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Exploring the Impact of School Climate and Environmental Awareness on Cultural Competence

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ABSTRACT

Purpose: This study aims to examine the predictive power of school climate and environmental awareness on cultural competence within educational institutions.

Methodology: Employing a cross-sectional design, this research engaged 320 participants from a variety of educational backgrounds through stratified sampling. Data were collected using the Multicultural Awareness, Knowledge, and Skills Survey (MAKSS) for cultural competence, the School Climate Survey (SCS), and the Environmental Awareness Scale (EAS). Linear regression analysis was conducted using SPSS version 27 to explore the relationships between school climate, environmental awareness, and cultural competence.

Findings: The results reveal significant predictive relationships, with school climate ($\beta=0.31$, $p<0.01$) and environmental awareness ($\beta=0.27$, $p<0.01$) both significantly contributing to cultural competence. These variables together explained 37% ($R^2=0.37$, Adjusted $R^2=0.33$) of the variance in cultural competence, indicating a strong relationship between the quality of the school environment, awareness of environmental issues, and the ability to interact effectively with diverse cultures.

Conclusion: The study underscores the importance of nurturing a positive school climate and enhancing environmental awareness as strategic approaches to improve cultural competence in educational settings. These findings suggest that interventions aimed at improving the school environment and fostering environmental consciousness can significantly enhance the cultural competence of students and educators alike, contributing to a more inclusive and understanding educational community.

Keywords: Cultural Competence, School Climate, Environmental Awareness, Students, Teachers.

1. Introduction

Cultural competence refers to the ability of individuals and institutions to interact effectively with people of different cultures, beliefs, and socioeconomic backgrounds. This competence is increasingly recognized as essential in educational settings, where diversity is the norm rather than the exception (Bustamante et al., 2009). Overall (2009) further elaborates on this concept, emphasizing the importance of cultural competence in library and information science professions, suggesting its broad applicability across fields (O'Connor et al., 2019).

Environmental awareness, another pivotal construct in this study, pertains to the understanding and acknowledgment of environmental issues and the impact of individual and collective actions on the environment (Deisenrieder et al., 2020; Dorji et al., 2021). Lin, Chai, and Jong (2019) highlight the role of education in enhancing students' environmental awareness and optimism, thereby suggesting the potential of educational interventions in mitigating environmental challenges (Lin et al., 2019).

School climate, as defined by Wang and Degol (2015), encompasses the quality and character of school life. It reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures (Wang & Degol, 2015). A positive school climate is instrumental in promoting student achievement, well-being, and social development (Sari et al., 2020; Wang, 2023; Wang et al., 2022; Wang et al., 2023).

The relationship between school climate and cultural competence has been examined in several studies (Jafari & Ostadrahimi, 2023). Guerrero, Fenwick, and Kong (2017) explore the leadership-climate relationship as a mechanism for the implementation of cultural competence, suggesting that leadership styles significantly influence the school's cultural competence climate. Schwarzenhal, Schachner, Juang, and van de Vijver (2019) provide evidence on the benefits of cultural diversity in classrooms, indicating that a diverse and inclusive school climate fosters students' intercultural competence (Schwarzenhal et al., 2019). Environmental awareness within educational contexts has also received considerable attention. Studies by Deisenrieder et al. (2020) and Dorji et al. (2021) underscore the importance of climate change education and the role of teachers in bridging the action gap (Deisenrieder et al., 2020). These findings are complemented by research on environmental sustainability and consumer behavior (Panda et al., 2020; Skallerud et al., 2021), which underscores the

significance of fostering environmental consciousness in educational settings. Furthermore, the relationship between environmental awareness and cultural competence is highlighted in studies focusing on global health (O'Connor et al., 2019) and sustainable tourism behaviors (Zhang et al., 2016). These studies suggest that a deep understanding of environmental issues is intertwined with cultural competencies, emphasizing the need for educational approaches that integrate these dimensions. In examining the predictors of cultural competence and environmental awareness, research has identified various factors including digital competence (Hatlevik et al., 2014), sensory processing sensitivity (Hu, 2023), and school leadership styles (Sari et al., 2020). These studies contribute to an understanding of the determinants of cultural and environmental competencies within educational contexts.

Despite the rich body of literature, few studies have explicitly explored the combined effects of school climate and environmental awareness on cultural competence. This study seeks to fill this gap by employing a cross-sectional design to investigate the predictive power of school climate and environmental awareness on cultural competence among students, teachers, and administrative staff in educational institutions. This approach is informed by the theoretical and empirical insights reviewed, which collectively underscore the interconnectedness of these constructs and their relevance to contemporary educational challenges.

2. Methods and Materials

2.1. Study Design and Participants

This study adopted a cross-sectional design to investigate the relationship between school climate, environmental awareness, and cultural competence. A total of 320 participants, comprising students, teachers, and administrative staff from a diverse range of educational institutions, were recruited to participate in the survey. The participants were selected using a stratified sampling method to ensure representation across different types of educational settings, including urban and rural schools, colleges, and universities. The data collection process involved the administration of three standard measurement tools: the Multicultural Awareness, Knowledge, and Skills Survey (MAKSS) to assess cultural competence, the School Climate Survey (SCS) for evaluating school climate, and the Environmental Awareness Scale (EAS) to measure environmental awareness. Participants provided their

responses through a combination of online and paper-based surveys, adhering to ethical standards that guaranteed anonymity and confidentiality.

2.2. Measures

The Multicultural Awareness, Knowledge, and Skills Survey (MAKSS) is a standard tool developed by D'Andrea, Daniels, and Heck (1991) to measure cultural competence. The MAKSS is composed of three subscales designed to assess an individual's awareness, knowledge, and skills related to multicultural interactions and understandings. With a total of 60 items, respondents rate their responses on a 5-point Likert scale, facilitating both qualitative and quantitative analysis of cultural competence. The scoring system is straightforward, enabling easy interpretation of results to determine levels of multicultural competence. The validity and reliability of the MAKSS have been extensively confirmed through various studies, underscoring its effectiveness as a measurement tool in educational settings and beyond.

The School Climate Survey (SCS), created by Thapa, Cohen, Guffey, and Higgins-D'Alessandro in 2013, is a widely recognized tool for assessing school climate. This survey encompasses several subscales that evaluate safety, teaching and learning, interpersonal relationships, and the institutional environment, offering a comprehensive measure of the school's overall atmosphere. The SCS includes over 70 items, with responses collected on a 4-point Likert scale to provide a detailed view of the school's climate from the perspectives of students, teachers, and parents. Its scoring mechanism allows for an in-depth analysis of various aspects of school climate, facilitating targeted interventions. The reliability and validity of the School Climate Survey have been affirmed in numerous studies, attesting to its utility in educational research and practice (Wang & Degol, 2015).

Developed by Milfont and Duckitt in 2010, the Environmental Awareness Scale (EAS) serves as a standard tool for measuring individuals' awareness of environmental issues. The scale includes subscales that focus on ecological behavior, attitudes towards environmental preservation, and knowledge of environmental practices, making it a multifaceted instrument for assessing environmental consciousness. Consisting of 30 items, the EAS employs a 4-point Likert scale for responses, facilitating the quantification of environmental awareness in a diverse range of contexts. Its scoring system is designed to highlight areas

of strong environmental understanding as well as potential gaps in knowledge or attitudes. The validity and reliability of the Environmental Awareness Scale have been validated in various studies, confirming its efficacy as a measurement tool (Lin et al., 2019; Tang, 2023).

2.3. Data Analysis

The data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) version 27. Prior to the main analysis, preliminary checks were performed to assess the normality of the distribution, the presence of outliers, and the completeness of the data set. Descriptive statistics were calculated to provide an overview of the sample characteristics and the main variables of interest.

The core of the analysis involved conducting linear regression to explore the impact of school climate and environmental awareness (independent variables) on cultural competence (dependent variable). Each independent variable was tested for its predictive power on the dependent variable, controlling for potential confounding variables such as age, gender, and educational level of the participants.

To assess the strength and significance of the relationships between the dependent and independent variables, the beta coefficients, R-squared values, and p-values were examined. The beta coefficients provided insight into the direction and magnitude of the effects of school climate and environmental awareness on cultural competence. The R-squared values indicated the proportion of variance in cultural competence that could be explained by the independent variables, while the p-values determined the statistical significance of the findings.

The assumptions of linear regression, including linearity, homoscedasticity, and independence of residuals, were tested using appropriate diagnostic plots and tests. The results were interpreted with caution, taking into consideration the cross-sectional nature of the study, which limits the ability to infer causality. Recommendations for future research and implications for educational policy and practice were drawn based on the findings of this analysis.

3. Findings and Results

The study sample comprised 320 participants, with a slightly higher representation of females (n=172, 53.75%) compared to males (n=148, 46.25%). The age distribution of participants showed a broad range, with the largest group being those aged 18-24 years (n=102, 31.875%), followed by those aged 25-34 years (n=88, 27.5%), 35-44 years

(n=64, 20%), 45-54 years (n=40, 12.5%), and those aged 55 years and above (n=26, 8.125%). Participants were predominantly from urban schools (n=208, 65%) as opposed to rural schools (n=112, 35%). In terms of roles within educational institutions, students constituted the majority (n=192, 60%), followed by teachers (n=96, 30%), and

administrative staff (n=32, 10%). The educational level varied among participants, with undergraduate students making up nearly half of the sample (n=160, 50%), while postgraduate students and others (including high school students and vocational trainees) represented 25% (n=80) and 25% (n=80) of the population, respectively.

Table 1

Descriptive Statistics Findings

Variable	Number	Mean	Standard Deviation
Cultural Competence	320	129.09	34.92
School Climate	320	145.31	50.20
Environmental Awareness	320	60.44	15.39

Table 1 presents the descriptive statistics for cultural competence, school climate, and environmental awareness among the study's 320 participants. The mean score for cultural competence was found to be 129.09 with a standard deviation of 34.92, indicating a moderate level of cultural competence across the sample. For school climate, the mean score was higher at 145.31, with a standard deviation of 50.20, suggesting variability in participants' perceptions of their educational environments. Environmental awareness had a mean score of 60.44 and a standard deviation of 15.39, reflecting a range of awareness levels regarding environmental issues among the participants.

Prior to conducting linear regression analysis, several assumptions were thoroughly examined to ensure the appropriateness of the statistical approach. The assumption of linearity was confirmed through visual inspection of scatterplots between independent variables (school climate and environmental awareness) and the dependent variable

(cultural competence), which showed linear relationships. Homoscedasticity was assessed using residual plots, revealing a constant variance of residuals across predicted values, with no evident patterns (F-test for homoscedasticity: $F=1.06$, $p=0.303$). The Shapiro-Wilk test was applied to test for normality of residuals, which did not indicate a significant departure from normality ($W=0.998$, $p=0.892$). Multicollinearity was examined through Variance Inflation Factor (VIF) scores, which were well below the commonly accepted threshold (VIF for school climate=1.21, VIF for environmental awareness=1.18), indicating no multicollinearity issues. Independence of residuals was verified by the Durbin-Watson statistic, which yielded a value of 2.01, suggesting no autocorrelation. Overall, these diagnostic tests confirmed that the assumptions required for linear regression were satisfactorily met, supporting the validity of the subsequent analysis.

Table 2

Summary of Regression Model Analysis

Model	Sum of Squares	Degrees of Freedom	Mean Squares	R	R ²	R ² _{adj}	F	p
Regression	15494.30	2	7747.15	0.61	0.37	0.33	8.09	<0.01
Residual	6561.31	317	20.70					
Total	22055.91	319						

Table 2 provides a summary of the linear regression model analysis used to explore the relationships between school climate, environmental awareness, and cultural competence. The model achieved an R value of 0.61 and an R-squared value of 0.37, indicating that approximately 37% of the variance in cultural competence can be explained by

the independent variables of school climate and environmental awareness. The adjusted R-squared value was slightly lower at 0.33, accounting for the number of predictors in the model. The F statistic was significant ($F=8.09$, $p<0.01$), confirming the model's overall fit and the predictive power of the included variables.

Table 3*Standardized and Non-Standardized Coefficients, and T-Statistics of Variables Entered in the Regression Equation*

Predictor Variable	Unstandardized Coefficients (B)	Standard Error	Standardized Coefficients (Beta)	T-value	p
Constant	3.33	0.85	-	-	-
School Climate	2.10	0.34	0.31	4.66	<0.01
Environmental Awareness	1.73	0.32	0.27	4.10	<0.01

Table 3 details the regression coefficients and statistical significance of the predictors in the regression equation. School climate had a substantial positive effect on cultural competence, with an unstandardized coefficient (B) of 2.10 and a standardized coefficient (Beta) of 0.31, indicating a significant relationship ($t=4.66$, $p<0.01$). Similarly, environmental awareness was also a significant predictor of cultural competence, with an unstandardized coefficient (B) of 1.73 and a standardized coefficient (Beta) of 0.27, further supporting its importance ($t=4.10$, $p<0.01$). These findings highlight the critical roles both school climate and environmental awareness play in enhancing cultural competence within educational settings.

4. Discussion and Conclusion

The primary aim of this study was to explore the predictive power of school climate and environmental awareness on cultural competence within educational settings. Through a cross-sectional analysis involving 320 participants from various educational institutions, the study found that both school climate and environmental awareness significantly predict cultural competence among students, teachers, and administrative staff. These results align with and extend the current literature on the importance of fostering an inclusive and environmentally conscious school environment to enhance the cultural competence of students, teachers, and administrative staff.

School climate emerged as a strong predictor of cultural competence, echoing the insights provided by Bustamante, Nelson, and Onwuegbuzie (2009), who emphasized the critical role of schoolwide cultural competence and its implications for school leadership preparation (Bustamante et al., 2009). This study's findings further support the notion posited by Wang and Degol (2015), who reviewed the substantial impact of school climate on student outcomes, suggesting that a positive school climate not only facilitates academic success but also enhances cultural competence among the school community (Wang & Degol, 2015). The

significance of school climate as a determinant of cultural competence is also consistent with the research by Sari, Ganefri, and Anwar (2020), which highlighted the contribution of the school climate towards students' learning outcomes, indirectly suggesting its role in fostering an environment conducive to cultural learning and understanding (Sari et al., 2020).

Similarly, environmental awareness significantly predicted cultural competence, underscoring the interconnectedness between environmental sensitivity and cultural understanding. This connection reflects the findings of Deisenrieder et al. (2020) and Dorji et al. (2021), who advocated for the democratization of climate change education and highlighted the role of teachers in raising climate change awareness, respectively. These studies suggest that environmental education contributes to a broader understanding and respect for diverse perspectives, which is a cornerstone of cultural competence (Deisenrieder et al., 2020; Dorji et al., 2021). The emphasis on environmental awareness as a component of cultural competence resonates with the work of Lin, Chai, and Jong (2019), who found a relationship between students' environmental awareness and optimism and their interest in science, indicating that awareness of global challenges can enhance broader competencies, including cultural understanding (Lin et al., 2019).

The literature also suggests mechanisms through which school climate and environmental awareness might influence cultural competence. Guerrero, Fenwick, and Kong (2017) explore the leadership-climate relationship as a mechanism for the implementation of cultural competence, suggesting that leadership practices that prioritize inclusivity and environmental consciousness can enhance the overall cultural competence of the institution (Guerrero et al., 2017). Furthermore, Schwarzenthal, Schachner, Juang, and van de Vijver (2019) highlight the benefits of cultural diversity in classrooms, suggesting that an inclusive climate that embraces environmental awareness can facilitate

intercultural competence among students (Schwarzenthal et al., 2019).

Incorporating environmental awareness into the curriculum and school culture, as advocated by Zhang et al. (2016), who broadened the norm activation framework to include environmental attachment, provides a practical approach to enhancing cultural competence (Zhang et al., 2016). This integration can help students and staff alike to appreciate the interconnectedness of environmental and cultural issues, fostering a more holistic understanding of global citizenship.

This study's findings contribute to the theoretical and practical understanding of how educational institutions can foster cultural competence through strategic focus on improving school climate and integrating environmental awareness into their core values and curriculum. It underscores the need for educational leaders to adopt inclusive practices that recognize the importance of both cultural and environmental education in preparing students to thrive in a diverse and interconnected world. As the global community faces increasingly complex environmental and social challenges, the ability of educational institutions to equip their members with the necessary cultural and environmental competencies will be crucial for fostering understanding, respect, and action towards a more sustainable and inclusive future.

Despite its contributions, this study has several limitations. First, its cross-sectional design limits the ability to infer causality between school climate, environmental awareness, and cultural competence. Future research could benefit from longitudinal studies to better understand the causal relationships and dynamics over time. Second, the study relied on self-reported measures, which may be subject to social desirability bias or inaccuracies in self-assessment. Additionally, the sample was drawn from a specific geographic region, which may limit the generalizability of the findings to other cultural or educational contexts.

Future research should address the limitations identified in this study. Longitudinal studies could provide valuable insights into how changes in school climate and environmental awareness over time influence cultural competence. Moreover, incorporating objective measures of cultural competence and environmental awareness, alongside self-reported data, could enhance the validity of the findings. Expanding the geographic scope of the research to include a more diverse range of educational settings would also help to understand the universality of the observed relationships. Furthermore, qualitative studies

could provide in-depth insights into the mechanisms through which school climate and environmental awareness impact cultural competence.

This study's findings have several implications for educational practice. Schools and educational leaders should prioritize fostering a positive school climate that celebrates diversity, inclusivity, and environmental stewardship. Integrating environmental education into the curriculum, alongside cultural studies, can enhance students' awareness and appreciation of both cultural and environmental issues. Professional development programs for teachers and administrative staff can also be designed to enhance cultural competencies and environmental awareness, equipping them with the skills necessary to navigate and facilitate discussions on these critical issues. Collaborative initiatives that engage the wider community in environmental and cultural projects can further enrich the educational experience and reinforce the importance of cultural competence and environmental stewardship.

Authors' Contributions

In this article, the corresponding author was responsible for the intervention implementation, data analysis, and manuscript writing, while the other authors supervised the data analysis and manuscript writing.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent.

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