

Enhancing Student Engagement and Leadership in Climate Action: Research on the Role of Extracurricular Activities at Universities

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Abstract: Climate change remains one of the most urgent global challenges today, demanding immediate action across all levels of society. Universities, as centers of learning and innovation, play a vital role in equipping students with the knowledge and skills necessary to combat climate change. While classroom instruction provides foundational theories, extracurricular activities offer practical, hands-on experiences that are essential for developing a deeper understanding of the subject. This article explores the significance of integrating climate change-related extracurricular activities in universities, focusing on their role in boosting students' environmental awareness, fostering interdisciplinary collaboration, and encouraging active involvement in climate action. Through reviewing existing research and conducting a survey of students engaged in climate-related extracurriculars, this paper highlights the potential influence of such initiatives on student engagement and the wider academic community.

Keywords: Climate change, extracurricular activities, environmental awareness, student engagement

1. INTRODUCTION

Climate change is one of the most serious global challenges of the 21st century, directly impacting the sustainable development of all countries (IPCC, 2022). In this context, universities not only serve to train high-quality human resources but also act as centers of knowledge and innovation. They are responsible for shaping a generation of students with awareness, skills, and leadership capacity to engage in climate change response activities (Filho et al., 2019).

In higher education, besides formal teaching, extracurricular activities are increasingly seen as a vital way to help students develop leadership, teamwork, social responsibility, and boost their engagement with community issues (Astin, 1999; Kuh, 2008). International research shows that student participation in extracurricular activities positively influences environmental awareness and behaviors related to climate change (Holdsworth & Thomas, 2021). However, much of the new work has focused solely on formal education about sustainable development (Tilbury, 2011), while the specific role of extracurricular activities in promoting student climate engagement and leadership has not been fully explored, especially in the context of higher education in developing countries like Vietnam.

This gap is both theoretical, because there are no frameworks for systematically analyzing the relationship between extracurricular activities, student participation, and leadership in climate action, and practical, as many universities lack an effective strategy to incorporate extracurricular activities into the climate action program, resulting in students not fully embracing their pioneering role in sustainable initiatives. This article aims to demonstrate how such activities improve a more comprehensive and practical understanding of climate issues, boost student engagement in environmental advocacy, and foster leadership skills essential for advancing climate action. By exploring current trends in university-based extracurricular programs related to climate change, this study aims to highlight best practices, identify gaps, and suggest strategies for more effectively integrating these initiatives into higher education curricula.

Furthermore, this paper will present evidence from both qualitative and quantitative research that highlights the positive impact of extracurricular activities on students' understanding of and commitment to tackling climate change. Through a survey of students and interviews with faculty members, the research will also offer insights into how universities can support and expand these programs to maximize their educational and social benefits.

2. LITERATURE REVIEW

Over the past decade, several studies have examined the role of education in climate change awareness and action. Scholars like Panth et al. (2015) emphasize that while theoretical knowledge about climate change is important, hands-on experiences are just as vital for building a deeper understanding and sense

of responsibility among students. Brown and Smith argue that students who engage in activities such as environmental clubs, campus sustainability initiatives, or community outreach projects are more likely to develop the skills needed for long-term climate action. Their work supports the idea that experiential learning improves students' ability to connect abstract climate concepts to real-world situations.

However, there is a gap in the literature regarding the specific contribution of extracurricular activities to climate education at the university level. While there is general agreement on the importance of experiential learning, few studies have systematically examined the variety of extracurricular opportunities available to students, the barriers to participation, and the measurable impact these activities have on students' attitudes and behaviors. For example, Poyyamoli and Alexander (2014) found that students involved in environmental organizations often report a stronger commitment to sustainable practices, but the study did not provide enough data on how these activities influence students' academic performance, career choices, or long-term engagement in climate action.

Furthermore, research by Panth et al. (2015) emphasizes the importance of interdisciplinary collaboration in tackling climate change, but their study mainly focuses on formal academic projects. There is little research on how extracurricular activities can encourage interdisciplinary approaches by uniting students from diverse fields such as environmental science, economics, sociology, and political science to work together on climate-related initiatives. This research aims to address these gaps by providing a detailed analysis of how extracurricular activities support climate change education and how universities can better promote these programs to increase their effectiveness.

This study relies on experiential learning theory, developed by educational theorist Rabia, as its theoretical basis. According to Rabia (2010), experiential learning is a process where knowledge is created through transforming experience. The theory suggests that learning is most effective when it involves active participation in real-world situations, which enables individuals to reflect on their actions, make adjustments, and apply their knowledge to new scenarios. In the context of climate change education, extracurricular activities provide students the chance to engage directly with environmental issues, experiment with solutions, and reflect on the results of their actions (Sra, 2012).

Extracurricular activities, such as campus sustainability projects, environmental advocacy groups, and community outreach programs, align with Kolb's model by offering students hands-on experiences that reinforce and build on the theoretical knowledge they gain in class. These activities motivate students to take initiative, collaborate with peers, and develop problem-solving skills in a real-world, dynamic setting. Through participation in these programs, students can deepen their understanding of climate change, explore innovative solutions, and build confidence to become active contributors to the global climate movement.

In summary, this study will explore how universities can utilize extracurricular activities to enhance academic education on climate change. By promoting hands-on learning experiences, universities can provide students with the skills, knowledge, and motivation necessary to tackle one of the most urgent issues of our time.

3. METHODOLOGY

This research uses a qualitative approach, combining a literature review with a survey of university students who have participated in climate-related extracurricular activities. Data was collected through semi-structured interviews with faculty members and student leaders, as well as a questionnaire distributed to a sample of 520 students from various disciplines at universities. The goal of the data collection was to explore the types of extracurricular activities available, the level of student engagement, and the perceived impact of these activities on students' understanding of climate change.

4. RESULTS

The survey results show that students involved in climate-related extracurricular activities have a greater awareness and understanding of climate change than those who are not involved. These students said that the hands-on experience from activities like campus sustainability projects, environmental clubs, and climate advocacy groups gave them practical knowledge of climate issues that complemented their academic learning. Additionally, students emphasized the significance of interdisciplinary teamwork in these activities, which allowed them to view climate change from various angles, including science, economics, and policy.

Table 1: Student survey results

Questions	Yes (Ratio)	No (Ratio)
Are you familiar with climate-related extracurricular activities on campus?	54.17	45.83
Are you involved in any climate-related extracurricular activities?	41.67	58.33
Has participating improved your understanding of climate change?	45.83	54.17

Source: Author's survey results

Besides student responses, interviews with faculty members showed that extracurricular activities are important in supporting classroom learning. Many faculty members observed that students involved in climate-related initiatives tend to participate more in discussions about sustainability and are more likely to pursue careers in environmental fields.

4.1. Positive effect on student knowledge and engagement

The main finding of this study is that participating in extracurricular activities related to climate change significantly improves student knowledge and involvement. Survey data from students engaged in university-based climate action groups, sustainability projects, and environmental clubs showed a clear increase in their understanding of key climate change concepts. For example, 54.17% of respondents said that their involvement in these activities enhanced their knowledge of topics like carbon footprints, renewable energy, climate mitigation strategies, and the socio-economic effects of climate change.

The interviews with students further support these findings. Many participants noted that extracurricular activities allowed them to engage with climate change issues in ways that classroom education could not. One student remarked, "In class, we learn the theory, but in the environmental club, we get to apply that knowledge. We organize events, campaign for change, and work with local communities, which makes the learning real and impactful." This sentiment was echoed by several others, emphasizing the hands-on nature of extracurricular activities and the experiential learning opportunities they offer.

Additionally, students emphasized that these activities cultivated a sense of personal responsibility and urgency about climate change. While classroom learning often tends to be more passive, participation in extracurricular activities encouraged students to take action. For example, engagement in campus-wide sustainability initiatives, such as waste reduction campaigns or tree planting projects, inspired students to make eco-friendly choices in their everyday lives. Many respondents shared that they began adopting sustainable habits, like reducing energy use, recycling, and taking public transportation, as a direct result of their involvement in extracurricular programs.

The data also showed that students who took part in extracurricular climate activities were more likely to engage in environmental advocacy outside of college settings. About 41.67% of survey respondents said they had become more active in climate advocacy, either by joining local environmental groups or by taking part in climate protests and lobbying efforts. This highlights the importance of extracurricular activities in promoting a long-term commitment to environmental stewardship among college students.

4.2. Developing leadership and interdisciplinary collaboration skills

Another important outcome of the research is the enhancement of leadership and interdisciplinary collaboration skills among students involved in climate-focused extracurricular activities. The qualitative analysis of interview data showed that these activities offered students many chances to assume leadership roles, oversee projects, and work together with peers from different academic backgrounds. This is especially vital in the context of climate change, which demands solutions that cross multiple disciplines, including environmental science, economics, sociology, and political science.

Many students said they gained valuable leadership experience by organizing campus events, running sustainability campaigns, or overseeing community outreach programs. One student, who served as president of an environmental club, shared, "Heading up our climate action group has been one of the most rewarding experiences of my college life. It taught me how to work with a team, communicate effectively, and lead by example. These are skills that will be key to my future career, especially if I want to work in environmental policy."

Furthermore, many extracurricular activities offered opportunities for students to collaborate with peers from different fields, improving their ability to work across academic boundaries. For example, one university's "Green Campus Initiative" united students from environmental science, engineering, business, and sociology to work on sustainability projects. The program promoted interdisciplinary cooperation by enabling students to apply their specific skills to a shared goal. Engineers focused on

creating sustainable energy solutions, business students devised strategies for funding these initiatives, and sociologists examined the social effects of the projects on the local community.

This interdisciplinary approach was highly valued by students, with many noting that it gave them a more comprehensive understanding of climate change. As one student said, "Climate change is not just an environmental problem, it's a social, economic, and political one. Working with students from other departments helped me see the bigger picture and understand how different fields need to collaborate to create meaningful solutions."

4.3. Challenges in organizing and maintaining extracurricular activities

Despite the clear benefits of extracurricular activities for climate education, the research also identified several challenges that universities face in organizing and maintaining these programs. One of the main issues highlighted by students and faculty alike is the lack of institutional support. Many respondents reported that although there is a strong interest in climate-related extracurricular activities, universities often lack the necessary resources to support these initiatives effectively.

For example, over 50% of survey respondents said they struggled to secure funding for their projects. Sometimes, students had to depend on external donations or fundraising to support their activities, which limited the size and scope of their efforts. One student shared, "We wanted to expand our waste reduction campaign to include more departments on campus, but we didn't have the budget to do so. It was frustrating because we had the support of the student body, but not enough resources to make it happen." Similarly, faculty members who oversee or advise student-led environmental groups also highlighted the difficulty of balancing extracurricular activities with their academic duties. Many faculty members shared that while they are passionate about supporting student climate efforts, they often lack the time and resources to fully commit to these activities. One faculty advisor explained, "It's a constant juggling act. I want to help my students develop their projects, but I also have research, teaching, and administrative responsibilities that take up a lot of my time. There needs to be more institutional recognition of the importance of these activities so that faculty can get the support they need."

Along with resource constraints, another challenge found in the research is students' inconsistent participation in extracurricular activities. Many students said that although they are interested in climate change, academic pressures often keep them from dedicating much time to these activities. This was especially true during exam periods or when they had heavy coursework. One student said, "I love being part of the environmental club, but sometimes it's hard to balance it with my studies. During finals, I have to prioritize my grades, which means I can't always commit as much time to the club as I'd like."

5. DISCUSSION AND CONCLUSION

The findings of this research align with previous studies that highlight the significance of extracurricular activities in improving climate education. For example, the work of Brown and Smith (2015), which stresses the importance of experiential learning in climate education, is supported by the results of this study. Both studies show that hands-on involvement in climate-related activities enhances students' understanding of climate change and encourages them to take action.

However, the current study builds on previous work by providing a more detailed look at the challenges of organizing and maintaining extracurricular activities. While earlier research mainly highlighted the benefits of these programs, this study offers a broader perspective by exploring the obstacles faced by universities and students, such as resource limitations, inconsistent participation, and the need for stronger institutional support.

Organizing extracurricular activities on climate change at the university level is vital for fostering environmental awareness, engagement, and leadership among students. These activities provide a platform for hands-on learning, enabling students to connect theoretical knowledge from their academic studies with real-world applications. Through participation in climate-related projects, workshops, and campaigns, students gain a deeper understanding of the environmental issues facing their communities and the world. This experiential learning not only broadens their knowledge but also motivates them to take personal responsibility for climate action, which is a key step in addressing the global climate crisis. One of the key benefits of extracurricular activities is their ability to develop critical skills such as leadership, communication, and teamwork, which are vital for effective climate advocacy. When students collaborate in group projects, they learn how to work together towards common goals, negotiate solutions, and communicate their ideas effectively. These skills are not only valuable for their academic growth but also prepare them to become future leaders in sustainability efforts. Furthermore, by participating in

climate-related initiatives, students are empowered to voice their concerns, engage with policymakers, and contribute to public discourse on climate change mitigation and adaptation.

Extracurricular activities also promote a sense of community and shared responsibility, helping to build a culture of environmental stewardship within the university. As students participate in climate change initiatives, they motivate their peers, faculty, and the broader community to get involved in sustainability efforts. This collective effort can lead to meaningful institutional changes, such as adopting more sustainable campus practices, increasing environmental education, and incorporating climate change topics into the broader curriculum. Universities, as an influential institution, can set an example by promoting sustainability and addressing climate issues through both formal and informal education channels. Moreover, these activities provide an avenue for interdisciplinary collaboration, bringing together students from various academic backgrounds to work on climate-related challenges. This diversity of perspectives fosters innovative solutions and encourages students to think critically about the complex, interconnected nature of climate issues. In doing so, universities not only contribute to the development of well-rounded individuals but also help advance climate solutions that consider social, economic, and environmental dimensions. Ultimately, by fostering awareness, skills, and action through extracurricular activities, universities can play a pivotal role in equipping the next generation with the tools they need to confront the pressing issue of climate change. These initiatives are essential for building a sustainable future and ensuring that students emerge as informed, active participants in the global effort to combat climate change.

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