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Exploring Pre-service Teachers' Voices Through Photovoice: Basis for Recreating Academic Green Spaces

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Abstract

This study explored the lived experiences and critical perspectives of pre-service teachers regarding academic green spaces through a qualitative participatory research design using the Photovoice approach. Anchored on the participatory principles of Wang & Burris (1997) and the thematic analysis framework of Braun and Clarke (2006), the study examined how academic green spaces contribute to students' well-being, learning experiences, and environmental awareness. The research was conducted at a Philippine Higher Education Institution with a Center of Excellence in Teacher Education during the Academic Year 2024–2025 and involved twenty-two (22) science pre-service teachers selected through purposive sampling. Data were gathered through Photovoice SHOWED guide questions, participants' photographs, reflective narratives, and focus group discussions. The collected data were analyzed using thematic analysis to identify recurring patterns and themes related to the significance, challenges, and improvement of academic green spaces. Findings revealed that the majority of participants perceived academic green spaces as highly important in promoting stress reduction, emotional well-being, social interaction, reflective learning, and environmental awareness. Participants identified several benefits of green spaces, including relaxation, improved concentration, better social interaction, and increased motivation to study. However, challenges such as inadequate maintenance, insufficient shaded and seating areas, poor waste management, and limited student participation in environmental planning were also observed. The study further emphasized the importance of student participation in campus environmental planning and sustainability initiatives. The study concluded that academic green spaces play a significant role in creating inclusive, learner-centered, and sustainable educational environments. It recommended strengthening campus greening programs, improving maintenance and access, implementing effective waste management practices, and increasing student involvement in environmental decision-making processes. The study supports Sustainable Development Goal (SDG) 3 on Good Health and Well-Being, SDG 4 on Quality Education, SDG 11 on Sustainable Cities and Communities, and SDG 13 on Climate Action by emphasizing the importance of sustainable and inclusive green learning environments. Its sustainability impact lies in promoting environmental stewardship, participatory campus planning, student well-being, and sustainable institutional practices within higher education.

Keywords: Academic Green Spaces, Environmental Awareness, Participatory Research, Photovoice, Pre-Service Teachers, Reflective Learning, Student Well-Being, Sustainability, Thematic Analysis, Waste Management

1. Introduction

Academic green spaces play a significant role in promoting students' holistic development, environmental awareness, and psychological well-being within higher education institutions (Appiah-Opoku et al., 2023). These spaces, which include gardens, parks, open lawns, shaded walkways, and recreational areas, provide opportunities for relaxation, social interaction, physical activity, and reflective learning. Exposure to green environments has been associated with reduced stress, improved mental health, enhanced cognitive functioning, and stronger academic engagement among students (Masón et al., 2021). In educational institutions, green spaces also function as experiential learning environments that foster environmental education and sustainability awareness (Akinsemolu & Onyeaka, 2024). Despite their importance, higher education institutions may experience challenges related to the maintenance, accessibility, and utilization of academic green spaces. Limited shaded areas, inadequate environmental planning, and minimal student participation may reduce students' engagement and limit the benefits of these environments. In response, participatory approaches such as Photovoice have emerged as effective methods for exploring students' lived experiences and perspectives regarding campus environments (Robertson et al., 2022). Developed by Wang & Burris (1997), Photovoice enables participants to communicate their realities through photographs and reflective narratives, thereby promoting empowerment and collaborative reflection (Sutton-Brown, 2014). This study explores the lived experiences of pre-service teachers regarding academic green spaces using Photovoice and thematic analysis. Guided by the principles of participatory research and

sustainability, the study seeks to identify students' perceptions, concerns, and recommendations for improving academic green spaces to support inclusive, sustainable, and learner-centered campus environments.

1.1 Academic Green Spaces and the Lived Experiences of Pre-Service Teachers

Academic green spaces have become increasingly important in higher education because of their contribution to students' psychological well-being and holistic development (Masón et al., 2021). These environments include gardens, parks, shaded walkways, open lawns, and recreational areas that provide opportunities for relaxation, social interaction, and physical activity (Jalón et al., 2021; Appiah-Opoku et al., 2023; Gozalo et al., 2023). Green spaces in educational institutions are recognized not only as aesthetic components but also as learning environments that support experiential and environmental education (Chunyan et al., 2024). Higher education institutions worldwide have promoted sustainable campus initiatives to strengthen environmental stewardship and improve campus life (Filho et al., 2023; Filho et al., 2021). For pre-service teachers, sustainable development education can increase their awareness of this concept (Acar & Akhan, 2023). However, challenges such as inadequate maintenance, limited accessibility, insufficient shaded areas, and minimal student participation in environmental planning continue to affect the effectiveness of academic green spaces (Fangnon, 2021; Amaral et al., 2021; OUZIR et al., 2021). These concerns highlight the need to examine students' perspectives and lived experiences to develop more inclusive and learner-centered campus environments.

1.2 Photovoice and Thematic Insights on Academic Green Spaces

Existing literature emphasizes the positive effects of green environments on mental health, stress reduction, cognitive functioning, and academic engagement among learners (Masón et al., 2021; Vella-Brodrick & Gilowska, 2022). Academic green spaces contribute to social interaction, thereby supporting students' overall well-being and educational experiences (Jalón et al., 2021; Ly & Vella-Brodrick, 2024). Participatory research approaches have also gained importance in educational studies, particularly in understanding students' lived experiences (Lin & Nguyen, 2021; Saimon et al., 2022). Photovoice, developed by Wang & Burris (1997), enables participants to express their realities through photographs and narratives. This method empowers participants to identify strengths, challenges, and opportunities for improvement within their communities. In educational research, Photovoice promotes critical reflection, student participation, and collaborative problem-solving (Bryant, 2023; Khatter et al., 2024; Robertson et al., 2022). Thematic analysis further supports qualitative inquiry by providing a systematic approach to identifying and interpreting patterns within qualitative data. Braun and Clarke (2006) described thematic analysis as a flexible and accessible method for analyzing recurring themes in participants' narratives and visual representations. Through thematic analysis, researchers can examine experiences related to the significance, challenges, and improvement of academic green spaces.

1.3 Academic Green Spaces in Higher Education Institutions: Local, National, and Global Context

Globally, universities and colleges have increasingly adopted sustainable campus initiatives to improve student well-being (Mishra et al., 2024). Academic green spaces have become integral to institutional efforts promoting sustainability and environmental stewardship (Filho et al., 2021) and contributing to healthy learning environments (Vella-Brodrick & Gilowska, 2022). Within educational settings, there is growing recognition of the importance of involving students in environmental planning and decision-making processes (Akinsemolu & Onyeaka, 2024). However, many institutions continue to encounter maintenance issues (Amaral et al., 2021) and challenges regarding student engagement in campus environmental initiatives (Angelaki et al., 2023). These challenges may prevent campuses from achieving expected performance levels in green spaces (Amaral et al., 2021), affecting functionality and inclusivity, and potentially reducing their educational and psychological benefits (Luque-García et al., 2021). For pre-service teachers, experiences within environmentally responsive campuses are particularly relevant because such experiences may shape future educational practices and perspectives on sustainability and environmental education. Understanding students' lived experiences regarding academic green spaces can therefore contribute to improving institutional environmental policies and practices.

1.4 Photovoice and Thematic Analysis as Foundations for Exploring Academic Green Spaces

This study is grounded in the participatory principles of Photovoice developed by Wang & Burris (1997). Photovoice allows participants to document and communicate their lived experiences through photographs and reflective narratives. The approach empowers participants by encouraging active involvement in identifying issues, expressing concerns, and proposing improvements related to their environments. Using reflexive photography to capture visual narratives bridges the gap between institutional sustainability policies and daily academic life (Tan et al., 2023), while also exposing underlying power dynamics between students and their campus environment (McLaughlan, 2023). The study also uses thematic analysis, a systematic and flexible framework for identifying, analyzing, and interpreting recurring patterns within qualitative data (Braun & Clarke, 2022). By examining participants' photographs and narratives, the study identifies themes associated with the significance, challenges, and improvement of academic green spaces. Systematically coding visual and textual data reveals the nuanced relationship between students and their physical environment (Khan et al., 2021) and accurately captures their personal interpretations of natural settings (Üzmez & Kavaklı, 2024), creating an alternative paradigm where student perspectives actively shape more responsive institutional landscapes (McLaughlan, 2023). These

approaches support the study's objective of exploring pre-service teachers' voices and lived experiences regarding campus green spaces while promoting inclusive participation and reflective inquiry.

1.5 Research Gaps on Pre-Service Teachers' Perspectives Toward Academic Green Spaces

Although studies have recognized the benefits of green spaces in promoting mental health and academic engagement (Sun et al., 2023), as well as environmental awareness (Appiah-Opoku et al., 2023), challenges concerning maintenance, accessibility, and student participation remain evident in higher education institutions (Wood et al., 2022). Existing discussions often emphasize the physical and environmental functions of green spaces but pay limited attention to students' lived experiences and perspectives regarding these environments (Boyd, 2022). There is also a need for participatory approaches that allow students to meaningfully express their concerns and recommendations about campus green spaces (Kleespies & Dierkes, 2023). Through Photovoice and thematic analysis, this study addresses the need to amplify pre-service teachers' voices and involve them in institutional environmental planning and decision-making processes. The study is significant because it explores how pre-service teachers perceive academic green spaces, identifies issues and opportunities related to these environments, and provides recommendations for recreating more inclusive and sustainable campus spaces.

1.6 Academic Green Spaces and Their Alignment with Relevant Sustainable Development Goals (SDGs)

This study aligns with several Sustainable Development Goals (SDGs). It supports SDG 3 (Good Health and Well-Being) by highlighting the role of academic green spaces in reducing stress, improving mental health, and promoting students' well-being (Ly & Vella-Brodrick, 2024). The study also relates to SDG 4 (Quality Education) because green spaces function as experiential learning environments that enhance reflective learning, environmental awareness, and student engagement. In addition, the study contributes to SDG 11 (Sustainable Cities and Communities) through its emphasis on inclusive, accessible, and sustainable campus environments. The focus on environmental stewardship and participatory campus planning also supports SDG 13 (Climate Action) by encouraging sustainability awareness and environmentally responsive practices within educational institutions.

1.7 Contribution of the Study to Educational, Environmental, and Community Sustainability

The study contributes to multidisciplinary sustainability by addressing educational, socio-environmental, and community sustainability concerns. In terms of educational sustainability, the research supports learner-centered and experiential learning environments that enhance environmental awareness and reflective learning among pre-service teachers. The study also contributes to socio-economic and community sustainability by promoting inclusive participation in campus environmental planning and encouraging collaborative decision-making processes. Furthermore, it supports environmental sustainability through the promotion of green spaces that enhance ecological awareness, psychological well-being, and sustainable campus development. By exploring students' lived experiences and recommendations, the study may help institutions develop more sustainable, inclusive, and responsive academic environments that support both human well-being and environmental stewardship.

2. Materials and methods

2.1 Research Design

This study employed a qualitative participatory research design using the Photovoice methodology. Photovoice is a qualitative method that enables participants to express their experiences, perceptions, and insights through photographs and reflective narratives (Wang & Burris, 1997). This methodology was appropriate because it allowed pre-service teachers to document and describe their perspectives regarding campus academic green spaces. The study focused on understanding the lived experiences and viewpoints of pre-service teachers concerning the condition, significance, and improvement of campus green spaces. Through photographs and discussions, participants critically reflected on how these spaces influenced their academic and personal experiences.

2.2 Locale of the Study

The study was conducted at a Philippine Higher Education Institution with a Center of Excellence in Teacher Education during the Academic Year 2024–2025. The university campus served as the setting for the Photovoice activities, photo documentation, and exhibition, and focus group discussion activities concerning academic green spaces. Participants explored various campus areas that they considered meaningful, problematic, relaxing, or beneficial to student learning and well-being.

2.3 Respondents of the Study

The participants of the study consisted of twenty-two (22) science pre-service teachers enrolled at a Philippine Higher Education Institution with a Center of Excellence in Teacher Education during the Academic Year 2024–2025. The participants represented different year levels to obtain diverse perspectives regarding the university's green spaces. To

qualify, participants were required to be officially enrolled as science pre-service teachers, willing to participate voluntarily, capable of using a mobile phone or camera for photo documentation, and available during focus group discussions.

2.4 Sample and Sampling Procedure

The study employed purposive sampling in selecting participants. This approach ensured that participants could actively engage in the Photovoice activities and provide meaningful insights regarding academic green spaces within the campus. Selecting participants from different academic levels allowed the researchers to gather varied experiences and perspectives related to the university environment.

2.5 Research Instrument

The primary instruments used in the study included the Photovoice SHOWED guide questions for focus group discussions, participants' photographs taken within the campus, and their narrative descriptions. The guide questions focused on participants' perceptions, experiences, concerns, and recommendations regarding academic green spaces. Open-ended questions were used to encourage deeper reflection and discussion. These questions explored the meaning of the photographs, the reasons for selecting the images, the influence of the spaces on academic and personal experiences, and possible improvements for the identified areas.

2.6 Data Gathering Procedure

The researchers conducted the data gathering process in several phases. During the orientation phase, the researchers explained the objectives of the study, ethical considerations, and the Photovoice process. Participants were informed about proper photo documentation and advised to avoid taking photographs that could violate privacy or institutional policies. They also provided informed consent for voluntary participation. In the photo documentation phase, participants received sufficient time to capture photographs representing their experiences, observations, and perspectives regarding academic green spaces within the university campus. The photographs included areas perceived as meaningful, problematic, relaxing, or supportive of student learning and well-being. During the reflection and discussion phase, the researchers conducted a photo exposition, and participants prepared reflections and narrative explanations for their selected photographs. The researchers also held focus group discussions to enable participants to elaborate on the meanings and stories behind the captured images.

2.7 Data Analysis Techniques

The researchers analyzed the collected photographs, narratives, and focus group discussion responses using thematic analysis following the framework of Braun and Clarke (2006). The researchers reviewed the data carefully, identified recurring patterns and ideas, and organized them into themes and subthemes related to academic green spaces. This analysis process included familiarization with the data, coding of significant statements and narratives, identification of themes, review and refinement of themes, and interpretation and presentation of findings.

2.8 Ethical Considerations

The study strictly observed ethical standards in conducting research involving human participants. Researchers informed participants about the purpose of the study and asked them to sign informed consent forms before their involvement. Participation was voluntary, and participants could withdraw from the study at any stage without penalty. To maintain confidentiality and anonymity, the presentation of findings did not disclose participants' names and identities. Researchers used photographs containing identifiable individuals only with proper permission, and used all gathered data solely for academic and research purposes.

3. Results and Discussion

3.1 Perceptions of Pre-Service Teachers Toward Academic Green Spaces

3.1.1 Perceived Importance of Academic Green Spaces

The findings revealed that most respondents considered academic green spaces highly important in their academic and personal lives. Among the participants, 68.18% described green spaces as very important, 22.73% considered them important, and 9.09% rated them as moderately important. None of the respondents viewed green spaces as unimportant. Participants emphasized that green spaces contributed to relaxation, stress reduction, improved concentration, and better academic experiences. One participant stated that green spaces made the campus more peaceful and less stressful, especially during examination weeks. The findings indicate that pre-service teachers recognize the significant role of green environments in supporting emotional well-being and academic functioning. These findings align with Kaplan & Kaplan (1989), who emphasized that exposure to nature contributes to psychological restoration and mental well-being (Hooyberg et al., 2022). Similarly, Ulrich (1984) found that natural environments positively influence emotional recovery and stress reduction (Chan et al., 2021). These findings suggest that academic green spaces serve not only as physical campus features but also as essential environments that enhance students' emotional and academic experiences. Furthermore, the deliberate arrangement of vegetation within these areas can bolster feelings of safety and comfort, which are foundational to fostering

a conducive learning environment (Sezavar et al., 2023). Beyond these psychological benefits, these environments foster social interactions and strengthen bonds, which are critical for building positive peer relationships in an educational setting (Appiah-Opoku et al., 2023).

3.1.2 Benefits of Academic Green Spaces

The respondents identified several benefits associated with academic green spaces. Stress reduction and relaxation emerged as the most recognized benefit, identified by 90.91% of participants. This was followed by better social interaction (81.82%), improved learning environment (77.27%), environmental awareness (72.73%), and increased motivation to study (63.64%). Participants shared that shaded areas, gardens, and open spaces allowed them to rest, interact with peers, and engage in informal academic discussions. One participant explained that seeing well-maintained and verdant surroundings inspired students to care more about the environment and adopt sustainable practices. These findings demonstrate that academic green spaces contribute to students' mental wellness, collaborative learning, and environmental consciousness. The results align with the World Health Organization (2016), which reported that green spaces improve mental health and overall well-being (Gozalo et al., 2023). The responses further indicate that exposure to green spaces may influence pre-service teachers' future teaching practices and sustainability awareness. Moreover, integrating green spaces shapes pre-service teachers' ecological identities and pedagogical affordances for their future careers (Gray & Colucci-Gray, 2018). Additionally, these natural settings serve as critical sites for physical activity and social hubs that foster interaction and strengthen interpersonal connections, echoing broader observations that urban green environments are essential for facilitating social cohesion and overall quality of life (Wang et al., 2021).

3.2 Challenges Encountered in Academic Green Spaces

3.2.1 Maintenance and Accessibility Concerns

The findings showed that participants encountered several concerns regarding the condition of academic green spaces. 86.36% of respondents identified lack of maintenance as the primary issue. Additionally, 77.27% reported limited seating areas, 72.73% noted insufficient shaded spaces, and 68.18% observed poor waste management practices. Participants explained that some gardens and open spaces lacked proper cleaning, landscaping, and infrastructure, which affected their functionality and accessibility. One participant stated that some green areas were visually appealing but not fully functional because of limited benches and shaded spaces. The findings suggest that inadequate maintenance and infrastructure reduce students' ability to maximize the benefits of academic green spaces. Poorly maintained green spaces may discourage utilization and lessen the potential health and educational benefits associated with natural environments (Fangnon, 2021). The results indicate that although students value green spaces, their ratings of campus cleanliness, maintenance, and general appearance are important aspects of their experience, consistent with (Seitz et al., 2014). Policies, such as waste management and landscaping, are described as significant sustainability initiatives in higher education campus operations (Filho et al., 2021).

3.2.2 Limited Student Participation in Environmental Planning

The results revealed that 63.64% of respondents believed that students should actively participate in campus environmental planning and decision-making. Participants expressed the need for greater involvement in designing and improving academic green spaces to ensure that these areas meet students' needs and preferences. The findings highlight the importance of participatory approaches in environmental management within educational institutions. These results support Wang & Burris (1997) and DeValiant et al. (2021), who emphasized that participatory methods such as Photovoice empower individuals to identify community concerns and contribute to meaningful social change. Greater student involvement may therefore contribute to more inclusive, responsive, and sustainable campus environments. Integrating student perspectives into these initiatives can highlight areas where awareness of sustainability education is limited within higher education institutions (Angelaki et al., 2023). Moreover, formal channels for student input in campus development planning can be established (Mishra et al., 2024). Aligning institutional support with student input facilitates a more synergistic integration of sustainability action plans into university governance (Filho et al., 2021; Mishra et al., 2024).

3.3 Recommendations for Recreating Academic Green Spaces

3.3.1 Environmental Improvement and Sustainability Initiatives

The respondents proposed several recommendations for improving academic green spaces within the university. The majority recommended planting more trees and gardens (90.91% of participants), while 86.36% suggested conducting regular maintenance programs. Additional recommendations included providing more seating areas (81.82%), implementing waste segregation practices (77.27%), and involving students in environmental planning (72.73%). Participants emphasized that greener and cleaner spaces could enhance comfort, productivity, and environmental engagement among students. The findings emphasize the importance of participatory environmental management and sustainability practices in educational institutions. Photovoice is a method that encourages participants to critically examine their surroundings and contribute recommendations for community improvement (Smith et al., 2025). The overall results suggest that pre-service teachers highly value academic green spaces and recognize their contributions to mental well-being, social interaction, learning experiences, and emotional and spiritual growth, all of which are essential for a holistic

educational experience. However, improvements in maintenance, accessibility, and student participation remain necessary to recreate more sustainable and learner-centered academic green spaces. The installation of additional seating and shaded zones contributes to thermal comfort and can enhance the usability of green spaces (Tomasi et al., 2024; Arzberger et al., 2026). Initiatives should prioritize the selection of native, drought-resistant species, ensuring long-term ecological viability (ABUAYYASH et al., 2023). Embedding these initiatives enables universities to cultivate a culture of collective responsibility and structural engagement, transforming campus environments into living laboratories for climate action (Filho et al., 2023).

4. Conclusion & Recommendations

The study explored the voices and experiences of twenty-two (22) science pre-service teachers regarding academic green spaces through the Photovoice methodology. Findings revealed that the majority of the respondents perceived academic green spaces as essential areas that contribute to stress reduction, emotional well-being, social interaction, environmental awareness, and improved learning experiences. Quantitative results further showed that students highly valued the presence of clean, accessible, and well-maintained green spaces within the university. However, participants also identified challenges such as insufficient maintenance, limited seating and shaded areas, poor waste management practices, and limited student involvement in environmental planning. Overall, the study emphasizes that academic green spaces play a significant role in creating supportive and learner-centered educational environments and highlights the value of students' voices in developing sustainable campus initiatives.

Based on its findings, the study recommends that higher education institutions strengthen the development and maintenance of academic green spaces by providing additional trees, gardens, seating areas, and shaded learning environments. Universities may also implement regular environmental maintenance and waste management programs to improve the usability and sustainability of campus green spaces. Furthermore, school administrators are encouraged to involve students, particularly pre-service teachers, in environmental planning and decision-making activities through participatory programs and sustainability projects. Future researchers may also conduct similar studies involving larger populations and different academic institutions to further examine the relationship between green spaces, student well-being, and academic engagement.

This study was limited to 22 science pre-service teachers from a Philippine Higher Education Institution, which may limit the generalizability of the findings to other student populations or educational institutions. The study also relied primarily on participants' perceptions and self-reported experiences gathered through Photovoice, reflective narratives, and discussions. Because the research focused on qualitative and descriptive data supported by simple quantitative analysis, the findings may not fully capture all dimensions of students' interactions with academic green spaces. Additionally, time constraints and accessibility of certain campus areas may have influenced the photographs and responses provided by the participants. Future studies may utilize mixed-method approaches and larger samples to obtain broader and more comprehensive findings.

Compliance with ethical standards

This study adhered to ethical standards in conducting research involving human participants. Participants were informed about the purpose of the study prior to participation. Confidentiality and anonymity were maintained by ensuring that participants' names and identities were not disclosed in the presentation of findings. Photographs containing identifiable individuals were used only with proper permission, and all gathered data were used solely for academic and research purposes.

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