolen land (Louie et al., 2017). Decolonization goes beyond course materials and requires faculty to examine the language used, the class structure, the support provided, and methods of

student engagement (Louie et al., 2017). It is imperative to decentralize white knowledge systems that have oppressed marginalized students and explore underrepresented knowledge systems within an accurate historical context.

Antiracist Pedagogy

Higher education institutions' DEI plans are shifting from a non-racist to an antiracist narrative. *Antiracist pedagogy* can be defined as " a paradigm located within Critical Theory utilized to explain and counteract the persistence and impact of racism using praxis as its focus to promote social justice for the creation of a democratic society in every aspect" (Blakeney, 2005). Several higher education institutions have shifted from non-racist and multicultural education that recognizes racism and colonization toward antiracist teaching and pedagogy that dynamically confronts institutional and structural barriers that hinder BIPOC students and critically investigates and condemns themes of white supremacy (Knowles and Hawkman, 2019).

Kyoko Kishimoto describes two components to antiracist pedagogy in her article *antiracist Pedagogy: from faculty's self-reflection to organizing within and beyond the classroom*. The first component is to incorporate topics about inequality and race throughout the course. These should be accompanied by a discussion that critically assesses race, racism, power, privilege using accurate political, economic, and historical contexts.

The second component is to teach from an antiracist position. Antiracist pedagogy also requires faculty to self-reflect on their privileges as they all possess both privileges and oppressed identities (Kishimoto, 2018), which may affect how and what they teach. For example, white faculty must acknowledge that they are non-neutral and neglecting to do so only feeds into white privilege and structures that challenge BIPOC students. Self-reflection is equally if not more critical to conduct when building and developing a curriculum, especially for those who design curriculum and pedagogical approaches to be antiracist and decolonize. Serious discussions about racism may leave students feeling disempowered, and by providing examples of community, students may feel empowered to take the initiative and engage in their community. This follows the institutional DEI objective of fostering community engagement through student-community partnerships. Thus, not only will the incorporation of antiracist pedagogy enhance the curriculum, but it will also extend outside of the classroom into the campus and community.

Methods

Data Collection

Autoethnography is a research method used to understand cultural backgrounds by writing and analyzing personal experience data (Ellis et al., 2011). After each weekly class period, detailed meeting notes were written that outlined the structure of the meeting, relevant discussion topics, processes developed, questions asked, and personal notes while identifying patterns and themes that emerged as students progressed through the class. Constructing the notes as an autoethnographic tool allowed me to contribute to the discourse through my voice as a student and highlight my university peers' voices. From this, themes and patterns from the class discussions could be compared to those within higher education's literary discourse. In the first class session, students were invited to participate and sign consent forms. Meeting notes were then created from the following nine classes.

In addition to meeting notes, surveys were administered during the beginning of the term and after students presented their finalized action plan to the department chair at the end of the term. Surveys are typically utilized to measure unobservable data such as preferences, beliefs, factual information, traits, attitudes, and behaviors (Bhattacherjee, 2012). The first survey aimed to collect demographic and baseline data about students' knowledge of diversity, equity, and inclusion within the PSU ESM department. Demographic information included age, admission, and estimated graduation year, major and minors, race/ethnicity, and gender identity. Other questions asked intended to identify students' definitions of DEI, why they wanted to participate in this class, and opinions about current methods for student input within the ESM department.

The second survey compiled open-ended questions that were emailed to each student after presenting our findings to the department chair. The survey questioned students about their experiences with the department, their motives for participating in this class, and if this class was a valuable method for student commentary.

A third open-ended survey was sent to the department chair. The intention of this was to have the chair contextualize the need for this class and why they decided to include students as collaborators instead of employing existing top-down mechanisms.

The last collection of data were the deliverables presented to the department chair. Throughout the class, students worked to construct an action plan that could be delivered to and implemented by the department. The Manifesto, the first deliverable, introduced each student, summarized the completed work and intentions for implementing the second deliverable, the Targeted Objectives. The Targeted Objectives was constructed to incorporate literature-based suggestions, resources and tools, and self-reflection questions that faculty could use to guide them through self-reflection about their pedagogical approaches and how to update their courses.

Data Analysis

This study was analyzed with deductive coding, using Atlas.ti Mac version 9. Atlas.ti is a computer software designed to organize qualitative data. A deductive analytical approach is when codes are created based on existing theory and literature. Two passes of coding were conducted, where the first round of coding was completed using themes extracted from the literature review findings (see codebook). During the first pass, passages with themes outside the literature review were denoted as "emergent." In the second pass of coding, passages denoted “emergent” were then coded using themes from the data. Codes were compiled onto a codebook, where they were organized and defined using overarching literature themes. Nine meeting notes, five surveys, and two deliverables were uploaded into Atlas.ti and coded using their coding functions. As the author and researcher, I did not participate in surveys.

Findings

Motivation for Participation

Upon joining the class, students were eager to begin the process of contributing towards a more equitable, inclusive, and diverse environmental science department. Student's eagerness stemmed from frustrations with current methods for student commentary on course curriculum, wanting to contribute toward uplifting future BIPOC STEM majors, and general interests in social change.

> “I feel like I can help uplift people like myself who aren't always included at the decision-making table. I want future pacific island students at PSU to feel like they belong and should be there.” (Student C)

Currently, there are two common methods for providing input about courses: the first, course evaluations, and the second, bringing information directly to ESM faculty. Course evolutions are

sent, via email, to each student during the last weeks of the term and focus on assessing the instructor's preparedness, knowledge, and ability to facilitate an academic environment. Each question is measured using a Likert scale and includes one open-ended comment section. However, students were not confident that their concerns and suggestions were adequately considered and addressed within these methods.

> "The current method of course evaluation is difficult to use…and produces little tangible change. The questions are minimally applicable to classes and fail to provide space for critiquing the course content and quality of instruction outside of the rigid questions. In my experience, students do not feel empowered by course evaluations and tend to see more receptive outcomes from professors who use their own, additional evaluative criteria (i.e., an assignment to give feedback on the class)." (Student E)

Students explained that not only does this method provide little room for direct student commentary, but changes from any feedback, concerns, and suggestions provided are usually minimal or non-existent. Similarly, there is no space in course evaluations to critique and suggest changes to course materials, topics, or discussions that better reflect student's interests. Within the class, students agreed that as direct recipients of education, they should have a more significant part in designing course curriculum and plans to achieve HEI DEI goals.

Recruitment and Retention

Class discussions rarely touched on recruitment and retention, and when they did, no novel themes emerged. The Discussion mainly centered around recruitment. Typically, universities will upload descriptive statistics and photos showing diverse groups on their campus to display diversity and inclusion. However, the students noticed that these statistics are not always accurately contextualized and could be easily misunderstood. For example, students noted that on their HEI's website homepage, there is a static that says "35% diverse background" but does not further contextualize the statistic.

> "Does this mean that PSU is the most diverse campus in Oregon? What is the demographic distribution of Oregon concerning other states and other higher education campuses?" (Week 2 Meeting Notes)

In the literature, authors describe university marketing as the primary tool for recruiting diverse students and faculty (Carey, 2013). HEIs become attractive when they market themselves as diverse, yet the students felt that these marketing campaigns were not entirely accurate and should be more transparent. Upon later examination, this statistic describes this HEI as being

one of the most diverse campuses in its state. Without further investigation, prospective students may not pick up on this.

Campus Climate

The literature defines campus climate as “the interactions between groups and participants from various backgrounds, and the social patterns that emerge from various beliefs, behaviors and characteristics” (Peterson and Spencer, 1990). From the data, campus climate can be characterized by peer-peer and faculty-student relationships. The facilitation of these relationships falls into two categories, collaborative interactions, and pedagogical caring.

Collaborative interactions are facilitated through physical spaces where students can collaborate on academic projects and build a sense of community. One student noted that Portland State, as a commuter school, has a reputation for minimal campus culture, making it challenging to build relationships on campus. In July 2020, PSU announced that it would be renovating one of the science buildings used for environmental science classes, Science Building One. When discussing peer-peer interactions, students were quick to comment on suggestions for an inclusive and collaborative environment.

> “Most of the suggestions revolved around the need for an academic and social collaboration space solely for STEM students. One student noted that PSU is known for having minimal campus culture where friend and peer relationships are made in the classroom. Hinting that a socially inclusive space for STEM students could help facilitate the inclusion of all peoples. Other suggestions included adding a computer lab, printing services, and more tables to facilitate group projects better.” (Week 8 Meeting Notes)

Physical changes, such as adding inclusive and accessible collaborative spaces can improve campus climate as students are more willing to utilize campus resources and build a sense of community. Community can also contribute to a student's sense of belonging as individuals may feel more accepted when they can collaborate with their peers, be prepared for their courses, and engage within the classroom (Hachey and McCallen, 2018). Additionally, adding services like a computer lab and printer in a STEM centered space will support students who do not have access to such resources outside of campus, ensuring equity by increasing self-belonging and course preparedness.

In comparison to peer-peer, Student-Faculty relationships are less about building social relationships and more about pedological caring. Students who consider their professors to be

caring and inclusive have a greater sense of belonging and tend to produce higher quality work (Owusu-Ansah and Kyei-Blankson, 2016). Caring includes professors taking actions to build accessibility into their course, which can decrease the hardships students battle in classrooms and allow them to focus on course material and building community.

> "Accessibility and inclusivity should be built into the entire course rather than added as an afterthought to accommodate individual students, i.e., Black students, Indigenous students, and other students of color; Disabled students (including cognitive, motor, and sensory disabilities, as chronic illness and other conditions); international students; students of all genders; students with children; students facing financial hardship and poverty; learners of English as a second language; and other intersections of marginalization." (Targeted Objectives)

> "Accessibility in fieldwork, research, teaching, learning, and testing. Accommodations for disabled students primarily rely on services provided by PSU's Disabilities Resource Center. Opportunities for more integrated approaches can be added to the curriculum's structure." (Manifesto)

Actions such as enabling closed captions on virtual formats, providing course material well in advance, and offering testing alternatives are a few methods that can support students with disabilities and various learning styles. For example, offering group testing reduces testing stress, improves peer-peer relationships, and simulates a collaborative environment students will encounter in the workforce. There is already an extensive body of literature surrounding models for classroom accessibility; however, the students identified these examples as essential ways to facilitate inclusion and equity within the ESM department.

Community Engagement

Portland State University takes pride in its community engagement, and workforce development as its motto is "Let Knowledge Serve the City." In STEM, there is no better way for students to learn than through application. In the ESM department, this is done through labs, field trips, research opportunities, and internships. However, students in ESM 410 felt underprepared for the workforce as many jobs require a certain amount of experience and skill set that had not been practiced.

> "We understand that many management projects are based on current regulations, grant funding, and the economy. In our experience, we did not receive many opportunities at PSU to develop our professional skills in order to work in management as a career." (Targeted Objectives)

Many jobs require a certain amount of experience with specific skills like grant, permit, and policy writing along with coding, outreach techniques, and budgeting. These topics and skills are under discussed and practiced in the ESM department, leaving students to feel unqualified for jobs. Many students in ESM 410 were interested in exploring avenues to support their community using their coursework yet were not presented with the opportunity.

> "To enhance student learning and career development in the future, we suggest faculty dive deeper into challenges students face in more complex concepts such as the grant writing process as well as environmental policy and regulation. We believe that faculty could be more engaged with the student transition out of college and into the workforce by looking at relevant job postings and relating course content to required skills needed for the job." (Targeted Objectives)

Coupling relevant workforce skills with community-based projects allow students to engage with the community and build relationships with potential employers in low-pressure situations where students can gain the experience needed for the future. Adding these projects into the course curriculum also supplies experience to students who do not have the time or means to take on internships outside of their academic and personal commitments. Engaging in local and regional projects not only builds a more skilled and prepared workforce, but it can boost student self-belonging, reinforce the university motto, and attract students interested in serving and engaging with their community.

Course Curriculum

The main focus of discussion and action in ESM 410 was creating an action plan toward a decolonizing and antiracist curriculum. In the Targeted Objectives section of the action plan, the students emphasized four non-ranked and independent objectives, followed by non-comprehensive concepts to assist faculty in assessing their course materials and pedagogy. Following each objective is a self-assessment questionnaire that faculty can use to appraise their course content and teaching. Providing a self-assessment component to the action plan allowed the students to guide the faculty in completing decolonizing and antiracist self-reflection work independently. These objectives were (1) Fostering Critical Pedagogy, (2) Designing and Managing Inclusive Classrooms, (3) Diversify Course Content and (4) Empathizing Spatial and Temporal Context, and while designing them, the students stressed that these recommendations were not end-all solutions and that the action plan should be considered a living document that is continuously updated and edited to fit the ESM department's DEI goals. Each concept and objective was carefully constructed through discussing critical literature,

reflecting on lived and academic experiences, and collaborating with the supervising faculty member. The student's delegate points people based on each other's interests in particular objectives and concepts. The group would provide feedback and collaborate on different sections in each meeting until an agreed finalized version was completed. The construction of each targeted objective was truly collaborative among the students and faculty members.

From the data pertaining to course curriculum, there were three methods in which decolonization and antiracist actions can be implemented to build a more diverse, equitable, and inclusive curriculum. They are decolonizing through decentralization, translating adaptive management to adaptive learning, and providing an engaging and safe classroom environment for BIPOC students.

Decolonization Through Decentralization

Students found that many course materials and topics taught in the ESM curriculum centralized colonial knowledge and disregarded indigenous knowledge. Decentralization of colonial knowledge was a key theme, alluded to in the literature, that students found to be essential when constructing a decolonizing curriculum. In alignment with the literature, students felt it necessary for faculty to assign readings from diverse authors, critique colonial theories, and utilize more tools than just journal articles. Decentralization occurs through these actions because there is an incorporation of other knowledge systems, viewpoints, and theories from BIPOC.

> "Primarily assigning articles by white scientists who follow Western Science practices, like the scientific method, negates the existence of POC practices and scientists. The absence of POC authors may cause students to centralize their environmental knowledge around white knowledge deemed valid via a journal publishing process that favors Western Science practices." (Targeted Objectives)

A novel theme relating to decentralization of knowledge that students implored faculty to address is the epistemological differences between lesser scientifically documented and studied Indigenous practices to Western Science. For example, one student used the phrase "Knowledge Production Complex," which describes how and what is being taught as "valid" knowledge and practice.

> " 'Knowledge Production Complex' - Understanding who allows specific knowledge to be valid and accepted. Not all indigenous knowledge needs to go through the scientific

> methods to be considered valid or valuable, as they have been practicing environmental management for hundreds of years." (Week 4 Meeting Notes)

The literature emphasizes assigning readings from diverse authors, however, the content in such articles still centralizes colonial ideologies. Furthermore, reading purely from journals governed by Western Science principles does not accurately represent Indigenous knowledge as many Indigenous practices have not been scientifically documented nor passed down through written documentation (Snively and Williams, 2016). By expanding course material to include different mediums such as documentaries, credible media articles, podcasts, and ted talks from Indigenous voices, a professor can develop a decolonizing course curriculum. Incorporating different mediums and tools into courses also supports the inclusion of different learning styles, as long technical journal articles can be difficult for students to read and comprehend.

The "Knowledge Production Context" also relates to the inclusion of accurate colonial context and timeline of environmental management and practices. In many of the student's experiences, teachings about environmental management began with policies like the National Environmental Protection Act, Endangered Species Act, and Clean Water Act, all of which were enacted in the 1970s in response to colonial industrialization.

> "In the ESM curriculum, environmental management knowledge begins with the Pre-Industrial era and follows with the Enlightenment, Industrial, and Progressive eras. These eras were dominated by white-settler colonists who seized Indigenous land and industrialized their land-use practices. Timelines for environmental practices need to begin with Indigenous peoples, not with white-settlers who stole their lands." (Targeted Objectives)

The management practices that follow these policies are reactive, as they work to clean up or regulate Anthropocene pollution. However, underutilized and studied indigenous practices are proactive and protect natural resources from exploitation or degradation. As many of these proactive practices are now making their way into US management practices, little is being taught about the origins of the practices. An example outlined in the Targeted Objectives is prescribed burning.

> "Learning about Indigenous resource management may also lead to innovative ways of understanding historic ecosystem regimes. It is common knowledge now, for example, that Indigenous prescribed burnings of the forest had many ecological benefits.

> However, centuries of fire suppression by white settlers led to fuel accumulation and even more intense burns. Now, prescribed burning is viewed as an important restoration tool by the US Forest Service. In this way, Indigenous experiences, practices and knowledge are essential content for general environmental science understanding." (Targeted Objectives)

By acknowledging and teaching the origins of Indigenous sustainable practices, students will learn that not all colonial practices are sustainable. This also opens space for students to explore further and learn about other BIPOC management practices, which in turn decentralizes and decolonizes the course curriculum.

Updating and diversifying course material can be an effective and relatively simple method to decolonize the course curriculum. However, decolonization does not require dismissing colonial science altogether but instead teaching Indigenous Science and Western Science complement each other. Each knowledge system is valid and can enhance the other, but teaching without recognizing Indigenous science can cause students to centralize colonial science.

Translating Adaptive Management to Adaptive Learning

A core concept threaded through the environmental curriculum is adaptive management. Adaptive management in natural resources is "a structured process of learning by doing and adapting based on what's learned" (Walters and Holling, 1990). This process includes several iterations of decision-making, implementation, and assessment to effectively manage and upkeep various resources. The students in ESM 410 felt that because this management technique was so deeply ingrained into the curriculum, it should be applied to the department in the context of continuous self-reflection, departmental DEI management, and overall assessment material and curriculum.

> "As trained managers in the Environmental Science and Management program, we are taught to gather evidence then utilize our expertise in order to propose and implement environmental management. We are taught that adaptive management is an ever-changing and evidence-based approach to changing the ways we've mismanaged the environment: without taking the next step of implementation, effective management decisions can not take place."
> (Targeted Objectives)

By following adaptive management principles, the department can continuously assess the context of their teaching and ground pedagogy and course curriculum in real-world and lived experience contexts. This was crucial to the students, as grounding teaching in current realities

allows students to connect their personal and academic interests towards addressing current and future environmental issues. Similarly, students explained that their interests were driving motivators to engage in particular course work and sources for excitement when learning about management.

> “Many ESM students have a personal connection to the environment through lived experiences and current events. It is these encounters that create niche interests and future environmental specialists. We believe that students should be able to tailor their learning experiences toward their interests.” (Targeted Objectives)

To execute this, students suggested that faculty create various activities and exercises that incorporate student’s interests. These include having students report current events and discussing its intersections with ESM, assigning final projects and papers that allow students to research a topic of interest, and simply asking students what they want to uncover and gain from the class topics and teaching faculty.

Adaptive management also requires faculty to reflect on their privileges and perspectives continuously and independently. Well illustrated in the literature (Kishimoto, 2016; Tuck and Yang, 2012) is the idea that lack of continuous work and self-reflection can affect a faculty's pedagogical approach, thus affecting student’s experiences with the curriculum, department, and the HEI.

Initially, the students in ESM 410 were going to construct a rubric and "grade" each course's syllabi. However, after further discussion, the students felt that it was not their job to complete the work to decolonize the syllabi; instead, they could provide suggestions and tools for faculty members to use. Ultimately, the work of decolonizing and constructing an antiracist curriculum lies on the shoulders of the department, and by using adaptive management as a framework to self-reflect and assess DEI targeted HEI DEI goals can be met.

Classroom Environment

Delving into heavy topics such as racism and decolonization before setting classroom guidelines can hinder productive and critical work. Guidelines can create boundaries that prevent and shut down microaggressions, white supremacist ideology and create a safer space for BIPOC to engage in. For example, during the first class meeting, the student of ESM 410 adapted Ijeoma Oluo's Rules of Engagement to build classroom guidelines. Students could note

what they were comfortable sharing, topics that brought discomfort or held trauma, and outline when it was appropriate to ask a BIPOC about their culture, practices, and beliefs. By completing this exercise in the first week of the term, faculty can decentralize dominant white voices and welcome students from underrepresented to engage and participate in the class.

In tandem with creating "Rules for Engagement," students believe it essential for the teaching faculty to understand that not everyone has the same knowledge about antiracism, decolonization, equity, inclusion, and diversity. Similarly, not everyone has the same background knowledge of the United States' colonial past and how it has affected BIPOC communities and land and resource management. Conceptions about these terms and ideologies may differ based on a student's background and lived experience.

> "Each person's definitions for decolonizing and antiracist terms may not be the same. Our personal definitions are created through our research, academic, and lived experiences. We can identify and use common patterns and themes from each definition to better align our group goals. Before engaging in DEI, decolonizing, and antiracist work, it is important to reflect and assess what these terms mean to us, and how they are applicable in the context they are being used. " (Manifesto)

Creating class definitions and building baseline knowledge of DEI, racism, and colonization creates a foundation for students to explore decolonizing and antiracist topics while exploring various knowledge systems.

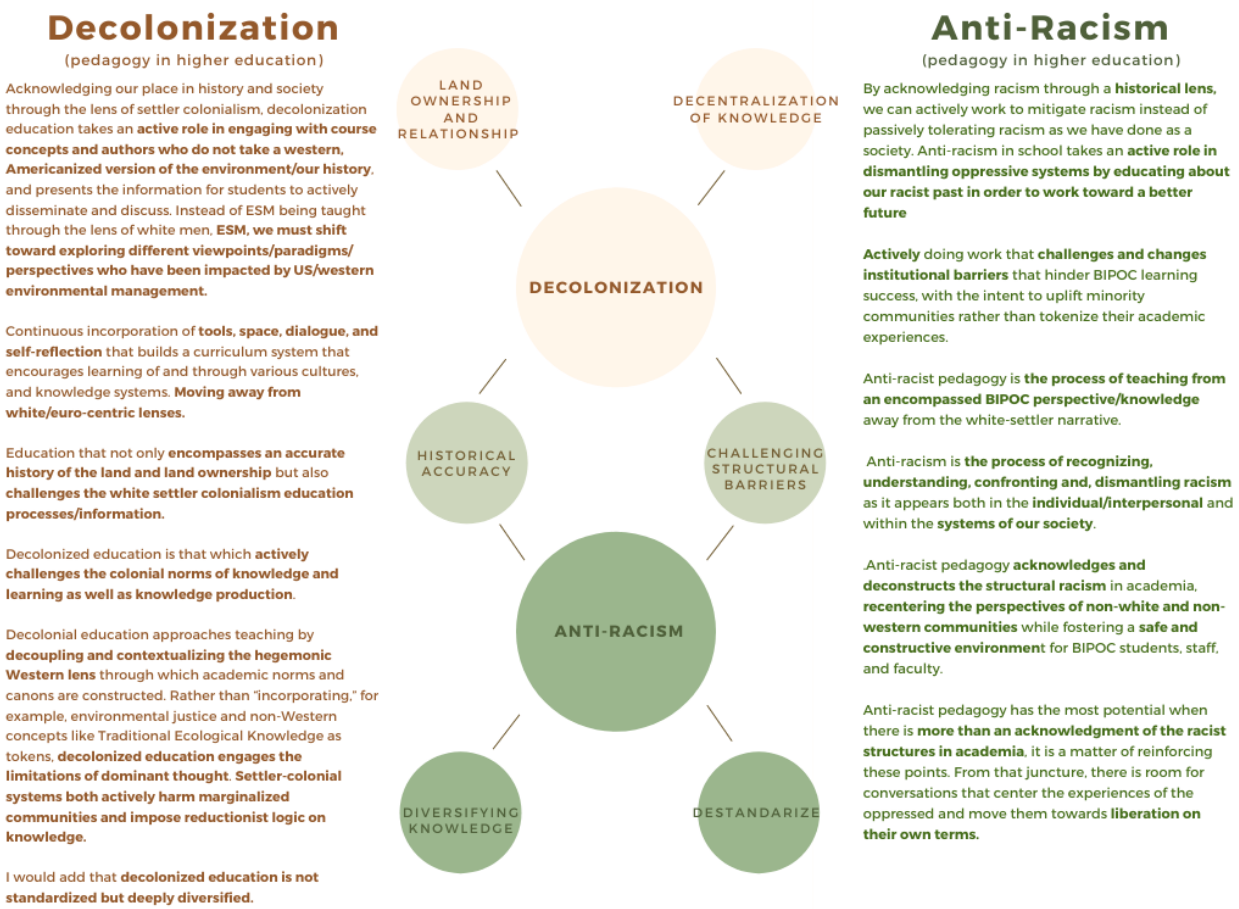

Figure 1. Definitions of decolonization and antiracist pedagogy in higher education were created by each student in ESM 410: DEI. Students defined these terms using their personal experiences and academic knowledge. Key phrases from each definition were bolded and used to create a flow diagram that displays the intersection of decolonization and antiracism.

Overlooking exercises such as adapting "Rules of Engagement" and creating class definitions continue to centralize white ideology and hides the colonial past. This also makes it easier for faculty to navigate *through* difficult conversations and topics instead of *away*. Navigating away, when confronted with conversations about antiracism, decolonization, diversity, equity, and inclusion, alludes to more significant systemic issues and neglects to address the problems that hinder student growth. It is crucial for faculty to continuously address and navigate through these conversations, as they are teaching and preparing future land managers, policy writers, and environmental scientists.

Student's Outlook

At the end of the term and after presenting the Targeted Objectives and Manifesto to the department chair, the students were asked two questions about their overall experience. The

first,*“After creating this Action Plan and presenting to the ESM Chair, do you feel as if your voice has been heard?” and second, "Has this class been a source of hope, empowerment, support etc. to you in any way? What has made this class "worth it" to you?"*.

Directly after presenting to the ESM department chair, students reported that they had felt heard. During the presentation, the chair actively listened and initiated discussions about each section of the presentation. The students appreciated the attentiveness and willingness to engage in a critical discussion about DEI and the constructed avenues toward a decolonizing and antiracist department. However, the students emphasized that they would need to see action and accountability for them to feel genuinely heard and valued.

Students wanted action in the sense that various resources, tools, and recommendations put forth in the class deliverables would be used to continue the construction of a decolonizing and antiracist department. Accountability entails holding the university and department responsible for continuously working towards bettering DEI. Looking into the future, the students asked, "how will we know that professors and the department will be held accountable and make the necessary DEI, decolonizing and antiracist changes?" This warrants continuous assessments of DEI by the ESM department and the university. An entity cannot simply state that it has decolonized, as "decolonization is a structure, not an event" (Tuck and Yang, 2016) and requires continuous work and improvement.

The students unanimously affirmed that this class had been an essential space for them to voice their opinions and concerns.

> "To me, this was very empowering because the conversation went beyond the classroom." (Student A)
>
> "Yes, I felt like my personal experience and struggles as an ESM student at PSU were shared across the group. I felt very supported." (Student C)
>
> "I think just seeing [the professor's] passion and all of our classmates' passion for justice and equity made me feel less alone. I'm just really proud of the work we did and the people I was able to work with." (Student D)
>
> "...I came out of the experience feeling a much stronger sense of community and optimism for the ESM department. It was really reassuring to hear from a small group of other students who had similar experiences and also felt passionate about the importance of deconstructing harmful paradigms in natural sciences and environmental management.” (Student E)

Each student explained that this class had become a weekly source of support to look towards. Being able to share their experiences and build an action plan that could better the academic experience for future BIPOC students made this process worthwhile. Students concluded the class by agreeing that Portland State University and other HEIs are at a critical juncture where it is essential to address diversity, equity, inclusion, antiracism, and decolonization by involving students as agents toward change.

Limitations and Future Recommendations

This study was conducted virtually during an unprecedented time. Social movements, pandemics, and elections consumed students, faculty, and staff alike. These factors, along with virtual fatigue from endless hours at our computers, created obstacles during this study. During some weeks, student engagement was low, as many students felt the need to take time away from their screens, take mental health breaks, and recuperate from events outside of their academics. While important, this hindered the amount of data collected per week and required part of the successive meeting to be designated to reviewing prior discussions instead of progressing forward. Future in-person studies about student co-collaboration and commentary on course curriculum could be compared to this study to determine how engagement affected discussions and progress towards a completed deliverable.

Another limitation to this study is that there were only 6 participants. Due to the small number of participants, it is difficult to make assumptions about all the ESM departments and university students. Future studies could utilize a larger sample size to incorporate a more well-rounded representation of student input and further expand to more departments. Similarly, the only faculty member interviewed was the ESM department chair. Future studies may find it helpful to interview all faculty involved in co-collaboration with students to represent both participant groups equally. In addition, this study could be replicated to incorporate student involvement in other departments at PSU. Decolonizing and antiracist pedagogy and curriculum may constitute different approaches in various departments and majors.

Due to the time constraints of this study, virtual meetings were not recorded and transcribed. Transcriptions can be an essential data collection method in qualitative research and may provide a deeper understanding and insight into what students want from their curriculum. For

in-person studies, voice recordings and transcription could highlight more themes than identified in this study.

Conclusion

This study highlights the importance of students as co-collaborators when constructing an antiracist and decolonizing course curriculum. In ESM 410, the students shared their lived experiences and opinions, discussed critical literature, and designed an antiracist and decolonizing action plan. Not only were the students self-motivated to be agents of change, but they contributed an outside and invaluable perspective that faculty do not hold. The students proposed an abundance of ideas within the action plan that included different approaches to update course materials, assess pedagogy, and advance student and faculty discussions about racism and colonization in a respectful and academic environment. They also included methods to cultivate an inclusive and accessible student experience that elevates the sense of belonging and community on campus.

Compared to many top-down approaches, this bottom-up process allowed students to directly elucidate their concerns, suggestions, and requests to the department chair. Direct and open communication between higher-level administrators, like a department chair, and students bridges the gap between top-down and bottom-up mechanisms and illustrates the importance of co-collaboration. Through this experience, the students felt empowered, supported, a sense of belonging and community as they were given a platform and voice to discuss their lived and academic experiences.

HEIs, like Portland State University, are at a crossroads of being social justice leaders and champions of educational equity by incorporating, supporting, and uplifting the voices of BIPOC students. Students are the direct recipients of the educational product supplied by HEIs, and it is the job of an HEI, like PSU, to provide equitable support and resources that facilitate student success, belonging, and community while preparing students for the workforce with a comprehensive education. It is imperative that HEI's make this shift, as redefining excellence and working towards equitable education will catalyze an HEI to meet its targeted DEI goals. It is experiences and opportunities, like ESM 410: Diversity, Equity, and Inclusion, that assist an HEI in redefining its excellence with educational equity. Student self-belonging, community, inclusion and satisfaction with their experiences at an HEI can be more telling of an institution's excellence than GPA, standardized test scores, awards, and funding.

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Appendix

Survey Guide

Survey 1:

Age:
Start year:
Estimated Grad year:
Current Year:
Race/Ethnicity:
Gender Identity:

In your own words: short answer

1. How do you define the term “diversity”?
2. How do you define the term “equity”?
3. How do you define the term “inclusion”?

In which method can students have the most input:

1. Course evaluations
2. Participating in department/campus-wide meetings
3. Joining and working in clubs
4. Direct discussion with professors, and other administrators
5. Other- explain

In your opinion, does the current method of class/curriculum evaluations need to be updated or changed:

- Yes: why
- No: why not

How accessible is it to voice your concerns or suggestions about DEI:

1. Accessible; I know exactly whom to talk to if I have a concern or suggestion.
2. Moderately; sometimes I know whom to talk to if I have a concern or suggestion, and sometimes I don't.
3. Inaccessible; I have no idea whom to talk to if I have a concern or suggestion.

If you were to voice a concern to the chair of the ESM department, how likely do you think the issue would be resolved?

- 5 Very likely
- 4 Somewhat likely
- 3 Neither likely nor unlikely
- 2 Somewhat unlikely
- 1 Very unlikely

In your opinion, what would result in the most institutional Diversity, Equity, and Inclusion? (Rank, using your opinion, from most to least influential)

1. Students lead the initiative.
2. BIPOC/Underrepresented groups are hired as higher-level administrators
3. Increase in BIPOC/Underrepresented faculty
4. Creation of committees assigned to specifically update and maintain DEI
5. Other- explain

Survey 2:

Have students answer within the context of what they have learned/experienced through ESM 410.

1. What does student success mean for you?
    a. As a student in the ESM department, how has the department helped you succeed?
    b. Have there been any barriers introduced that have hindered your own student success?

2. After creating this Action Plan and presenting it to the ESM Chair, do you feel as if your voice has been heard?
    a. If so, in what ways?
    b. If not, what would need to occur for you to feel as if you have been heard?

3. Most of the literature about empowering students and forming inclusive classrooms is written by faculty. In your opinion, what can students contribute to this conversation?

4. Was the work we did in this class burdensome to you in any way?
    a. If yes, and you feel comfortable sharing, what made it burdensome?
        i. And what might have helped to relieve the burden?

5. Has this class been a source of hope, empowerment, support, etc., to you in any way?
        i. If so, can you pinpoint an example of this?
        ii. If not, why not?

6. And lastly, what has made this class "worth it" to you? Why was it important to you to participate in the development of this Action Plan?

Questions for the ESM Department Chair:

1. As the department chair, why did you see ESM 410: Diversity, Equity, and Inclusion as a departmental need?

2. As the department chair, why did you decide to include the students as agents for diversity, equity, and inclusion change, instead of utilizing existing top-down mechanisms?

3. What are current top-down mechanisms used to discuss and implement diversity, equity, and inclusion into the department, and are they allowing you to meet your targeted goals?

Codebook

Archive description	
Official title	A Student-Led Assessment of Diversity, Equity, and Inclusion in the Environmental Science and Management Department at Portland State University
Project period	January 4, 2021 - June 10, 2021
Theme	Diversity, Equity, Inclusion, Antiracism, Decolonization, Pedagogy, Students, Environmental Science and Management, Curriculum, Higher Education
Collaborators	Aneesha Gharpurey (Student Investigator)
	Melissa Haeffner (PI)
Sources	Peterson, M. W., & Spencer, M. G. (1990). Understanding academic culture and climate. In W. G. Tierney (Ed.), Assessing academic climates and cultures. New directions for institutional research (No. 68, pp. 3–18). San Francisco: Jossey-Bass.
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Funding	N/A
IRB approval #	217152-18

Green Codes = Overarching codes produced from the literature

Blue Code = Subcodes produced from the literature

Red codes = Emergent themes from the data

Codes	**Definitions**
Campus Climate	Campus climate is determined by the interactions between groups and participants from various backgrounds and the social patterns that emerge from various beliefs, behaviors, and characteristics.
Self-belonging	Students' sense of being accepted, valued, included, and encouraged by others (teacher and peers) in the academic classroom setting and of feeling oneself be a vital part of the life and activity of the class. More than perceived liking or warmth, it also involves support and respect for personal autonomy and for the student as an individual.
Social Interactions	Social interactions highlight the peer-peer relationships that develop from engaging in similar extra-curricular activities, similar coursework, or campus employment and opportunities.
Student-Faculty Relationships	Students who were perceived to have a positive relationship with faculty members were hypothesized to affect their academic caring and performances. Student-Faculty relationships relate "to instructors'

	communicated caring about a students' learning, termed pedagogical caring (Wentzel, 1997), rather than interpersonal caring. Thus, one important contributor to college students' sense of university-level belonging may be their perceptions of pedagogical caring from the professors with whom they interact."
University Support Systems	"Offering an array of support services to meet the diverse needs of postsecondary learners assumes that these services improve success by providing students with compensatory resources and opportunities for engagement (Purnell & Blank, 2004)." Campus support sources include financial aid, health, disability, careers centers.
Recruitment	Recruitment entails attracting and admitting students and hiring faculty from diverse and underrepresented backgrounds. Recruitment also highlights the way an institution markets and presents itself and how they go about recruiting diverse peoples/.
Cluster hiring	Cluster hiring, a process in which multiple scholars are hired based on a common theme or shared research interests, is not new and is continually used throughout the nation as a way to heighten interdisciplinary synergy among hired faculty members.
student admissions	Properly understood, "diversity" is a concept that reflects institutional interests in an array of student backgrounds, characteristics, and interests—of which race and ethnicity may be two factors among many.
University Marketing	University marketing is defined by the different techniques and information a university will use to attract diverse groups of students and faculty.
Retention	Student retention is commonly thought of as a higher education institution's ability to keep a student from admission all the way to graduation (completion rate) and the proportion of student intake of each consecutive year (continuation rate).
Financial Support	Financial support in higher education includes providing students with financial support, support financial literacy,
Community Engagement and Partnerships	"... initiatives and processes through which the expertise of the institution in the areas of teaching and research are applied to address issues relevant to its community. Community engagement typically finds expression in a variety of forms, ranging from informal and relatively unstructured activities to formal and structured academic programmes addressed at particular community needs (for example, service-learning programmes). Some projects might be conducive towards the creation of a better environment for community engagement, and others might be directly related to teaching, learning and research."
Stakeholders	the people and organizations who affect or are affected by a decision; stakeholders can be directly or indirectly involved in an endeavor. Externally-driven initiatives are those led by individuals or institutional

	stakeholders (such as regional or national government, national or in-international non-governmental organizations or researchers) who are organizing local stakeholders.
Workforce Development	Diversification in higher education flows into the workforce. Those who have obtained degrees in a diverse environment provide valuable contributions to the workforce as they have developed problem-solving skills from collaboration with a broad range of students and perspectives. In turn, this aids in decreasing work environment discrimination and stereotyping.
Pedagogy	Pedagogy is a term that describes how instructors, teachers, and professors teach based on their beliefs, backgrounds, and experiences.
Levels of Understanding	The amount of knowledge a student has about antiracism and decolonization prior to engaging in discussion about DEI.
Current Events	In this context, current events are related to teaching course topics and content using a real-world context.
Accurate Context	Fostering an honest representation and timeline of colonization and Indigenous management practices.
Diversify Knowledge Systems	Incorporating TEK, IS, and other knowledge from many perspectives using a variety of tools and resources.
Classroom Environment	Fostering a safe and inclusive space where BIPOC can engage with fear of being tokenized or experiencing microaggressions.
Student Lived Experience	Utilizing students' relationship with natural resources to better engage in environmental management and science teachings.
Decentralization	A shift from a white-settler lends to a lens that encompasses many ways of knowing, management, and science.
Antiracist Pedagogy	" a paradigm located within Critical Theory utilized to explain and counteract the persistence and impact of racism using praxis as its focus to promote social justice for the creation of a democratic society in every aspect."
Decolonizing Pedagogy	Teaching from a non-white eurocentric perspective, where white values, knowledge systems, beliefs, and ideas are decentralized.
Co-Creating Curriculum	describe as co-creation of the curriculum (co-design of a program or course, usually before the program or course takes place) and co-creation in the curriculum (co-design of learning and teaching within a course or program, usually during the course or program).
Junk	
Emotional Unloading	Unconsciously ranting or going in-depth about unrelated or related topics.

Other	Codes that do not fit into the sections created above
Accountability	Delegating and assessing the responsibility of the department to foster an inclusive and equitable academic experience that supports diverse groups.
Continuous and Active Work	Recognizing that decolonization and antiracist work cannot be completed through one email, class, meeting, or term. The work is continuous and can be ever improved upon.