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Unpacking place-based narratives: enhancing campus community participation in watershed conservation

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Abstract

Purpose – The study aims to identify the evoked ‘sense of place’ that the campus community attributes to a watershed area in a Malaysian higher institution, aiming to enhance their participation in watershed conservation. Central to this objective is the incorporation of the concept of a watershed as a *place*, serving as the conceptual framework for analysis.

Design/methodology/approach – This case study explores an urban lake at Universiti Malaya, Malaysia's oldest higher institution. It utilises diverse qualitative data, including document analysis, semi-structured interviews, vox-pop interviews, and a co-production workshop, to generate place-based narratives reflecting the meanings and values that staff and students associate with the watershed. Thematic analysis is then applied for further examination.

Findings – The data patterns reveal shared sense of place responses on: 1. Campus as a historic place, 2. Student, staff, and campus identity, 3. In-place learning experiences, and 4. Interweaving of community wellbeing and watershed health. Recommendations advocate translating these narratives into campus sustainability communication through empirical findings and continuous co-production of knowledge and strategies with the campus community.

Practical implications – The research findings play a critical role in influencing sustainable campus planning and community inclusion by integrating place-based frameworks into sustainable development and watershed management. The study recommends the *process* of identifying place-based narratives with implications for the development of sustainability communication in a campus environment.

Originality/value – This paper contributes both conceptually and empirically to the sustainable management of a campus watershed area through place-based thinking. It outlines a process for enhancing campus sustainability communication strategies.

Keywords Sense of place, Campus sustainability, Sustainability communication, Higher education, Watershed conservation, Malaysia

Paper type Research paper

Introduction

Watersheds are social-ecological systems offering a range of ecosystem services highly valued by society (Grigg, 2016). Marked by hydrographic basin boundaries, a watershed is a physical place that embodies meaningful symbolic aspects of the landscape, derived from people's daily social and cultural interactions (Druschke, 2013). Watershed conservation is a critical concern in a developing country like Malaysia, where land use change affects water quality and community life (Camara *et al.*, 2019). The challenges of urban population growth (World Bank, 2015) and unsustainable development intensify this concern. This study positions university campuses within urban watershed areas, advocating a watershed-based approach to conservation for campus sustainability.

Community participation in watershed conservation is closely tied to their awareness levels (Praveena and Themudu, 2022). Two preceding studies on water pollution awareness offer valuable insights: a nationwide survey of Malaysians (Neo *et al.*, 2016) and a more localised study among urban Malaysians in the Klang Valley (Chin and Ng, 2015). Neo *et al.* (2016) found an overall high awareness, ranking water pollution awareness highest among various environmental concerns in the national context. In contrast, Chin and Ng (2015) discovered low awareness and knowledge specifically among urban Malaysians, attributing it to a lack of personal significance assigned to urban rivers and subsequent low public participation. Thus, while the public is generally aware of water pollution issues at a national level, they are not truly invested in the situation in a more localised context. Beyond awareness, attitudes, pro-environmental behaviour, and willingness to act are considered superior indicators of public participation (Cichoń *et al.*, 2021).

While the physical and technical aspects of watershed rehabilitation are crucial for conservation, the social, cultural, and historical dimensions — encompassing meanings and values connecting people to places, even ecologically damaged ones—are often overlooked. This research underscores the significance of integrating the social dimensions of a watershed, particularly the meanings and values of staff and students, to contribute to conservation efforts. Acknowledging students as key stakeholders, Johnson and Castleden (2011) advocate for democratic engagement by integrating student values into landscape development and water sustainability planning. Hamann and Drossman (2006) highlight the role of students and educational institutions in community-based watershed partnerships to address local water-related issues. Building on the concept of sense of place, defined as the “collection of meanings, beliefs, symbols, values, and feelings” (Williams and Stewart, 1998, p.19) arising from people's relationships with a watershed, this research aims to demonstrate how place understanding can drive societal and individual action for watershed conservation. Studies, such as Russ *et al.* (2015), reveal that fostering a positive ecological place meaning can inspire students to envision improvements in their environment. Additionally, Bartolo *et al.* (2023) suggest that place attachment may mediate students' engagement in pro-environmental behaviours, enhancing both their personal and social well-being.

Practitioners and academics are actively exploring ways to enhance campus sustainability, highlighting the crucial role of communication. Too and Bajracharya (2015) introduced a framework gauging the success of campus sustainability programs based on active participation rates, emphasising communication factors like community knowledge and environmental values. However, sustainability communication faces challenges, such as the “invisibility of causes, distant impacts, lack of immediacy, and direct experience of the impacts, lack of gratification for taking mitigative actions” (Moser, 2010, p.31), particularly for transient university students sensitive to action failures. Recognising these challenges, McKenzie-Mohr (2000) underscores the importance of a ‘community-based social marketing’ approach as a pragmatic alternative to traditional information-heavy campaigns. This aligns with the notion that sustainability communication should bridge the gap between scientific discourse and the public by incorporating social science research to enhance public engagement (Godemann, 2021). Moreover, emerging research areas are integrating place-based approaches with sustainability communication, as evident in studies by Schweizer *et al.* (2013) and Hu and Chen (2016).

This research recommends a *process* for exploring novel avenues in campus sustainability communication through the incorporation of place-based frameworks. Building upon existing concepts linking sense of place to behavioural change (Junot *et al.*, 2018; Masterson *et al.*, 2017; Enqvist *et al.*, 2019), our study delves into the integration of campus sustainability communication with place-based approaches. This exploration aims to enhance campus community involvement in watershed conservation, providing an alternative to, or supplementing, broad/generic communication strategies with localised/place-based strategies derived from the study of place. The research contends that understanding the concept of *place* is crucial in unravelling the connections individuals have with watersheds, positing that a sense of place can facilitate participatory processes and drive transformative behavioural change.

Methodology: identifying staff and students' sense of place towards a campus lake

The Universiti Malaya (UM) campus is situated in the capital city of Kuala Lumpur (KL), Malaysia. With a population of 24,872 local and international students and 5,486 academic and non-academic staff (UM Fact Sheet, 2023), UM is an integral part of the Klang River urban watershed area, encompassing highly urbanised and industrialised zones in KL and the neighbouring state of Selangor. UM's environmental landscape includes faculties, laboratories, residential colleges, offices, cafeterias, forested areas, sports and recreation zones, and water bodies like rivers and a lake.

This case study concentrates on the central area of the campus, highlighting Tasik Varsiti, a human-made lake covering 0.0148 km². Constructed in the late 1950s by Malaysia's oldest university, UM, Tasik Varsiti includes users and surrounding features like an urban river, streams, wetland, residential college, and library. Supporting various land and aquatic life, including native, introduced, and migratory species, the lake is reportedly suitable for recreational purposes and maintains good water quality (Che Mood *et al.*, 2017). However, Mohamad *et al.* (2018) observed pollution susceptibility, impacting its consistent water quality and recreational use.

To promote sustainable management of the watershed area surrounding the lake, this study emphasises the uncovering of 'sense of place' through narrative collection as a crucial initial step. Sense of place, a subjective concept best explored qualitatively, as argued by researchers like Davenport and Anderson (2005), guided the use of diverse methods in this research. Qualitative data were gathered through document analysis (273 documents), semi-structured interviews (8 participants), vox-pop interviews (12 participants), and a co-production workshop (13 participants). Although the sample size of thirty-three (33) participants is small, the aim was not to represent the larger campus population but to provide a more comprehensive perspective of place from specific stakeholder groups such as implementers, experts, and laypersons – those with firsthand, everyday experiences of the campus lake. These methods delve into socially-constructed thoughts, feelings, and interpretations about the lake. Interviews and workshops were conducted in Malay or English for effective communication. Ethical approval for data collection was obtained from the university. Table 1 summarises the participants' profiles, all of whom are affiliated with the university.

Table 1 Study participant profile

Participant characteristics	Semi-structured interviews	Vox-pop interviews	Co-production workshop
Gender (number of participants):			
Male	8	2	8
Female	-	10	5
Age:			
Range (minimum and maximum)	25 - 70	20 - 35	20 - 70

Affiliation with university:			
Student (Undergraduate)	-	5	-
Student (Postgraduate)	-	4	2
Academic staff	4	-	5
Non-academic staff	3	2	5
Alumni	1	1	1

Document analysis

Historical research was undertaken using university library archives, providing access to written and visual data¹ spanning staff and student records from the 1960s to the 1990s. The library systematically compiled 73 newspapers, bulletin articles, and theses, along with over 200 photographs. This archival collection offers valuable insights into the evolving historical, political, environmental, social, and cultural perspectives surrounding the lake and campus.

Semi-structured interviews

Purposive sampling ensured a diverse representation of the campus community, focusing on individuals with expertise or experience in the relevant topic (Bolderston, 2012). Typology criteria (Palinkas *et al.*, 2015) were employed to ensure comprehensive representation, encompassing implementers (key stakeholders in lake maintenance, development, and recreation) and experts (staff and alumni with extensive experience or research in the area). Interviews delved into participants' life histories, local memories, personal connections to the lake, various knowledge facets (e.g., seasonal changes, biodiversity), and future outlooks. Data were gathered from February 2019 to February 2020.

Vox-pop interviews

Vox-pop interviews prove valuable for capturing spontaneous perspectives from individuals at events or in transit through specific areas. This journalistic interviewing approach, as outlined by MacBride-Stewart (2019), typically involves posing three to four questions, utilising multiple prompts to encourage discussion. Rooted in an embodied experience, especially evident while walking around the campus lake or kayaking, this method aligns with Ellingson's (2012) view of integrating the 'in-place' experience with the communicative process within the interview. Convenience sampling, with attention to diversity to mitigate age and gender gaps, was employed following Stratton's (2021) approach. Three interview sessions occurred in October and November 2019, coinciding with guided walk events at Tasik Varsiti. Participants, recruited through open invitations, were asked three specific questions about Tasik Varsiti: to describe the distinctive features of the lake's surroundings, articulate the personal significance of the lake, and share their future vision for it.

Co-production workshop

Inspired by the transformative engagement toolkit, this workshop incorporates creative, art-based processes, including experiential, sensory, somatic, narrative, and intuitive methods (Pearson *et al.*, 2018). Participants are encouraged to explore their values, intentions, and ecological self-awareness. The workshop follows a structured flow: *convene* (participants are welcomed and introduced to the workshop's objective), *observe* (engaging in storytelling about the lake), *reflect* (making meaning and recalling stories), *act* (participating in a brainstorming session for a future lake prototype), and concludes with *harvest* (summarising workshop findings). Participants were enlisted through email invitations to key lake stakeholders and an open call via social media and the university's emailing list. The workshop took place in July 2019.

¹ A bibliography of the documents can be made available upon request from the corresponding author.

Qualitative data analysis

Masterson *et al.* (2017) observed that attachments and meanings to a place, while subjective, exhibit patterned variations. Thematic analysis, following Braun and Clarke's (2006) method, was employed to analyse the multiple qualitative data collected. Thematic analysis is adept at revealing nuanced insights without reliance on quantifiable words or phrases (Namey *et al.*, 2008). The resulting themes captured significant place-based narratives about the campus lake, reflecting patterned responses or meanings derived from the data. The analysis adhered to step-by-step guidelines for thematic analysis (Braun and Clarke, 2006; Nowell *et al.*, 2017), encompassing familiarisation with the data, generation of initial codes, exploration of themes, review of themes, definition and naming of themes, and report production. Coding and theme development were guided by theoretical interests (deductive), and interpretations delved beyond surface meanings (latent), emphasising social meaning over individual interpretation (constructionist approach).

Results: meaningful place-based narratives for the campus lake

Considering the non-homogeneous nature of places, various evoked 'sense of place', also referred to as 'place-based narratives', can differ or be shared across each campus watershed. The research findings revealed four meaningful themes that shed light on the role of place in watershed conservation.

Campus as a historic place

The historical narratives surrounding the campus lake significantly contribute to its unique identity. The creation of Tasik Varsiti in 1957 is intricately linked to the political symbolism of a burgeoning developing nation. This human-made lake came into existence during the same historical period as the changes in the status of the Federation of Malaya (predecessor to Malaysia, formed in 1963), coinciding with the nation's attainment of independence in 1957. Notably, this period also witnessed the establishment of Universiti Malaya in Kuala Lumpur, marking the inception of the country's first university (PAUM, 2008). The transformation of the educational institution's landscape from "no lake" and "marshy land" to featuring a "lake in the middle of the campus" was a deliberate effort to enhance its image and perceived value:

When they first opened up the campus, there was no lake. Maybe a small marshy land... So when they were initially planning the beautification of the campus, his (professor) idea was that there should be a lake in the middle of the campus.

The creation of the lake in the heart of the campus also appears to symbolise the aftermath of Western colonialism in Asia. This period saw the introduction of various public spaces, including gardens, parks, and lakes, by the British in their colonial town. These spaces acted as a 'microcosm' of colonial society (Harun *et al.*, 2015), similar to the significance of Merdeka Square in KL. In the earlier period, Tasik Varsiti's ecological system and its social role within the campus community are often described as an aspiration for the university, reflecting its response to the broader context of colonial influences on public spaces:

Thousands of students were able to enjoy the lake's beauty, clear water and fresh air since its existence when the University of Malaya campus was established in 1957.

Functioning as a place of leisure and recreation, the lake became an important site for social life. Notably, it serves as a location for students to showcase their residential college spirit through water games during campus orientation, as well as a venue for the traditional 'baptism' of newly elected committee members. The viability of these activities is contingent on the positive perception of the lake's water quality and ecosystem:

1
2
3 *At the water-games organised by the Freshmen Orientation Committee, held at Tasik*
4 *Varsiti (...) College spirit was as strong as ever as each of them urged their fellow*
5 *collegian participants to win honours.*
6

7 However, the expanding development around the campus has resulted in a noticeable loss of connection to
8 the original emphasis on the ecological and social functions of the lake. Campus development has
9 introduced silt pollution and a land reclamation process, leading to the lake shrinking to half its former size:
10

11 *In its early stages the lake covered quite a substantial area of the Campus. (...) The*
12 *present area of the Lake is roughly one-third that of its original size. The lake is fast*
13 *silting up.*
14

15 Concurrently, economic development in the local area surrounding the campus, within the same watershed,
16 has taken priority. Land reclamation has altered the topography by separating the river and lake on campus.
17 These material changes compromise the environment, leading to the loss of recreational sites and a decline
18 in social and ecological impact:
19

20 *The river used to be natural. (...) In the 70s the river was made concrete. Once*
21 *they've done that, it changes the ecosystem so the water birds are gone, or not as*
22 *plenty.*
23

24
25 In the 1970s, a global environmental movement influencing Malaysia's green activism emerged (Tayeb
26 and Yew, 2019). At UM, this movement impacted the local-level socio-cultural and ecological dynamics
27 around the lake. Despite the university's development diverging from the original vision, conservation
28 efforts have preserved the place, enhancing its greenery:
29

30 *When he (the new Vice-Chancellor) came, he wanted a higher density of trees. Last*
31 *time, bare. He transferred all the convocation ground to the road, so that this (area)*
32 *became green.*
33

34 The historical dimensions of a place are dynamic, constantly changing in both material setting (how a place
35 looks) and the shared symbols or meanings between different people (Massey, 1995). The concept of 'socio-
36 ecological coupling' captures the dynamic interplay between social and ecological processes (Cullen-
37 Unsworth *et al.*, 2013), as evident in the historical dimension discussed here. For instance, when ecological
38 preservation gave way to development, traditional social activities at the university were also impacted.
39 Additionally, political and economic processes contribute as minor aspects of this historical dimension.
40 These findings offer an intriguing perspective on how local places can be affected by national/global
41 interests and changing relationships between nature and culture.
42

43 *Student, staff and campus identity*

44 In addition to the campus's historical significance, special places on campus played a crucial role in shaping
45 identity. This research identified two distinct types of place identities: first, the development of self-identity,
46 where staff and students formed connections with the lake as an integral part of their personal sense of self.
47 Their self-identity unfolded through narratives about interactions with places they cared about, such as the
48 lake. Secondly, the emergence of a campus identity, where the lake held significant meaning as a place that
49 is part of and reflective of the larger identity of the campus. Both forms of identity were found to be
50 relational.
51

52
53 Firstly, the campus community's self-identity is shaped by positively valued memories of the lake,
54 influenced by personal emotions. Questions on place identity focused on the connection with the campus
55 lake, revealing self-identities informed by both social and ecological perspectives. An alumnus, for
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1
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3 instance, expressed nostalgic feelings tied to shared experiences at the lake, marking a significant phase in
4 their student life:
5

6 *It's about the memory of myself during my student time. An event place, a gathering*
7 *place, where it's free (laughs) and where we can meet almost all the kids in UM.*
8

9 Another student connected with the lake as part of their hometown identity, finding environmental
10 familiarity and a sense of belonging that facilitated their adjustment to living in a different place:
11

12 *I'm from the village, so my soul (can relate). Tall buildings don't soothe me. But when*
13 *I come here, I get to see birds... It makes me feel relieved because it's so calming.*
14

15 Next, the lake, as a special place on campus, contributes to shaping the overall campus identity. Its
16 strategically central location, adorned with water features and greenery, stands out as uncommon in modern
17 campuses, especially those built in city centres. Moreover, the lake plays a crucial role in fostering
18 additional meaningful identities for the campus, such as being perceived as 'sustainable' and 'livable':
19

20 *I like to think of the lake and the area around it as a green oasis in the middle of the*
21 *campus with the buildings kind of forming like a boundary around it. (...) Certainly it*
22 *is something very special for UM and for an urban university to have a park in a very*
23 *central, very... conspicuous place. It's almost as if the university was designed around*
24 *this green space.*
25

26 Similarly, the lake's identity mirrors the campus identity. As discussed earlier, the lake is intertwined with
27 the university's history, portraying it as a place of heritage. It is also recognised as a site for learning,
28 complementing classroom education. This underscores the campus's role in disseminating knowledge to
29 both internal and external communities, highlighting a commitment to research-based management:
30

31 *I think if the kids out there are exposed directly to all forms of science, including how*
32 *to take care of the lake, the biodiversity, checking how wetland works... and that's*
33 *actually a large classroom. That's UM's testimony sort of or UM walking the talk in*
34 *that sense.*
35

36
37 *There was a year when thousands of our fishes died in the lake. When we did an*
38 *inspection, we found that there was water pollution here and asked opinions from UM*
39 *experts. We asked many opinions... based on their areas of expertise.*
40

41 Place identity, often defined as per Proshansky's (1978) framework, involves individuals incorporating
42 places into their broader concept of 'self-identity'. Peng *et al.* (2020) highlighted that this concept has been
43 expanded, introducing another definition related to the features of a place – described in this study as
44 'campus identity' – which differentiates places based on nature, culture, and material settings. In this study,
45 the overlap between 'self-identity' and 'campus identity' was evident, where staff and students'
46 personalities are intertwined with special places on campus, shaping their identities. The socio-ecological
47 interaction with the lake significantly influences and contributes to their personal identity.
48
49

50 *In-place learning experiences*

51 The significance of the 'localisation' of places, where shared lived learning experiences are formed, is
52 noteworthy. Gustafson (2001, p.11) points out that the accessibility of places, whether "close or far away,
53 easy or difficult to reach," impacts what makes places meaningful for individuals. Respondents in this study
54 indicated that *where* a place is located, particularly in terms of proximity and walkability akin to "your
55 backyard," could play a role in promoting deeper learning opportunities:
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3 *Why trouble yourself to go all the way to Perdana Botanical Garden when everything*
4 *is here (at Tasik Varsiti)? It's in your backyard. There is no other place like this.*
5

6 Actual phenomena and local nature are more contextually authentic and familiar, fostering a stronger sense
7 of affiliation. For urbanites, an urban setting portrays a more “real” ecology, making it more relatable for
8 learning:
9

10 *(Going) to the forest or sea, it's not 'real' ecology. Young students live in urban*
11 *areas, so we just need to walk across the street to see ecology.*
12

13 Localisation fosters a deeper understanding of diverse knowledge forms, such as local, traditional,
14 scientific, or arts-based, by reconciling theoretical concepts with practical application. For instance, one
15 student gained a more comprehensive ecological understanding by observing a concept learned in the
16 classroom in real-life situations:
17

18 *In theory we learned about wetland and how it filters the water to make it clean, but*
19 *we can truly understand the concept when we go there.*
20

21 Knowledge creation transforms into place-based practices through service learning. Students engage in
22 local learning experiences that simultaneously address societal needs by developing sustainable solutions
23 for the lake. This action-oriented knowledge is exemplified when students use the campus lake as a living
24 laboratory:
25

26 *The Engineering Society (...) are presently making a survey to build a canal (...) to let*
27 *the stream wilt all its mud, unwanted chemical and dirt to pass through without*
28 *contaminating the lake. And the Science Faculty has promised to get rid of the muddy*
29 *content of the lake by biological methods.*
30

31 *Several students had randomly placed quadrats in their sampling area along the edge*
32 *of the campus lake. This was done to study the extent of plant colonisation on the lake*
33 *bank which are often exposed to flood or landslides.*
34

35 Knowledge evoked from local-level or in-place experiences often goes unnoticed. This study reveals that
36 campus communities construct meaningful, locally relevant knowledge rooted in observable nature, culture,
37 and historical memories. This understanding has the potential to increase staff and students' appreciation
38 and drive positive actions in regenerating places. Campuses, viewed as living laboratories, are “full of
39 interesting research questions, [offering] real-life problems waiting to be solved and challenges to be
40 addressed” (van Winden, 2014, p.2).
41
42

43 *Interweaving of community wellbeing and watershed health*

44 Ecosystem services enhance people's wellbeing through interactions with clean water, fresh air, fertile soil
45 (including the presence of tall trees), and biodiversity. The place atmosphere, as highlighted by MacBride-
46 Stewart (2019), encompassing safety and a clear sky, further contributes to wellbeing, particularly for those
47 seeking nature as an escape from everyday pressures. This is evident when the lake was recognised as a
48 place that improves mental health amid the stressful lifestyle individuals experience:
49

50 *(The lake) gives a soul to the university... University is a place of a lot of stress, fast*
51 *life. You'll need this kind of place where people can release their anxieties.*
52

53 There are instances in which water pollution, disrupting ecosystem services, has directly affected people's
54 health:
55
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(During a pollution incident in the 70s) those who come into contact with the water, for example if they happen to fall into the water, they will develop rashes.

Environmental health can have psychological effects on people's emotions, where what they see influences what they feel (Cunsolo and Ellis, 2018). For example, an alumnus expressed disappointment about the environmental changes at the lake:

The sad part was the lake before cleaning. Yeah, it feels like (sigh) why did my university, my alma mater become like that?

However, ecosystem health is not dependent on community wellbeing, as evident in the following quote. The deprivation of physical activities such as kayaking would not impact the lake:

I enjoy kayaking. But to me, the lake can exist without the kayak, the kayak can't exist without the lake.

Respondents described the pursuit of human wellbeing as a meaningful interaction with place, deriving benefits from ecosystem services and the place atmosphere. A healthy environment was found to influence people's emotions, though the reverse is not true – the health of the natural world is not reliant on human wellbeing, indicating a higher human dependence on nature. Therefore, promoting campus community wellbeing could be integrated with watershed health by addressing anthropogenic activities that may disturb ecosystem functions.

Results summary

Table 2 summarises the key place-based narratives derived from the meanings and values of students and staff toward the campus lake.

Table 2 Place-based narratives summary

Place-based narratives	Descriptions
Campus as a historic place	Historical values of the campus encompass social, ecological, political, and economic dimensions, with the dynamic interaction between social and ecological processes revealed as the most meaningful.
Student, staff and campus identity	The interrelation between the emergence of a personal sense of self through meaningful interaction with the lake and the lake as a unique entity that is part of and reflective of the larger identity of the campus.
In-place learning experiences	Meaningful in-place learning experiences for the campus community involve underlying aspects such as localisation, familiarity, practicality, and service learning.
Interweaving of community wellbeing and watershed health	The link between campus community wellbeing and watershed health, and its psychological effect on people's emotions.

Discussion

Place-based narratives for enhancing participation in watershed conservation

Place-based narratives identified in the study can contribute to enhancing community participation in sustainability initiatives, aligning with insights from prior research. Firstly, historical narratives, a

1
2
3 significant theme in the evoked ‘sense of place’, resonate with findings that show places become more
4 meaningful due to their history, fostering stronger community attachment to places with historical
5 significance (Ujang, 2016). Harun *et al.* (2015) noted that a positive interpretation of local history
6 establishes a shared sense of rootedness. Our study highlights how the socio-ecological dynamic of campus
7 histories contributes to constructing ‘productive’ nostalgia — an affective attachment to past experiences
8 (Wheeler, 2016). Despite how indulging in the past could have a negative outlook, such as romanticising
9 it, Wheeler (2016) acknowledges that nostalgia can be ‘productive’ through a more positive rendering of
10 local history and heritage activities. In related research, Bonnett (2016) emphasised the role of nostalgia in
11 creating hope for the future. In this context, it plays a crucial role in envisioning a future for the campus
12 lake, where activities like swimming and boating, once part of its history, could be revived.
13

14
15 Secondly, previous research has investigated the relationship between place identity and environmental
16 behaviour. Stedman (2002) noted that people are more inclined to advocate for places central to their
17 identities. In a recent study, Kuo *et al.* (2021) affirmed that place identity and place dependence can directly
18 or indirectly affect environmentally responsible behaviour. They further suggested that these emotional
19 connections, i.e., identity and dependence, can be cultivated to promote positive behaviour at a place.
20 Therefore, mediating the process of staff and students’ self-identity revelation/development, influenced by
21 special places such as the lake, may strengthen their personal appreciation, understanding, and knowledge
22 of a watershed.
23

24
25 Thirdly, in-place experiences have been associated with conservation efforts. Khadka *et al.* (2021)
26 discovered that place-based approaches incorporating local and observable impacts effectively promote
27 knowledge generation, awareness, responsibility, and behavioural intention. Klaniecki *et al.* (2018)
28 identified a relationship between *experiencing* a connection to nature in a specific location and the scale of
29 pro-environmental behaviour, spanning from local to global impacts. The concept of experiential
30 interactions in place-based learning, exemplified by Tasik Varsiti’s role as a site for localised study and
31 experimentation in conservation, aligns with the principles of the living labs movement (van Winden,
32 2014), and service learning (Huard, 2011). This is particularly meaningful here considering the appreciation
33 of other dimensions of place already described.
34

35
36 Finally, campus communities rely on the campus lake for wellbeing and self-enhancement, both of which
37 are affected by ecosystem health conditions. Junot *et al.* (2018) highlighted the mediating role of wellbeing
38 and quality of life in promoting general pro-environmental behaviours. Criscuolo *et al.* (2020) suggested
39 that sustainability goals can be more effectively communicated when framed as a personal health necessity.
40 The concept of campuses as places of wellbeing for both people and nature aligns with the ethos and values
41 that sustainability communication strives to uphold.
42

43
44 Methodologically, among the four qualitative approaches used to uncover the ‘sense of place’, semi-
45 structured interviews yielded the most insightful perspective on people’s relationships with the place.
46 Document analysis proved valuable for historical places with access to archive collections, offering original
47 accounts spanning different time periods. Vox-pop interviews also provided useful supporting data. Finally,
48 it is recommended that the co-production workshop is better suited for the co-designing or co-delivering
49 stages, particularly for translating sense of place findings into practical sustainability communication
50 products with the campus community. Optimal outcomes require an experienced facilitator.
51

52 *Translating place-based narratives into campus sustainability communication*

53 Sustainability communication, an emerging research field, emphasises collaborative interdisciplinary
54 research (Godemann, 2021). Some researchers advocate for the use of communication strategies based on
55 social science data to address social and psychological factors supporting social change (Floress *et al.*,
56 2015). Integrating sustainability communication with place-based thinking is ideal due to the connection
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3 between the sense of place and sustainability sciences. Place is regarded as a boundary device (an organising
4 concept), informing theory, method, and practices in sustainability science, showcasing commonalities
5 between both approaches (MacGillivray and Franklin, 2015).
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7 Empirical findings from this research provide insights into how place-based narratives can enhance the
8 content of campus sustainability communication, fostering participation in watershed conservation:
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- 10 • Utilise productive nostalgia linked to the campus history, particularly coupled social-ecological
11 narratives, to enchant the campus community and strengthen a sense of rootedness.
- 12 • Facilitate the revelation and development of self-identity in relation to the campus watershed while
13 promoting the unique identity of the watershed area to foster place understanding and protection.
- 14 • Treat the campus as an open classroom and living laboratory, encouraging personal engagement
15 through walking, socialising, and experiential programs. Communications should include
16 observable phenomena, nature, and the sharing of local culture and history to promote social and
17 nature bonding while enhancing place attachment.
- 18 • Integrate community wellbeing and campus liveability with watershed health, emphasising the
19 psychological impact of this relationship to raise awareness about place dependence.
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22 In Malaysia and other Asian countries, sustainability communication is a relatively new and somewhat
23 overlooked concept (Mohamad Saleh *et al.*, 2023). Current approaches often focus on mono-directional
24 communication, employing sender-receiver models through platforms like social media, virtual exhibitions,
25 or mass media, with some encouragement for two-way strategic collaboration involving various
26 stakeholders. The interpretation and translation of place-based narratives could lead to diverse
27 communication modes, message structures, and designs to enhance the campus community's participation
28 in watershed conservation. For instance, communication for sustainability in places with specific
29 landscapes, like the campus lake, could benefit from the study field of interpretation commonly used in
30 tourism or leisure places (Ham, 2013). Communication plans might involve guided walks, interpretive
31 signage, and other types of dialogic on-site communication modes. Additionally, adopting the 'storytelling'
32 or 'narrative arc' (Joubert *et al.*, 2019) message structure used in science communication may prove
33 advantageous.
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36 Earlier literature on sustainability communication underscores the importance of facilitating respectful
37 dialogue and participatory approaches while nurturing relationships with stakeholders (Franz-Balsen and
38 Heinrichs, 2007). It recognises people's knowledge, abilities, and skills as crucial resources for social
39 change. Moving forward, adopting the 'co-production cycle' (Vincent *et al.*, 2018) ensures a continuous
40 collaborative decision-making process, with the uncovering of staff and students' sense of place as part of
41 the *co-exploring* stage. The 'co-production cycle' includes subsequent stages involving the campus
42 community in *co-developing* solutions, *co-delivering* solutions, and *evaluation*. Therefore, incorporating
43 additional co-production workshops or focus group discussions into methodologies for planning, designing,
44 and implementing campus sustainability communication strategies, based on earlier findings, is
45 recommended. This should involve critical scrutiny or reflexivity (Guillemin and Gillam, 2004) regarding
46 potential 'sensitivity' narratives in relation to the data. Reflections could also consider short-term and long-
47 term strategies feasible within time, budget, and human resources limitations. Furthermore, a quantitative
48 evaluation survey using Likert scale questions could gauge the campus community's intention and
49 willingness to participate in watershed conservation based on the communication strategies developed. Co-
50 producing knowledge with stakeholders enables realistic improvements and effective solutions to
51 challenges in sustainability communication.
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Conclusion

The incorporation of a 'place-based' perspective in the enhancement of sustainability planning and watershed management for campuses opens up myriad perspectives, providing insights often overlooked when addressing complex sustainability issues. It also broadens conceptual and methodological frameworks and principles. This research paper contributes by advocating for the application of place-based thinking, particularly the constructed 'sense of place' (i.e., the watershed community's perception of self and place), as a foundational approach for sustainable watershed management on campus. The paper explores the implications of this approach for the development of effective sustainability communication within the campus environment. This builds upon the existing framework by Jorgensen and Stedman (2001), which models sense of place as a multidimensional construct including 'place meaning' and 'place attachment', and its reconstructed model by Masterson *et al.* (2017), linking it to place-related behaviour. Conceptually, the proposed framework strengthens place-based research that connects 'sense of place' as a catalyst for place-related behaviours, such as stewardship or pro-environmental behaviour. Notably, it introduces the role of sustainability communication in bridging the link between these two concepts.

The place-based narratives offer nuanced insights into the meanings and values held by the campus community, revealing an understanding of the campus as a historic place, shaping student, staff and campus identity, providing in-place learning experiences, and interweaving community wellbeing with watershed health. The empirical findings underscore the multiple and shared nature of the sense of place within a relatively small campus watershed community, cautioning against rigid generalisations when compared to other watershed locations. This distinguishes it from past studies, such as Davenport and Anderson's (2005) exploration of the sense of place in a river community in Nebraska, or Enqvist *et al.*'s (2019) categorization of place meaning for groups involved in waterfront and waterbody protection and restoration in New York, emphasising the importance of local framing. However, this does not imply exclusivity of the findings to this site. The empirical findings also reveal that the sense of place may be shared or vary in a patterned way within the same community residing near the campus lake or having the same type of experience in the area. Chapin and Knapp's (2015) research provides an understanding that people can form attachments to types of places or to those with particular attributes, and this plays a critical role for stewardship and conservation. Hence, places recognised by others as having similar *types* (e.g., lakes or parks) or *attributes* (historical significance, unique identities, or shared conservation issues) may benefit from adopting similar sustainability planning and communication strategies, as suggested in this research.

Previous literature on 'place-based communication' often conceptualises 'place' from a general perspective, describing a type of communication that uses the physical landscape as a medium and is situated in cultural values and local knowledge (Schweizer *et al.*, 2013; Hu and Chen, 2016). In contrast, starting from a methodological perspective of sense of place, using multiple qualitative data collection methods like interviews and workshops, is less developed in sustainability communication. This research suggests employing such a method to understand place-based narratives, which can be further analysed and triangulated to provide a deeper and more meaningful understanding of place. This approach aligns with past research, such as Cantrill (1998), who describes how identified sense of place can be applied in the communication of policy. The empirical findings from uncovering staff's and students' sense of place could guide the development of campus sustainability communication to some extent. However, the actual interpretation and translation should include a more elaborate collaborative decision-making process (Vincent *et al.*, 2018) through co-developing detailed planning, design, and implementation with stakeholders.

This interpretive study aimed to develop sustainability communication materials from place-based narratives, incorporating participatory approaches to promote campus community participation and influence place-related behaviours, such as stewardship or pro-environmental behaviour, thus making the place more present to the people. It seems plausible to conclude that the power of place-based narratives on campus sustainability planning and management is promising. This research provides valuable insights

for academics, practitioners, communicators, or stewards who are interested in watershed conservation strategies, particularly in urban campuses in Malaysia and elsewhere.

References

- Bartolo, M.G., Servidio, R., Palermi, A.L., Nappa, M.R. and Costabile, A. (2023), "Pro-environmental behaviors and well-being in adolescence: the mediating role of place attachment", *International Journal of Environmental Research and Public Health*, Vol 20 Issue 10.
- Bolderston, A. (2012), "Conducting a research interview", *Journal of Medical Imaging and Radiation Sciences*, Vol 43 Issue 1, pp.66-76.
- Bonnett, A. (2016), *The Geography of Nostalgia: Global and Local Perspectives on Modernity and Loss (1st ed.)*, Routledge, New York, NY.
- Braun, V. and Clarke, V. (2006), "Using thematic analysis in psychology", *Qualitative Research in Psychology*, Vol 3 Issue 2, pp.77-101.
- Camara, M., Jamil, N.R. and Abdullah, A.F. (2019), "Impact of land uses on water quality in Malaysia: a review", *Ecological Processes*, Vol 8 Issue 1, pp.1-10.
- Cantrill, J.G. (1998), "The environmental self and a sense of place: communication foundations for regional ecosystem management", *Journal of Applied Communication Research*, Vol 26 Issue 3, pp.301-318.
- Chapin, F.S. and Knapp, C.N. (2015), "Sense of place: a process for identifying and negotiating potentially contested visions of sustainability", *Environmental Science and Policy*, Vol. 53 Part A, pp.38-46.
- Che Mood, N., Othman, F., Muhammad Amin, N.F. and Adham, M.D. (2017), "Effectiveness of lake remediation towards water quality: application in Varsity Lake, University of Malaya, Kuala Lumpur", *Sains Malaysiana*, Vol 46 Issue 8, pp.1221-1229.
- Chin, C. and Ng, Y. (2015), "A perspective study on the urban river pollution in Malaysia", *Chemical Engineering Transactions*, Vol 45, pp.745-750.
- Cichoń, M., Warachowska, W. and Łowicki, D. (2021), "Attitudes of young people towards lakes as a premise for their public participation in environmental management", *Frontiers in Environmental Science*, Vol 9.
- Criscuolo, A., Krenza, G. and Hershkowitz, A. (2020), "Planetary health and human health: what Covid-19 can teach us about promoting sustainability", available at: <https://sustainabilityreport.com/2020/10/01/planetary-health-and-human-health-what-covid-19-can-teach-us-about-promoting-sustainability/> (accessed 14 May 2023).
- Cullen-Unsworth, L.C., Nordlund, L.M., Paddock, J., Baker, S., McKenzie, L.J. and Unsworth, R.K.F. (2013), "Seagrass meadows globally as a coupled social-ecological system: implications for human wellbeing", *Marine Pollution Bulletin*, Vol 83 Issue 2, pp.387-397.
- Cunsolo, A. and Ellis, N.R. (2018), "Ecological grief as a mental health response to climate change-related loss", *Nature Climate Change*, Vol 8 Issue 4, pp.275-281.
- Davenport, M.A and Anderson, D.H. (2005), "Getting from sense of place to place-based management: an interpretive investigation of place meanings and perceptions of landscape change", *Society & Natural Resources*, Vol 18 Issue 7, pp.625-641.

1
2
3 Druschke, C.G. (2013), "Watershed as common-place: communicating for conservation at the watershed
4 scale", *Environmental Communication*, Vol 7 Issue 1, pp.80-96.
5

6 Ellingson, L.L. (2012), "Interview as embodied communication", Gubrium, J.F., Holstein, J.A., Marvasti,
7 A.B. and McKinney, K.D. (Ed.), *The SAGE Handbook of Interview Research: The Complexity of the Craft*,
8 Thousand Oaks: SAGE Publications, pp.525-540.
9

10 Enqvist, J.P., Campbell, L.K., Stedman, R.C. and Svendsen, E.S. (2019), "Place meanings on the urban
11 waterfront: a typology of stewardships", *Sustainability Science*, Vol 14 Issue 3, pp.589-605.
12

13 Floress, K., Akamani, K., Halvorsen, K.E., Kozich, A.T. and Davenport, M. (2015), "The role of social
14 science in successfully implementing watershed management strategies", *Journal of Contemporary Water
15 Research & Education*, Vol 154 Issue 1, pp.85-105.
16

17 Franz-Balsen, A. and Heinrichs, H. (2007), "Managing sustainability communication on campus:
18 experiences from Lüneburg", *International Journal of Sustainability in Higher Education*, Vol 8 Issue 4,
19 pp.431-445.
20

21 Godemann, J. (2021), "Communicating sustainability. Some thoughts and recommendations for enhancing
22 sustainability communication", Weder, F., Krainer, L. and Karmasin, M. (Ed.s), *The Sustainability
23 Communication Reader: A Reflective Compendium*, Springer VS, Wiesbaden, Germany, pp.15-30.
24

25 Grigg, N.S. (2016), "Watersheds as social-ecological systems", *Integrated Water Resource Management:
26 An Interdisciplinary Approach*, Palgrave Macmillan, London, pp.139-149.
27

28 Guillemin, M. and Gillam, L. (2004), "Ethics, reflexivity, and "ethically important moments" in research",
29 *Qualitative Inquiry*, Vol 10 Issue 2, pp.261-280.
30

31 Gustafson, P. (2001), "Meanings of place: everyday experience and theoretical conceptualizations",
32 *Journal of Environmental Psychology*, Vol 21 Issue 1, pp.5-16.
33

34 Hamann, H.B. and Drossman, H. (2006), "Integrating watershed management with learning: the role of
35 information transfer in linking educators and students with community watershed partners", *Comparative
36 Technology Transfer and Society*, Vol 4 Issue 3, pp.305-337.
37

38 Ham, S. (2013), *Interpretation: making a difference on purpose*, Fulcrum Publishing, Colorado.
39

40 Harun, N.Z., Mansor, M. and Said, I. (2015), "Place rootedness suggesting the loss and survival of historical
41 public spaces", *Procedia Environmental Sciences*, Vol 28, pp.528-537.
42

43 Huard, M. (2011), "Service-learning in a rural watershed Unity College and Lake Winnecook: a community
44 perspective", *Journal of Contemporary Water Research and Education*, Vol 119 Issue 1, pp.60-71.
45

46 Hu, S. and Chen, J. (2016), "Place-based inter-generational communication on local climate improves
47 adolescents' perceptions and willingness to mitigate climate change", *Climatic Change*, Vol 138 Issue 3,
48 pp.425-438.
49

50 Johnson, L. and Castleden, H. (2011), "Greening the campus without grass: using visual methods to
51 understand and integrate student perspectives in campus landscape development and water sustainability
52 planning", *Area*, Vol 43 Issue 3, pp.353-361.
53

54 Jorgensen, B.S. and Stedman, R.C. (2001), "Sense of place as an attitude: lakeshore owners attitudes toward
55 their properties", *Journal of Environmental Psychology*, Vol 21 Issue 3, pp.233-248.
56
57
58
59
60

Joubert, M., Davis, L. and Metcalfe, J. (2019), "Storytelling: the soul of science communication", *Journal of Science Communication*, Vol 18 Issue 5.

Junot, A., Paquet, Y. and Fenouillet, F. (2018), "Place attachment influence on human well-being and general pro-environmental behaviors", *Journal of Theoretical Social Psychology*, Vol 2 Issue 2, pp.49-57.

Khadka, A., Li, C.J., Stanis, S.W. and Morgan, M. (2021), "Unpacking the power of place-based education in climate change communication", *Applied Environmental Education & Communication*, Vol 20 Issue 1, 77-91.

Klaniecki, K., Leventon, J. and Abson, D.J. (2018), "Human–nature connectedness as a 'treatment' for pro-environmental behavior: making the case for spatial considerations", *Sustainability Science*, Vol 13, pp.1375–1388.

Kuo, H.M., Su, J.Y., Wang, C.H., Kiatsakared, P. and Chen, K.Y. (2021), "Place attachment and environmentally responsible behavior: the mediating role of destination psychological ownership", *Sustainability*, Vol 13 Issue 12, pp.6809-6825.

MacBride-Stewart, S. (2019), "Discourses of wellbeing and environmental impact of trail runners in protected areas in New Zealand and the United Kingdom", *Geoforum*, Vol 107, pp.134-142.

MacGillivray, B.H., and Franklin, A. (2015), "Place as a boundary device for the sustainability sciences: concepts of place, their value in characterising sustainability problems, and their role in fostering integrative research and action", *Environmental Science and Policy*, Vol 53 Part A, pp.1-7.

McKenzie-Mohr, D. (2000), "Promoting sustainable behavior: an introduction to community-based social marketing", *Journal of Social Issues*, Vol 56 No 3, pp.543–554.

Massey, D. (1995), "Places and their pasts", *History Workshop Journal*, No 39, pp.182-192.

Masterson, V.A., Stedman, R.C., Enqvist, J., Tengo, M., Giusti, M., Wahl, D. and Svedin, U. (2017), "The contribution of sense of place to social-ecological systems research: a review and research agenda", *Ecology and Society*, Vol 22 No 1.

Mohamad, Z. F., Abd Kadir, S.N., Nasaruddin, A., Sakai, N., Mohamed Zuki, F., Hussein, H., Sulaiman, A.H. and Mohd Salleh, M.S.A. (2018), "Heartware as a driver for campus sustainability: insights from action-oriented exploratory case study", *Journal of Cleaner Production*, Vol 196, pp.1086-1096.

Mohamad Saleh, M.S., A Rahman, N.A. and Adi Kasuma, S.A. (2023), *Sustainability communication across Asia: fundamental principles, digital strategies and community engagement*, Taylor Francis, London and New York.

Moser, S.C. (2010), "Communicating climate change: history, challenges, process and future directions", *WIREs Climate Change*, Vol 1 Issue 1, pp.31-53.

Namey, E., Guest, G., Thairu, L. and Johnson, L. (2008), "Data reduction techniques for large qualitative data sets", Altamira, R. (Ed.), *Handbook for Team-based Qualitative Research*, Almamira Press, Plymouth, pp.137-161.

Neo, S.M., Choong, W.W. and Ahamad, R. (2016), "Environmental awareness and behaviour index for Malaysia", *Procedia - Social and Behavioral Sciences*, Vol 222, pp.668-675.

1
2
3 Nowell, L.S., Morris, J.M., White, D.E. and Moules, N.J. (2017), "Thematic analysis: striving to meet the
4 trustworthiness criteria", *International Journal of Qualitative Methods*, Vol 16, pp.1-13.

5
6 Palinkas, L.A., Horwitz, S.M., Green, C.A., Wisdom, J.P., Duan, N. and Hoagwood, K. (2015), "Purposeful
7 sampling for qualitative data collection and analysis in mixed method implementation research", *Adm
8 Policy Ment Health*, Vol 42 Issue 5, pp.533-544.

9
10 PAUM (2008), *The University of Malaya - The Calling of Pantai Valley*. PAUM and Trans-Edu Publishing
11 Sdn Bhd., Petaling Jaya, MY.

12
13 Pearson, K.R., Backman, M., Grenni, S., Moriggi, A., Pisters, S. and Vrieze de, A. (2018), *Arts-based
14 methods for transformative engagement: a toolkit*, SUSPLACE, Wageningen.

15
16 Peng, J., Strijker, D. and Wu, Q. (2020), "Place identity: how far have we come in exploring its meanings?",
17 *Frontiers in Psychology*, Vol 11.

18
19 Praveena, S.M. and Themudu, S. (2022), "Exploring water conservation awareness level among primary
20 school children from Melaka (Malaysia)", *Malaysian Journal of Medicine and Health Sciences*, Vol 18,
21 pp.75-81.

22
23 Proshansky, H.M. (1978), "The city and self-identity", *Environment and Behavior*, Vol 10 Issue 2, pp.147-
24 169.

25
26 Russ, A., Peters, S.J., Krasny, M.E. and Stedman, R.C. (2015), "Development of ecological place meaning
27 in New York City", *The Journal of Environmental Education*, Vol 46 Issue 2, pp.73-93.

28
29 Schweizer, S., Davis, D. and Thompson, J.L. (2013), "Changing the conversation about climate change: a
30 theoretical framework for place-based climate change engagement", *Environmental Communication*, Vol
31 7 Issue 1, pp.42-62.

32
33 Stedman, R.C. (2002), "Toward a social psychology of place: predicting behavior from place-based
34 cognitions, attitude, and identity", *Environment and Behavior*, Vol 34 Issue 5, pp.561-581.

35
36 Stratton, S. (2021), "Population research: convenience sampling strategies", *Prehospital and Disaster
37 Medicine*, Vol 36 Issue 4, pp.373-374.

38
39 Tayeb, A. and Yew, W.L. (2019), "Malaysia's green movement: old continuities and new possibilities",
40 Lemiere, S. (Ed.), *Illusions of Democracy: Malaysia Politics and People*, Amsterdam University Press,
41 Amsterdam, pp.287-304.

42
43 Too, L. and Bajracharya, B. (2015), "Sustainable campus: engaging the community in sustainability",
44 *International Journal of Sustainability in Higher Education*, Vol 16 No 1, pp.57-71.

45
46 Ujang, N. (2016), "Affective perception of place: attachment to Kuala Lumpur historical urban places",
47 *Open House International*, Vol 41 No 2, pp.95-101.

48
49 UM Fact Sheet (2023), "About UM", available at: www.um.edu.my/um-fact-sheet (accessed 16 July 2023).

50
51 van Winden, W. (2014), "Connecting cities building successes: The city as classroom and living lab: how
52 universities can benefit from a deeper local involvement", *EUniverCities*.

53
54 Vincent, K., Daly, M., Scannell, C. and Leathes, B. (2018), "What can climate services learn from theory
55 and practice of co-production?", *Climate Services*, Vol 12, pp.48-58.

1
2
3 Wheeler, R. (2016), "Local history as productive nostalgia? Change, continuity and sense of place in rural
4 England", *Social & Cultural Geography*, Vol 18 Issue 4, pp.466-486.
5

6 Williams, D.R. and Stewart, S.I. (1998), "Sense of place: an elusive concept that is finding a home in
7 ecosystem management", *Journal of Forestry*, Vol 96 Issue 5, pp.18–23.
8

9 World Bank (2015), "Malaysia among most urbanized countries in East Asia", available at:
10 [http://www.worldbank.org/en/news/feature/2015/01/26/malaysia-among-most-urbanized-countries-in-](http://www.worldbank.org/en/news/feature/2015/01/26/malaysia-among-most-urbanized-countries-in-east-asia)
11 [east-asia](http://www.worldbank.org/en/news/feature/2015/01/26/malaysia-among-most-urbanized-countries-in-east-asia) (accessed 12 May 2023).
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Table 1 Study participant profile

Participant characteristics	Semi-structured interviews	Vox-pop interviews	Co-production workshop
Gender (number of participants):			
Male	8	2	8
Female	-	10	5
Age:			
Range (minimum and maximum)	25 - 70	20 - 35	20 - 70
Affiliation with university:			
Student (Undergraduate)	-	5	-
Student (Postgraduate)	-	4	2
Academic staff	4	-	5
Non-academic staff	3	2	5
Alumni	1	1	1

Table 2 Place-based narratives summary

Place-based narratives	Descriptions
Campus as a historic place	Historical values of the campus encompass social, ecological, political, and economic dimensions, with the dynamic interaction between social and ecological processes revealed as the most meaningful.
Student, staff and campus identity	The interrelation between the emergence of a personal sense of self through meaningful interaction with the lake and the lake as a unique entity that is part of and reflective of the larger identity of the campus.
In-place learning experiences	Meaningful in-place learning experiences for the campus community involve underlying aspects such as localisation, familiarity, practicality, and service learning.
Interweaving of community wellbeing and watershed health	The link between campus community wellbeing and watershed health, and its psychological effect on people's emotions.