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EXPLORING SUSTAINABLE HERITAGE: A CULTURAL JOURNEY THROUGH SARAWAK'S LONGHOUSES

Siti Akhtar Mahayuddin[1*]
Noor Rizallinda Ishak[2]
Nor Azizah Talkis[3]
Wan Nur Syazwani Wan Mohammad[4]
Nurul Huda Abdul Hadi[5]
Raja Nurulhaiza Raja Nhari[6]
Wan Akmal Zahri Wan Zaharuddin[7]

[1]Department of Built Environment Studies and Technology, College of Built Environment, Universiti Teknologi MARA Perak Branch, Seri Iskandar Campus, Perak, Malaysia, (E-mail: sitia880@uitm.edu.my)
[2]Department of Built Environment Studies and Technology, College of Built Environment, Universiti Teknologi MARA Perak Branch, Seri Iskandar Campus, Perak, Malaysia, (E-mail: noorr399@uitm.edu.my)
[3]Department of Built Environment Studies and Technology, College of Built Environment, Universiti Teknologi MARA Perak Branch, Seri Iskandar Campus, Perak, Malaysia, (E-mail: norazizah@uitm.edu.my)
[4]Department of Built Environment Studies and Technology, College of Built Environment, Universiti Teknologi MARA Perak Branch, Seri Iskandar Campus, Perak, Malaysia, (E-mail: wannur956@uitm.edu.my)
[5]Department of Built Environment Studies and Technology, College of Built Environment, Universiti Teknologi MARA Perak Branch, Seri Iskandar Campus, Perak, Malaysia, (E-mail: nurul499@uitm.edu.my)
[6]Department of Built Environment Studies and Technology, College of Built Environment, Universiti Teknologi MARA Perak Branch, Seri Iskandar Campus, Perak, Malaysia, (E-mail: rajanurulhaiza@uitm.edu.my)
[7]Department of Built Environment Studies and Technology, College of Built Environment, Universiti Teknologi MARA Perak Branch, Seri Iskandar Campus, Perak, Malaysia, (E-mail: wan450@uitm.edu.my)
*Corresponding author

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Abstract: *Sarawak, a state renowned for its cultural diversity and rich heritage, boasts an iconic architectural marvel: the longhouse. These traditional longhouses epitomise the harmonious coexistence of multiple families under one roof, reflecting the communal lifestyle of the indigenous people. In recent years, there has been growing concern about the diminishing appreciation and knowledge of cultural heritage among the younger generation. This trend is evident across various cultures worldwide, including those with rich and diverse histories. Several factors contribute to this phenomenon, each playing a significant role in the erosion of traditional practices, customs, and knowledge. To address this issue, a cultural and educational trip was organised for a group of construction technology undergraduate students to visit a longhouse in Sarawak. The objective of this trip was for the students to explore, learn, and understand the unique ethnic and socio-cultural communities, architectural heritage, and environment of Sarawak. Additionally, the program intended to expose the students to the sustainability elements in the traditional longhouse structures they visited. The students were able to identify and perceive the differences between traditional and modern longhouses. While*

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the materials used for construction differ, the concept and design remain consistent. Despite their modernity, these longhouses continue to symbolize the strong cultural identity and communal ethos of the Sarawak people. The journey through these longhouses offers an immersive experience of Sarawak's architectural ingenuity and cultural richness. The students were exposed to the seamless blend of tradition and modernity, emphasizing the importance of preserving heritage while adapting to contemporary living standards. Through this exposure, it is hoped that these students, as future generations, will be able to value and preserve this unique way of life amidst changing times.

Keywords: *Culture, Heritage, Longhouse, Sustainability, Sarawak*

Introduction

Sarawak, nestled in the heart of Borneo, stands as a testament to cultural diversity and architectural ingenuity through its iconic longhouses. These traditional structures, where multiple families coexist under one roof, encapsulate the communal character and rich heritage of Sarawak's indigenous communities. However, in recent years, there has been a noticeable decline in the appreciation and knowledge of such cultural appreciation among younger generations globally, reflecting a broader trend towards the erosion of traditional practices and customs (Aswani et al., 2018). This phenomenon is not unique to Sarawak but resonates across diverse cultures with deep historical roots. Factors contributing to this decline vary, encompassing societal changes, urbanisation, and shifting lifestyles that often prioritise modernity over preservation of cultural heritage (Loulanski, 2006; Wen et al., 2023). Recognising the urgency of this issue, a cultural and educational initiative was undertaken. Aimed at built environment undergraduate students, the programme sought to immerse participants in the unique ethnic communities, architectural heritage, and environmental landscape of Sarawak, with a specific focus on its traditional longhouses.

The primary objective of the educational trip was twofold: first, to enable students to explore, learn, and comprehend the cultural significance embedded within Sarawak's longhouse communities; and second, to educate them on the sustainable elements inherent in these traditional architectural marvels. Through firsthand encounters, students were able to discern the nuanced differences between traditional and modern longhouses, highlighting how evolving construction materials have not compromised the enduring cultural and communal values these structures represent. The major groups of the Sarawak Indigenous are Iban, Bidayuh, Orang Ulu (Kayan, Kenyah, Kelabit, Lun Bawang), and Melanau which each contribute to the state's rich cultural tapestry. Understanding their unique traditions, languages, and ways of life offers valuable insights into the diverse heritage of Sarawak. By traversing these longhouses, students gained a profound insight into Sarawak's architectural heritage, witnessing firsthand the seamless synthesis of tradition and modernity. This experiential learning underscored the imperative of preserving cultural identity amid the pressures of contemporary living standards. It is hoped that such immersive experiences will cultivate a deeper appreciation among future generations, empowering them to champion the conservation of Sarawak's unique cultural tapestry amidst an ever-changing world.

This paper delves into the outcomes and reflections derived from an academic trip to Sarawak undertaken by a group of undergraduate students studying construction technology within the built environment field. The trip offered insights into the pivotal role of experiential learning in

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fostering cultural preservation and sustainable development within Sarawak's built environment.

Literature Review

Student Development Through Educational Trip

Field trips are educational activities that may develop students by providing beneficial experiences outside the school or campus to introduce changes for the better. These educational trips enhance the student's understanding of various academic subjects and their retention due to a hands-on approach (Falk & Dierking, 2018). For instance, trips to a historical museum can help students make history lectures more interesting and easily grasped (DeWitt & Storksdieck, 2008; Kanlı & Yavaş, 2021). Furthermore, educational trips strengthen interaction with students and others, making them understand the subsequent social skills like cooperation and leadership as well as teamwork (Pace & Tesi, 2004). These educational trips increase students' self-reliance and confidence since solving problems in new environments makes them feel accomplished and may initiate their lifetime learner attitude (Anderson et al., 2006).

Experiential learning is cyclical, as shown in Figure 1 (Kolb, 1983). Students first engage in an experience, which they review and abstract as they ponder that experience; implementation is the final step as the students plan or launch what they have learned. It can also be a new idea, test, or concept they want the audience to consider. Every journey through the cycle involves some form of learning. Field trips facilitate the objectives of the curriculum and make it easier for students to understand matters that they would have only read or been taught in class by providing examples whereby they can prove these matters on their own.

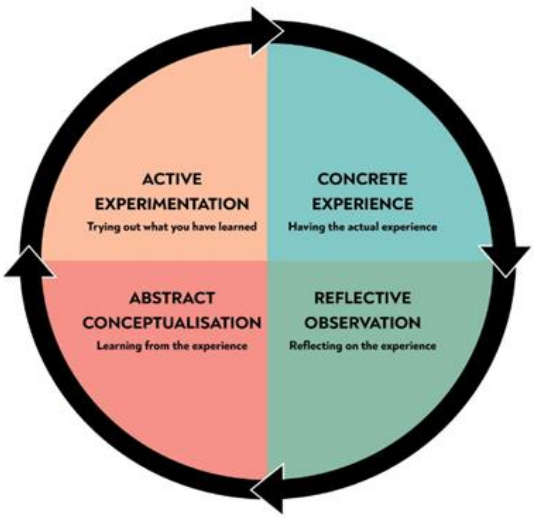

Figure 1: Experiential Learning Cycle

Source: Kolb (1983)

Educational trips provide several advantages, including a better knowledge of academic ideas, enhanced social skills, higher confidence, greater cultural awareness, and a closer connection to the environment (Campbell & Gedat, 2021; Tagulao et al., 2022). Visiting other communities or countries exemplifies diversity and shapes students' attitudes, making them more accepting of differences.

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Sustainable heritage and its importance for built environment students

The built environment encompasses man-made structures and infrastructure that facilitate various human activities (Seyedrezaei et al., 2023). Heritage buildings are tangible elements of cultural heritage, serving as valuable physical artifacts from past generations that must be preserved and maintained for the benefit of future generations (Zaid et al., 2021). They are passed down from the past and are vital in our contemporary society. Given that heritage faces various global ecological and political threats, enhancing its sustainability has become a significant priority (Al-Sakkaf et al., 2020). Heritage sustainability is defined as designing and managing heritage assets in accordance with social, economic, and ecological sustainability standards (McLennan, 2004).

The Sustainable Development Goals (SDGs) 11, target 11.4, underscores the importance of strengthening efforts to protect and safeguard the world's cultural and natural heritage (Petti et al., 2020). Repurposing buildings enhances sustainability by lowering environmental impact, reducing construction waste, and rejuvenating unused spaces (Arfa et al., 2022). Although heritage is inherited from the past, it is constantly reshaped by contemporary influences (Van Doorsselaere, 2021). Conversely, some new developments also incorporate the principles of traditional architecture. Integrating these principles into the design of new buildings or the refurbishment of existing ones is a crucial step toward sustainable development (Oikonomou and Bougiatioti, 2011). In Malaysia, longhouses serve as traditional dwellings for many natives in Sarawak. Some of these longhouses have existed since before World War II, evolving over the years. Initially, it was constructed using local materials and designs that harmonized with the environment and climate, providing comfort to occupants. However, traditional materials and construction methods have largely been replaced by modern ones (Mahayuddin et al., 2017). Typology has become a threat to traditional longhouses (Beynon, 2013). Although traditional buildings create a connection from heritage to sustainability, the impact of climate change works against the conservation of heritage sites (Auclair & Fairclough, 2015). To protect built heritage, a comprehensive grasp of construction techniques and the typological traits of traditional architecture is required (Mahayuddin et al., 2017).

Target 4.7 of SDG 4 emphasizes ensuring that by 2030, all learners acquire the knowledge and skills necessary to promote sustainable development (United Nations, 2015). Certain elements of built environment education are challenging to grasp through verbal explanations alone in a classroom setting and are better comprehended through direct observation (Frank, 2005). This highlights the importance of preserving built heritage so students can learn by having a field trip to an actual site. The shift from constructing new buildings to repurposing existing ones, and from mere conservation to adaptive reuse in built heritage, impacts architectural education. Architects must understand the physical attributes and deficiencies of existing structures, along with the cultural and historical values they represent. This necessitates innovative teaching methods (Clarke et al., 2019). In Belgium for instance, the primary focus of heritage education is helping young people connect local and familiar challenges to broader global issues (Van Doorsselaere, 2021). Education is widely regarded as a significant opportunity to address current environmental problems (Amador-Alarcón et al., 2022). Universities play a crucial role in preparing future generations to create sustainable societies by shaping students' personalities with a sustainability-focused approach (Coronado et al., 2020). Incorporating environmental protection into university education is a viable method for promoting sustainable education, aligning with contemporary educational goals of fostering sustainability and ecological awareness (Hao, 2021). Therefore, educating built environment students on sustainable heritage is crucial. As future professionals and stakeholders in heritage conservation, students play a

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pivotal role in the preservation and management of heritage buildings. Their education and active involvement are essential for ensuring the sustainability and conservation of these structures.

Methodology

This study employs a mixed-methods approach, combining qualitative and quantitative research methods (Saunders et al., 2016). This approach provides a comprehensive understanding of the sustainable heritage of Sarawak's longhouses. The primary methods used in this research are observation and questionnaire surveys, which allow for an in-depth examination of cultural practices, community interactions, and sustainability efforts within the longhouse communities. In addition, this adopted method is able to determine the students' understanding of the differences between traditional and modern longhouses.

During the academic trip, students are required to conduct an observation of the longhouses visited. Observation is a key method used in this study to gain a detailed understanding of cultural practices, and sustainability efforts in Sarawak's longhouses. Data collection through observation can be either structured or unstructured (Sekaran & Bougie, 2016; Saunders et al., 2016). This study uses unstructured observations because the purpose of conducting the observation is to identify the architectural design and building material of the longhouses. The observation process involved 4 steps. The first step is the selection of the longhouses. Purposive sampling was used to select a diverse range of longhouses that are representative of Sarawak's cultural and geographic diversity. The focus was on both modern longhouses and traditional longhouses to capture differences in architectural design, building materials, and the surrounding environment. The Nyalak Ladong Longhouses in Pakan, Sarawak were selected due to their proximity, which allows for a comparative study between modern and traditional longhouses.

These longhouses are located at the same site which allows easier movement between them. Secondly is the duration of the observation. Observation was conducted over one day at the longhouses, allowing for a focused and intensive study of the specific aspects of interest. The next step is the observation focus areas. The focus areas include architectural design (comparison of modern and traditional longhouses, focusing on differences in layout, structure, and functionality), building materials (examination of materials used in the construction of modern versus traditional longhouses, including wood, bamboo, and modern construction materials) and surrounding environment (assessment of the environmental setting and its integration with the longhouse). Lastly, data recording, where detailed field notes, photographs, and video recordings were used to document observations. These records were systematically organised and analysed.

A questionnaire survey was conducted with all students after the academic trip. The survey was designed to gather quantitative data on the demographic profile, perceptions of the differences between traditional and modern longhouses and understanding of the importance of preserving heritage. The survey process involved four steps as shown in Figure 2.

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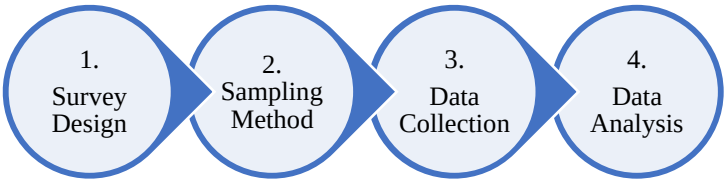

Figure 2: Questionnaire Survey Process

For the survey design, a structured questionnaire was developed, consisting of Likert Scale questions. The questionnaire was divided into three sections namely Section A, B and C. Section A consists of demographic questions to gather demographic information of the respondents. Section B consists of questions on the ability to identify and perceive differences between traditional and modern longhouses. Meanwhile, section C consists of questions on the understanding of the importance of preserving heritage. The questions in both Section B and Section C were designed using a Likert scale (1-5, where 1 = Strongly Disagree and 5 = Strongly Agree). The next step is the sampling method. Purposive sampling was used, where all the students who joined the academic trip became the respondents. This selection ensured that the respondents had relevant knowledge and interest in the subject matter. For data collection steps, the questionnaire was distributed online via WhatsApp, leveraging the convenience and accessibility of the platform to reach the selected respondents effectively. Lastly is data analysis, where the survey data were analysed using descriptive analysis. Statistical software was used to perform the analysis.

The findings from the observation and questionnaire survey were integrated to provide a holistic understanding of sustainable heritage in Sarawak's longhouses. The qualitative data from observations enriched the quantitative survey data, offering deeper insights into the lived experiences and cultural context of the longhouse communities.

Results and Discussions

Demographic Profile

The participants of the academic trip were undergraduate students from a public university in Peninsular Malaysia who were studying Construction Technology. All 35 participants completed the questionnaire survey given to them after the academic trip. Table 1 shows the demographics of the respondents. The majority of the respondents were male, with 25 students representing 71.4%, while 10 students were female, representing 28.6%. The overwhelming majority of respondents were Malay, accounting for 94.3% (33 respondents). The Iban and Bidayuh ethnic groups were minimally represented, each with only one respondent (2.9%). Most respondents (91.4%, or 32 respondents) were from Peninsular Malaysia, while only 8.6% (3 respondents) were from Sarawak. Over half of the respondents (51.4%, or 18 respondents) had never visited a longhouse. A notable proportion (34.3%, or 12 respondents) had visited 2-3 longhouses, while 11.4% (4 respondents) had visited more than five longhouses and only one respondent (2.9%) had visited just one longhouse. The data indicates a varied level of exposure to longhouses, which might reflect differing levels of understanding and appreciation of this aspect of Sarawak culture.

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Table 1: Demographic Profile

	Frequency	Percentile
Gender	n=35	
Male	25	71.4%
Female	10	28.6%
Race		
Malay	33	94.3%
Iban	1	2.9%
Bidayuh	1	2.9%
Origin		
Peninsular Malaysia	32	91.4%
Sarawak	3	8.6%
Have Been to Sarawak		
Yes	11	31.4%
No	24	68.6%
Number of Longhouses Visited		
0	18	51.4%
1	1	2.9%
2-3	12	34.3%
4-5	0	0.0%
More than 5	4	11.4%

Students Ability to Identify and Perceive The Differences Between Traditional and Modern Longhouse

The Nyalak Ladong Longhouses visited are located in Pakan, Sarawak, and are owned by the Iban ethnic group. They have built modern longhouses near their traditional longhouses. The majority of the residents have moved to the modern longhouses, while a minority still stay in the traditional ones. Thus, the one-day visit to both traditional and modern longhouses gave the students firsthand experience in observing the longhouses themselves. The differences between the traditional and modern longhouses, focusing on the architectural design, building materials, and surrounding environment, are summarised in Table 2.

The architecture of Iban longhouses is a reflection of the Iban people's cultural heritage, communal lifestyle, and adaptability to their environment. As such, the Iban longhouses' structure and layout raised on stilts serve several purposes, for example, protection from flooding during heavy rain, ventilation to keep the living spaces cool, and defence against wild animals. The primary materials used in construction are locally sourced (i.e., belian) for the main structure, particularly for stilts due to its durability and resistance to decay and insects. The roof structure traditionally is made from thatch (i.e.,attap) (leaves of the nipah palm). However, the roofing of the modern longhouse uses corrugated metal sheets and concrete tiles. The entrance to the traditional longhouse is accessed via a notched log or wooden ladder and the 'tanju' is an open-air-verandah used for preparing food, drying paddy, and other activities that require sunlight. However, this area is unavailable in the modern longhouse. The next area is the 'ruai', a communal hall for social activities, ceremonies, and gatherings. The 'ruai' runs an entire length of the longhouses, designed to accommodate large extended families, and is open to all the longhouse members and guests. The shared 'ruai' fosters a sense of community and mutual support which facilitates cooperation among families. Both traditional and modern longhouses retain the 'ruai' area and 'bilik'. The 'bilik' is the private area for each family

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residing in the longhouse, containing a living area, kitchen, and sleeping quarters, and is arranged in a row along one side of the 'ruai'. Compared to modern longhouses, the modern adaptations of contemporary materials including concrete stilts and metal roofing allow for durability and ease of maintenance purpose.

Table 2: Differences Between Traditional and Modern Longhouses

Aspect	Traditional Longhouse	Modern Longhouse
1. Façade - Entrance		
2. Layout	An area known as the 'ruai' serves as the central gathering space for social activities, ceremonies, and daily interactions. 	Maintain the fundamental layout of communal and private spaces such as ruai but use elements that enhance durability and comfort. 
3. Architectural Design	• Elongated structure with communal and private spaces. • Elevated platforms supported by pillars. • Roofing from sago palm or nipa palm. • Wooden walls with intricate carvings.	• Blends traditional layout with modern materials. • Reinforced concrete column and metal roofing. • Includes modern amenities like plumbing and electricity. • Walls made of bricks and concrete for better insulation.
4. Building Material	• Wood, bamboo, and natural fibres. • Locally sourced, sustainable materials.	• Concrete, steel, and synthetic roofing materials. • Chosen for durability and weather resistance

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	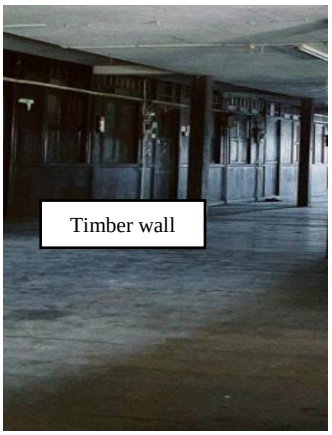	
	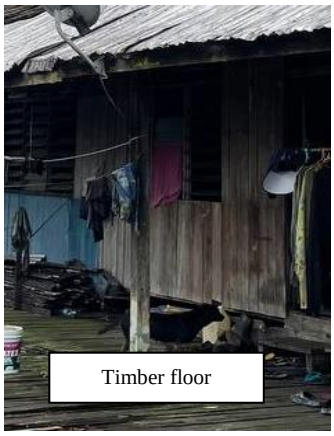	
Surrounding Environment	• Harmoniously integrated with the natural landscape. • Surrounded by vegetation, rivers, and forests. • Provides access to natural resources	• More developed with improved infrastructure. • Roads, drainage systems, and public amenities. • Preserve green spaces and natural vegetation.

Apart from the photos and explanations mentioned in Table 2, the students' understanding is confirmed through the survey results. The students' ability to identify and perceive the differences between the traditional and modern longhouses is summarized in Table 3. The majority of the students were able to distinguish between the traditional and modern longhouses.

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Table 3: Ability to Identify and Perceive Differences Between Traditional and Modern Longhouses

No	Item	Frequency (%)				
		SD	D	U	A	SA
1.	I can easily distinguish between traditional and modern longhouses based on their building materials	1 (3%)	0 (0%)	0 (0%)	15 (43%)	19 (54%)
2.	I can easily distinguish between traditional and modern longhouses based on their architectural design	0 (0%)	0 (0%)	2 (6%)	13 (37%)	20 (57%)
3.	Traditional longhouses use more natural materials compared to modern longhouses.	1 (3%)	0 (0%)	0 (0%)	11 (31%)	23 (66%)
4..	The design concepts of traditional and modern longhouses are fundamentally similar	0 (0%)	1 (3%)	2 (6%)	15 (43%)	17 (49%)
5.	I can identify the cultural significance of the design elements in traditional longhouses	0 (0%)	1 (3%)	1 (3%)	16 (46%)	17 (49%)
6.	I can identify the cultural heritage in the design elements of the modern longhouse	1 (3%)	0 (0%)	3 (9%)	16 (46%)	15 (43%)
7.	The used of different types of construction materials in traditional and modern longhouses affects their durability	1 (3%)	0 (0%)	1 (3%)	13 (37%)	20 (57%)
8.	I can identify the differences in layout design between traditional and modern longhouses	1 (3%)	0 (0%)	3 (9%)	16 (46%)	15 (43%)
9.	The environment surrounding traditional longhouses is different from that of modern longhouses	0 (0%)	0 (0%)	1 (3%)	16 (46%)	18 (51%)
10.	Visiting longhouses has enhanced my understanding of Sarawak's cultural heritage	1 (3%)	0 (0%)	0 (0%)	8 (23%)	26 (74%)

Notes: SD-Strongly Disagree; D-Disagree; U-Uncertain; A-Agree; SD-Strongly Agree.

Students Understanding on The Importance of Preserving Heritage

Observation of traditional and modern longhouses exposed the students to the unique culture and heritage of the Iban longhouses. The majority of the students agreed or strongly agreed with statements emphasising the importance of preserving both traditional and modern longhouses as cultural heritage, as shown in Table 4. They recognised that preservation contributes to the identity of ethnic communities and fosters a greater appreciation of Sarawak's culture. Additionally, students advocated using traditional materials in restoration efforts, saw cultural tourism as a means of preservation, and highlighted the crucial role of community involvement. Their responses indicated an increased awareness and understanding of the importance of preserving heritage after visiting the longhouses.

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Table 4: Understanding the Importance of Preserving Heritage

No	Item	Frequency (%)				
		SD	D	U	A	SA
1.	Preserving traditional longhouses is important for maintaining cultural heritage	1 (3%)	1 (3%)	1 (3%)	9 (26%)	23 (66%)
2.	Modern longhouses should also be preserved as part of our cultural heritage	0 (0%)	1 (3%)	5 (14%)	11 (31%)	18 (51%)
3.	Preservation of longhouses contributes to the identity of the ethnic communities	1 (3%)	1 (3%)	1 (3%)	11 (21%)	21 (60%)
4..	Understanding the heritage of longhouses fosters a greater appreciation of Sarawak's culture	1 (3%)	1 (3%)	1 (3%)	10 (29%)	22 (63%)
5.	Efforts should be made to use traditional materials in the restoration of longhouses	1 (3%)	1 (3%)	1 (3%)	12 (34%)	20 (57%)
6.	Cultural tourism can help in the preservation of longhouses	1 (3%)	1 (3%)	1 (3%)	10 (29%)	22 (63%)
7.	Community involvement is crucial for the preservation of longhouses	1 (3%)	1 (3%)	1 (3%)	13 (37%)	19 (54%)
8.	I am more aware of the importance of preserving heritage after visiting longhouses	1 (3%)	1 (3%)	1 (3%)	11 (31%)	21 (60%)

Notes: SD-Strongly Disagree; D-Disagree; U-Uncertain; A-Agree; SD-Strongly Agree.

Conclusion and Future Research

In a nutshell, a visit to a Sarawak longhouse is more than just a trip; it's a cultural journey that offers an authentic glimpse into the traditions, lifestyle and preservation of traditional and modern Iban longhouses. The hospitality, the rich cultural heritage, and the serene natural surroundings make it a memorable and enriching experience. The main contribution of this study has been to provide further insights into aspects of ethnic and social-cultural communities, architectural heritage, and environment of Sarawak through an academic trip. The academic trip highlighted the importance of maintaining cultural heritage, fostering community involvement, and utilizing traditional materials in restoration efforts. Students gained a deeper appreciation for Sarawak's rich cultural identity and the role that sustainable practices play in preserving it. This immersive experience not only enhanced their understanding of the built environment but also underscored the significance of cultural heritage in promoting sustainable development.

Further study related to the exposure of students to culture and heritage through academic trips is crucial for enhancing their educational experience. Such research can explore the impact of firsthand learning on students' understanding and appreciation of diverse cultures and traditions. In addition, further research on Sarawak longhouses is also essential for a comprehensive understanding of their significance and continued relevance. Such research demands a multifaceted approach that integrates architectural studies, history, tourism, economics, cultural anthropology, and technological integration. Exploring various facets will provide a holistic understanding of the Sarawak people, their traditional longhouses, and the dynamic interplay between tradition and modernity in their communities. The studies on the sustainable heritage of Sarawak longhouses offer valuable insights into the interplay between design, culture, and environment. Hence, by exploring various research areas, scholars and practitioners can contribute to the preservation, adaptation, and innovation of the unique architectural heritage which ensures its relevance and sustainability for future generations.

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