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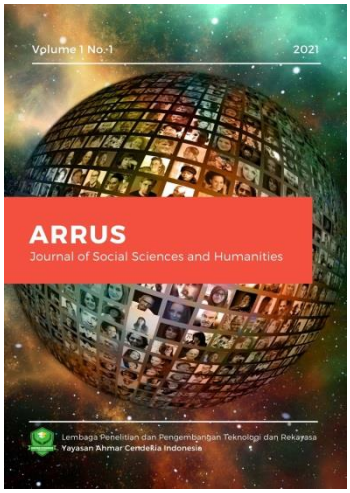

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RESEARCH ARTICLE

Influence of Environmental Conditions and The Students' Health

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Abstract: Healthy students are not merely a result of good genes; they are also a product of an environment that fosters and encourages their well-being through a mutual influence of environmental conditions. This study determined the influence of environmental conditions on students' health in one of the basic education schools in Ozamiz City during the S.Y. 2023-2024. It employed a descriptive-correlational design with 249 Senior High School respondents chosen through simple random sampling. The Environmental Conditions and Students' Health Questionnaires with a five-point Likert scale were used as data gathering instruments. Mean, Standard Deviation, and the Pearson Product Moment Correlation Coefficient were used as the statistical tools to analyze the gathered data. Results revealed that the students' environmental conditions on air quality, water quality, access to green spaces, built environment, social and community support, transportation, and commute, and environmental were good, while noise pollution and temperature were fair. The students' overall health was good, including their physical, mental, and social health. The students' environmental conditions greatly influenced their health and well-being. The learning environment of students plays an important role in their health and well-being. School administrators may prioritize reducing noise pollution and regulating temperature while investing in sustainable practices, green spaces, and community support to create a healthier learning environment.

Keywords: *environment, health, pollution, temperature, well-being*

1. Introduction

In a world shaped by environmental challenges and educational aspirations, the health and well-being of adolescents, especially those embarking on Science, Technology, Engineering, and Mathematics (STEM) education, have emerged as a pivotal concern. The rise in environmental changes, encompassing heightened exposure to risk factors like air and traffic pollution, fungal agents, and tobacco smoke, has far-reaching implications for individuals' health across their lifetimes (Murrison et al., 2019). This concern extends to the physical, mental, and emotional well-being of STEM students, which plays a critical role in their overall development and future societal contributions. Simultaneously, addressing the gaps in understanding among certain students about key aspects of solid waste and its consequences is imperative, prompting the exploration of school initiatives in waste management and students' responsibilities in this regard (Molina et al., 2021). These interrelated issues underscore the necessity of a comprehensive approach to address environmental and educational challenges, emphasizing both environmental awareness and students' holistic well-being (Murrison et al., 2019; Molina et al., 2021).

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In the pursuit of a comprehensive understanding of the impacts of environmental conditions on the well-being and development of Senior High STEM students, it becomes evident that these conditions extend beyond the confines of the classroom. Addressing these environmental influences not only promotes the health and potential of current students but also shapes the future workforce and citizens who will contribute significantly to the economic and social fabric of our communities. Therefore, prioritizing a holistic examination of these environmental influences is paramount for fostering healthier, more resilient individuals and a stronger, more prosperous society. This calls for a comprehensive analysis of environmental conditions on Senior High STEM students' health, offering critical insights into how their physical and ecological surroundings affect their well-being, academic performance, and overall development. This comprehension can guide evidence-based interventions and policies for fostering healthier learning environments, supporting the success and long-term well-being of upcoming STEM professionals (Artika et al., 2023). It is worth noting that students currently demonstrate a limited level of environmental awareness regarding the consequences of climate change. Nonetheless, recognizing the importance of a conducive learning environment is a valuable investment that yields improved student learning outcomes, enhanced future workforce productivity, and a greater potential for self-sustained economic growth (Navarro, 2022).

The period between adolescence and adulthood is crucial, marked by significant physical and psychological changes, with behaviors, lifestyles, and environments impacting health outcomes. Researchers and policymakers increasingly focus on senior high school students' health, particularly environmental conditions. A previous study revealed that poor physical health, low energy, and fatigue predict more severe depression, anxiety, stress, and overall poorer mental health over time, with mental health transitions acknowledged as a critical issue (Jansen et al., 2022; Cage et al., 2021). Mental health results from complex genetic, psychological, social, and environmental interactions, necessitating interdisciplinary collaboration, including environmental science (Roberts et al., 2023). Understanding environmental impacts on student health is vital, extending beyond individual well-being to profoundly affect society. School physical environments, such as air quality and green spaces, influence health, cognition, and academic performance. The social environment, encompassing peer interactions and support networks, significantly impacts mental and emotional well-being.

Environmental conditions significantly impact Senior High STEM students' physical and mental health. These students face rigorous academic demands, making conditions like air and water quality, noise levels, green spaces, and school infrastructure vital for a conducive learning environment. These environmental conditions play a crucial role in students' stress management, focus on complex STEM concepts and physical well-being.

Air quality in educational institutions, particularly for high school STEM students, is a critical environmental factor affecting health. Poor indoor air quality, a health threat, can lead to respiratory diseases in millions of students, with pandemic concerns adding urgency (Sadrizadeh et al., 2022). It significantly influences student well-being and academic performance, impacted by indoor activities, materials, equipment, and external conditions. High concentrations of CO2 in classrooms are regulated in some regions, but broader pollutant sources, like settled dust, affect indoor air quality, leading to variations in particle concentrations during classroom activities (Becerra et al., 2020).

Noise pollution is a pressing issue in educational institutions, especially those near busy roads, with a clear link between school noise levels and traffic noise (Wen et al., 2019). The proximity to busy roads underscores the need to investigate the adverse effects of noise pollution on education, with global efforts reflecting the urgency (Chahdietal, 2021). A study in southeast Nigeria found that noise from sources like portable generators, traffic, and speakers used by students and businesses negatively affected students' tolerance, causing headaches, irritability, reduced attention span and decreased productivity (Obi et al., 2021).

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Water pollution is a looming global concern for student health, particularly in school environments where children spend a significant part of their day (Morgan et al., 2021). Contaminated drinking water disproportionately affects low- and middle-income countries, posing risks to vulnerable students. Despite its critical importance, research on drinking water quality in educational institutions is lacking. Pollutants from various sources, including chemicals and pathogens, infiltrate water bodies, potentially causing waterborne diseases and long-term health issues. Safeguarding student health requires a systematic framework with regular treatment and monitoring to ensure safe water quality (Hung et al., 2020). Addressing water pollution can also inspire STEM students to explore solutions and contribute to water quality knowledge, equipping them to tackle this pressing global issue.

In education, research highlights the substantial impact of sustainable school environments and eco-friendly practices on student well-being. Green spaces near schools are shown to positively affect academic performance (Browning et al., 2019). Sustainable initiatives encompass clean water, waste management, green spaces, and noise control, contributing to eco-friendly school ecosystems (Sucipto & Safitri, 2019). Recent studies highlight the effectiveness of green barriers in improving air quality within schools (Redondo Bermudez et al., 2023). Eco-conscious schools uphold four pillars: environmentally friendly policies, an eco-centric curriculum, participatory environmental activities, and ecologically conscious facilities (Hidayat et al., 2023). These schools excel in waste management, reduce single-use plastics, and implement innovative initiatives like biopore infiltration holes, showcasing a comprehensive commitment to environmental sustainability.

Additionally, nature's positive impact on student well-being extends indoors, enhancing concentration and mood (van den Bogerd et al., 2020). Active engagement with green spaces, such as outdoor activities, enhances students' quality of life and reduces stress (Holt et al., 2019). Understanding the effects of sustainable school environments and nature engagement is crucial for creating healthier, more supportive learning environments that advocate academic success and student well-being.

In an era marked by expanding concerns over climate change, fostering environmental awareness among students has emerged as a pressing imperative (Artika et al., 2023). However, recent research has revealed a disturbing reality: students currently exhibit a limited level of environmental awareness regarding the consequences of climate change. This deficiency poses significant challenges, not only within the classroom but also for the broader society (Artika et al., 2023). Addressing this critical issue necessitates a collaborative effort between the public and private sectors, with a primary focus on enhancing the learning environment for students. Investing in improved and sufficient school infrastructure is key to cultivating a conducive learning environment. This, in turn, yields a myriad of benefits, including enhanced student learning outcomes, improved future workforce productivity, and the potential for self-sustained economic growth (Navarro, 2022).

Despite increasing awareness of the importance of STEM education, there's a significant gap in understanding how environmental conditions impact the health and well-being of senior high school STEM students (Sadrizadeh et al., 2022). Existing research often lacks comprehensive causal analyses, focusing on individual components (Wen et al., 2019; Chahdietal, 2021). Additionally, there's a research gap in addressing indoor air quality and noise pollution in STEM classrooms (Becerra et al., 2020; Obi et al., 2021). Lastly, in the context of addressing environmental awareness among students, there is a pressing need for collaborative efforts to improve the learning environment through enhancing school infrastructure, but the specific strategies and their potential impacts on students' health require further investigation (Artika et al., 2023; Navarro, 2022). Bridging these gaps is crucial for informed educational policies that support senior high school STEM students' holistic development. This study determined the influence of the environmental conditions and health STEM students in one of the senior high schools in Ozamiz City during the S.Y. 2023-2024.

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2. Research Method and Materials

2.1. Research Design

This quantitative study used the descriptive-correlational design. The researchers used the design to investigate the nature of interconnection between variables, independent and dependent, rather than direct cause-and-effect relationships (Sousa et al., 2007). Therefore, the descriptive-correlational design was appropriate for this study, as it describes the environmental conditions that affect senior high school STEM students' health.

2.2. Research Setting

The study will be conducted at a tertiary institution in Ozamiz City, a privately owned, non-sectarian, non-profit educational institution located in Misamis Occidental, Philippines. The university has a rich history dating back to its founding in 1929-1931 under the name Misamis Institute. Over the years, it underwent several name changes, including Misamis Colleges (1955-1977), before adopting its current name, Misamis University, in 1977.

A privately owned, non-sectarian, non-profit educational institution located in Misamis Occidental offers a comprehensive senior high school program, providing two years of specialized upper-secondary education. Within this program, students have the opportunity to personalize their educational journey based on their unique aptitudes, interests, and intellectual capacities. The specific subjects a student will study during Grades 11 and 12 are determined by their chosen career path. To cater to a range of interests and career aspirations, students can select from four distinct academic tracks in senior high school. These tracks are as follows: Accountancy, Business, and Management (ABM); Humanities and Social Sciences (HUMSS); Science, Technology, Engineering, and Mathematics (STEM); and General Academic Strand (GAS). The target respondents will be the Science, Technology, Engineering, and Mathematics (STEM) students of Misamis University.

2.3. Respondents of the Study

The respondents of the study were 249 senior high school STEM students at a certain University who were chosen through simple random sampling. The selection of the respondents was based on the following criteria: (1) bona fide students of Misamis University; (2) Senior High School STEM students who experience environmental conditions affecting health; and (3) Senior High School STEM students who expressed willingness and availability to participate in the study.

2.4. Instruments

The study uses two questionnaires as a data gathering instrument:

a. Environmental Conditions Questionnaire. This questionnaire is researcher made. The questionnaire utilized the five-point Likert scale. The first instrument contains 27 items describing the nine constructs in air quality, water quality, noise pollution, access to green spaces, built environment, temperature and climate, social and community support, transportation and commute, and environmental education. Afterward, it was pilot tested on the selected STEM students who were not among the respondents. It yielded a Cronbach's alpha coefficient of 0.89. Hence, the instrument was considered valid, reliable, and ready for use in the study.

   In determining the environmental conditions of students in SHS, the following scale was used:

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Responses	Continuum	Interpretation
5- Strongly Agree	4.20-5.0	Very Good
4- Agree	3.40-4.19	Good
3- Neutral	2.60-3.39	Fair
2- Disagree	1.80-2.59	Poor
1-Strongly Disagree	1.0-1.79	Very Poor

b. Student's Health. This questionnaire is a researcher made. Responses were classified using the five-point Likert scale. The researchers opted to modify the questionnaire to fit the respondents' context. The second instrument contains nine items describing the four constructs of physical health, mental health, and social health. Subsequently, a pilot test was conducted on the chosen STEM students who were not included in the original sample. The result showed a Cronbach's alpha coefficient of 0.7. Therefore, the instrument was deemed to be valid, reliable, and ready for use in the study.

Responses	Continuum	Interpretation
5- Strongly Agree	4.20-5.0	Very Good
4- Agree	3.40-4.19	Good
3- Neutral	2.60-3.39	Fair
2- Disagree	1.80-2.59	Poor
1-Strongly Disagree	1.0-1.79	Very Poor

2.5. Data Collection

The researchers secured approval from the principal of the Basic Education Department at a certain institution in Ozamiz City to conduct the study. Subsequently, the researchers sought permission from the office of the Assistant Principal of the Senior High School Department to conduct surveys with the chosen respondents. Consent letters were then dispatched to the respondents, providing a comprehensive explanation of the study's purpose. For respondents who preferred to utilize hard copies of the survey instruments, the researchers personally administered the questionnaires to ensure full cooperation and maximize response rates. This approach also adhered to health and safety protocols mandated by the Inter-Agency Task Force (IATF). Respondents who opted to answer the survey online were provided with Google Forms links for both research instruments. Once the questionnaires were filled out, the data was compiled and organized using Microsoft Excel, followed by statistical analysis using IBM SPSS software. The results were presented in a tabular format to facilitate analysis and interpretation.

2.6. Ethical Considerations

To preserve the rights of the study's participants, the researchers prioritized the physical and psychological safety of the student respondents, ensuring that all survey questions were neither deceptive nor erroneous, thus guaranteeing that respondents could provide informed and accurate responses. The researchers also took measures to guard against any misinterpretation or exaggeration of the study's original aims and outcomes, recognizing the importance of maintaining the integrity of the research findings and ensuring their accurate representation. Furthermore, as part of their commitment to ethical research practices, the researchers solicited the voluntary participation of the respondents, providing them with a clear understanding of the study's purpose and assuring them that their involvement would not harm them in any way. The researchers consistently prioritized respect for the respondents' dignity and took steps to protect their privacy, maintain the confidentiality of research data, and ensure the anonymity of the participating students.

In addition, the researchers were diligent in avoiding deception and exaggeration regarding the research's aims and objectives. They made explicit declarations regarding any affiliations, funding sources, or potential conflicts of interest, and all communication about the research

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was characterized by transparency, free from misleading information and misinterpretations of primary data findings. To document the respondents' willingness to participate, the researchers requested them to sign an informed consent form. Throughout the study, the researchers also ensured strict adherence to ethical considerations and the provisions of the Republic Act No. 10173, known as the "Data Privacy Act of 2012." This commitment extended to the data gathering, data analysis, and dissemination of research findings, all carried out with the utmost care to protect the dignity and anonymity of the participants and their organization.

2.7. Data Analysis

The study used the following tools in analyzing the data gathered with the use of IBM SPSS Software:

Mean and Standard Deviation were used to determine the environmental conditions affecting the student's Health.

Pearson Product Moment Correlation Coefficient was used to explore the significant relationship between environmental conditions affecting Senior High School STEM students and students' health.

3. Results and Discussion

3.1. Students' Environmental Conditions

The conditions influencing students' health were measured, encompassing air quality, water quality, noise pollution, access to green spaces, built environment, temperature and climate, social and community support, transportation and commute, and environmental education (Table 1). The presented data indicates that the students' environmental condition was good (M = 3.69, SD = 0.84).

Table 1. Students' Online Learning Satisfaction

Students' Environmental Conditions

Variables	Mean	SD	Interpretation
Air Quality	3.61	0.84	Good
Water Quality	3.45	0.89	Good
Noise Pollution	3.37	0.88	Fair
Access to Green Spaces	3.90	0.91	Good
Built Environment	4.06	0.78	Good
Temperature and Climate	3.08	1.12	Fair
Social and Community Support	3.76	0.84	Good
Transportation and Commute	3.90	0.87	Good
Environmental Education	4.15	0.79	Good
Overall Environmental Conditions	3.69	0.88	Good

Note: Scale: 4.20-5.0(Very Good); 3.40-4.19(Good); 2.60-3.39(Fair); 1.80-2.59 (Poor); 1.0-1.79 (Very Poor)

The air quality (M = 3.61, SD = 0.84), water quality (M = 3.45, SD = 0.89), access to green spaces (M = 3.90, SD = 0.91), built environment (M = 4.06, SD = 0.78), social and community support (M = 3.76, SD = 0.84), transportation and commute (M = 3.90, SD = 0.87), and environmental education (M = 4.15, SD = 0.79) were good as perceived by STEM students. The good perception of students in air quality (M = 3.61, SD = 0.84) and water quality (M = 3.45, SD = 0.89) on STEM students' health indicates that clean air and water play in establishing a conducive and health-promoting learning environment. STEM students also perceive access to green spaces (M = 3.90, SD = 0.91) and the built environment (M = 4.06, SD = 0.78) as good to the enriching opportunities for physical activities and aesthetically pleasing surroundings, fostering a positive and conducive atmosphere for overall well-being.

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Recognizing the positive impact of social and community support (M = 3.76, SD = 0.84), having strong social connections and a supportive community on well-being; similarly, they emphasized the importance of transportation and commute (M = 3.90, SD = 0.87), acknowledging the positive correlation between efficient, stress-free transportation and overall health. Students perceived environmental education (M = 4.15, SD = 0.79) as good, reflecting a positive acknowledgment of the profound impact that knowledge and awareness about environmental issues can have on fostering a healthier and more sustainable lifestyle.

However, temperature and climate (M = 3.08, SD = 1.12), as well as noise pollution (M = 3.37, SD = 0.88), were perceived by the respondents as fair. While not as immediately impactful as the other conditions, they still contribute to the overall environmental conditions that influence well-being. Students might recognize that moderate variations in temperature and exposure to noise could potentially affect their comfort and concentration, highlighting the intricate interplay between these conditions and their health. This complex problem highlights the importance of focusing on measures, recognizing that specific conditions necessitate a variety of approaches for enhancing the learning environment for students' health. Addressing these high- and moderate-influence conditions directly contributes to the development of healthier and more supportive learning environments.

The data also suggests that temperature and climate, as well as noise pollution, have a moderately high influence on students' health. This indicates that variations in these environmental conditions may affect various aspects of well-being, though not as strongly as some other conditions. Addressing temperature, climate, and noise pollution through strategies such as climate control, improved ventilation, and considering local climatic conditions in facility planning can contribute to enhancing students' health in the learning environment.

The findings of this study correspond with previous research on the impact of environmental conditions on the health of senior high school STEM students, particularly air quality (Sadrizadeh et al., 2022). Clean water, waste management, and green spaces have all been shown to contribute to eco-friendly school ecosystems (Sucipto & Safitri, 2019). Green barriers have been shown to improve school air quality (Redondo Bermudez et al., 2023), and environmentally friendly policies, curricula, and facilities are prioritized in eco-conscious schools (Hidayat et al., 2023). Waste management and the minimization of single-use plastics are emphasized in environmentally conscious schools (van den Bogerd et al., 2020).

According to Holt et al. (2019), indoor exposure to nature improves concentration and mood in students. The study is supported by the Environmental Health Theory (WHO, 1993), which systematically assesses the impact of environmental conditions, such as air quality and toxins, on the well-being of STEM SHS students. This theory's application is to discover causal relationships in order to inform strategies for improved health outcomes. Therefore, these variables influence environmental conditions affecting STEM students' health, fostering a holistic learning environment that promotes both physical and mental well-being.

Based on the compelling findings outlined in this study, it is evident that environmental conditions play an important role in the health and well-being of senior high school STEM students. The implications of the findings discussed above emphasize the crucial need to create a holistic learning environment for senior high school STEM students. By prioritizing eco-friendly school ecosystems, including clean air, water, waste management, and green spaces, educational institutions can significantly impact the well-being of their students. Incorporating green barriers to improve air quality and implementing environmentally conscious policies, curricula, and facilities contribute to creating a conducive atmosphere for both physical and mental health.

Furthermore, initiatives focused on waste management and the reduction of single-use plastics align with the broader goal of cultivating environmentally responsible practices. Embracing the idea of indoor exposure to nature, as suggested by Holt et al. (2019), can enhance students' concentration and mood, fostering a positive and enriching educational

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experience. The application of the Environmental Health Theory (WHO, 1993) serves as a valuable tool for systematically assessing and addressing environmental conditions that influence the well-being of STEM students. In essence, these findings emphasize the need for educational institutions to adopt comprehensive strategies that integrate environmental considerations into their policies and practices, ultimately promoting the overall health and learning outcomes of senior high school STEM students.

3.2. Students' Health

The data, as shown in Table 2, offers insights into students' health in terms of physical health, mental health, social health, and overall health and well-being. The overall health and well-being (M= 3.69, SD= 0.96) are interpreted as good. This indicates a balanced integration of physical, mental, and social in STEM students' overall health and well-being. The data revealed that the physical health (M = 3.65, SD = 0.92), mental health (M = 3.59, SD = 1.00), and social health (M = 3.83, SD = 0.96) of STEM students are interpreted as good. The data show a significant influence on students' physical health, highlighting the importance of addressing factors that contribute to physical well-being in educational settings. For mental health, awareness and support strategies can create a positive and conducive learning environment. The study indicates that STEM students' social health is good, underscoring the importance of social networks and community engagement in improving overall health.

The data also suggests that students' health awareness is good in terms of physical, mental, and social. These variables indicate that educators, school administrators, and policymakers have to consider and support students' holistic well-being. In addition, educators can build wellness programs into the curriculum, administrators can foster a positive and inclusive school environment, and policymakers can put policies in place that prioritize students' overall health. This collaborative effort is essential for creating a supportive and improving educational environment.

This study supports previous studies by proving that environmental conditions have an impact on physical, mental, and social health, as well as overall well-being in senior high school STEM students. The complete structure includes quantitative assessments of physical health, with an emphasis on disease absence and fitness (Ninivaggi, 2020); mental health, with an emphasis on effective challenge management (WHO); and social health, with an emphasis on positive interactions and societal challenges in relation to the environment (Cho et al., 2020). The study additionally examines environmental awareness and its relationship to overall health (Sompura et al., 2022). This study quantitatively examines the interplay between various dimensions of STEM education and environmental conditions. The findings offer valuable insights for developing targeted strategies in the STEM educational context (Ninivaggi, 2020; WHO; Cho et al., 2020; Sompura et al., 2020).

The study reveals that STEM students exhibit good overall health and well-being, attributed to balanced considerations of physical, mental, and social. This suggests an opportunity for educators to integrate environmental education, administrators to foster inclusive school environments, and policymakers to prioritize comprehensive wellness policies. Collaboratively, this can enhance students' holistic well-being and contribute to an improved educational environment.

Table 2. Students' Health

Variables	Mean	SD	Interpretation
Physical Health	3.65	0.92	Good
Mental Health	3.59	1.00	Good
Social Health	3.83	0.96	Good
Overall Health and Well-being	3.69	0.96	Good

Note: Scale: 4.20-5.0(Very Good); 3.40-4.19(Good); 2.60-3.39(Fair); 1.80-2.59 (Poor); 1.0-1.79 (Very Low)

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3.3. Significant Relationship between the Environmental Conditions of Students and their Health

The Data in Table 3 reveals the influence of various environmental conditions on students' health, revealing significant correlations. Air Quality showed positive associations with physical health ($r = .387$, $p = .000$), mental health ($r = .360$, $p = .000$), and social health ($r = .194$, $p = .002$). For students, improved air quality means breathing cleaner air on campus, which directly supports their respiratory health and overall well-being. In the classroom, clean air fosters an environment that enhances concentration and reduces stress, positively influencing their academic performance. Furthermore, a healthy atmosphere promotes positive social interactions among students, creating a conducive space for collaboration and community engagement.

Similarly, Water Quality correlated significantly with physical ($r = .243$, $p = .000$), mental ($r = .350$, $p = .000$), and social health ($r = .291$, $p = .000$). Access to clean water is crucial for students' physical health, ensuring that they have a safe and reliable source of hydration on campus. Clean water contributes to their mental well-being by eliminating concerns related to water safety, allowing them to focus on their studies. At a communal level, reliable water quality promotes a sense of shared well-being among students, contributing to positive social connections and community cohesion.

Noise Pollution exhibited strong correlations with physical ($r = .340$, $p = .000$), mental ($r = .357$, $p = .000$), and social health ($r = .194$, $p = .002$). Reduced noise levels directly impact students' physical health by providing a quieter environment that supports better sleep and reduces stress, positively affecting their overall well-being. In terms of mental health, a quieter setting on campus creates a conducive atmosphere for studying and concentration. Socially, decreased noise pollution encourages positive social interactions among students, fostering a more peaceful and collaborative learning environment.

Access to Green Space correlated positively with physical ($r = .190$, $p = .003$), mental ($r = .325$, $p = .000$), and social health ($r = .350$, $p = .000$). Green spaces offer students opportunities for physical activity and relaxation, contributing to their overall physical health and well-being. These spaces provide mental health benefits by offering tranquility, reducing stress, and providing a respite from academic pressures. At a social level, green spaces become hubs for student gatherings, fostering positive social interactions and a sense of community on campus.

Built Environment demonstrated robust associations with physical ($r = .412$, $p = .000$), mental ($r = .353$, $p = .000$), and social health ($r = .403$, $p = .000$) of students. A well-designed built environment positively influences students' physical health by encouraging active lifestyles within campus spaces. The aesthetically pleasing and functional design of classrooms and common areas contributes to students' mental well-being, establishing a conducive environment for learning and personal development. Socially, the built environment facilitates student interactions, creating spaces for collaborative projects and community-building activities.

Temperature and Climate correlated significantly with physical ($r = .384$, $p = .000$), mental ($r = .459$, $p = .000$), and social health ($r = .302$, $p = .000$). Favorable temperatures on campus contribute to positive physical health among students, encouraging outdoor activities and reducing the impact of extreme weather conditions. The comfort provided by moderate climates positively influences students' mental well-being, creating a pleasant atmosphere for learning. Socially, favorable climates encourage outdoor events and gatherings, promoting positive social interactions and community engagement among students.

Social and Community Support showed positive associations with physical ($r = .414$, $p = .000$), mental ($r = .355$, $p = .000$), and social health ($r = .365$, $p = .000$). Strong social and community support networks directly impact students' physical health by helping during challenging times and promoting healthy behaviors. Mentally, these networks offer emotional support, reducing the risk of mental health issues and creating a sense of belonging among

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students. On a social level, active community engagement and supportive networks contribute to a positive and inclusive campus environment.

Transportation and Commute exhibited strong correlations with physical ($r = .424$, $p = .000$), mental ($r = .383$, $p = .000$), and social health ($r = .400$, $p = .000$). Transportation options that encourage physical activity contribute to positive physical health for students, offering opportunities for exercise and well-being. Mentally, efficient and less stressful commutes positively impact students' mental well-being by reducing stress and fostering a positive mindset. Socially, well-connected transportation systems facilitate student mobility, encouraging interactions among peers and engagement with the broader community.

Finally, Environmental Education correlated significantly with physical ($r = .328$, $p = .000$), mental ($r = .291$, $p = .000$), and social health ($r = .488$, $p = .000$). Environmental education directly impacts students' physical health by increasing awareness about healthy lifestyle choices and sustainability practices. Mentally, it stimulates curiosity and critical thinking, positively influencing students' mental well-being and academic engagement. Socially, knowledge gained through environmental education promotes collective responsibility and community engagement among students, fostering a sense of environmental stewardship and social cohesion. The positive associations across these environmental conditions highlight their collective impact on enhancing students' overall health and well-being. Future interventions should consider these findings to create healthier educational environments.

The data indicates significant correlations between environmental conditions and diverse dimensions of students' health. Improved air quality, access to clean water, noise reduction, green space availability, a well-designed built environment, favorable temperature, and climate conditions, social and community support, efficient transportation, and environmental education all showed positive associations across physical, mental, and social health dimensions. These robust correlations underscore the comprehensive impact of environmental conditions on various aspects of students' well-being. These findings emphasize the collective and highly significant influence of the studied environmental conditions on the multifaceted dimensions of students' health, reinforcing the need for targeted interventions to foster healthier educational environments.

There are no weak positive relations observed between the environmental conditions and the different aspects of students' health. This means that each factor consistently exhibits a substantial and statistically significant positive correlation with better overall well-being. The fact that there are no weak positive connections emphasizes how strong and reliable the associations are. It highlights how favorable environmental conditions collectively have a powerful impact on promoting positive health outcomes among students.

The presence of green spaces near schools has been demonstrated to have a positive impact on students' overall health (Browning et al., 2019). Sustainable initiatives, including provisions for clean water, efficient waste management, accessible green spaces, and effective noise control, contribute to cultivating eco-friendly school environments that positively influence the health of students (Sucipto & Safitri, 2019). Nature's positive influence on students' health extends indoors, improving concentration and mood (van den Bogerd et al., 2020). Actively engaging with green spaces through activities like outdoor pursuits enriches students' well-being, reduces stress, and enhances their overall quality of life (Holt et al., 2019). Recognizing the impacts of sustainable school environments and nature engagement is essential for crafting learning spaces that not only foster academic success but also enhance students' health.

Environmental conditions significantly enhance the well-being of Senior High STEM students. Amidst rigorous academic demands, factors like high air and water quality, minimal noise levels, abundant green spaces, and well-designed school infrastructure are crucial for fostering an uplifting learning environment. These positive conditions are essential for supporting students' well-being, aiding in stress management, enhancing concentration on complex STEM concepts, and contributing to overall health.

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Table 3. Significant Relationship between the Environmental Conditions of Students and their Health

Variables	*r* value	*p* value	Decision	Remarks
Air Quality and				
Physical Health	.387**	.000	Reject Ho	Highly Significant
Mental Health	.360**	.000	Reject Ho	Highly Significant
Social Health	.194**	.002	Reject Ho	Highly Significant
Water Quality and				
Physical Health	.243**	.000	Reject Ho	Highly Significant
Mental Health	.350**	.000	Reject Ho	Highly Significant
Social Health	.291**	.000	Reject Ho	Highly Significant
Noise Pollution and				
Physical Health	.340**	.000	Reject Ho	Highly Significant
Mental Health	.357**	.000	Reject Ho	Highly Significant
Social Health	.194**	.002	Reject Ho	Highly Significant
Access To Green Space and				
Physical Health	.190**	.003	Reject Ho	Highly Significant
Mental Health	.325**	.000	Reject Ho	Highly Significant
Social Health	.350**	.000	Reject Ho	Highly Significant
Built Environment and				
Physical Health	.412**	.000	Reject Ho	Highly Significant
Mental Health	.353**	.000	Reject Ho	Highly Significant
Social Health	.403**	.000	Reject Ho	Highly Significant
Temperature and Climate and				
Physical Health	.384**	.000	Reject Ho	Highly Significant
Mental Health	.459**	.000	Reject Ho	Highly Significant
Social Health	.302**	.000	Reject Ho	Highly Significant
Social and Community Support and				
Physical Health	.414**	.000	Reject Ho	Highly Significant
Mental Health	.355**	.000	Reject Ho	Highly Significant
Social Health	.365**	.000	Reject Ho	Highly Significant
Transportation and Commute and				
Physical Health	.424**	.000	Reject Ho	Highly Significant
Mental Health	.383**	.000	Reject Ho	Highly Significant
Social Health	.400**	.000	Reject Ho	Highly Significant
Environmental Education and				
Physical Health	.328**	.000	Reject Ho	Highly Significant
Mental Health	.291**	.000	Reject Ho	Highly Significant
Social Health	.488**	.000	Reject Ho	Highly Significant

Note: p<0.01 (Highly Significant; p<0.05 (Significant); p>0.05 (Not Significant)

Given the substantial correlation between environmental conditions and students' overall health, it is advisable to prioritize positive conditions such as clean air, water, and accessible green spaces within school environments. Ensuring these aspects contribute to a positive environment may have a beneficial impact on students' overall well-being. Exploring sustainable initiatives like maintaining water quality, efficient waste management, and incorporating green spaces could be instrumental in promoting students' health. Additionally, integrating nature within the school environment, such as incorporating green areas, has been shown to positively influence students' well-being. Recognizing the significance of fostering eco-friendly school environments and promoting interaction with nature can play a pivotal role in creating conducive learning spaces that support both academic success and students' overall health.

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Addressing the positive correlations found in Table 3, this research emphasizes the profound impact on students' overall health, directing attention to policymakers, architects, curriculum developers, and community stakeholders. Policymakers are urged to enact policies prioritizing elements crucial for overall health, such as clean air, water quality, noise control, and green spaces. Architects and planners play a pivotal role in designing learning environments that optimize conditions like air quality and noise levels, contributing significantly to students' overall health outcomes. Curriculum developers are key contributors in integrating environmental education, enriching students' understanding of how their surroundings influence their overall well-being. Educational institutions stand to benefit by investing in eco-friendly initiatives, which not only promote environmental well-being but also enhance students' overall health. Stress management programs, leveraging positive environmental conditions, offer valuable assistance to students, promoting their holistic well-being. Professional development for educators is highlighted for its role in emphasizing the importance of a positive and sustainable learning environment, acknowledging the significant impact on students' overall health. These comprehensive measures aim to foster both the immediate and long-term well-being of students, reaping economic benefits and cultivating a resilient future workforce.

4. Conclusion

The students' environmental conditions are generally positive, with fair levels of noise pollution and temperature. Good air and water quality, access to green spaces, and community support highlight the importance of addressing specific environmental challenges for comprehensive well-being. The students currently enjoy positive overall health across physical, mental, and social dimensions, reflecting holistic well-being that mitigates potential negative impacts from environmental conditions.

School administrators prioritize reducing noise pollution and regulating temperature while investing in sustainable practices and green spaces. This commitment creates a healthier learning environment for students. Teachers and students promote overall well-being through curriculum-integrated mindfulness, physical activities, and social engagement, encouraging a balanced approach to physical, mental, and social health.

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