

Engaging International Students in Sustainability Initiatives for WueLAB



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Chapter 1 – Introduction: Purpose of the Study and Research Questions

1.1. Problem definition and research question

WueLAB is looking for a concept which invites international students to co-create innovative, science-based strategies that bridge research, communication, and campus life. WueLAB presents itself as more than a research platform, but rather a living space for sustainability experimentation, student engagement, and practical learning. However, international students at JMU Würzburg are largely unaware of WueLAB's sustainability work, which limits the inclusivity and reach of the lab, including its Participatory Wall known as the *Future Frame*. The *Future Frame* is a wall where students can learn about events, share their ideas, connect to nature through following a bear-foot path. With these tools, WueLAB attempts to turn passive passersby into active participants.

With this in mind, the research team formed the main question: *“How could WueLAB's sustainability activities be made more visible, accessible, and engaging to international students?”*

1.2. Guiding questions

To provide more context, the research team was provided the following guiding questions by WueLAB:

- *“How can international students be made aware of the activities of the University Würzburg’s Sustainability Lab WueLAB —especially through the Participatory Wall at the Campus Hubland Nord?”*
- *“Which sustainability topics are most relevant and engaging for international students?”*
- *“How can the Participatory Wall be used as a tool for science communication, not just information display?”*
- *“What creative, interactive formats (e.g., QR codes, pop-up events, visual storytelling, film screenings) can make WueLAB’s research accessible and inspiring?”*
- *“How can the wall foster ongoing engagement beyond one-time visits?”*

1.3. SWOT-Analysis describing current challenge context

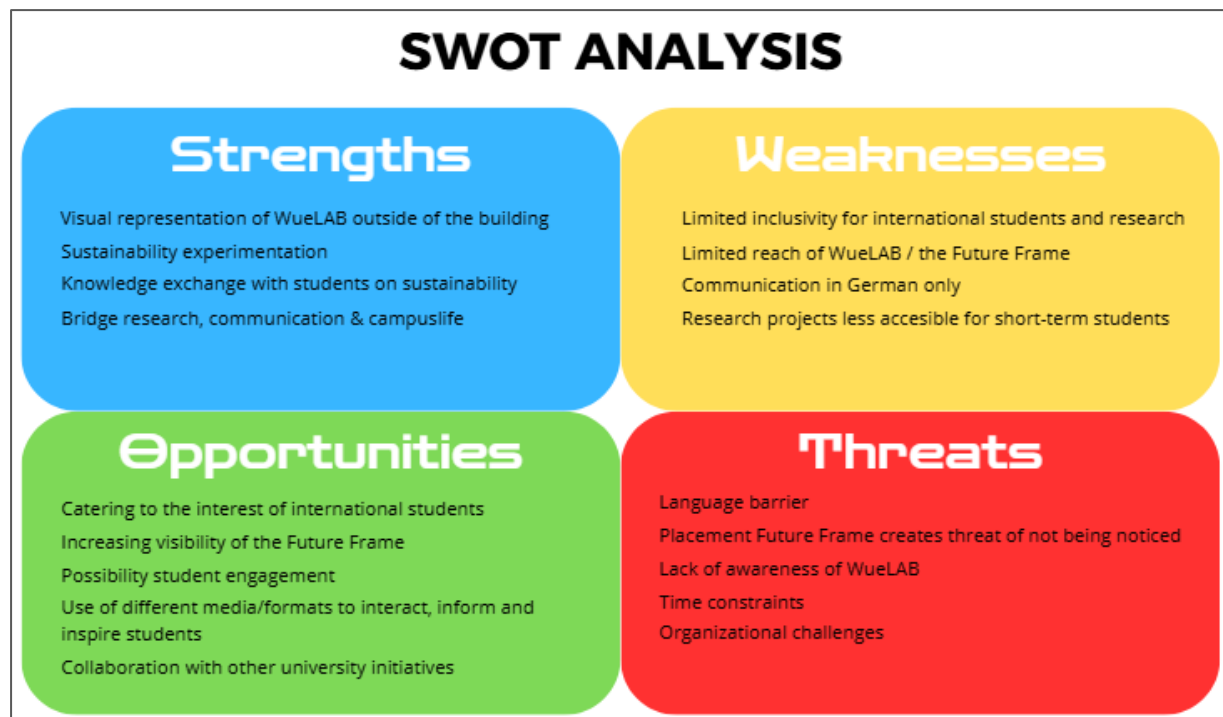


Figure 1: SWOT analysis of WueLAB – Future Frame

The SWOT presents four aspects of the current situation of the *Future Frame*. Starting with strengths, the wall is a visible representation of WueLAB outside the building, making it easier to attract new students. As such, the wall can enhance sustainability experimentation by inviting students to engage in practical activities and exchange knowledge with peers. This can help connect research, the communication of research, and sustainability with daily campus life and student communities. Therein, opportunity lies in engaging with international students, a potential that can be increased by catering to their specific needs. Furthermore, the *Future Frame* could increase its ability to attract attention in order to engage students with offers of more diverse content. This could be done by using different media to inform and inspire people with both digital and physical tools. Another opportunity lies in scalability, where the *Future Frame* or WueLAB's other initiatives could be expanded and linked to other university initiatives.

The weaknesses include limited inclusivity for international students, who currently hardly participate. This experienced inaccessibility is extended by the exclusive reliance on German communication. Another weakness exists in the fact that many international students stay in Würzburg for only a short period and may not have the opportunity to

participate as much as those who stay at JMU for longer. When events are tailored to their needs these students might lack time to participate in returning events or long-term ongoing projects. Additionally, there is a threat related to the frame's location, which complicates interaction due to its position away from the main path. A different location could make for more interaction and publicity. WueLAB needs this publicity as it is currently unknown to many students. More events and projects could improve students' awareness but could also impose organisational challenges and time investment for both WueLAB team and students.

Chapter 2 – Literature Review

2.1. Overview

Higher education institutions are increasingly recognised as key spaces for advancing sustainability, yet international students' participation in campus sustainability initiatives remains low despite their growing presence in universities worldwide. Research shows that international students are less likely to engage in extracurricular sustainability activities than their local peers, partly due to barriers such as language differences, unfamiliarity with local institutional structures, lack of awareness of available opportunities, and a weaker sense of belonging within the host university community (Rose-Redwood & Rose-Redwood, 2018). A study of student engagement across 34 Chinese universities found that a large proportion of international students were passively or ineffectively involved in campus learning and participation activities, and that several environmental factors, including teaching quality, peer cooperation, and respect for diversity, significantly predicted their level of engagement (Tian et al, 2020). In the European context, research on the sustainability habits of mobile students highlights that international students often lack information about sustainable practices in their host countries, which significantly limits their ability to participate in local environmental initiatives, even when their personal values align with sustainability goals (Baggia et al., 2025).

2.2. Barriers to participation

Understanding what specifically drives these gaps requires looking beyond general descriptions of under-participation and examining the concrete barriers international students face. Research points to three interconnected factors: a lack of awareness about

available initiatives, time pressures created by the demands of studying abroad, language barriers and a sense of belonging that shape how students engage.

2.2.1. Lack of awareness

One study found that nearly 43% of students identified a general lack of awareness about sustainability initiatives as the primary barrier to participation, with many students reporting that they overlooked communications about campus events due to information overload. These findings suggest that universities must move beyond assuming that sustainability initiatives will automatically attract international students and instead actively investigate which formats, communication channels, and forms of support would make participation feel relevant and accessible (Hepworth, 2025). Without such facilitation, students can feel overwhelmed and confused by complex sustainability concepts, which can discourage their meaningful use (Chaplin & Wyton, 2014). However, barriers to engagement are not just about lack of information or understanding but also shaped by culture and social connections. Research shows that cultural values such as collectivism (a focus on group goals) and uncertainty avoidance (a preference for familiar routines) influence how international students engage in pro-environmental behaviours. For instance, students from collectivist cultures often respond more positively to group-based initiatives or activities backed by peers. At the same time, many international students feel excluded, not only from decision-making processes but also from the informal social networks where local students learn about and join campus activities. These gaps can make it harder for them to fully participate, even when they are interested (Martirosyan, 2019).

2.2.2. Time constraints and academic pressure

International students face time pressures that are different from those of their local peers. Research consistently identifies time constraints as a frequently cited barrier to campus engagement, with students reporting that academic workloads, language-related study demands, and the logistical challenges of navigating an unfamiliar system consume the hours that local students might otherwise spend on extracurricular activities. According to a study conducted by Cecil et al (2022) on barriers to campus involvement, the leading obstacle was the perception of not having enough time to participate, or being too busy, mostly with academic work, and these barriers were amplified for international students who also needed

additional time for language preparation and adapting to unfamiliar academic expectations. Students also reported familial pressures to perform well academically, which meant that extracurricular participation was seen as a luxury rather than a priority, particularly in the early semesters when they were still settling into life abroad. This finding has practical implications for WueLAB: sustainability activities that require long-term, fixed-schedule commitments may be less accessible to international students than short, flexible, low-barrier entry points that can be fitted around existing demands.

2.2.3. Language barriers and sense of belonging

The sense of belonging, or its absence, is another significant barrier. International students frequently report feeling like outsiders within campus communities, not because they lack interest in participating, but because they encounter social and cultural barriers that make participation feel unwelcoming or irrelevant. Research on leisure and belonging among international students found that less acculturated students perceive higher levels of socio-cultural, interpersonal, and access constraints, and that participation in activities does not automatically produce a sense of belonging unless the environment is genuinely inclusive (Lee & Kim, 2021). Yet, belonging can play a crucial part in sustainability. When students feel like they are part of a certain space, they are shown to feel more responsible for its stewardship. Fostering a close connection between students and the campus may therefore help make engagement with on-campus sustainability-related activities feel more personally relevant (Chaplin & Wyton, 2014). Active stewardship also offers opportunities for positive interactions with place-bound sustainability, creating directly visible, rewarding results that incentivise continued caretaking (Krasny & Delia, 2013).

In the German university context, the language barrier is identified as the most persistent obstacle to social integration and a sense of belonging. The International Student Barometer 2022 highlights that while three-quarters of international students in Germany feel welcome at their university, only half feel the same in the wider local community, with difficulty establishing contact with local students cited as a primary challenge (Ripmeester, 2023). According to a report from the Deutscher Akademischer Austauschdienst (Pineda et al., 2022), linguistic insecurity often leads to "informal exclusion," in which international students are less likely to be invited to informal social gatherings that serve as entry points to

campus initiatives. Other studies have shown that international students who participate in campus activities alongside local peers' report increased belonging, but only when those activities provide repeated, meaningful interaction rather than one-off events, as regular contact helps lower the emotional barriers of shame and discomfort associated with using a second language (Beutner et al, 2023).

2.3. Conclusion

In conclusion, the under-participation of international students is rarely due to apathy towards the environment. Instead, it is the result of a "value-action gap" widened by structural obstacles (Woodruff & Shebitz, 2026). The primary obstacle is often a lack of awareness, where students are interested but simply do not know how or where to start because communications are not tailored to their needs. This is exacerbated in the German context by the language barrier, which transforms linguistic insecurity into a social isolation that hinders a sense of belonging to both the community and the university space. When sustainability initiatives are communicated primarily in the local language or through informal domestic networks, international students are effectively excluded before they can even begin to manage their time constraints. Addressing these barriers requires academic institutions to adopt a "students-as-partners" approach that actively reduces these informational and linguistic barriers (Toman et al, 2024).

Chapter 3 – Methodology

3.1 Research approach and design

This study utilised a survey-based methodology to investigate the barriers international students face when engaging with WueLAB and to consider their suggestions for improving it. The decision to use surveys was informed in part by WueLAB's own recommendation and inspired by a comparable survey conducted in 2025. The same method was adopted to compare findings, observe what changed over the span of a year, and examine trends specific to international students compared with the student population surveyed in the previous survey.

This research considered a final sample of 25 international students at University of Würzburg after conducting the survey over 3 days. Participants were recruited through

intercept-based sampling, approaching individuals on and around campus. Approximately 10 potential participants declined to take part, either because they did not meet the eligibility criteria (i.e. they were not international students) or because they lacked the time to participate.

3.2. Analysis

Survey responses were analysed using inductive coding, an approach in which themes emerge organically from the data rather than being predetermined. This allowed the researchers to remain open to the range of experiences and perspectives participants brought, without imposing a predetermined framework on the findings.

3.3. COM-B model as the theoretical framework

To interpret the barriers and facilitators identified through the survey, the study draws on the COM-B model of behaviour (Michie et al., 2011). The model proposes that behaviour occurs when three conditions, i.e. capability, opportunity and motivation, are sufficiently met.

The COM-B model offers a structured lens for understanding why participation may be limited among international students at WueLAB. For example, international students may face capability barriers, including language challenges and limited awareness of how to use WueLAB's resources. Opportunity barriers could include inconvenience or insufficient outreach on social media channels that international students are more likely to use. Motivational barriers might include low awareness of WueLAB's relevance to their interests, uncertainty about whether the space is welcoming to them, or competing academic and personal pressures.

By mapping findings onto the COM-B framework, the study aims not only to describe the barriers international students report but also to understand and develop key steps toward designing interventions to address the underlying problem.

Chapter 4 – Data analysis

4.1. Results analysis

The survey was completed by approximately 25 international students at JMU Würzburg. The majority of respondents were enrolled at Master's level (59%), and the largest

single group (45%) reported an expected period of study of between zero and six months, indicating a sample weighted towards shorter-stay students.

When it came to understanding which events had reached most international students, it was found that awareness was concentrated on its discussion forums and lectures or presentations, whereas its networking events were the least widely recognised activity. However, even with some awareness of WueLAB's events, overall awareness was low, with 89% of respondents reporting having never participated in any WueLAB project or research activity.

A key objective of the survey was to comprehend what might motivate international students to engage with WueLAB, and we found that a majority was motivated by the prospect of networking opportunities, student jobs, and social events. Regarding which factors would most encourage participation, skills-building was the most frequently selected (86%), followed by the opportunity to find community (73%), and an online presence was ranked lowest among the options offered. To understand the most interesting medium, we evaluated various forms of content delivery and found that educational and networking events were the most favoured, at approximately 68% each, whereas workshops were less favoured at 64%. In terms of preferences for sustainability topics that could be engaging, climate change was the most popular (64%), followed by sustainable careers (55%), environmental justice (45%), and biodiversity and green energy (41% each). The least frequently selected topics were community action (18%) and economic security and clean water (14% each).

Another key source of interest was understanding the obstacles international students are currently facing: lack of time was the most cited (45%), closely followed by language barriers (41%). A lack of interest in sustainability was the least frequently reported barrier (14%), suggesting that non-participation was attributed primarily to practical and linguistic constraints rather than to disengagement from the subject matter. Finally, regarding communication channels, respondents preferred Instagram and the university newsletter (both at 64%).

4.2 Comparison of CHARM and WueLAB survey

Since the aim of this study is to fully understand how best to engage international students in university-related sustainability activities, it will be valuable to understand how this group's engagement compares to that of German students at JMU. Similarities could indicate that activities aimed at these factors are most efficient in terms of time and energy costs, while it is important to realise where these two groups might differ to tailor activities to international students' specific needs. To this end, the comparison of the findings from the CHARM survey to a more extensive survey conducted by the WueLAB in 2025 among 446 German students, would be insightful.

The first comparison relates to the division of degree levels among the respondents. Whereas the CHARM survey mostly got responses from master students, the WueLAB survey got most of its responses from bachelor students (39.7%, see *figure 2*). While WueLAB aims to engage students in sustainability across all levels at the campus, each group may have unique needs and wishes that influence how best to encourage their participation in sustainability. Research indeed suggests that behavioural change is achieved most effectively when communication is adjusted to its audience specific characteristics (Juma-Michilena et al, 2022). It is therefore important to keep in mind that interpretations of the data generated through our survey may reflect differences not only determined by national-international dimensions, but also degree level.

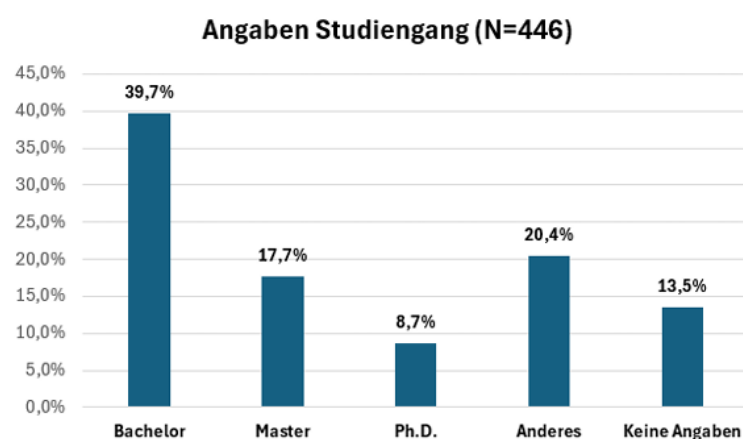


Figure 2: WueLAB graph on student degree level

Interestingly, the WueLAB survey demonstrates that more than half of the surveyed German students (61.8%, see *figure 3*) are highly interested in thematic workshops around

sustainability, meaning this type of activity would be equally appealing to both international and national students.

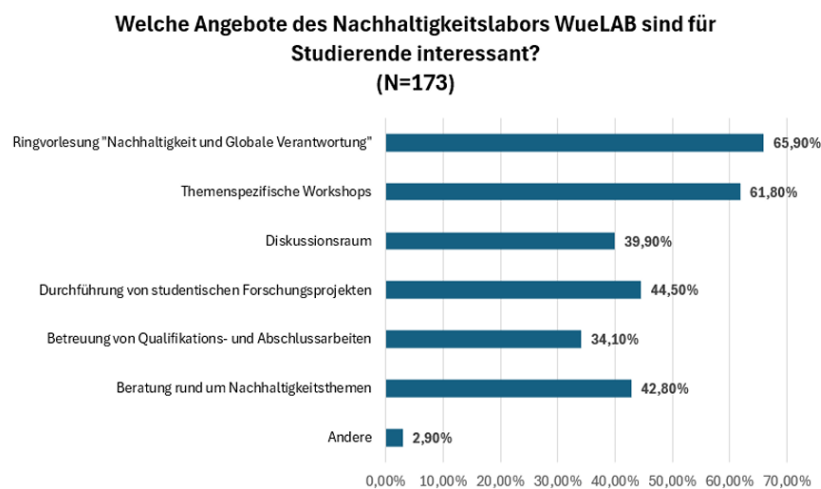


Figure 3: WueLAB graph on student interest in activities

International students' appreciation of the social dimensions of sustainability is also supported by the finding that 70% of German students engage with sustainability themes through peer-to-peer interactions (*see figure 4*). This suggests that bringing students together to participate in sustainability events should be an effective way of involving international as well as German students.

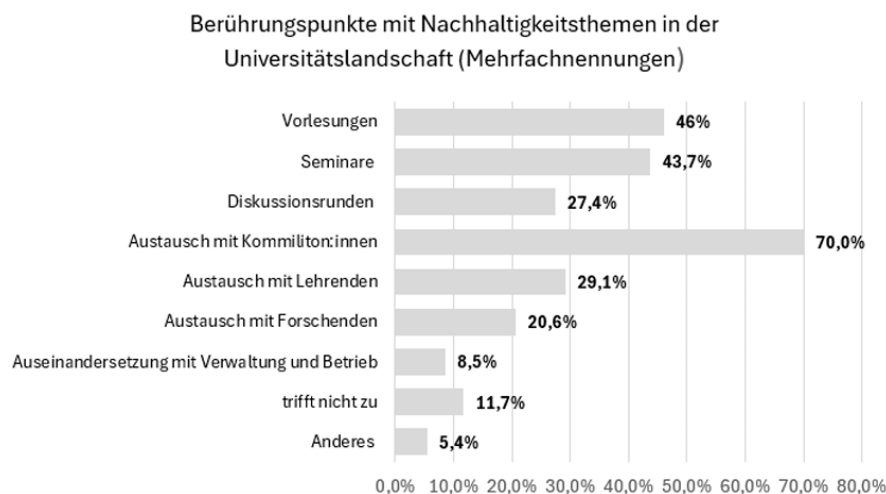


Figure 4: WueLAB graph on student interaction with sustainability

From reflections on these survey results, WueLAB suggests that the lack of student engagement may be due to a communication issue rather than disinterest. As is true for international students, German students know too little about opportunities to participate in

sustainability initiatives on campus to consider getting involved (WueLAB, 2025). This suggests that interventions aimed at improving the visibility, accessibility and suitability of the WueLAB's sustainability projects for international students would benefit German students at the same time.

4.3. Concepts recommendation

To respond to the found language barriers, lack of awareness of WueLAB activities, weak sense of belonging, time constraints and unfamiliarity with local structures, we would like to propose considering following three concepts:

4.3.1. Invite local sustainability experts to speak about local sustainability initiatives

The aim of this type of event would be to offer international students who are not yet familiar with their surroundings the opportunity to learn more about local sustainability initiatives in an accessible, non-demanding way, helping them get to know their new living environment. While this may be of general interest to international students, it could also be an opportunity to strengthen a sense of belonging in the local area and community. The event could also respond to international students' wishes for educational and networking opportunities. Simultaneously, international students may have opportunities to network or even learn about student jobs at the organisations that attend these events. Experts would preferably speak on the themes considered to be most interesting by international students; climate change, sustainable careers, environmental justice, biodiversity, and green energy. This could be done in practice by inviting people working in green jobs locally (e.g. a renewables firm or an environmental NGO) to give a 45-minute talk, followed by 30 minutes of informal mingling. The student union (Studierendenvertretung) could be an interesting partner for these events, as the external stakeholders might also be interested in presenting their initiatives at the annual study fair (Studi-Messe). Other possible event formats could be roundtable discussions or lectures followed by interactive case studies to ensure active participation rather than passive listening. If held once a semester and advertised in English, this event could guarantee attendance and could lead to possible student jobs.

4.3.2. Organise social and educational events for active nature stewardship

To further strengthen a sense of nature-relatedness and direct participation in on-campus sustainability, WueLAB might organise small-scale monthly events that bring

international students together to practice stewardship of natural areas near the university. International students may meet each other, or they could be paired with German students as part of a 'buddy system' that encourages the integration of internationals into local culture, language, and social life. Perhaps, in collaboration with the Ecology department's Campus Garden or the Biodiversity Walks already present on campus, students could get together to learn how to garden sustainably through practices such as permaculture, and to learn about its effects on biodiversity while socialising. Alternatively, the WueLAB could encourage students to participate in taking care of natural elements established for the initiative of L(i)ebenswerter Campus or the raised beds which are planned to be placed around the international office of JMU. These partners could help promote the possibilities in campus stewardship events by using their network to recruit international students. Students could participate on a one-time basis to respect time constraints but would preferably join repeatedly to create lasting relationships with other students involved in the project and, more importantly, with nature itself. In practice, this could be a monthly afternoon drop-in at the Campus Garden, with some gardening and tea-sharing. The campus biodiversity walk could be organised at the start of each academic year and could end at the *Future Frame* so people can physically discover the wall.

4.3.3. Host creative projects to be exhibited around the *Future Frame*

As demonstrated in the JMU exhibition on *Narrating the Multispecies World*, creative works can be an excellent way to engage with sustainability, inviting creators to explore new perspectives and communicate scientific knowledge in a digestible way. Possibly in collaboration with the study programme of Environmental Ethnology – responsible for the exhibition – or similar programmes/courses, WueLAB could facilitate the development of creative works that catch students' attention through visually attractive designs around campus. These artworks could be made fully sustainable from recycled materials. Students could bring unused materials/objects from home or gather waste materials from around their homes to encourage sustainability engagement beyond campus. The works could either express students' perceptions of sustainability or aim to communicate scientific findings from WueLAB's research projects. While the creative project could simply be a fun activity that would attract international students to engage with sustainability in a low-stakes environment, WueLAB could support and encourage students' reflections on different forms

of science communication. As such, creativity paired with reflection could form a workshop that helps students develop skills in breaking down complex sustainability issues into more personally relevant and understandable elements. While the works may be accompanied by texts explaining them when exhibited on campus, visual creations could overcome, or bypass, language barriers altogether. The works could be placed near the WueLAB's *Future Frame* to make it more visible from a distance and create an additional opportunity to visit the *Future Frame*. Once there, international students can learn more about WueLAB through posters that advertise events and research projects. The creation of the artworks could also be framed as a campus-wide competition, in which students can be incentivised to vote on their favourite works via Instagram or the WueLAB website to decide which artworks will be exhibited. This could be a fun, accessible way to attract students to these platforms and inform them about other WueLAB sustainability activities afterwards.

5. Conclusion

By adopting the presented recommendations, WueLAB could overcome the current issues around visibility, accessibility and limited engagement of international students, with a special role for the *Future Frame*. As demonstrated through the survey and the literature review, the limited engagement is not due to a lack of interest in sustainability or WueLAB but rather due to circumstantial barriers that could be removed with several strategic interventions. This would mean tailoring events to the specific needs and wishes of international students by embracing English communication that highlights opportunities for their social, educational and career-oriented development. At the same time, successfully establishing initiatives with these aims requires careful sensitivity for international students' time constraints, feelings of social exclusion, and weak sense of belonging to the university landscape. Preferably, events organised by WueLAB would therefore address exactly these aspects by being non-demanding on time, by striking alliances between national and international student groups and by fostering stronger connections with the JMU campus. By doing so, WueLAB could enhance international students' appreciation for sustainability and as a result generate a powerful culture of sustainability that is supported by all.

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