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Rural College Students' Eco-anxiety and Attitude toward Discussing Environmental Sustainability Topics Post-pandemic

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This mixed-methods study examines Southwestern U.S. college students' potential experiencing of eco-anxiety, application of green practices, and attitude toward discussing environmental sustainability issues in the classroom after the pandemic, with the population examined by sex, race, age, and income. Additionally, the study offers faculty recommendations for implementing a sustainability curriculum. Conducted in a rural, geographically marginalized area, the study implemented mixed-methods with survey and short-answer question instruments and applied an exploratory case-study design and a convergent parallel strategy assessing 188 women and 188 men participants, including racial minority and low socio-economic status (SES) students, with a median age of 26 years. The author formulated the survey by adapting questions from four scales about eco-anxiety, college students' potential experiencing of eco-anxiety during the pandemic, college students' sustainability consciousness level, and a university's sustainability rate: the Hogg Eco-Anxiety Scale, Pandemic-related Political Identities Scale, Sustainability Consciousness Questionnaire, and Sustainable University Scale. The author used independent samples t-tests to report potentially statistically significant difference amongst the student groups. Additionally, the author applied a grounded theory approach to code students' short-answer comments about their possible eco-anxiety, sustainable activities, and view of exploring green discourses in class. Of participants surveyed, women reported statistically significantly higher eco-anxiety levels than men connected to their anxiety about climate change and other environmental problems. Likewise, Native Americans reported statistically significantly higher eco-anxiety levels than Caucasians linked to their worry about environmental problems, with Asian/Pacific Islander, African-American, and Hispanic/Latino students also having greater eco-anxiety rates than Caucasians.

Keywords: eco-anxiety, sustainability, environmentalism, controversial topics, college students, rural students, racial minority students

INTRODUCTION

According to Tavolacci and Ladner (2024), many college students experience eco-anxiety or a fear of the world's pending environmental destruction, a psychological

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stressor that can act as an additional obstacle in their academic success even as they face other sources of stress producing burn out. Eco-anxiety is a recent phenomenon defined as having climate change anxiety, which includes suffering distress about global warming's advent in addition to the occurrence of other environmental disasters. A mental-health issue, eco-anxiety negatively impacts people's daily lives by causing them to feel cynical and emotionally exhausted not only about the present time but also about the Earth's looming degradation. Alternately and positively, experiencing eco-anxiety can influence students to adopt more environmentally friendly practices and to unite with others to act collectively. In Hickman and colleagues' (2021) study, the authors argue that college students' suffering of eco-anxiety is a justifiable reaction for them to climate change warranted by the degree of damage wrought by it and other natural disasters. Notably, students with eco-anxiety may feel that those in power, who possess the most ability to create green policies, have dismissed or ignored them. According to Larmann (2020), contemplating climate change can cause students to feel a sense of sadness as they face a negatively transformed world, with young people becoming anxious about their future and reenvisioning their lifestyles and plans because of mounting environmental conflicts, including those related to college, employment, travel, and family planning. Significantly, in Tavolacci and Ladner's (2024) study, almost 60% French students reported having moderate eco-anxiety, and over 31% suffered at a high level. Concerning those at greatest risk, women, young adults, and those with a low SES are more likely to experience eco-anxiety than their counterparts.

According to Cambridge International (2020), 39% of U.S. students view climate change as the world's largest dilemma and also a stressor for them. Sustainability issues represent complex, multi-faceted, and wicked problems with phenomena that cannot be separated into discrete strands, a context making it difficult for students to study environmental matters (Filho et al., 2018). However, most college students internationally, including in the U.S., wish to tackle green concepts, especially in their major courses, because of the subject's relevance to their lives, interests, and careers (Al-Balushi & Al-Aamri, 2014; Boca & Saraçlı, 2019; Hiser & Lynch, 2021; Ovais, 2023; Rosentrater & Burke, 2018). Indeed, according to Ezarik (2023), 45% of U.S. students seeking a higher education considered an institution's green policies and environmental output in deciding where to attend, with 85% reporting that their school's adherence to sustainability guidelines was at least somewhat important to them. Moreover, the students also researched their preferred institution's surrounding community in order to determine its environmental vision. Within the classroom itself, cross-disciplinarily, 46% of students in Ezarik's (2023) study reported that they had opted to take at least one sustainability-focused course while in college due to their interest in the topic. Similarly, in Cambridge's (2020) study, over 70% of U.S. students desired to attain a career where they could address global dilemmas, with over three-fourths claiming that they would consider a prospective employer's stance on world issues as significant in determining their potential employment there. According to the group, Unite Students (2021), climate change is likewise a top focus and stressor for British college students, with 61% wishing for additional classes featuring environmental content and 76% reporting that their discipline's involvement in green dialogues influenced their career choice.

Overall, the environment affects people's life parameters and health, spiritual, and moral aspects (Nazarenko & Kolesnik, 2018). Unfortunately, in Ovais' (2023) study of Indian college students, many felt that addressing sustainability problems in order to enact positive world change was beyond their control. Nevertheless, students who learn about green discourses will be more ready to face 21st century systems (Sumarmi et al., 2020) and tackle global conflicts (Aliman et al., 2019) than their peers. Academically, students adopting a concerned attitude about sustainability can apply critical, creative, and ethical thinking patterns to green challenges in order to find better solutions (Motallebzadeh et al., 2018), engage in multidisciplinary research, and participate in world conversations (Mulyono et al., 2023). With the potential for valuable curricular outcomes, Torres (2024) argues that faculty should commit to featuring green concepts in their assignments. According to Genovese (2022), all education should provide an environmental element within the effort to further human survival, including in preventing climate disasters and reducing pollution. Younger generations hold the key to the Earth's future, and it is up to universities to educate them to become deep thinkers, problem solvers, and change agents (Mullenbach & Green, 2018). Faculty can support students in mitigating their eco-anxiety by creating coursework that builds their sustainability knowledge and involves them in green initiatives as a counter measure to the latter's perceived helplessness (Rosentrater & Burke, 2018). Connected to the current study, the question arises as to what extent rural, Southwestern U.S. students also experience eco-anxiety and wish to discuss sustainability in their classes. Furthermore, the question remains as to faculty's best curricular options in designing a green-infused curriculum relevant to students' needs more widely.

Literature Review

College Students' Potential Sustainability Practices by Demographic Factor

As teachers address student requisites in constructing a knowledge and application of sustainability principles, it is important to consider some findings about both the U.S. and international college student population and their relationship to the environment more largely, with some groups experiencing higher eco-anxiety rates than others according to their 1) political stance, 2) sex, 3) race, 4) age, 5) income, and 6) residential location, factors the current study also considers in gauging students' eco-anxiety and proclivity for employing green practices. First, according to McCright and Dunlap's (2011) study of U.S. society, which also encompassed college students, politically liberal people valued learning about and enacting environmentally friendly practices more highly than did conservatives. Second, measuring the college population by sex, in Leal and colleagues' (2024) study, European and Turkish women were more likely to view environmental concerns with seriousness and to implement green living practices, such as eating less meat, than men. Following the lead of Leal and others' use of the *Hogg Eco-Anxiety Scale (HEAS)* (Hogg et al., 2021) examining participants' potential eco-anxiety factors, the current study implements the same scale. Proceeding, replicating Leal and colleagues' finding about women suffering greater eco-anxiety rates than their male peers, in the Conference Board's (2023) similar study, the women also reported being slightly more anxious about climate change than the men (73% versus 67%). Third, in categorizing the U.S. college student population racially,

Slotnick and others (2023) found that minorities experienced a higher rate of anxiety in contemplating climate change's effects and also implemented more environmentally friendly lifestyles than their Caucasian peers although many in both groups rated sustainability as important. Slotnick and colleagues used statistical analysis to identify differences in perceptions by student characteristics via *t*-tests, which was a quantitative method that the current study also employed. Fourth, measured by age, U.S. young people, including college students, were more likely than those from older generations to view the science related to climate change as reliable. Comparably, in aligning age with green concerns, Badruddin's (2024) study found that Indian university students were also affected by their year of college placement, suggesting that younger students can learn to apply green behaviors with continued academic exposure. Fifth, proceeding with the demographic factors, in the U.S., those with higher incomes believed that climate change was a danger to the Earth at greater rates than did those with lesser money. Pertaining to college students specifically, Al-Naqbi and Alshannag's (2018) study of United Arab Emirates students found that those with higher incomes were also more involved in green activities, even if additionally they had the larger capacity to act. Sixth, as a final population categorization by location size, according to Meyer (2014), those in U.S. cities reported caring more about sustainability than did rural inhabitants due to the former's increased worries about air pollution and need to use resources efficiently, such as by selecting public transportation over private vehicle ownership. Comparably, regarding location's impact on college students' background, in He and colleagues' (2011) study of Chinese students, urban residents also held a slightly greater awareness of environmental problems than did rural ones, placing both groups on a close playing field.

The Effect of Implementing Sustainability Curricula on Student Outcomes

According to Jeong and others (2015), many U.S. college students purported that when teachers integrated sustainability ideas into both their major coursework and other classes, students were influenced positively to adjust their behavior by growing incrementally more environmentally friendly, as well as becoming more involved in university and community green initiatives. Faculty employing sustainability dialogues in their classes can benefit all types of students, including women, racial minorities, low SES students, and nontraditional learners. In the author's own study, the related questions concerning students' attitude toward studying sustainability and the possible benefits they gained from interacting with green discourses were also pertinent. In one instance from the literature of a curriculum initiative supporting U.S. college students' exploration of sustainability practices in their general classes, Hembrough (2019) found that teachers who raised green topics in professional writing courses reported that this pedagogical approach reinforced their students' critical thinking, research, digital writing, and collaborative skills, as well as supporting their personal and career-related environmental goals. Likewise, in Al-Balushi and Al-Aamri's (2014) study of Omani secondary students, those participating in class sustainability projects increased their degree of environmental knowledge, with the result being statistically significant compared to the control group. In Nazarenko and Kolesnik's (2018) comparable study exemplifying an environmental curriculum for Russian college students majoring in science, nature, and resource management, the faculty also helped students contemplate

the actions they could perform to become more green. Alternatively, Hekler and colleagues' (2010) study of a sustainability curriculum promoting U.S. college students' adoption of greater sustainability behaviors outside of the classroom determined that students who studied green discourses also decreased their carbon footprint and lowered the amount of meat products and sugar-sweetened beverages they consumed. Finally, in Kusmulyono and colleagues' (2023) study, faculty who encouraged students to become involved in local environmental practices indicated that Indonesian college students enrolled in social entrepreneurship courses were able to participate in practice-based, outreach activities advancing their rural area businesses.

According to Al-Balushi and Al-Aamri's (2014), as a guiding force, faculty can connect their generation and that of their students in order to navigate dialogues about sustainability's controversial aspects and promote students' possibility of living more sustainably by identifying their behaviors' effects on the natural world. Nevertheless, it is important to note that for teachers internationally, conflicts can arise in addressing green discourses, with the author's own study also exploring its faculty's attitude toward establishing an environmental pedagogical focus. As obstacles, Hiser and Lynch (2021) argue that faculty may find green concepts to be irrelevant to their coursework, lack the long-term relationships with those involved in sustainability work necessary to secure their continued guidance, and be restricted from designing their own curricula. Meanwhile, teachers who attempt to present sustainability ideas to their students but do so poorly may not lead them to make the academic and personal gains intended but instead could make them to feel overwrought, depressed, and hopeless about solving environmental problems. Besides these dilemmas, according to Abo-Khalil (2024) and Parry and Metzger (2023), faculty may face roadblocks in instating green debates and assignments in their classroom, including lacking professional training opportunities to learn about the environment, lacking the time or resources required to prepare a sustainability-based curricula, experiencing a high degree of complexity in teaching multilayered green concepts, and facing cultural differences from students in navigating green topics. As a final barrier to an environmental curriculum, some teachers designing such coursework fail to receive any recognition for it at all (Filho et al., 2020) even as their society also disvalues green worldviews (Abo-Khalil, 2024; Parry & Metzger, 2023). Despite these potential obstructions, faculty who teach environmentalism can play an invaluable role in their students' lives by fostering green education initiatives and encouraging a shift from an individualistic consumer mindset to a more global, sustainable one (Bergman, 2016).

Despite the existing general literature about both the U.S. population's and college students' experiencing of eco-anxiety and their range of knowledge and view of sustainability practices, according to Ovais (2023), research remains lacking in higher education concerning students' demographic factors linked to eco-anxiety, as well as their knowledge of environmental ethics and application of green practices, especially for women, racial minorities, and low SES students. Indeed, Badruddin (2024) notes that green research at the university level is still in its beginning stages. Likewise, some research has been conducted about U.S. urban populations' employment of sustainable living activities (López & Palacios, 2024), but less is known about rural areas, especially for students. Of interest for the current study are these research questions:

What differences amongst Southwestern U.S. student groups exist in their experiencing of eco-anxiety by sex, race, age, and income, and what is their attitude toward learning about environmentalism in their classes? Additionally, what strategies can faculty employ in creating a curriculum supporting a knowledge of and engagement in sustainable processes?

METHOD

Research Methods

Having a full comprehension of the literature and attending to the study's goals, the author endeavored to investigate rural, Southwestern students' potential eco-anxiety factors and green-related ideas and practices associated with their sex, race, age, and income in determining how these identifiers impacted students' attitude toward discussing environmental topics in class. The author constructed the study upon prior regional research contrasting the stressors of Native American versus Caucasian college students (Hembrough & Cavanagh, 2022), as well as those of men versus women (Hembrough & Mixon, 2024), including eco-anxiety as a stressor. Having Institutional Review Board approval, the author implemented an exploratory case study utilizing a mixed-methods design and a convergent-parallel strategy to gather and analyze data (Creswell & Creswell, 2017). Through an exploratory case study, researchers can understand a phenomenon in fuller depth (Engel & Schutt, 2014), and as college students' potential experiencing of eco-anxiety and interest in sustainability were present-day phenomena, an exploratory case study method was appropriate. Comparatively, Taboada-González and Aguilar-Virgen's (2024) study was also exploratory, representing the first analysis of a Mexican sustainability curriculum. Proceeding, the author applied a mixed-methods approach in order to benefit from both quantitative and qualitative methods in investigating the study findings and analyzing them in depth (Creswell & Creswell, 2017). López and Palacios' (2024) study, cited in the literature, also utilized mixed methods with the objective of triangulating the results to avoid potential threats to internal validity. Proceeding, the author enacted a convergent-parallel design to collect and evaluate the data simultaneously as an approach to generating conception points that arose and crystalized together.

Adopting a mixed-methods approach, the author formulated a survey with quantitative (numerical) and qualitative data (short-answer comments). The Likert-scale questions were given on a continuum from 1 "strongly disagree" to 5 "strongly agree," and students completed corresponding short-answer questions offering further feedback. The author utilized SPSS 28 software to evaluate group differences through independent samples *t*-tests. Additionally, the author coded the short-answer comments via a grounded approach by creating analytical codes and categories from the data (Creswell & Creswell, 2017) via NVivo 14's qualitative software. The coded, short-answer comments dealt with students' perceived reason(s) for experiencing eco-anxiety based upon personal, familial, and communal concerns, as well as any benefits that they gained in studying sustainability concepts in the college classroom. According to the codes, students had 1) *a view that environmental topics were linked to important current events to cover*, 2) *a belief that green ideas were relevant to their major*, 3) *a*

continuing interest in sustainability questions, 4) *a desire to share how environmental issues affected them and/or their family*, and 5) *a longing to contemplate their views and to participate in a forum where they could express their opinions in a moderated setting*. Additionally, Al-Naqbi and Alshannag used a descriptive analysis to discern patterns in data in order to answer questions about who, what, where, when, and to what extent a phenomenon occurred, and the current study also relied on this method to assist in producing codes about students' thoughts and actions. For the data collection process, participants created an online, anonymous Sona Systems account to participate voluntarily in the study and signed a consent form indicating ethical clearance and protocol. Participants were awarded compensatory points (no more than 5% of the overall points possible). The author validated the survey with 100 respondents before its field application. To provide study credibility and reliability, the author solicited an adequate participant number (N = 376) using G-Power 3.1.9.7 software analysis (https://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower). Based upon G-Power calculations, the author needed 176 participants per group (352 total) for a 99% rate of being likely to achieve statistical power. The sample of 188 per group (376 participants total) was above this threshold. Researchers use G-Power to determine a priori sample size adequacy and find statistical power, known as the ability to determine a statistically significant difference if existing.

Materials

The author adapted questions from four scales in formulating a survey and scale:

Hogg Eco-Anxiety Scale (HEAS) (Hogg et al., 2021)

First, to identify potential stress that college students might experience, including an anxiety about sustainability-linked problems, the author used the HEAS as a model measuring people's climate anxiety via their affective and behavioral symptoms with their having a continued mental focus on environmental issues and an anxiety about their own personal impact upon the world. The author adapted questions using seven items about whether and to what degree students were anxious generally and were "bothered" separately by "thinking about climate change and other global environmental conditions" and how this potential eco-anxiety affected them mentally and physically.

Pandemic-related Political Identities Scale (PPIS) (Hembrough & Mixon, 2024)

Second, the author adapted 23 items from the PPIS, which focuses on college students' attitude toward discussing their identity, life stressors, and potential willingness to examine their knowledge of sustainability and application of green practices while in a pandemic-affected classroom, as well as whether climate change and other natural disasters posed as a great stressor for them at this time.

Sustainability Consciousness Questionnaire (SCQ) (Gericke et al., 2019)

Third, the author modeled 15 items from the SCQ, based on the UNESCO framework, measuring individuals' environmental, social, and economic knowledge, attitudes, and behaviors. Researchers such as Leal and others (2024) validated this scale with

European and Turkish college students to investigate their sustainability knowledge and practices based upon age, gender, and major. Questions from the SCQ were concerned with "sustainability attitudes," including 1) "that everyone ought to be given the opportunity to acquire the knowledge, values and skills that are necessary to live sustainably"; 2) "that we who are living now should make sure that people in the future enjoy the same quality of life as we do today"; and 3) "that it is important to take measures against problems which have to do with climate change."

Sustainable University Scale (SUS) (Kobylińska et al., 2024)

Fourth, the author adapted SUS 20 items concentrating on a given university's potential for sustainability education and awareness, research and innovation, and governance and measurement. The author modeled questions from the scale concerning students' perception that their college 1) "offers a lot of . . . sustainability classes," 2) employs faculty who provide "information about sustainability in normal courses," 3) "promote[s] critical thinking about sustainability," 4) "organizes educational events to inform students and the academic community about the importance of sustainable development," 5) makes "students are aware of the sustainability strategy of the university," 6) includes students in "sustainability research," and 7) "engages in community outreach programs that benefit the local environment."

Sustainability Ideas Post-pandemic Scale (SIPS)

The author's survey implemented the author's scale (SIPS) and consisted of Likert-scale and short-answer items gauging college students' 1) potential general anxiety and eco-anxiety (HEAS) and 2) whether, if present, their eco-anxiety level had worsened since the COVID-19 pandemic (PPIS); 3) sustainability knowledge (SCQ); 4) green behavior, including conservation efforts of electricity, water, and waste management (SCQ); 5) opinion of the possible influence on them of green-focused coursework (SUS); and 6) demographics.

Sample Demographics

For the study, 188 women and 188 men participated. Women between the ages of 18 to 65 were included, with the median age of 26, and the men were aged similarly. Women majored in fields such as business, accounting, education, English, psychology, and counseling, with 82% (n = 154) enrolled full-time. The women were employed in settings such as education, marketing, retail, and hospitality. The men had similar demographics to the women and majored in fields such as psychology, aviation, business, and criminal justice, with 88% (n = 166) enrolled full-time. Men were employed in occupations such as ranching, retail, and law enforcement. The study included undergraduates from freshmen to seniors. See Table 1 for demographics, including a view of students' rural residential status in an impoverished region, number of children supporting, and marital status as potential factors contributing to their overall financial status.

Table 1
Men and women students' demographic characteristics

	% *n*	% *n*	% *n*	% *n*	% *n*
Race/Ethnicity					
Women	Caucasian 54(101)	Native American 31(59)	African-American 4(7)	Asian/Pacific Islander 3(5)	Hispanic/ Latino 9(16)
Men	Caucasian 57(108)	Native American 18(34)	African American 11(21)	Asian/Pacific Islander 2(3)	Hispanic/ Latino 12(22)
Age					
Women	17-19 16(31)	20-29 62(117)	30-39 13(25)	40-49 4(8)	50+ 4(7)
Men	17-19 16(31)	20-29 62(117)	30-39 14(26)	40-49 4(7)	50+ 4(7)
Marital status					
Women	Married 31(59)	Cohabitating 12(22)	Separate/Divorced 3(5)	Single 54(102)	
Men	Married 19(36)	Cohabitating 7(14)	Separate/Divorced 2(3)	Single 71(134)	
Financially responsible for children under 18					
Women	None 66(124)	1 child 11(21)	2 children 13(25)	3 children 6(11)	4+ children 4(7)
Men	None 81(152)	1 child 7(14)	2 children 7(13)	3 children 3(5)	4+ children 2(3)
Annual house-hold income					
Women	$0-15,000 9(17)	$16,000-30,000 13(25)	$31,000-45,000 12(22)	$46,000-60,000 20(37)	$61,000-76,000+ 45(84)
Men	$0-15,000 12(22)	$16,000-30,000 16(30)	$31,000-45,000 14(26)	$46,000-60,000 11(21)	$61,000-76,000+ 46(86)
Town/city size					
	Less than 5,000 31(116)	5,000-10,000 15(58)	11,000-20,000 26(98)	30,000-50,000 15(57)	60,000-100.000 12(45)

Note. Women, $n = 188$; Men, $n = 188$.

Research Site

The author conducted the study at a rural, public university catering to the state's lowest income areas where only over a quarter of students ever graduate (Deidentified University Factbook, 2023), and women, racial minority, and low SES students represent peripheralized populations that experience ongoing persistence issues (see Postsecondary National Policy Institute, 2023a; 2023b). In terms of positionality, the author taught writing courses with a discussion element and a green topical focus during the study's timeline. Concerning sustainability practices, the state does not possess strong environmental policies even if it has earned higher ratings for cleaner water, air, and land usage than elsewhere nationally due to its mostly rural landscape (Oklahoma Policy Institute, 2024). Meanwhile, in the area, many Native tribes are working to create higher quality environmental standards for implementation (Brown, 2023).

FINDINGS

As findings, some Southwestern U.S. students reported experiencing eco-anxiety or a concern about the world's environmental degradation, with differences existing amongst the groups demographically. Likewise, many students possessed a positive attitude toward learning about sustainability in their classes as beneficially affecting their lives, careers, and communities and offsetting their eco-anxiety. These findings contribute to faculty rationales for teaching sustainability, as well as paths forward in doing so to be outlined in the Discussion.

Students were measured by their 1) sex, 2) race, 3) age, and 4) income as factors linked to their potential experiencing of eco-anxiety. According to the first factor of sex, equal groups of women (n = 188) and men (n = 188) were allotted to be measured. Of women, 52% (n = 98) suffered eco-anxiety compared to a quarter (25%, n = 47) of men. The author ran an independent samples t-test to evaluate this sex difference, resulting in the women reporting a statistically significantly higher eco-anxiety rate than the men, $t(374) = 4.54$, $p < .001$, with a 95% confidence interval ranging from .48 to 1.21. See table 2.

Table 2
Independent samples *T*-test for statistically significant difference for eco-anxiety: Women and men

Sex	Mean	Standard Deviation
Women	3.02	1.81
Men	2.17	1.71

Note. Women, n = 188; Men, n = 188.

Concerning students' second demographic factor of race, the author randomly selected an equal number of students per race for comparison and removed the extra participants within these categories: Asian/Pacific Islander, African-American, and Hispanic/Latino (n = 76); Native American (n = 76); and Caucasian (n = 76). Within these groupings, as the largest population, half (50%, n = 38) of the Native Americans experienced eco-anxiety. In following, 32% (n = 24) of Asian/Pacific Islander, African-American, and Hispanic/Latino students suffered from eco-anxiety. Finally, 22% (n = 17) of Caucasians were anxious about climate problems. Altogether, the difference in eco-anxiety levels between the Natives and Caucasians produced the greatest divide, and the author ran an independent samples t-test comparing the eco-anxiety levels between these two groups. Resultingly, Native students reported statistically significantly higher eco-anxiety rates, $t(150) = 7.71$, $p < .001$, with 95% confidence intervals ranging from 1.22 to 2.05. Thus, the Natives were more than twice as concerned about sustainability conversations than their Caucasian peers. See Table 3.

Table 3
Independent samples *T*-test for statistically significant difference for eco-anxiety: Natives and caucasians

Race	Mean	Standard Deviation
Native Americans	3.45	1.61
Caucasians	1.81	1.62

Note. Native Americans, n = 76; Caucasians, n = 76.

Third, in terms of age as an eco-anxiety factor, the author also randomly chose an equal number of students for comparison and separated them into three groups, with the extra ones omitted: 1) 18 to 19 years (n = 62), 2) 20 to 29 years (n = 62), and 3) 30 plus (n = 62). As a finding, those aged 30 and older experienced the most eco-anxiety at 57% (n = 35). Next, 40% (n = 25) of those between 20 to 29 years suffered from eco-anxiety. Lastly, 34% (n = 21) of those aged 18 and 19 were anxious about environmental problems. Per these results, by age, the middle group's (30 plus years) eco-anxiety level was almost a quarter higher than that of the youngest students.

Fourth, by income level, students' eco-anxiety rate was also compared. Using the process of random selection, students were separated into three groups, with the extra ones removed to ensure that the household income categories were equal in size: 1) $0-$30,000 (n = 39), 2) $31,000-$46,000 (n = 39), and 3) $46,000 plus ($n$ = 39). As a finding, those with incomes of $46,000 plus experienced the greatest eco-anxiety at 56% (n = 22), followed by students with incomes of $0-$30,000 at 49% (n = 19). Lastly, 33% (n = 13) of students with incomes between $31,000-$45,000 reported eco-anxiety. Resultingly, amongst these groups, those with the largest income were 23% more likely to suffer eco-anxiety than those with a mid-range income of $31,000-$45,000. Because all students were rurally located, this descriptor also contributed to some students' low SES as the region possessed limited employment opportunities and access to subsidized social and economic programs.

Proceeding, in terms of academics and students' attitude toward broaching sustainability issues in one or more of their courses that semester, 181 participants consisting of 86 women, including just under half (47%, n = 41) of racial minority women, and 45% (n = 45) of Caucasians, and 95 men responded to additional survey questions about this curricular option. In total, almost a fifth to nearly a half of the students altogether, dependent upon the demographic factor, wanted to tackle green ideas in their courses for various reasons, with the women reporting higher numbers than men. The students presented five rationales for their motivation to converse and write about the environment:

First, 47% (n = 40) of women, including 49% (n = 20) of racial minorities and 44% (n = 20) of Caucasians, and 29% (n = 27) of men viewed environmentalism as connected to important current events necessary to cover in the classroom, with 33% (n = 59) of the remaining students indicating neutrality about this curricular possibility. Likewise, the survey's coded, short-answer comments shone light upon the students' perceived reason(s) for experiencing eco-anxiety based on their personal, familial, and communal backgrounds, and many also expressed anxiety about current events and the world's natural conditions because they believed that A) *climate change was affecting their children and future generations*, B) *climate change was destroying the land as a sacred place for Native Americans*, C) *not enough people seemed to care about the surrounding environmental degradation*, D) *most people seemed uninformed of climate change's dangers*, and E) *it was too late to stop the damage done by climate change but that greater harm might be avoided by taking steps toward the Earth's preservation*.

Second, 33% (n = 28) of women, including 37% (n = 15) of racial minorities and 29% (n = 13) of Caucasians, and 16% of men (n = 15) surveyed believed similarly that green

conversations were relevant to their major and career, with 33% (n = 60) of the remaining students reporting being neutral.

Third, 22% (n = 19) of women, including 37% (n = 15) of racial minorities and 29% (n = 13) of Caucasians, and 26% (n = 25) of men described themselves as interested in engaging with sustainability questions as a stressful but necessary topic to tackle, with 27% (n = 48) of the additional students being neutral.

Fourth, some students wanted to discuss how environmental issues had affected them and/or their family in order to evaluate and reflect upon their situation, with 22% (n = 19) of women, including 22% (n = 9) of racial minorities and the rest Caucasian, and 16% (n = 15) of men agreeing with this statement, and 45% (n = 82) of the other students being ambivalent about their position.

Fifth, 17% of women (n = 15), including 20% (n = 8) of racial minorities and 16% (n = 7) of Caucasians, and 17% of men (n = 16) wished to learn more about and debate green matters in order to think more critically about their beliefs and to participate in a forum where they could express their opinions in a moderated setting. Furthermore, the students also believed that their instructors and peers would appreciate hearing their opinion. Alternately, 45% (n = 82) of the remaining students were unsure of this option.

Summarily, many students surveyed wished to cover sustainability problems in their classes, but the women had a mostly greater desire to do so than the men, with there being up to a 20 percentage point difference between the sexes across the questions. According to the students, in response, many of their teachers had offered them an opportunity to interact with green topics that semester, to the students' satisfaction. Significantly, the students reported that just over 40% of their faculty had covered environmental discourses in their classrooms in some manner, including by introducing discussions or writings. Additionally, according to the coded themes produced from the short-answer comments, students studying environmentalism believed also that they had increased their knowledge of green discourses and benefitted from the following academic outcomes: the ability to 1) think critically about current events; 2) reflect upon how their lives, communities, and future careers were impacted by green concerns; 3) conduct research about multi-dimensional global problems; 4) participate in university sustainability initiatives and community-based learning activities; and 5) locate like-minded groups and organizations to join for support.

DISCUSSION

The study produced findings regarding participants' eco-anxiety levels linked to their sex, race, age, and income factors that can be discussed, including ones valuable for understanding rural and low SES students' relationship to environmental matters. Additionally, the study found that many students held a positive attitude about learning about green dialogues in their classes as positively affecting their lives, careers, and communities, with this outcome contributing to faculty rationales for teaching sustainability discourses.

According to sex, over half of the women (52%, n = 98) and a quarter of men (n = 47) reported eco-anxiety, with there being a quarter more women than men worried about the Earth. Likewise, the Conference Board (2023) also discovered that U.S. women

were slightly more anxious about climate change's negative effect than men (73% versus 67%). Both the current study and Conference Board offer similar outcomes concerning sex as contributing factor toward eco-anxiety, but the current study shows a larger spread between the sexes of 27 percentage points versus the Conference's six points. This difference in spread probably occurred because the current study was located in a politically conservative area and not country-wide, with liberal people holistically being more environmentally friendly. Furthermore, the current study's finding mirrors that of Leal and colleagues (2024), where European and Turkish women were more likely to take environmental concerns seriously and to pursue green living practices than their male peers.

Continuing with the factor of racial impact on eco-anxiety, more minority students than Caucasians proved anxious about the planet's degraded status. Specifically, half (50%, n = 38) of Native Americans and almost a third of (32%, n = 24) of Asian/Pacific Islander, African-American, and Hispanic/Latino students were anxious about environmental destruction. Contrastingly, only about a fifth (22%, n = 17) of Caucasians were worried about it. In examining this race-related finding, the author posits that more Natives than Caucasians probably were concerned with green endeavors due to the former's greater cultural focus on nature's preservation. In concert with the current study's racial finding, Brown (2023) highlights Native American tribes' work to formulate better area sustainability policies. Similarly in the literature measuring racial minorities' level of environmental concern, U.S. racial minorities in McCright and Dunlap's (2011) study proved also more anxious about climate change than Caucasians.

Proceeding with the current study, by age as a parameter, participants aged 30 plus reported suffering the most eco-anxiety of all groups at 57% (n = 35). In turn, the middle-aged group's eco-anxiety rate fits somewhat with that of McCright and Dunlap's study where younger people were also more likely than older generations to uphold the scientific data related to climate change. Likewise, the current study highlights the growing number of students who have grown interested in green discourses, probably because of society's greater recent focus.

Next, by income level, participants with higher incomes were the most eco-anxious, with 56% (n = 22) of those with incomes of $46,000 plus falling into this category. This income-based finding connects with McCright and Dunlap's study concerning income as an indicator of people's level of worry about sustainability.

Finally, regarding location, in Meyer's (2014) U.S. study, urban residents showed greater care about green initiatives than did rural ones. However, Meyer points out that some rural residents feel close to nature and agriculture activities due to their background, a factor that foreseeably also influenced the current study's rural students to suffer higher eco-anxiety rates than otherwise.

Aligned with these findings demographically, at the study's university, almost a fifth to nearly half of students, dependent upon factor, wanted the opportunity to talk or write about green concerns in their classes, including those affecting them personally, communally, and careerwise. This outcome regarding some students' desire for launching sustainability conversations matches studies by both Hiser and Lynch (2021)

and Boca and Saraçlı (2019) where many U.S. college students also wished to learn about green ideas, including those related to their major, because of their relevance to the students' backgrounds, interests, and employment. In Ezarik's (2023) study, at U.S. universities, 46% of the students reported that they had enrolled in at least one sustainability-oriented course because of their interest in the subject matter. In the current study, students also favored environmental conversations for five reasons: 1) They viewed green topics as linked to critical current events to cover, 2) believed green discourses were relevant to their major, 3) remained interested in tackling sustainability, 4) wished to discuss how environmental problems had influenced them and/or their family and to ponder this setting, and 5) longed to think critically about their own views on the matter and to participate in a forum where students could exchange their ideas in a moderated setting.

Relatedly, the survey's coded, short-answer comments provided information about students' eco-anxiety struggles based on their personal, familial, and communal backgrounds, with many expressing a sense of anxiety related to climate change's effects on current events, including natural disasters. Specifically, students held that A) *climate change was affecting their children and future generations*, B) *climate change was destroying the land as a sacred place for Native Americans*, C) *not enough people seemed to care about environmental degradation*, D) *most people seemed uninformed of climate change's dangers*, and E) *it was too late to stop the damage done by climate change but that greater harm might be avoided by taking steps toward the Earth's preservation*. These themes not only reflected the greater literature about students' rationales for suffering eco-anxiety (see Larmann, 2020) but are also expressed in the current study through student comments. Articulating an interest in green subjects, one Native American woman offered, "I always think about conserving resources for coming generations. Whether or not there is a pandemic or other current emergency isn't a factor for me." Similarly, a Native man stated, "The environment's health has been at the forefront of my thought process. Climate change is damaging Native American land sacred to us." These comments align with Cambridge's (2020) study, where over 70% of U.S. students desired a career where they could address environmental problems. In the current study, many students believed they could provoke positive environmental change, at least locally, with this finding being similar to that of Ezarik (2023) where students were also worried about their community's scant regard for green ideas and lack of information. For the current study, one Caucasian man argued, "I can try to make a difference even if no one else cares about climate change."

Significantly, in the current study, many students desired for their teachers to introduce green conversations and responded positively when they did so, reporting their increased environmental knowledge and opportunities to participate in green initiatives, contrasted with their sense of eco-anxiety. This finding about students' wish for faculty to implement greater environmental curricula supports Rosentrater and Burke's (2018) statement that many colleges are now providing classes about green concepts because of a globally changing landscape increasingly cognizant of such concerns. In college, teachers should present students with choices in completing their assignments, including offering them a range of topics, including environmental ones, so they can achieve the highest learning outcomes possible (see El Firdoussi et al., 2020), including

becoming active learners, conscientious in completing assignments, and willing to debate controversial material (Wilkerson, 2017). For the current study, according to students, faculty who gave them the prerogative to tackle green discourses also supported them in 1) gaining information about sustainability dialogues and initiatives (Al-Balushi & Al-Aamri, 2014; Nazarenko & Kolesnik, 2018), 2) researching and discussing their personal and communal green concerns, and 3) gaining an understanding of others' views (see Hembrough, 2019; Motallebzadeh et al., 2018). Matching the literature, students from the current study participating in green conversations also reported feeling a greater readiness to face 21st century systems (see Sumarmi et al., 2020), solve important problems (see Aliman et al., 2019; Motallebzadeh et al., 2018), and consider ethical questions related to the environment (see Mulyono et al., 2023).

In the current study, students with eco-anxiety not only desired to introduce greater sustainability dialogues into their classes and on campus but also pointed to the need for their locale's larger participation and fuller understanding of how environmental concerns could affect the future. According to Ezarik (2023), 30% of U.S. students believed that their university's surrounding area held little regard for green ideals. Likewise, many current study participants reinforced this dilemma through their coded, short-answer comments giving reasons why they desired to tackle green concepts, including that *not enough people seemed to care about environmental degradation*. Linked to this theme, one African-American woman commented that she felt that many of her student peers remained "willfully ignorant" of green issues, regardless of how they might be tied with their other stressors and circumstances. Along the same lines, a Caucasian man issued this warning, "Worldwide decreases may actually be a proving ground against the people opposed to believing in global warming." Continuing in this vein, other students posed similar worries about how a lack of environmental initiatives would harm the future Earth. A Caucasian man reminiscing about the COVID-19 pandemic's impact, expressed, "The world did not seem that it could handle the devastation of the pandemic on the environment. I can only imagine if something more deadly than COVID-19 strikes. There would likely be nothing left." Such student comments align with Nazarenko and Kolesnik's (2018) study documenting that the environment affects people's lives in every way, including their health, spiritual, and moral elements. Moreover, the current students' comments harken back to Larmann's (2020) study where the students experienced despair in their facing a negatively altered world, with the young generation being especially anxious about its future.

Unfortunately, the larger world tends to ignore sustainability conversations (Abo-Khalil, 2024; Parry & Metzger, 2023), and in the current study, the students also reported that more than half of their instructors had not broached environmental topics that semester despite the literature's observed benefits. As discussed previously, teachers can face numerous obstacles in integrating green discourses into their curricula, including the need for teacher training, time, and resources. However, faculty everywhere can introduce green discussions with their students in various ways, regardless of their subject matter. Good options include problem-based, inquiry-based, experiential, project-based, and community-based learning strategies (see Gamage, Ekanayake, & Dehideniya, 2022) as depicted below. Indeed, Lozano and others (2023)

find that experiential research, project-based learning, and community-based learning produce the highest impact on students' knowledge of environmental concerns and participation in sustainability acts of all pedagogical methodologies.

1. Through problem-based learning, teachers can implement real-world case studies exploring environmental challenges and solutions from varied industries in order to generate valuable conversations. For instance, business teachers can examine companies applying green measures to their business models, and political science faculty might address policies that address climate change. Additionally, with problem-based learning, teachers can invite environmental experts or those working in sustainable industries to give lectures to help students to gain insights into how diverse sectors employ green policies.

2. In inquiry-based learning, teachers can support students by creating debate opportunities and helping them investigate their own lives. Through dialogues, students can approach complex sustainability issues, think critically, and view environmentalism from multiple perspectives. Questions of interest might include these: "What does a sustainable future look like to you?" and "How can people balance environmental, economic, and community factors in building green systems?" This approach to learning supports students in thinking beyond sustainability's scientific aspects and considering its wider contexts. Students can also participate in inquiry-based learning by connecting green topics to their current and future life choices. For instance, students can select a city where they might want to move and assess the environmental risks of residing there, as well as the location's level of preparedness.

3. To engage in experiential learning, students can take field trips and nature walks to immerse themselves in new and organic settings.

4. With project-based learning, students can participate in active learning projects exploring sustainability on campus or in their locale. Examples include developing green initiatives, conducting waste audits, and assessing energy consumption. Through such projects, students gain hands-on experience reinforcing their theoretical knowledge and demonstrating how they can make a tangible impact.

5. Faculty may also wish to integrate environmentally focused, community-based learning projects into their curriculum, such as by assisting local environmental groups, engaging in tree-planting initiatives, or promoting sustainable food practices. Community-based learning supports local engagement and points students to the practical impact of going green.

6. With classroom technology, students can investigate sustainability ideas. For example, they can use mapping tools to track carbon footprints, deforestation, and resource use or view databases with environmental data. Such sources assist students in seeing green issues as palpable and linking the local with the global.

7. Finally, faculty can teach by example by adopting green practices in their course design, including minimizing paper use by requiring digital submissions, conducting virtual meetings, and selecting sustainability-focused course materials. Teachers modeling environmental practices motivate students to adopt similar ones.

Separately, students can also act to learn more about the environment and participate in green efforts. Academically, students can enroll in open access courses to increase their green knowledge (Moreno Pires et al., 2022); select a university supporting green living; petition faculty for sustainability-linked courses; get involved in research projects related to climate change, environmental policy, eco-agriculture, and green engineering; participate in environmental initiatives, such as energy saving, recycling, composting, working in a campus garden, or joining in a campus clean-up; create an green awareness campaign; start a student environmental club; and support sustainable transportation initiatives (e.g., biking, carpooling, public transit use). In the community, students can participate by interning or volunteering with environmentally focused nonprofits and government organizations or join student networks, such as the United Nations Sustainable Development Solutions Network Youth, Greenpeace International Youth Engagement, and Global Student Forum: Climate and Sustainability.

LIMITATIONS AND CONCLUSION

As findings important for understanding students' potential eco-anxiety and relationship to environmental matters, in the rural Southwest region, women, racial minority-students, middle-aged and older students, and higher income students all reported experiencing greater eco-anxiety levels post-pandemic and had a wider participation level in sustainability practices than their peers. Moreover, almost a fifth to almost half of students, dependent upon the factor, wanted to tackle green ideas in the classroom for these reasons in combatting their sense of eco-anxiety and improving student well-being: 1) a view that environmental topics were linked to important current events to cover, 2) a belief that green ideas were relevant to their major, 3) a continuing interest in sustainability questions, 4) a desire to share how environmental issues affected them and/or their family, and 5) a longing to contemplate their views and to participate in a forum where they could express their opinions in a moderated setting.

Study limitations and future directions can also be addressed. As the first limitation, the author did not elect to survey those who had not attended college in order to examine their potential environmental ideas and practices as a group contrasted with the college students due to the difficulty of locating such a former population willing to participate. However, as a future direction, researchers could compare college students with nonstudents in terms of their eco-anxiety and sustainability attitudes and behaviors. As the second limitation, the author asked participants about their engagement in water, energy, and wildlife conservation post-pandemic but did not query them further about the kinds of community initiatives they hoped to see enacted in the future, yet researchers could also investigate students' environmental goals region-wide.

According to Hickman and colleagues (2021), international college students' experiencing of eco-anxiety will continue to rise post-pandemic foreseeably because some countries have failed to emphasize sustainability-linked changes, while others have fallen behind in their projected goals. However, the current study's findings point to the value for teachers of identifying ways to integrate green discourses into their curriculum to benefit their students personally, communally, and career-wise, including in alleviating their eco-anxiety and supporting their well-being. Overall, faculty in all fields must teach students to demonstrate a concern for the environment, not just a

knowledge about nature and how to protect it (Nizaar et al., 2020). Teaching students about sustainability and supporting them in assuming green convictions and a sense of personal responsibility toward the Earth represent long-term and complicated endeavors for educators. Indeed, teachers must continue to investigate instructional methods that best promote students' comprehension of green dialogues, as well as a rationale for their involvement in them, even as the faculty may also face restrictions in their knowledge and on their time and resources. Holistically, college students are more willing than adults-at-large to look past their personal ideologies in order to learn about climate change and make the necessary modifications (Nazarenko & Kolesnik, 2018). Indeed, Ovais (2023) deemed students' attitudes about sustainability to be even more important than the amount of information they knew about it in determining their enaction of green behaviors.

In the current study, many students desired for their teachers to implement green discussions and writing assignments cross-disciplinarily, and they could also seek other options available to them to participate in environmentalism both at the college level and locally. Likewise, faculty themselves often have some latitude in designing their curricula to include sustainability components based upon their objectives and political and institutional contexts. In the larger picture, many teachers value introducing green conversations in order to accomplish the following curricular outcomes: 1) supporting students' dialogues as exchanges examining their backgrounds and goals, including as a way to mitigate their eco-anxiety; 2) discussing controversial and political topics as items of current interest; 3) creating class camaraderie based on students' shared ideals of building a more sustainable world; and 4) emphasizing campus and community support services linked to green measures. Significantly, the author extends the call to faculty to support students, including women, racial minorities, low SES, nontraditional, and rural residents, in creating sustainable lifestyles and working together toward a more viable future.

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