

Exploring the Role of Nature Journaling in Enhancing Environmental Awareness and Connection to Natural Landscapes: A Mixed-Methods Study

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ABSTRACT

Nature journaling fosters environmental awareness by encouraging structured observation and documentation of natural landscapes. This study examines its role in enhancing environmental sensitivity and spatial awareness among 86 participants, including university students from design backgrounds, school students and youth workers from non-design backgrounds. A mixed-method approach was employed, with surveys conducted among university students and youth workers (46 responses), capturing changes in environmental awareness and their connection to natural landscapes. For all participants, including school students, engagement was assessed through observation and analysis of their journaling pages. Findings indicate that the workshop improved spatial observation skills and ecological literacy, equipping participants with an improved understanding of natural elements and their integration into the built environment. Participants reported heightened mindfulness, appreciation for environmental details, and a calming and engaging learning experience that fostered creative exploration. Statistical analyses revealed a significant increase in participants' confidence in documenting nature ($p=.00007$) and their sense of connectedness to the natural environment ($p=.005$) following the workshop. These insights highlight the potential of nature journaling as an accessible tool for integrating environmental awareness into design and sustainability education. While the study is exploratory, it underscores the need for creative, community-based approaches in built environment education. Future research should explore its application in built environment and sustainable design education to bridge the gap between nature engagement and the built environment.

Keywords: *Nature journaling; environmental education; built environment education; spatial observation skills; design and sustainability education*

INTRODUCTION

As the world faces increasing environmental challenges, fostering environmental awareness has become a critical aspect of education, particularly in built environment disciplines. Traditional environmental education often emphasises scientific knowledge, but creative, experiential practices such as nature journaling provide an alternative approach that encourages direct engagement with natural landscapes that can foster a deeper connection with the environment through hands-on engagement (Hill 2013;

Myer 2006). Nature journaling, which integrates artistic expression, structured observation, and reflective documentation, has the potential to enhance spatial awareness, ecological literacy, and environmental appreciation (Arsyad et al. 2024; Leslie & Roth 2003). Developing these skills in the built environment field is crucial for future designers and planners, as understanding natural patterns, biodiversity, and landscape dynamics informs sustainable design and planning strategies (Beatley 2017). However, there remains a gap in integrating creative methodologies into built environment education, limiting

opportunities for students, community and practitioners to cultivate a deeper, more intuitive connection with nature.

Recent studies emphasise the role of experiential learning in fostering environmental sensitivity and sustainable design thinking (Ku, 2008). Nature journaling offers a tangible, interactive method for observing and interpreting environmental elements, making it a valuable tool for landscape architects, urban planners, architects, designers and engineers to incorporate nature-based solutions into their work. By bridging art, science and design thinking, nature journaling encourages a multidisciplinary approach to sustainability and environmental stewardship. As built environment educators seek to integrate more immersive and reflective learning practices, nature journaling presents a promising strategy for fostering ecological literacy and richer environmental connections.

Nature journaling is still underexplored within built environment education despite its potential benefits. This approach can enhance experiential outdoor learning to complement technical and analytical skills with intuitive, observational engagement with nature. This study addresses this gap by examining how nature journaling increases environmental awareness, observation skills, and creative engagement with natural landscapes among children, youth and adults from both design and non-design backgrounds.

This study employs a mixed-methods approach, combining quantitative surveys and qualitative analysis of nature journal entries and observations to assess changes in environmental awareness and implementation of new skills (Adeoye et al. 2024; Dey et al. 2019; Fahmi & Ramdhani, 2023; Ong & Sunogan, 2024). The research focuses on three distinct participant groups: university students in design-related fields, youth workers from a non-governmental organisation, and school students. By analysing their experiences, this study aims to evaluate whether nature journaling can serve as an effective pedagogical tool for fostering a holistic understanding of environmental elements in design and sustainability education. Thus, this research contributes to existing literature by (1) Exploring the effectiveness of nature journaling in fostering environmental awareness, (2) Assessing how this practice impacts different demographic groups (students, youth workers, and children), and (3) Investigating the implications of nature journaling for built environment education and sustainable design thinking.

LITERATURE REVIEW

Traditional environmental education often focuses on theoretical knowledge, which can create a disconnect between students and the natural world (Ardoin et al., 2018). Experiential learning, which involves direct engagement with real-world environments, has been found to enhance ecological literacy and foster a deeper appreciation for sustainability (Kuh, 2008). Methods such as outdoor fieldwork, project-based learning, and participatory environmental activities have been widely used in education to improve awareness and retention of ecological concepts.

One of the most effective experiential learning techniques is nature journaling, which integrates artistic expression, structured observation, and reflective documentation (Leslie & Roth, 2003). This method encourages individuals to interact with nature more intentionally, leading to improved spatial awareness, environmental sensitivity, and mindfulness. Laws (2016) highlights that nature journaling extends beyond artistic expression, serving as a powerful tool for enhancing observation skills, fostering curiosity, and deepening personal connections with the environment.

Nature journaling has been historically used by scientists, artists, and naturalists as a tool for documenting observations and reflecting on environmental phenomena (Myers, 2006). In recent years, researchers have explored its applications in education, design, and sustainability studies. Recent studies have shown that incorporating nature journaling into educational settings can enhance observational skills, improve retention of ecological concepts (Leslie & Roth, 2003), encourage creativity and critical thinking (Beatley, 2017), promote emotional well-being through mindfulness (Myers, 2006), and encourage a more profound understanding of natural phenomena through the combination of visual representation and written observations (Laws, 2016).

These findings suggest that nature journaling can be a powerful tool for built environment education, as it enables students to observe and analyse natural patterns, materials, and structures, all of which are essential for sustainable design thinking.

In built environment disciplines such as landscape architecture, architecture, urban planning, industrial design and engineering, students are trained to approach design from a creative, technical and analytical perspective. The integration of creative methodologies like nature journaling can provide a more holistic understanding of natural systems and their relationship to the built environment (Beatley, 2017).

THEORETICAL FRAMEWORK

The integration of various theoretical frameworks into the study of nature journaling is essential for understanding its role in enhancing environmental awareness and fostering a connection to natural landscapes. This literature review explores key theories, including Place-Based Education (PBE), the Biophilia Hypothesis, and Experiential Learning Theory, highlighting their relevance to nature journaling's impact on environmental engagement.

Place-Based Education (PBE) emphasises experiential learning in natural settings. As Hu (2022) explains, PBE connects students with their local environments through hands-on experiences, fostering a deeper understanding of ecological systems and their significance. By encouraging direct interaction with nature, this pedagogical approach cultivates environmental awareness and appreciation. Nature journaling, as a component of PBE, further enhances engagement by prompting students to observe, reflect, and document their experiences, thereby deepening their connection to the natural world.

The Biophilia Hypothesis, proposed by Edward O. Wilson in 1984, suggests that humans have an innate affinity for nature, which is essential for psychological and emotional well-being (Joye & de Block, 2011). This hypothesis supports the idea that immersive nature experiences, such as nature journaling, can strengthen personal and emotional connections to the environment.

Experiential Learning Theory, developed by psychologist David Kolb in 1984, posits that learning occurs through the transformation of experience into knowledge (Kolb et al., 2014). This concept aligns with nature journaling, where reflecting on direct encounters with nature helps learners actively engage with their observations and emotions.

Islamic teachings emphasise the importance of observing and reflecting upon the natural world as a means to acquire knowledge and deepen one's understanding of the Creator's wisdom. The Qur'an encourages believers to contemplate the signs (*āyāt*) in nature, such as the alternation of night and day, and the diversity of life, viewing these phenomena as manifestations of divine creations that can lead to intellectual and spiritual growth. Rizqi and Azizah (2024) highlight that Islamic education scholars emphasise the Qur'an's advocacy for observing nature as a means of gaining both knowledge and spiritual insight while promoting environmental stewardship. This perspective aligns with experiential learning theories and holistic education approaches, incorporating distinct spiritual values that set it apart from secular models.

NATURE JOURNALING AS A PEDAGOGICAL TOOL

Nature journaling is a reflective practice that encourages individuals to closely observe, document, and connect with their natural surroundings through writing and artistic expression. Early Muslim scholars such as Al-Biruni and Ibn al-Haytham made substantial contributions to fields like astronomy, geology, and biology through meticulous study and recording of natural phenomena. Their works reflect a deep engagement with the environment, driven by the Islamic view that studying nature leads to a greater appreciation of the Creator's wisdom. For instance, Ibn al-Haytham's explorations in optics were grounded in careful observations of light and its interactions within the natural world (Stirone, 2017). Dr. Osman Umarji, in his series "Reflecting on Nature," emphasises the prophetic tradition of contemplating creation to strengthen one's relationship with Allah. He provides practical advice on adopting this habit, underscoring its significance in Islamic practice (Umarji, 2020).

With roots in the naturalist tradition, this practice also dates to scientists and explorers like John Muir and Henry David Thoreau, who recorded their observations and reflections on nature's beauty and complexity. Today, nature journaling is widely used in education as a hands-on learning tool that fosters environmental awareness by immersing students in their local ecosystems (Hu 2022). Beyond enhancing academic understanding of biodiversity and ecology, it also nurtures a sense of belonging and responsibility toward the environment.

Empirical research has demonstrated a range of cognitive, emotional, and observational benefits linked to nature journaling. Studies show that keeping a nature journal sharpens observational skills by encouraging individuals to closely examine their surroundings and reflect on their experiences (Tsevreni, 2021). This process fosters critical thinking and analytical abilities as individuals interpret their observations and articulate their thoughts through writing and artistic expression. Moreover, nature journaling serves as a valuable emotional outlet, helping individuals process their feelings about their experiences in nature. Research by Baikie and Wilhelm (2005) highlights the therapeutic effects of expressive writing, which can contribute to reduced stress, enhanced well-being, and a stronger emotional connection to the environment.

Nature journaling is widely used in both formal and informal education. In classrooms, teachers incorporate it into science and environmental curricula to promote engagement with nature and interdisciplinary learning. Hu (2022) emphasises that linking nature journaling to coursework helps students develop a deeper understanding of their environment. Nature journaling in informal settings, such as community programs and outdoor workshops, can encourage environmental stewardship and collective learning. Participants could share insights, strengthening their connection to nature and their communities. Overall, nature journaling is a versatile educational tool that enhances learning while fostering environmental awareness across all ages.

METHODOLOGY

This section outlines the research design, participant selection, data collection procedures, and analysis methods used in this study.

This study employs a mixed-methods approach, combining quantitative surveys and qualitative analysis of nature journal entries. The rationale behind this approach is to capture the trends in participants' environmental awareness and reflections on their experiences with nature journaling. The workshops were conducted three times, where participants engaged in a structured nature journaling session.

The study involved 86 participants divided into three groups:

1. University students ($n = 24$) – primarily from landscape architecture, architecture, art and design backgrounds.
2. Youth workers ($n = 31$) – from non-design backgrounds.
3. School students ($n = 31$) – aged 8-15, with no formal background in design or environmental studies.

A pre- and post-workshop survey with self-assessments and open-ended questions was administered to university students and youth workers ($n = 46$ responses) to measure changes in:

1. Environmental awareness (measured using a 5-point Likert scale).
2. Confidence in nature journaling (self-reported).
3. Perceived connection to nature (qualitative responses).

Surveys were not conducted with the school students group as many of the children were unfamiliar with Likert scales and abstract self-assessment formats. Their limited experience with structured rating tools raised concerns about the reliability and consistency of their responses, particularly those that require critical thinking or self-reflection (Dey et al. 2019; Ong & Sunogan, 2024). Instead, their nature journaling engagement was assessed through qualitative methods, primarily through analysing their journaling pages and informal observations during the workshop.

To ensure comparability across groups, qualitative data from all participants were standardised using the same thematic framework (Adeoye et al. 2024; Fahmi & Ramdhani, 2023). This framework focused on four dimensions observed consistently across the participants' journal pages: (1) journal structure and layout; (2) observational detail and objects drawn, (3) annotation and reflection, and (4) creative expression and use of techniques. Additionally, the researchers conducted observations during the workshop activities to see how the participants follow, adopt and adapt the journal techniques. These observations were recorded using photographs.

All participants engaged in guided nature journaling sessions, where they documented visual observations through sketches, drawings and annotations. The journaling activities were held outdoors and participants could choose what to observe and draw. Prior to the outdoor session, the participants were taught about nature appreciation, the basics of nature journaling and how to use watercolour as their painting media.

Since younger students were not given surveys, their engagement with nature journaling was assessed through analysis of their journal pages and direct observations. The facilitators recorded qualitative notes on level of engagement and enthusiasm during journaling, depth of observation in their drawings and notes, and expressed emotions and reflections about nature.

As part of the qualitative data collection, participants' nature journaling pages were collected and analysed to explore patterns of observation, creativity and engagement with natural elements. These visual artefacts were examined across the three participant groups, using a thematic lens informed by the six emergent themes identified in the study. Each journal was reviewed for its use of drawing techniques, page layout, annotation, artistic expression and reflective content. This analysis provided insights into how different groups interpreted and documented their interactions with nature, offering a visual complement to the survey responses and thematic coding of participant reflections. The journal entries served as both a creative output and a window into the participants' evolving environmental awareness and connection to the natural world.

Figure 1 presents the conceptual model that guided the workshop design and evaluation. Based on an Input-Process-Outcome (IPO) framework, the model helps to structure both the planning and analysis of participant learning experiences in nature journaling.

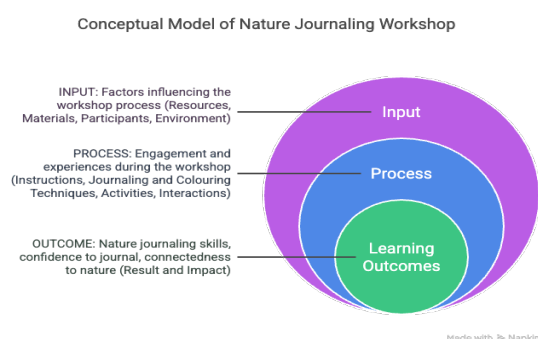


FIGURE 1. Conceptual Model of Nature Journaling Workshop

RESULTS AND DISCUSSION

PARTICIPANT OVERVIEW

The participants comprised 24 university students, 31 youth workers, and 31 school students aged between 8 and 15, with a total of 86 participants. The surveys were distributed to 55 participants (university students and youth workers), with only 46 responses (84% response rate). The 31 school students did not participate in the survey, as questionnaires were deemed inefficient for this age group. Alternatively, the students' engagement was assessed by observing and analysing their journaling pages.

Based on the survey, only a third of the respondents (14 out of 46 respondents) had tried nature journaling before the workshop (refer to Figure 2). None of the school students had previously tried nature journaling.

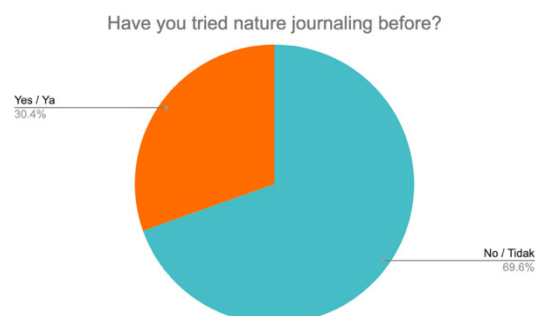


FIGURE 2. Prior experience with nature journaling

When participants were asked to rate their familiarity with nature journaling on a Likert scale from 1 (least familiar) to 5 (most familiar), the majority reported low familiarity. Specifically, 14 participants rated themselves

at 1, 13 at 2 and 11 at 3, while only a small number rated themselves at 4 (7 participants) and 5 (1 participant). This suggests that over 80% of participants (38 out of 46) had low to moderate familiarity (scores 1-3) with the concept prior to this workshop. This finding underscores the need for introductory or foundational approaches when implementing nature journaling activities, especially among groups with limited prior exposure.

The mean familiarity score was 2.3, with a median of 2, further confirming the generally low-reported awareness among participants. Figure 3 visualises the distribution of familiarity scores to provide a clear overview of participant responses.

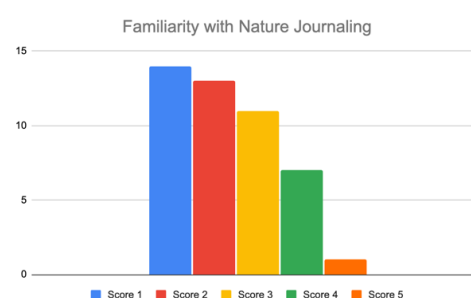


FIGURE 3. Familiarity with nature journaling

PERCEPTIONS OF NATURE JOURNALING

The participants were asked what they thought nature journaling involved. The findings revealed six key themes that highlight their perception (refer to Table 1).

TABLE 1. Emerging themes from participants' perception of nature journaling

Themes	Sample Responses
Theme 1: Observing and Experiencing Nature	• "Appreciating and valuing the beauty of nature" • "To observe and appreciate nature through your own lens" • "Exploring the forest and drawing what you see in the forest"
Theme 2: Sketching and Documenting Nature	• "Live sketching/painting in areas surrounded by nature" • "Draw what we can see" • "Observing and documenting nature through drawing or writing"
Theme 3: Recording and Communicating Nature's Essence	• "Recording what we see and feel to convey the knowledge to others." • "Drawing all forms of nature based on what we see with details" • "I sketch to understand the stories behind a nature element"
Theme 4: Nature-Inspired Artistic Creation	• "Sketches of each flora or fauna element" • "Decorations to beautify nature with plants" • "Drawing the natural environment"

continue ...

... cont.

Theme 5: Interaction with Nature through Art	“Drawing while looking at the scenery / being close to nature”
Theme 6: Reflection and Interpretation of Nature through Art	“Sketching something related to nature while reflecting on it”

DEVELOPING CONFIDENCE THROUGH GUIDED PRACTICE

Before the workshop, confidence levels were generally lower, with 9 participants rating themselves as ‘not confident’ (Score 1), and 4 selecting Score 2. The majority of participants fell in the middle range, with 17 choosing Score 3 and 12 selecting Score 4. Only 4 participants reported the highest confidence level (Score 5). In contrast, post-workshop responses indicated a notable shift: no participants selected Score 1, and only 2 selected Score 2. Confidence increased substantially at the upper end of the scale, with 16 participants selecting Score 4 and 10 choosing Score 5.

Figure 4 shows the change in their confidence level before and after the workshop. A paired *t*-test was conducted to compare the pre-workshop and post-workshop confidence levels. The results revealed a statistically significant difference between pre- and post-workshop confidence levels, $p = .00007$, indicating that the workshop had a meaningful impact.

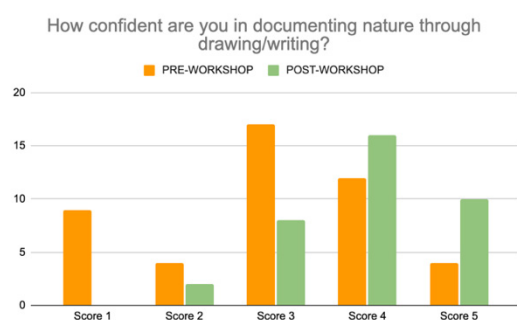


FIGURE 4. Confidence in nature journaling (1 = Not Confident; 5 = Very Confident)

Similar findings have been found by other researchers that examined how creative activities like art can reinforce learners' confidence in expressing their observations (Gray & Thomson, 2016; Zhongbin, 2024). Many participants initially felt uncertain about their ability to document their observations, but through guided demonstration and hands-on experience, they developed greater self-assurance in their nature journaling skills.

At the outset, 13 participants expressed uncertainty or self-doubt regarding their ability to document observations through drawing or writing (Score 1 and Score 2). To ease them into the process, the workshop began with a low-pressure, expressive activity: each participant was given a leaf or flower to paste into their sketchbook (refer to Figure 5-7). From there, they were invited to doodle, expand on its patterns, or write freely about how they feel on that day. This environmental art exercise served as an important icebreaker, helping participants to loosen up, engage creatively, and become more comfortable with the blank page. It emphasised that there was no wrong way to begin, allowing them to explore the visual and emotional dimensions of nature freely. The role of expressive activities can encourage participants to explore their emotional and visual experiences in nature as a starting point to build confidence to draw further (Arsyad et al. 2024; Hu, 2022).



FIGURE 5. Nature and art expression activity by a university student



FIGURE 6. Nature and art expression activity by the youth workers

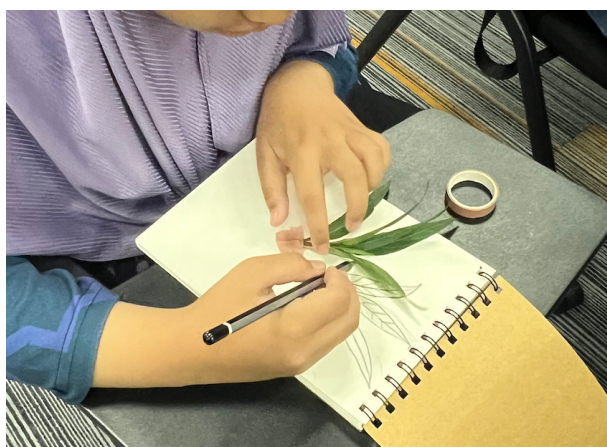


FIGURE 7. Nature and art expression activity by a school student

Building on this foundation, the next segment of the workshop introduced the core techniques of nature journaling. Participants were guided on how to set up their pages, observe closely, and draw elements of nature (such as flowers, leaves, insects, etc.) with attention to structure (Laws 2016; Leslie & Roth, 2003) (refer to Figure 8-9). For instance, in observing flowers, they could observe the petals, symmetry, colours and form. They also learned to annotate their drawings, combining sketches with notes that reflected their thoughts, feelings, or ecological observations.

One of the techniques taught during this session was the use of zooming in and out – encouraging participants to alternate between detailed close-ups of natural elements and broader landscape views (Laws, 2016; Leslie & Roth, 2003). This method not only improved their visual analysis but also enhanced their ability to relate individual elements to larger environmental contexts.

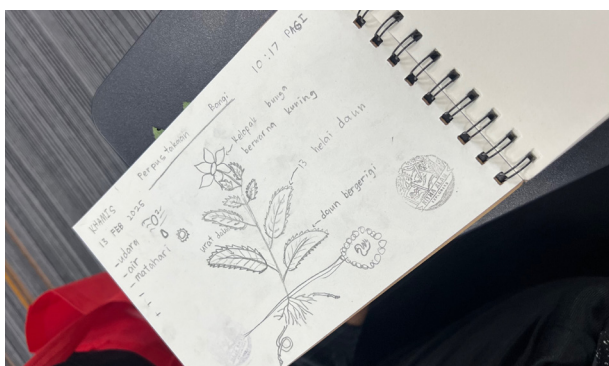


FIGURE 8. A school student's page structure for nature journaling

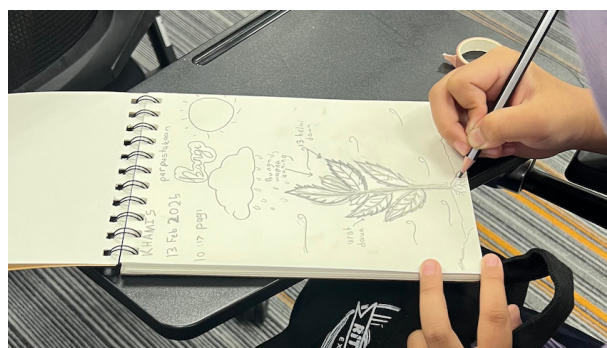


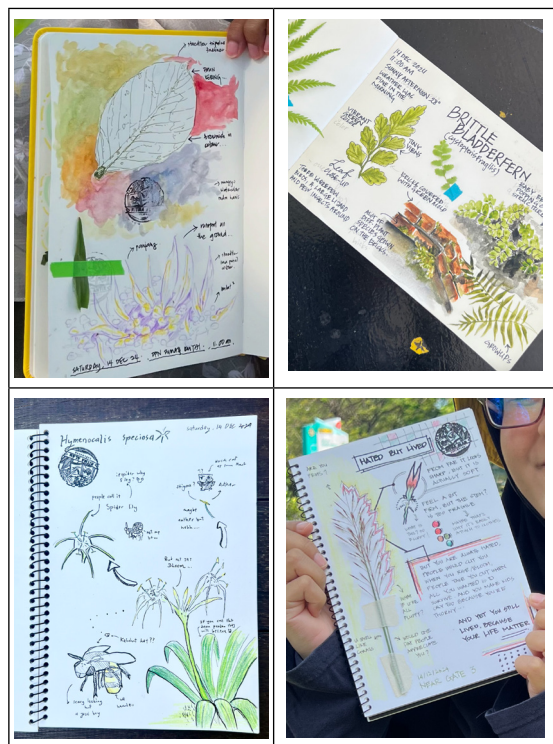
FIGURE 9. A school student elaborated her page with the natural process

In the final preparatory session, participants were introduced to basic watercolour techniques – specifically, wet-on-dry and wet-on-wet applications (Lin, 1993). These artistic tools gave them the confidence to experiment with textures, colour blending and layering, in the process of capturing the essence of natural subjects.

JOURNAL PAGE ANALYSIS

By the time the participants moved outdoors for independent journaling, they had developed a toolkit of creative and observational strategies. This structured progression – from free expression to focused technique – helped the participants feel more equipped and confident in their ability to journal in nature. 28 participants described the experience as calming and engaging, through words such as 'relaxing', 'calming', 'fun', 'inspiring', 'engaging' and 'healing', with eight participants reporting that they noticed details in their environment they had never paid attention to before, such as the shape of leaves, the arrangement of petals, or the variations in bark texture (refer Tables 2-4).

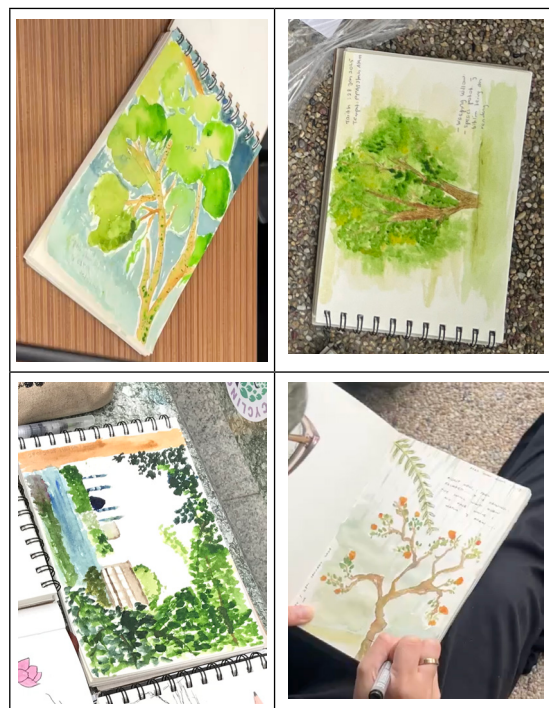
TABLE 2. Sample of nature journaling pages by the university students



A visual analysis of the journal pages produced by university students revealed a rich interplay of observation, artistic exploration and reflective expression. All 24 university students demonstrated a strong engagement with *Theme 1: Observing and Experiencing Nature* and *Theme 2: Sketching and Documenting Nature*, showing careful attention to structure, form and layout through applying techniques introduced during the workshop. 14 students produced detailed sketches of leaves and flowers, accompanied by labels or annotations describing natural features, while 10 students drew the natural setting and scenery.

Participants also experimented freely with patterns, textures and compositions. This creative play was encouraged during the initial expressive activity, where students expanded doodles from natural elements, allowing for more intuitive and imaginative responses to nature. One of the journal pages reflected deeper sense of engagement, where the student contemplated on the small things she found within nature and how important each one was to the environment, aligning with *Theme 6: Reflection and Interpretation of Nature through Art*. These entries featured poetic annotations and abstract visual styles indicating a shift from simple observation to personal reflection and emotional connection.

TABLE 3. Sample of nature journaling pages by the youth workers



The journaling pages created by youth workers reflect a notable emphasis on naturalistic observation and calm, expressive creativity. All 31 journal entries by the youth workers are rendered with watercolour washes since watercolour was the main colouring medium provided. Eight journal pages revealed an effort to portray landscape scenery, while 19 participants observed single trees, and four participants focused to zooming in to draw leaves and plant structures. All participants' journal pages indicated alignment with *Theme 1: Observing and Experiencing Nature* and *Theme 2: Sketching and Documenting Nature*.

While there is limited textual annotation visible in the samples, the compositions show signs of intentional layout and spatial awareness, suggesting that the participants absorbed key workshop concepts such as page design and focal point framing. The use of watercolour – both for background washes and leaf/textural detail – point to an application of the wet-on-wet and wet-on-dry techniques taught during the sessions. This experimentation aligns with *Theme 4: Nature-Inspired Artistic Creation*, where the medium itself becomes a tool for sensory connection and artistic play. In five journal pages that show partial writing and fine brushwork on tree and leaves, there are hints of personal reflection and immersion, which correspond with *Theme 5: Interaction with Nature through Art*. While less text-heavy than the university student samples, the youth workers' journals convey strong visual sensitivity and atmospheric interpretation, suggesting that they engage with nature on a sensory and emotional level, even without extensive written expression.

TABLE 4. Sample of nature journaling pages by the school students



The journaling pages produced by school students demonstrate a blend of playful exploration, early observational skills, and creative storytelling. 20 of the drawings show full outdoor scenes – lakes, trees, birds and buildings – indicating that students were not just focusing on isolated objects, but rather on the overall environment, which reflects *Theme 1: Observing and Experiencing Nature*. Despite their younger age, the students showed a clear engagement with layout, filling their pages thoughtfully with figures, lines, and in some cases, structured composition such as a view of a park or pond. All 31 journal pages include common natural elements that can be observed at the site (such as birds, trees, water features), suggesting they were noticing and attempting to represent recurring elements in their surroundings. This supports elements of *Theme 2: Sketching and Documenting Nature*, although in a more simplified, age-appropriate way.

Watercolour usage appears in 24 of the journal entries, with imaginative use of colour and texture, while seven participants left their drawings to be uncoloured, indicating an early form of *Theme 4: Nature-Inspired Artistic Creation*. While textual annotations are mostly absent or minimal (as expected at this age), the visual storytelling alone communicates curiosity, enthusiasm, and a willingness to experiment – key goals of the workshop. Their journal pages reflect the early developmental stages of nature journaling, focused on visual expression and discovery, laying a foundation for deeper reflective practices in the future.

COMPARATIVE PATTERNS ACROSS PARTICIPANT GROUPS

A comparative analysis of the nature journaling pages across the three participant groups revealed shared patterns and distinct differences in engagement and expression. University students demonstrated the highest level of structured observation and technical application, incorporating detailed sketches, page layouts, and annotations that reflected the workshop's emphasis on technique and spatial awareness. Youth workers embraced watercolour and loose, expressive drawing styles, showing a strong emotional and sensory connection to the environment. School students, on the other hand, used imaginative, symbolic visuals and full-scene illustrations to depict nature, focusing more on playfulness and discovery than formal structure.

Despite these differences, all groups showed evidence of increased attentiveness to their surroundings and a willingness to engage creatively with nature. The journals illustrate how nature journaling can be meaningfully adapted across age groups and experience levels, fostering observation, emotional connection, and artistic exploration in diverse ways.

Figure 10 shows the shift in how connected the participants feel to the natural environment. From the survey, 35 participants reported their connectedness to nature has increased to the level of 'connected' and 'very connected'. A paired *t*-test was conducted to compare participants' connectedness to nature before and after the workshop. The results revealed a statistically significant difference between the two time points, $p = .005$, indicating that the workshop significantly improved participants' sense of connectedness to nature.

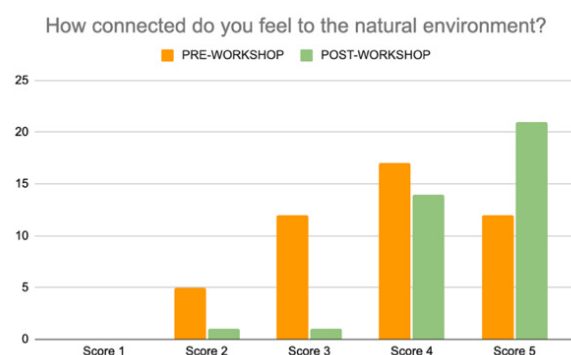


FIGURE 10. Connectedness to nature (1 = Not at All; 5 = Very Connected)

NEW SKILLS AND EMERGING THEMES

After the workshop, the participants were asked what new skills they had gained from nature journaling (see Table 5).

TABLE 5. Emerging themes from participants' new skills and overall experience

New Skills	Sample Responses
Theme 1: Learning and Practicing Nature Journaling	• "I learned about nature journaling- what elements we include in our journal, colouring techniques, how nature inspires us in many things we do." • "How to do nature journaling with different approaches" • "The workshop helped me to understand what to include in the journal. Now, not only I observe nature, I know how to document what I observe and learn about nature in a more structured way."
Theme 2: Observation and Appreciation of Nature	• "To identify, choose, then document important characteristics of chosen subject matter in a short time." • "To cherish whatever small things around me, even the <i>Mimosa</i> plant or a troop of ants who walk and pause to look at me." • "To be more mindful of the sounds and variety of plants around me. I never bothered about it before, but now it seems that I need to learn to be more grateful for it."
Theme 3: Developing Artistic and Analytical Skills	• "Skills in analysing objects or visuals that I see" • "Drawing, observing, expressing and colouring" • "Very warming experience that opened my eyes to not be afraid of the outcome of a sketch"
Theme 4: Experimenting with Tools and Materials	• "Skills in using brushes with different strategies" • "Playing with colours and how to do nature journaling"
Theme 5: Relaxation and Emotional Connection to Art	• "How to relax and be in the moment." • "It was a very calming and healing session, where I did not feel the need to create a perfect artwork."

The five emerging themes drawn from participants' reflections of their newly acquired skills and experience provide a comprehensive view of the outcomes and impact of the nature journaling workshop. When these themes are viewed alongside the survey results and visual analysis, a coherent picture of participant growth emerges.

Theme 1: Learning and Practicing Nature Journaling was reinforced by survey responses indicating a significant increase in participants' confidence and clarity in applying

journaling techniques. Most participants entered the workshop unsure about how to begin journaling or what to include, but through guided instruction and hands-on practice, they reported improved understanding of how to structure entries, observe meaningfully, and record their experiences effectively. These self-reports align closely with the visual outputs of university students and youth workers, whose journal pages exhibited structured layouts, thoughtful annotations, and intentional page compositions, clear evidence of applied learning.

Theme 2: Observation and Appreciation of Nature emerged as a prominent theme, echoed in both reflective statements and post-workshop survey data. The participants described a heightened awareness of small natural details, such as the movement of ants or the texture of tree bark – details they admitted to previously overlooking. This shift was especially evident in the school students' journal pages, which, while less technical, vividly captured full-scene impressions of their environment and expressed an innocent curiosity and attentiveness. The survey data similarly reflected increased scores in participants' perceived connection to nature, affirming that the workshop fostered not just skills, but also attitudinal change.

In relation to *Theme 3: Developing Artistic and Analytical Skills*, participants consistently noted gains in their ability to observe, sketch, analyse form, and express ideas visually. University students, in particular, demonstrated confidence in using sketching techniques, visual annotations, and compositional tools like zooming in/out. These visual indicators were supported by survey responses, where many students marked improvements in their ability to both observe and represent natural forms. Youth workers, while often producing more expressive rather than technical sketches, also demonstrated analytical engagement through colour choice and visual storytelling.

Theme 4: Experimenting with Tools and Materials was most strongly expressed through participants' enjoyment of the hands-on component of the workshop. Reflections highlighted enthusiasm for trying out new media such as watercolour and different pen types, and practicing techniques such as wet-on-wet and wet-on-dry applications. These experiences not only expanded participants' artistic skills but also served as a source of enjoyment and engagement. This was clearly visible in the diversity of visual outputs – ranging from careful pen illustrations to abstract colour explorations.

Finally, *Theme 5: Relaxation and Emotional Connection to Art* was a consistent thread across all participant groups. A large proportion of responses described the workshop as calming, enjoyable, and even therapeutic. Participants expressed feeling more present, less anxious about "perfect" outcomes, and more connected to both nature and themselves. The survey data

supported these sentiments, with strong increases reported in participants' comfort levels and emotional engagement with the journaling process.

Taken together, these findings demonstrate that nature journaling is not only a skill-building exercise but also a powerful tool for environmental connection, personal growth, and emotional well-being. The integration of self-reflection, visual expression, and structured observation enables participants to shift from passive viewers of nature to active and mindful participants in their environment. This holistic development, across cognitive, artistic and emotional domains, makes nature journaling a valuable pedagogical strategy for learners of all ages and backgrounds.

CONCLUSION

The findings of this exploratory study contribute meaningfully to the growing discourse on integrating experiential and creative practices into environmental and built environment education. While existing literature often emphasises scientific and theoretical approaches to fostering environmental awareness, this study highlights nature journaling as a complementary, practice-based method that nurtures ecological literacy, spatial awareness and personal engagement with natural landscapes. The emergent themes – personal growth, emotional experience, connection with nature, well-being, creativity and inspiration – demonstrate that nature journaling offers benefits not only to students in design disciplines but also for those from non-design backgrounds, demonstrating its versatility and accessibility.

Importantly, these findings have clear implications for curriculum development and educational policy. Nature journaling can be integrated into formal learning frameworks across school and university levels, particularly within environmental science, geography, art and design and sustainability education. Its alignment with experiential and student-centred pedagogies makes it well-suited for inclusion in outdoor learning modules, place-based education programmes, and interdisciplinary studio projects. At the policy level, educational stakeholders could consider nature journaling as a low-cost, scalable strategy to enhance environmental consciousness and creativity, particularly in urban settings where opportunities for nature engagement are limited.

Future research should expand on these findings by testing the model in diverse learning environments, tracking long-term behavioural and attitudinal changes, and exploring the integration of digital tools to support evolving forms of hybrid nature journaling. Incorporating

technology – such as tablets, digital sketching apps, or nature identification platforms – offers exciting possibilities for enhancing accessibility, interactivity, and documentation. These tools not only appeal to digitally native learners but also extend the reach of nature journaling into urban and classroom settings where direct contact with nature may be limited. By positioning nature journaling as a critical pedagogical tool, this study opens new pathways for interdisciplinary collaboration across education, urban planning, sustainability, and the arts, laying the groundwork for a more holistic and emotionally connected approach to environmental education.

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DECLARATION OF COMPETING INTEREST

None

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