Educating the Mindful Design Practitioner

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Highlights

- Mindfulness approaches in education may nurture reflective design practitioners
- Mindfulness can foster creativity, working with uncertainty, overcoming fixation
- Mindfulness can heighten spatial, bodily and multisensory awareness
- Mindfulness can enhance compassion for self and others
- Results from two case studies suggest benefits of formal and informal mindfulness practices

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Educating the Mindful Design Practitioner

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Abstract
Mindfulness applications are increasing exponentially across many disciplines. However, mindfulness theory and practice within design pedagogy is relatively scarce. What are the operational concepts and applications of mindfulness for acquiring design skills and ethical awareness? We explore these questions through a theoretical framework and two university-based studies where design students engaged in various mindfulness activities. Results show that meditation practices (formal mindfulness) and adopting a mindful approach to design tasks (informal mindfulness) can facilitate exploratory and creative thinking, increase sensory and spatial awareness, 'free up' one's inner critic, and expand students' empathetic horizons. These outcomes suggest mindful-ness training is fruitful for the holistic development of students, supporting them to be truly reflective practitioners who creatively attend to the wellbeing of others and themselves.

Keywords
Creativity, Design education, Ethics, Reflective practice, Mindfulness, Wellbeing

1. Introduction

The application of mindfulness is increasing exponentially across many disciplines, including healthcare, education, business and the arts. However, mindfulness theory and practice within design discourse is relatively scarce. To address this, we explore two research questions: What are the operational concepts and applications of mindfulness from the point of view of design pedagogy, and how can mindfulness, a practice grounded in notions of contemplation, reflection and self-awareness, inform the education of design students as 'reflective practitioners' and nurture their personal and professional development?

In his influential work *The Reflective Practitioner*, Schön (1984) defined how a particular reflective mode of learning and doing lies at the heart of the design process. The designer continuously reflects on the design moves h/she carries out, and responds in

accordance with the 'situations talk back' to carry on to the next move. Here the 'knowing' and 'doing' are not separable, and the designer continually experiments, reframes and constructs the situation moment after moment. Thus, design problems and solutions interdependently emerge through a dynamic, unfolding process where 'designerly ways of knowing' (Cross, 1982) allow the practitioner to respond to an ever-changing situation.

At around the time Schön wrote *The Reflective Practitioner*, a parallel movement was introducing a different kind of reflective practice into healthcare: mindfulness. Jon Kabat-Zinn, a biologist and Zen meditator, founded the Mindfulness Based Stress Reduction (MBSR) Clinic at the University of Massachusetts in 1979, adapting the 'ancient wisdom' (Feldman & Kuyken, 2019) of Buddhist psychology and contemplative practices to devise a secular programme of meditation-based training aimed at relieving suffering. The underlying aspiration of Buddhist contemplative practices is release from the suffering caused by our tendency to cling to what we want and avoid what we don't want in our everyday experience, which is contrary to the reality that all phenomena and experience will inevitably change (Khoury et al., 2017). Despite our efforts, all states are 'impermanent', what arises passes away, and accepting this is crucial. Moreover, all changing phenomena are interdependent and thus do not have a separate solid existence (Nhat Hanh, 1987). Thus, the Buddhist discipline of mindfulness involves practicing being conscious of one's breath, bodily movement, sensations, emotions, and thought processes as they arise and cease in the present moment, without grasping (Nhat Hanh, 1987). When we are mindful in our moment-to-moment existence, the main causes of suffering, namely our own desire, aversion and ignorance, are seen through (Williams & Kabat-Zinn, 2011), leaving the space for tranquility, equanimity and compassion.

The Western applications of mindfulness, introduced by Kabat-Zinn, initially centered around assisting people to deal with suffering, in the form of stress and depression, further adapted within therapeutic settings (Gethin, 2011). For Kabat-Zinn mindfulness is "Paying

attention in a particular way: on purpose, in the present moment, and non-judgmentally" (1994, p. 4), whereas Brown and Ryan (2003, p. 822), define mindfulness as an "enhanced attention to and awareness of current experience or present reality". Subsequently many other definitions and variations of mindfulness practices have been developed, within science, medicine healthcare and educational settings (Williams & Kabat-Zinn, 2011) in order to be benefited by people in areas of their professional and personal lives.

Mindfulness practices are now embedded in higher education in disciplines ranging from art, to life sciences, political science, contemplative disciplines and psychology (Bush, 2011). Research suggests this has led to numerous positive outcomes. According to Henning et al. (2018):

> Mindfulness meditation (or training) has been introduced within higher education contexts as a means of accessing information about self and others, to develop awareness of internal connections and how this impacts on the external environment, and to promote creativity, wellbeing, and compassion (p. 27).

After a thorough literature review of mindfulness and creativity in educational and other settings, Henriksen, Richardson and Shack suggest that different mindfulness practices may have different impacts on the phases of creative processes which needs further investigation. They call for an integration of mindfulness applications into learning settings:

> In practice, helping educators to understand how different types of mindfulness might support students across different needs and tasks could be beneficial; and this may be true in other contexts of thinking, learning and development. Existing research points to a promising intersection, but we would suggest that more action

> research approaches in classroom settings could benefit our empirical-practical understandings (Henriksen, Richardson, & Shack, 2020, p. 9).

Perhaps surprisingly, the relationship between mindfulness and design education specifically is just beginning to receive attention. Rojas, English, Young, and Spencer (2015) assert that mindfulness is particularly useful for enhancing awareness of the personal values that underpin design decisions. Rojas (2013) recommends non-analytical journaling and self-observation within the 'enhanced reflective practice' model, essentially integrating mindfulness ith Schön's (1984) model of reflection-in-action. Andrahennadi (2019) observes that applying contemplative mindfulness practices develops the positive mental qualities that may support designers to make design choices with a compassionate attitude. Christian (2019) identifies "an opportunity to concretize research around [mindfulness] and offer mindfulness programming specific to art, design, and creative practice at the university level" (32).

We posit that intentionally integrating mindfulness approaches in design education may nurture the development of designers who are more aware of themselves and others, and who can work within a more reflective, intuitive and creative mode. To test this notion, here we apply theoretical and empirical approaches to explore synergies between mindfulness and design pedagogy. After briefly defining mindfulness practices, we synthesize literature from across mindfulness and design domains. Next, we present two applied case studies of mindfulness in architectural/interior design education settings; a study evaluating the effects of formal mindfulness meditation training, and a study exploring two informal mindful awareness studio-based tasks. We conclude by reflecting on the results of these different case studies and suggest further possibilities and limitations of integrating mindfulness in design education.

2. Defining mindfulness practices

Traditional mindfulness practices vary across cultures, religions and historical periods, based on rich philosophical and psychological concepts. For the purposes of this study, we will now focus on the secular or 'operational' practice of mindfulness, which can be categorized as formal i.e. meditation, or informal i.e. an attitude incorporated into one's daily life.

2.1. Formal Mindfulness (meditation)

The eight-week Mindfulness Based Stress Reduction (MBSR) Programme devised by Kabat-Zinn, and similar Mindfulness-based Interventions (MBIs) developed to treat particular health conditions or to generally enhance performance and wellbeing, utilise formal mediation practice as well as other reflective and skills based practices. Meditation techniques typically include mindfulness of the body (body scan), where sensations in each part of the body are 'remembered' and noticed; exercises related to the breath; mindfulness of physical sensations, and mindfulness of feelings and thoughts. Meditations can last from a few minutes up to an hour, and practitioners are instructed to practice daily if possible. Training can be individual, online, or conducted by a trainer in a small group setting where discussion and reflection are facilitated. Within contemporary mindfulness courses, formal meditation techniques are taught alongside mindfulness in everyday life (Santorelli, Meleo-Meyer, Koerbel, & Kabat-Zinn, 2017).

2.2. Informal Mindfulness (awareness in everyday life)

Mindfulness can be cultivated by responding to everyday life with a mindful attitude. This has been emphasized both by Buddhist practitioners and Western scholars. For example, while Nhat Hanh (1993) guides formal seated meditation exercises, he also encourages mindful awareness within everyday activities, stating "You've got to practice meditation when you walk, stand, lie down, sit and work, while washing your hands, washing the dishes, sweeping

the floor, drinking tea, talking to friends, or whatever you are doing" (1987, p. 24). Everyday mindfulness can be cultivated by being flexible in one's views and opinions, and questioning previously held ones, being curious and paying attention in a way that notices novelty (Khoury et al., 2017). This attitude is beautifully suggested by Suzuki (1995) when he invites us to look at every moment in our lives as if we had seen it for the first time.

3. Cultivating design skills through mindfulness: a conceptual framework

Mindfulness techniques can offer ways to nurture skills and wellbeing of designers. In this section we identify four areas where attributes of (or barriers to) reflective design and mindfulness practices coincide.

3.1. Enabling creative thinking and cultivating curiosity

Schön's (1984) reflective practitioner model is based on an understanding of how creative thinking operates, namely through a very open and iterative process of testing and combining ideas in relation to a given (and itself evolving) context. Much design pedagogy is concerned with demonstrating this and enabling students to develop this way of working (Lawson, 1997; Shearer, 2015).

Mindfulness offers a means of opening up creative thinking processes, as it works at a deep cognitive level to enable new thought processes to emerge. Moreover, mindfulness can support students to enhance critical, creative thinking (Christian, 2019). Penman (2015), linking mindfulness and creativity, acknowledges creative problem solving requires 'divergent thinking', defined as the ability to gather and then integrate new ideas, concepts and information (with a calm mind), and that new ideas need to be recognised (noticed by an aware mind). He distinguishes between Doing mode – being cognitively involved in a task – and Being mode – where one is engaged in pure awareness and experiencing something rather than thinking about

it. While Doing mode is very effective for solving problems where following a logical sequence leads to a solution i.e. convergent thinking, it struggles to facilitate the 'creative leap', i.e. divergent thinking, that is needed when faced with complex, nuanced problems (Penman, 2015, p. 39–40). As such, mindfulness has also been found to enhance creative learning (Henriksen et al., 2020). Curiosity is linked to this creative exploration of ideas, and can motivate and fuel deep learning.

Mindfulness is epitomised by adopting an open and curious attitude, which may reward the mindful person with new insights:

> All life is fascinating and beautiful when the veil of our routinized thinking lifts, even for a moment […] When you observe things through the lens of mindfulness, whether it be during formal meditation practice or in daily living, you invariably begin to appreciate things in a new way (Kabat-Zinn, 2013, p. 176).

Enabling creative thinking and curiosity are also required to embrace the uncertain quality of design problems (Nelson & Stolterman, 2003). At the outset, design problems are embedded with ambiguity, where absolute knowledge of the situation is impossible. Skilled designers tap into and embrace the uncertainty from which design concepts emerge (Doorst, 2011). Thus, "good designers characteristically have incomplete and possibly conflicting ideas as a matter of course, and allow these ideas to coexist without attempting to resolve them too early in the process" (Lawson, 1997, p. 158). Such designers are willing to "live with uncertainty, consider alternative and perhaps even conflicting notions [and] defer judgment" (226).

While Cross asserts that the joy of designing lies in embracing uncertainty (1982), being comfortable with not knowing all outcomes to a situation is not always joyful. In the context of

education, where deadlines and pressures to achieve academic results exist, ‘being with’ uncertainty is challenging. Dealing with uncertainty and finding appropriate strategies during the design process is an important component of the skill set of designers (Tracey & Hutchinson, 2018). A qualitative investigation into design students’ strategies to manage uncertainty revealed that, internal strategies included to relaxation of a need to control each situation, opening up to new ideas and perspectives, and factoring in uncertainty as a natural part of the process (Tracey & Hutchinson, 2018). In parallel to these strategies, Ritchhart and Perkins (2000) propose introducing ambiguity within the classroom context, generating a space where students manage to skillfully respond to uncertainty mindfully. Accepting uncertainty at a metaphysical level enables direct experience of the constant change that takes place as each moment arises and falls away. As such, one can embrace ‘not knowing’ and expand one’s awareness to take in the dynamic complexity of the world and the many ways of perceiving it.

The opposite of accepting uncertainty and change is ‘design fixation’, a “state where someone engaged in a design task undertakes restricted exploration […] due to an unconscious bias resulting from their prior experiences, knowledge or assumptions”(Crilly & Cordoso, 2017, p. 6). A relationship between fixation and mindfulness has been observed in a study by Baer and Brown (2012), which revealed that 'psychological ownership', that is, possessing an object as 'theirs' whether it is material (artefact) or an idea, caused a resistance to change or adopt new perspectives. For Langer and Moldoveanu, the underlying characteristic of mindfulness is the natural ability ro draw novel distinctions within the present moment (2000a), an antidode to inflexible thinking. Mindfulness may encourage overcoming fixation and letting go during design, reducing the ‘mental clutter’ that leads to such ‘inflexible thinking’ (Penman, 2015, p. 2).

3.2. Heightening spatial, bodily and multisensory awareness

The significance of multisensory awareness is highlighted in different design disciplines. For example, according to Pallasmaa (2005), experiencing space is inherently multisensory. Not only do we use all our senses through seeing, hearing, touching and smelling; but also our moment to moment bodily experience within space changes. However, in both design education and practice, the visual sense dominates (Heylighen & Herssens, 2014; Pallasmaa, 2005; Schifferstein & Spence, 2008,). In response to this, Pallasmaa (2005) argues for the inclusion of all our senses in the understanding and awareness of architectural space. Similarly, Schifferstein and Desmet (2008) call for multisensory product design to facilitate positive user experience, offering 'sensory sensitizing' and 'sensory communication' as applied design strategies.

In architecture, Holl (1993) points out that sensory knowing is different from knowledge aquired from books or instructions from others. Zumthor also views direct sensory experience as a foundational aspect of practicing and teaching architecture:

> All design work starts from the premise of the physical, objective sensuousness of architecture, of its materials. To experience architecture in a concrete way means to touch, see, hear and smell it. To discover and consciously work with these qualities- these are the themes of our teaching […] (1998, p. 58).

Mindfulness practices engage the mind-body exactly in this somatosensory manner. Scholars stress the embodied aspect of mindfulness:

> Mindfulness means that the mind is present in embodied everyday experience; mindfulness techniques are designed to lead the mind back from its theories and preoccupations, back from the abstract attitude, to the situation of one's experience itself (Varela, Thompson, & Rosch, 1991, p. 22).

Particular mindfulness practices that focus on bodily and sensory awareness may support designers: During meditations such as the body scan, subtle sensations within the body and its relationship with the environment are recognized. Meditations that focus on visual forms, sounds or smells all work on the principle of attending to one aspect of our embodied relationship with our surroundings.

3.3. Fostering non-judgmental awareness and compassion for self

Reflective design practitioners are able to manage the tendency to judge one self and others in a positive way. A distinction can be made between judgments – characterized by constructive criticism – and being judgmental in a hypercritical and negative way; the former is professional / beneficial but the latter is counterproductive and potentially harmful. Excessive judgment of self and others leads to demotivation, loss of enjoyment in design, and in some cases high levels of distress (Porter, 2020). Such effects may impact on a range of design activities and processes.

Mindfulness training may encourage designers to let go of negative rumination by redirecting attention skilfully to the experience itself, rather than focusing on the outcome or comparison with others. This has been observed in art schools, where mindfulness led students to be more compassionate to themselves, focus less on the final outcome and enjoy the creative process (Bush, 2011). Thus, expansion of non-judgmental awareness also opens up the path towards creativity, since students may have less fear of others' opinions towards novel ideas and perspectives (Henriksen et al., 2020).

Mindful approaches may assist design students to overcome one specific example of negativitly, termed 'sketch inhibition'. Although sketching is a fundamental skill for ideation and design development (Cross, 2001), many novice designers have a reluctance to sketch. This problem has been observed by instructors in design education (Booth, Taborda, Ramani, &

Reid, 2016; Thurlow, Ford, & Hudson, 2019), with self-judgment identified as a primary source of the issue. These studies found sketch inhibition was caused by feeling the sketch was not up to one's own standards (self-judgment), and the fear of being judged by others. By contrast, mindfulness allows practitioners to just let things be as they are, maintaining a neutral, objective stance, stilling the voice of the inner critic (Penman, 2015). Thus, practitioners become more able to observe thoughts and feelings with equanimity. Compassion meditation exercises typically involve bringing feelings of loving-kindness to oneself and expands this stance towards others to include everyone. This also nurtures a sense of empathy, a foundation for inclusive design, which we discuss next.

3.4. Nurturing empathy: inclusive design, ethics and compassion for others

Inclusive design, often termed as universal design, falls within the larger umbrella of human-centered design. It is the application of design to encompass the needs and expectations of diverse users, ranging from children, elderly and people with different abilities. A designed space/product is inclusive if it enables everyone to participate in its experience with safety and without discrimination or discomfort, and specialized adaptation (Center for Universal Design, 1997).

Implicit fallacies held by designers during the design process can set limitations and block the conscious inclusion of everyone (Pheasant, 2000). In order to overcome this, designers must reflectively go beyond their individual experiences, and utilize design methodologies which foreground the feelings, emotions, and needs of diverse populations (McDonagh & Thomas, 2010). To this end, empathetic design tools are being successfully applied across design disciplines (Dong, 2009; Kouprie & Visser, 2009; McDonagh & Thomas, 2010). These tools, often using experiential learning where students actively engage in tasks

with varying abilities, have been found to yield positive learning outcomes (Altay, 2014; Altay, 2017; Mulligan, Calder, & Mulligan, 2018).

Langer and Moldoveanu (2000b) highlight the need for mindful attention of physiological, and psychological differences of users with diverse backgrounds so that the designers' intentions align with specific needs. Increasing sensitivity to one's own bodily and sensory experience may enhance the awareness of others' experiences. Becoming mindful of the limits to our knowledge and expanding this may nurture empathy, compassion and caring, the underlying foundations to create inclusive design.

Mindfulness may be also be incorporated with other inclusive-design approaches to foreground ethical design. For example, Kabat-Zinn (2011) stresses that the contextualization of mindfulness within health care systems implicitly embodies the responsibility to alleviate the suffering of oneself and all others equally. Krageloh (2018) notes mindfulness expresses the ethical, evaluative and discerning quality of the mind. Designers may be encouraged to bring awareness to their own biases and conditioned thinking habits as they design. A reflective engagement with the inner working processes of the designer will thus determine their priorities, discern between inclusive or exclusionary design decisions and favor those that encompass everyone.

In summary, from a theoretical standpoint, it appears that cultivating qualities of mindful awareness may support 'reflective' designers across multiple domains, namely by supporting individual creativity and curiosity, heightening spatial and sensory awareness, diminishing unhelpful negative thoughts when designing, and nurturing an open empathetic approach towards ourselves and those we design for.

In the following sections, we present empirical work that was undertaken with design students in two university programmes between 2017−2020. These two bounded case studies test how mindfulness can be applied in the design studio context to inform the education of

undergraduate students as ‘reflective practitioners’. Each author conducted a mindfulness application - one based on standalone ‘formal’ MBSR training and the other based on ‘informal’ studio based mindful tasks - and evaluated the effects on student creativity (Table 1). Both studies were conducted following ethics approvals by our respective university’s ethics committees.

Table 1: Comparative case study design.

	Case study 1 (author 2)	**Case study 2 (author 1)**
Type of mindfulness application	Formal: MBSR training including meditation and group discussion	Informal: Studio tasks embedding mindful approaches
Time frame	Training delivered in one cohort between February – April 2018	Tasks repeated with students enrolled in course over 4 cohorts between 2017−2020
Bounded case study group	Undergraduate architecture students, in University of Nottingham, UK	Undergraduate interior architecture students in Bilkent University, Turkey
# participants	N = 20 (2 subsequently withdrew = 18)	N = 78
Data collection tools + response rate	3 x surveys - Ex-ante (pre-training) N = 19 (95%). - Ex-post training evaluation (immediately after course) N = 15 (75%). - Ex-post training evaluation (6 months after course) N = 10 (50%)., - Focus group N = 9 (45 %)	1 x survey N = 43 (55%) Ex-post task evaluation (survey conducted between 2019–2020 for all participants, regardless of that year student participated in the course)
Data analysis methods	- Survey, Likert scale questions (descriptive statistics of frequency of responses) - Survey, open ended questions and focus group (thematic coding of qualitative data)	- Survey, Likert scale questions (descriptive statistics of frequency of responses) - Survey, open ended questions (thematic coding of qualitative data)

We describe and present results for each case study separately (Sections 4 and 5) before comparing the results in Section 6.

4. Case Study 1: formal mindfulness meditation – MBSR training for architecture students

4.1. Materials and methods

The first case study, led by author 2 (Porter), was conducted at the University of Nottingham, Department of Architecture and Built Environment (DABE), UK. Twenty architecture students, studying from year 1 to year 6, voluntarily participated in a Mindfulness-Based Stress Reduction (MBSR) programme. This MBSR programme was conducted at the university campus between February – April 2018 by a qualified MBSR trainer and student counsellor with over 20 years experience. The students participated in a conventional MBSR programme consisting of eight weekly group training sessions lasting 2.5 h per week, covering guided meditations and group discussion, and instructions for up to 45 min home practice per day. The programme followed a typical [1] MBSR thematic structure:

1 Introducing mindfulness

2 Handling stress

3 The power of being present

4 Patterns of reactivity to stress

5 Responding not reacting

6 Stressful communications and interpersonal mindfulness

7 Lifestyle choices

8 Keeping your mindfulness alive

To evaluate the effects of this training, participants were surveyed pre-training (survey 1), immediately post-training (survey 2) and six months post-training (survey 3) using Likert scale questions and qualitative open-ended questions (see Appendix A). Focus groups with

[1] The delivery of MBSR can vary according to the trainer's personalised delivery, which can adapt in response to the participants i.e. the MBSR curriculum is intentionally flexible and not intended to be a strict 'protocol'. For details see Santorelli et al. (2017).

participants (N = 9) allowed them to relate their experiences of the MBSR training and elaborate on the following themes already explored in the questionnaires:

- Engagement with mindfulness (types of practice, how often)
- Experiences, thoughts and feelings about studying or practicing architecture and how mindfulness may influence these
- Attitudes and opinions about being an architect, in relation to themes that intersect with mindfulness themes e.g. curiosity, compassion, judgement, anxiety

An interview with the MBSR trainer was also conducted to understand the context of the training and reflect on the process.

All results were analysed by author 2. Quantitative results of the surveys were analysed through descriptive statistical analysis (frequency of responses). Open ended survey responses, focus group responses and interview were transcribed and coded thematically according to emergent themes, after multiple-iterations.

It should be noted that the results reported here reflect the four themes identified in the preceding literature review; for results arising from this case study which reflect other effects of MBSR training, for example time management, focus, stress reduction and general well being, see (Porter, 2020).

4.2. Results

4.2.1. Enabling creative thinking and cultivating curiosity

When participants were asked if they approached design studio with curiosity their responses differed across the three surveys. The majority of participants reported that they ‘often’ approached design work with curiosity, even before mindfulness training, and small increases were reported after mindfulness training (Fig. 1).

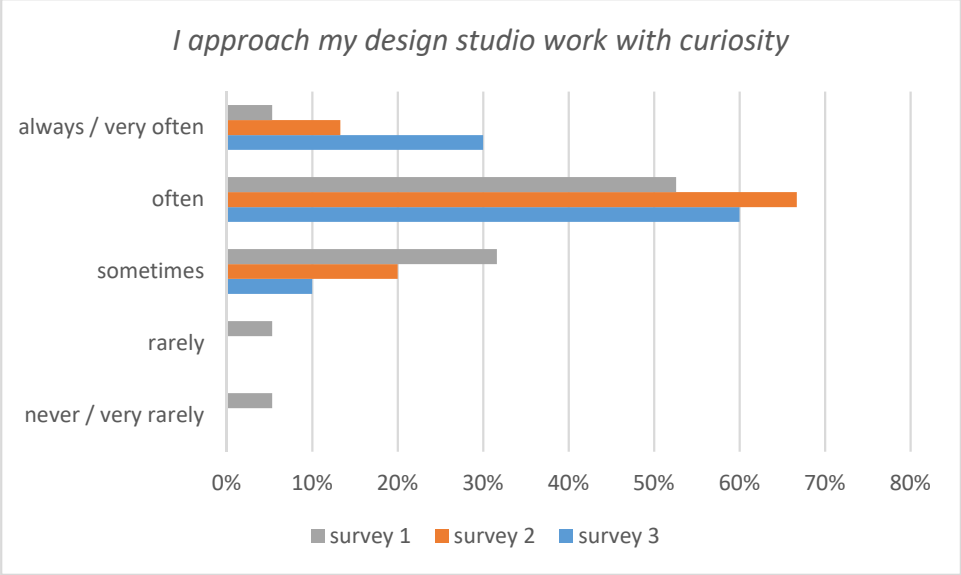

Figure 1. Responses related to curiosity

When commenting on creativity and curiosity, participants noted how the stress of study can undermine this, but that mindfulness can alleviate such stress responses. One participant commented ‘a lot of the creativity is suppressed by the constant pressure to complete unrealistic […] amounts of work in short spaces of time’ while another noted ‘with stress and things to do you can forget to be curious about the world, mindfulness is a reminder’.

Parallel to student comments, the MBSR trainer observed that the exercises she was teaching appeared well suited to cultivating creativity with this demographic:

> I have the sense that because architecture is about creativity which is a very internal experience, quite a personal thing, it’s not a tap that you can turn off and on at will, […] and mindfulness can really help with creativity (Wraight, 2018)

4.2.2. Heightening spatial, bodily and multisensory awareness

Participants were surveyed about their spatial and bodily awareness (Fig. 2)

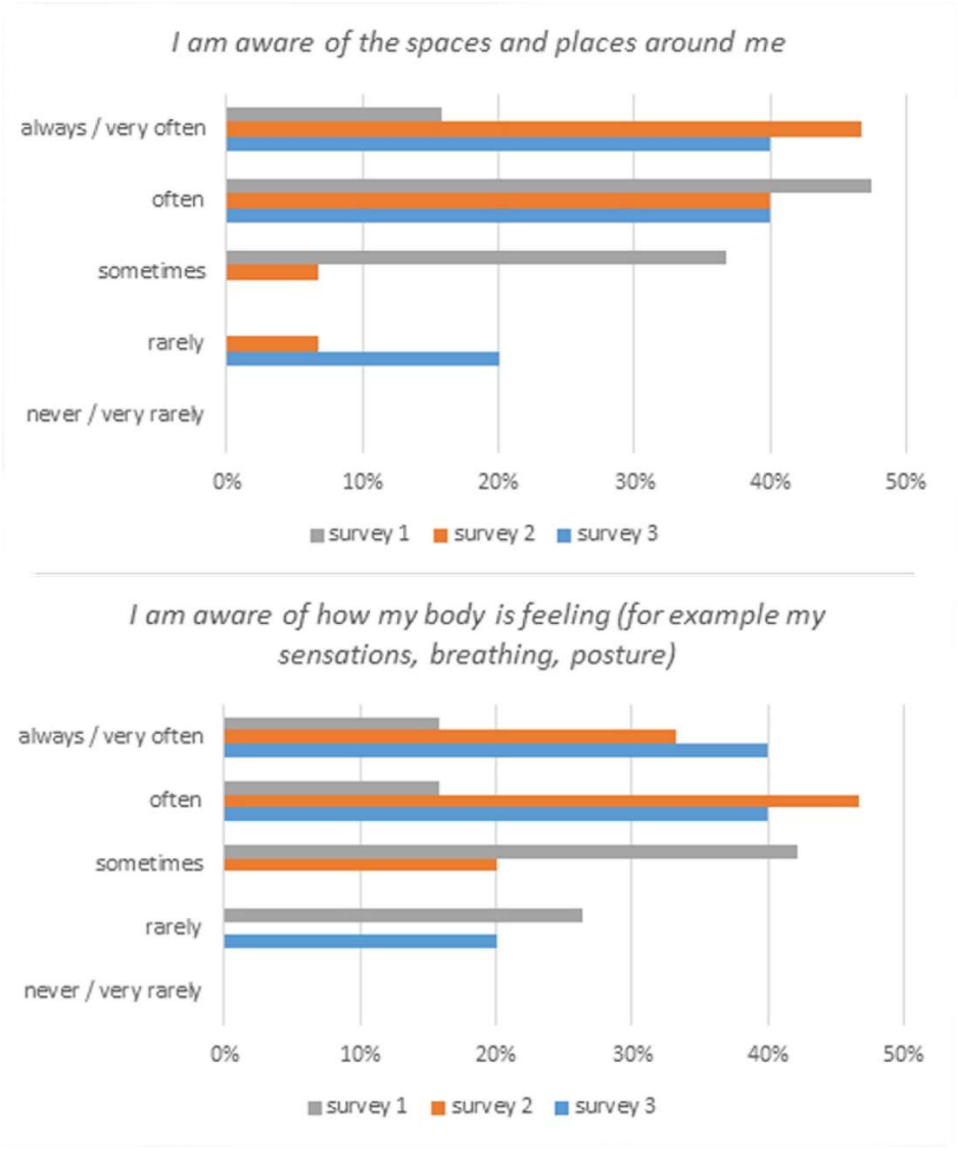

Figure 2. Responses related to spatial and bodily awareness

Responses show a slight but not universal increase in awareness of spaces and bodily sensations. As may be anticipated for students who study space, the pre-mindfulness training levels of spatial awareness were already reported as high, with over 60 % being ‘always’ or ‘often’ aware of spaces around them. Reported levels of spatial awareness were highest immediately after the training, with over 80 % being ‘always’ or ‘often’ aware of spaces around them before dropping 6 months later. Bodily awareness followed a similar pattern.

Several participants commented on their enhanced awareness:

> There's an exercise where we had to close our eyes and walk very slowly […] I hear more traffic and birds [… you] can feel more about what is surrounding you in your environment, and you can feel the weight of your body touching the ground.
>
> Sometimes when I'm in a space I'll take the time and really think about how I'm walking or really looking at where I am […] I might take a little more time to look around.

The MBSR trainer opted to undertake some of the training outdoors to amplify the sensory effects of walking:

> The course was in February so it was cold, coinciding with the week that mindful walking was scheduled. Some students elected to do it barefoot out there in the cold and that was a very embodied visceral experience. The following week one student reported that they had elected to do their mindful walking home practice barefoot in the snow to see what it was like (Wraight, 2018).

4.2.3. Fostering non-judgmental awareness and compassion for self

Students initially reported being highly judgmental about their own design work and performance, and to a lesser extent they extend this judgment to their peers. Frequency of judgement, as reported in the surveys, showed a very significant decrease after MBSR training (Fig. 3):

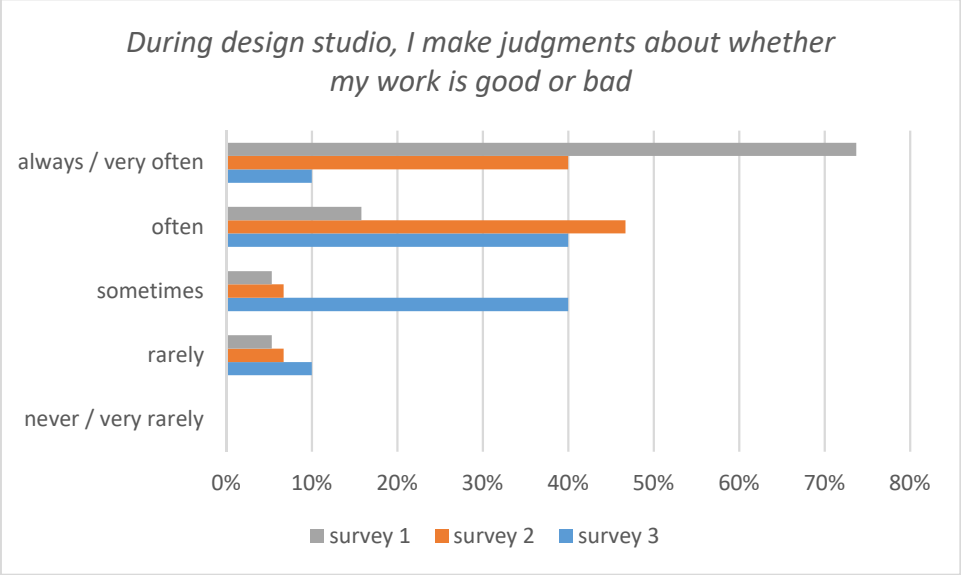

Figure 3. Responses related to judgmentality

Fig. 3 indicates that prior to MBSR training, the overwhelming majority of participants were 'always or very often' making judgments about whether their own work was good or bad. This gives the impression that such judgment is consistent and normalized. Post-MBSR training saw a dramatic shift, with immediate post-training judgment levels dropping in frequency and 6-month post training decreasing even more.

Competitiveness can lead to feelings of self-judgment which promote unhealthy work habits. Participants reported feeling more compassionate toward themselves and being more understanding and attentive toward their peers as a result of mindfulness practice. For example:

> Mindfulness has helped with competitiveness because we had a whole session on judgment and comparing ourselves to other people and that was really great […] it can be that in those pressurized moments you look at other people's work and [think] "why am I not as good as them?" and mindfulness has been a great way of dealing with that.

Students also discussed design reviews, a regular feature of architectural education, where work is submitted and judged in a public context. One student thought that it was not necessarily the review itself, 'but that build-up to it and that little bit of time before hand which can be stressful so we talked about that [in the mindfulness training sessions]'. It was acknowledged in focus groups that having the resilience to resist one's judgmental inner critic at such times was necessary. One participant applied this in their daily experience, commenting that 'if I ever got stressed I would [put things in perspective by] using non-judgmental words that mindfulness teaches, that was really helpful'.

4.2.4. Nurturing empathy: inclusive design, ethics and compassion for others

MBSR does not specifically address inclusive design, however compassion as a broader theme did resonate with several participants and influenced their approach to their peers in the design studio context, as the MBSR trainer observed:

> [Participants] had a real feeling of sympathy with each other over the workload they were experiencing as students, and in that respect they were probably finding it therapeutic to share that with each other and see that everybody was struggling, and reach this consensus that 'it's not just me', and of course that is an aspect of mindfulness anyway, to develop self-compassion, and one of the elements of self-compassion is a sense of compassion with other people (Wraight, 2018).

Unexpectedly, survey results did not show an increase in feelings of connection, a concept closely related to compassion (Fig. 4):

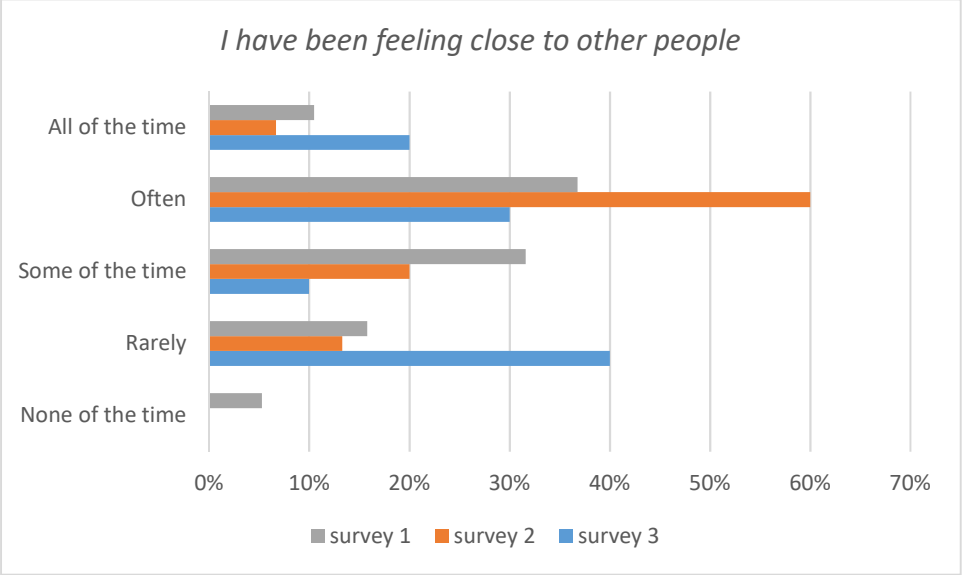

Figure 4. Responses related to closeness to others

In contrast to other responses in the survey, when students were asked about 'closeness to others' this actually declined between pre and long term post-training levels but showed that such feelings were present more 'often' immediately after the training itself (60 %). The sense of closeness created within the MBSR group setting, where experiences, feelings and thoughts were shared, may account for this shift, which would not necessarily be sustained after the group sessions ended.

5. Case study 2: informal mindfulness applications in design education

The second case study was carried out in Interior Architecture and Environmental Design Department at Bilkent University in Turkey by Author 1 (Altay). Two mindful tasks were introduced within an elective course 'Conceptual Development in Architecture and Interior Design'. The aim of the tasks were to explore the influence of mindful approach to students' (3rd and 4th years) understanding of spatial and sensory awareness and conceptual understanding.

The tasks were introduced within a program that was composed of reading and discussion of critical essays pertaining to design methods, analysis of exemplary architectural and interior spaces based on their guiding principles, and sessions that contained exercises that sensitized the students towards spaces by direct experience and research. The following tasks were embedded into the syllabus within the design context rather than an explicit discussion of mindfulness literature.

5.1. Materials and methods

Task one, *The Campus Experience* (CE), involved a two hour exploration and engagement with the immediate campus environment. The preliminary aim was to foreground multisensory experience- touching, hearing, seeing, smelling- by being immersed in what each moment would offer. Periodically we questioned 'what is it that we like about this particular space? What are the components that this area makes us feel pleasant/unpleasant?' and then moved on further. A change of perspective was also prompted by the introduction of lego mini-figure characters that students located in the environment. Different spatial features were momentarily appreciated, and enhanced with the adventures of the figures.

Task two, *View and Sketch* (V&S), was conducted in two phases with a total of two hours, seeking to address students' sketch inhibition. First, they sketched their initial impressions of architecture/interior design images from a rapid slide presentation, (a slide every two minutes) in their sketchbooks, which were not assessed. Before sketching, the instructor reminded the students that the aim of this exercise was not to produce finished sketches, but explore the act of sketching and the relationship between how the images are transferred into sketches without critical mind faculty operating. During sketching, the instructor guided the students to enhance the focus on process and non-judgmental awareness, with prompts such as 'whatever catches your attention, let that flow through your drawing', 'notice the sound of the

pen as you draw', 'while one of your hands is drawing, where is your other hand?' 'notice whether you are alert, or tired….whichever way you feel, that's okay'. Following this first phase, students attached verbal themes to their sketches, and collectively selected favourite themes to work on, from which they generated new sketches (20 × 20 cm). These were collected and displayed on a large canvas, expressing all of the thematic interpretations. The coexistence in the larger canvas dissolved the perception of sketches as separate entities and created a diversity within unity. The following figure shows students' experience from the Campus Experience task and their sketches from the View and Sketch task (Fig. 5).

Fig. 5. Student work from the two tasks. (Image credits: Top left and middle: Ifrah Ahmed, top right: Ece Uğurlu, bottom: Burçak Altay).

Seventy-eight students completed the exercises between 2017−2020, in four cohorts. After completion of all courses, between 2019–2020, an online anonymous survey (distributed by email to students whose email was still available) was conducted to gauge the effectiveness

of the two exercises. Overall, 43 students out of 66 that were contacted via email voluntarily responded the survey.

The survey consisted of Likert scale questions and qualitative open-ended questions (see Appendix B). Likert scale questions regarding the effectiveness of Campus Experience with regards to 'spatial and bodily awareness', and View and Sketch with regards to 'sketching skills' and 'creativity'. All closed-ended questions were followed by an open-ended question of how the task effected the questioned issue. The survey ended with open ended questions of overall effectiveness and suggestions for improvement for the tasks.

All results were analysed by author 2. Quantitative results of the surveys were analysed through descriptive statistical analysis (frequency of responses). Open ended survey responses, were brief (ranging from 1 to 5 sentences) and many of them overlapped. These were transcribed and coded thematically according to emergent themes, after multiple-iterations. The thematic analysis as proposed by Braun and Clarke (2006) was adhered to.

5.2. Results

5.2.1. Enabling creative thinking and cultivating curiosity

The exercises cultivated students' creativity in different ways. First, students felt that the CE increased their curiosity towards the environment and changed how they related to the environment (which will be elaborated in next section). Since their experience encouraged to 'see things differently', this also enabled them to have a more creative outlook in their design processes:

> I learned that even a sound or a tiny line may help you to develop your conceptual studies. If you look from a different perspective… it can encourage your ideas even if you do not notice. Design process runs together with experiences; experiences broaden your horizon.

In that respect, many students responded that the CE helped them achieve conceptual ideas in an easier and flowing way during their design process within the course and also in the adjoining design studio course:

> CE showed me the way that I need to follow in the next [design] project. It was a great experience of being somewhere and being aware of it. So in our final project we were consciously looking for the sign which will reinforce our sense of presence in that exact point.

Students also thought that V&S exercise enhanced their creativity (Fig. 6).

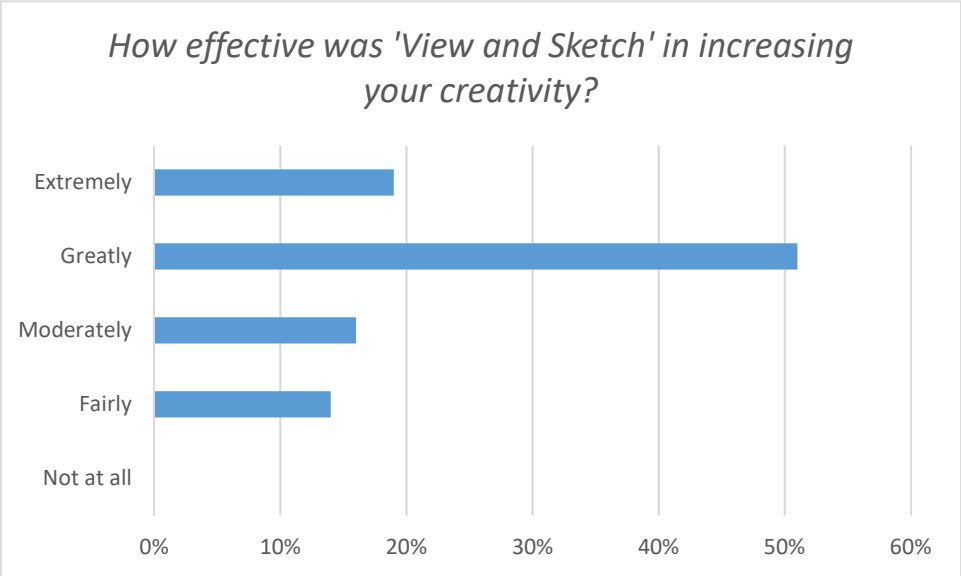

Figure 6. Responses related to creativity

The free flow of ideas without inhibition or judgment seemed to foster freedom and creativity:

> For me, this exercise was about letting your ideas free. Your mind works in collaboration with your hand. Thus, despite working in computer, it is important to develop concept with free-hand drawings.
>
> I learned that making quick decisions without even thinking sometimes brings forth the most creative and spot-on results.

5.2.2. Heightening spatial, bodily and multisensory awareness

The most pronounced impact, particularly of the CE, was the increase of spatial awareness (Fig. 7).

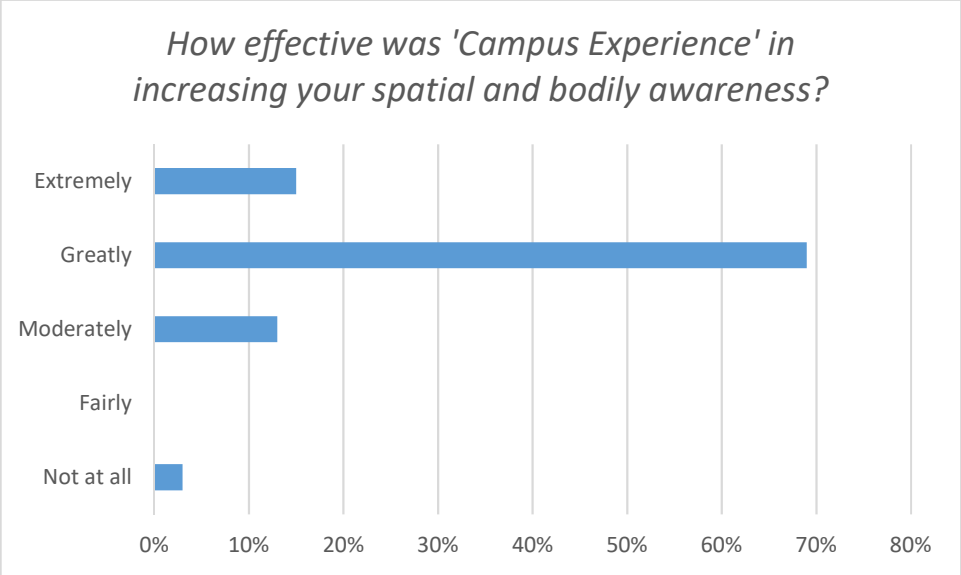

Figure 7. Responses related to spatial and bodily awareness

Almost all students commented on this issue. The phrases ‘different perspective’, ‘looking at the surroundings from different point of view’, and ‘increased awareness of space’ emerged repeatedly. The spaces they navigated for four years gained new meanings for them:

> I remembered what I had forgotten throughout the years: Observing like a child. And, in the end, this skill allowed us to be more mindful and attentive while working on the final project.

The students particularly commented that their ‘way of seeing’ changed, including multisensory awareness:

> It was fascinating to investigate how the places are changing dramatically through the day or season, exploring the hidden or unrealized spaces, paths or even behaviors

we experience every day without noticing them. After CE everything makes more sense and it reflects to our way of thinking while designing.

In both exercises, another theme that emerged was the way students could ***focus*** and be attentive on particular experiences, including feelings or certain details:

> The route (in CE) was out of the ordinary. Sometimes it was difficult to walk so I had to focus on the walking action with questions in my mind (What if I twist my ankle etc.)

> Initially I tried to make everything detailed for each slide, but after a while of not being able to catch up, I just chose one aspect of focus and reflected them into basic lines and geometries, very simple. This eased the process very much for me (V&S)

Through CE, some students also noted that they felt more connected to the space around them and also felt the space as a whole.

5.2.3. Fostering non-judgmental awareness and compassion for self

Results reveal the V&S exercise enhanced the ability to work non-judgmentally. This, in turn, enhanced the view that the exercise increased student sketching skills (Fig. 8).

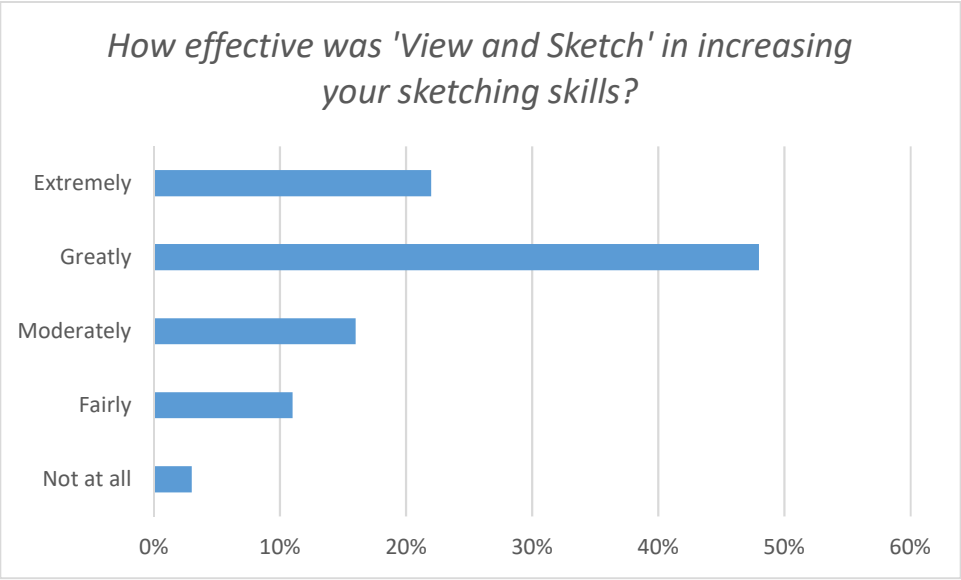

Figure 8. Responses related to sketching skills

The experiences shifted student's relationships with their experience and their self-awareness, transforming sketching into a joyful activity:

> It was a great experience to think and draw in just a few words in a few minutes in terms of brain activity and see how my mind works.
>
> Even though I don't have a sketch talent, I was shocked how easy I can reflect what I see to the paper.
>
> While sketching so quickly, I did not have time to criticize my own work in a bad way.

For some students, the exercise helped them for follow-up design work:

> The habit of keeping a journal started with the lecture on sketch and doodle. The inspiration of the lesson encouraged me that I should decrease my anxiety about making sketches even if they do not look good, because as the time passes by, the quality of my sketches improved.

5.2.4. Nurturing empathy: inclusive design, ethics and compassion for others

Both tasks focused on the participant's individual experience, and empathic or inclusive design was not the primary objective. However, experiencing the campus and discussing it together in CE, and bringing all of the conceptual ideas together into one piece at the end of V&S encouraged the students encounter and respect other people's perspectives:

> Academically and professionally, interior architecture is a teamwork and during some classes we may forget that we are also friends. It was nice to share this exercise with friends, having fun in a lesson (V&S).

> Since everyone has a different perspective, what they reflected on the paper is also different (V&S).

Moreover, students suggested ‘user interviews’ could be integrated to CE to involve others, with a student suggesting ‘Asking random people questions about how they perceive the campus while walking could be fun and useful’.

6. Discussion and implications for future research

This paper contributes to the knowledge of how mindfulness, as an ethical foundation and a practical application, can enhance design education and practice. The combination of theory and case studies illustrate how mindfulness can be indirectly or directly embedded in design educational contexts. In this respect, it fills the gap concerning applied and educational research on the relationship between mindfulness, creativity and thinking skills in particular contexts (Henriksen et al., 2020).

By synthesizing theory across mindfulness sand design pedagogy, we identified four main ways in which mindfulness may nurture the development of reflective design practitioners:

The first concerns how designers think and feel when solving design problems. Initially, mindfulness teaches methods of approaching the world with a curious attitude – which enhances divergent (creative) problem solving and can open up the possibility of new discovery. Moreover, practitioners learn that uncertainty is inevitable and that it is possible to ‘be with’ not knowing – which is at the core of design as an iterative reflective process. Additionally, noticing habitual thought patterns and overcoming fixation during design process is possible through becoming mindfully aware of one’s thoughts and emotional reactions.

The second mindfulness attribute that can inform design pedagogy, and perhaps the most directly applicable one for architects and other ‘spatial’ designers, concerns spatial, bodily and multisensory awareness. Designers who are mindfully attuned to the world around them in the

present moment, with its subtleties of light, texture, form and so on, are better equipped to draw upon such direct experiences to inform their work in an intuitive way. This cultivates the practitioner's understanding of person-environment relationships by engaging all their senses.

The last two features of mindfulness deal with compassion, for oneself and others respectively. Suspending judgment of one's work and reflecting on the inner critic may lead towards self-compassion. Learning mindfulness amongst peers can also nurture an ethic of collaboration and shared experience instead of competitiveness and judgment. Moreover, mindfulness can 'remind' us to include everyone in society through our designs. This way, students can respond to design challenges in a holistic and ethical context, being more aware of one's own humanity as it extends to an increased awareness of – and care for – others' wellbeing.

The case studies presented here, covering two disciplinary contexts in different countries, illustrate applied mindfulness within the design curriculum through formal MBSR meditation training and informal design exercises. Overall, the results support earlier research (Andrahennadi, 2019; Christian, 2019), regarding the benefits of the practices for students.

MBSR training primarily improved students' ability to manage anxieties and self-judgmental thoughts, which in turn enabled more creative design thinking and increased wellbeing and a sense of student empathy. Compassion was primarily invoked as being directed toward the self, which in turn improved student's attitudes toward themselves and the tendency to self-criticize design work. By training students to reflect on their own feelings, thoughts and work habits, the programme equipped them with skills to notice their own work processes in a holistic way. When evaluating the influence of MBSR training on creativity and curiosity, the results suggest some positive influence but this was not as pronounced as the stress reduction aspects. By comparison, in informal applications, the CE exercise cultivated present-moment awareness with novel perspective-taking, and cultivated the direct bodily and sensory

experience within space. The V&S exercise enabled students to skillfully apply sketching as a generative process with a suspension of the inner-critic and judgment, engaging in visualization for idea generation, as well as nurturing a space of collaboration instead of competition. The informal practices were oriented toward awareness of space and reflecting on how this may affect others; in this way compassion toward others was increased.

Comparisons of these two empirical studies show that informal mindfulness-based design exercises tend to have the most direct influence on reflective design practice and appraoch, especially on spatial awareness and the potential for empathetic design. MBSR training is indirectly influential, as it has more generalized stress reduction and wellbeing benefits that can in turn nurture students to be creative, compassionate and resilient. Hassad and Chambers note it is helpful "if mindfulness is not taught as a separate skill divorced from other aspects of the curriculum" but that "it needs to be integrated with other content" (2014, p. 148), and this comparison supports this view.

Several limitations to the empirical work suggest that more studies and evaluation are required to further verify the above findings. This study has focused on a small sample of students within architectural/interior design education settings; the types of mindfulness practice and the associated benefits identified in this study may inform design educators who want to conduct further studies across other programmes and with larger number of students than described here. The voluntary nature of the MBSR study may lead to self-selection bias amongst the overall student population, and in both cases the survey response rates and the self-reported nature of these responses mean results could also reflect a positivity bias. In future, longitudinal studies that evaluate student attainment, and which compare cohorts with and without mindfulness-based training, could provide a quantifiable set of data which could be analysed alongside qualitative measures.

Based on this study, we recommend future work could integrate and evaluate both formal and informal mindfulness (i.e. MBSR training and studio tasks) in the same design curriculum, while acknowledging there are practical barriers and risks associated with such applications. Within a design education context, the practicalities of resourcing formal MBSR training, which requires specialist qualified trainers and a significant time commitment within an already busy curriculum, present a challenge. Having said this, the significant wellbeing and mental health benefits of MBSR that are attained via formal meditation and reflection (Porter, 2020) should not be underestimated, and can embed mindfulness approaches in a sustained manner, beyond a one-off design exercise. By comparison, it is pragmatically advantageous to integrate and adapt informal mindfulness approaches within the existing curriculum, however this too relies on the skill of the trainer i.e. the design educator, to deliver and 'model' mindful behaviors. While we have noted in this literature review that parallels exist between established reflective design practice and the proposed novel mindful design approaches, this does not guarantee that a design educator will be equipped with the understanding to teach design in this manner without their own mindfulness training and sustained practice (for a reflection on the central importance of the trainer's own mindfulness see Santorelli et al., 2017, prologue). Furthermore, the Buddhist background as well as some popular misconceptions about mindfulness as a 'quick fix' to stress may present concerns for some students or educators. Nevertheless, the potential of mindfulness suggests working through such barriers may be worth the profound rewards. Ideally a combination of formal and informal mindfulness practices may be integrated into design education, supporting students to be truly reflective practitioners who attend to the wellbeing of others and themselves.

CRediT authorship contribution statement

Burçak Altay: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Visualisation, Writing – original draft, review & editing.

Nicole Porter: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Visualisation, Writing – original draft, review & editing, Funding acquisition for Case Study 1.

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Appendix A. Case Study 1 Survey Questions

Survey 1 – **ex-ante (pre-training)**

Part 1 – Your engagement with mindfulness

1 How would you describe mindfulness (your understanding or definition)

(open field for text)

2 How confident did you feel about describing what mindfulness means in the previous question?

Very confident / confident / slightly unsure / unsure

3 Does mindfulness play a part in your daily life?

Yes regularly / yes but not regularly, Sometimes / No

4 In what ways are you using mindfulness in your daily life? (if you answered 'no' at #3 above please skip this question)

(open field for text)

Part 2 – Your experiences, thoughts and feelings about studying architecture

Please rate each of the following statements using the scale provided. Choose the answer that best describes your own opinion of what is generally true for you at this point in time.

5 When I am in lectures I find it difficult to stay focussed. My mind wanders off an I am easily distracted

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

6 When I am in design studio I find it difficult to stay focussed. My mind wanders off an I am easily distracted

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

7 During studio or tutorials (in class activities), I make judgments about whether my thoughts, statements or questions are good or bad

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

8 During design studio, I make judgments about whether my work is good or bad

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

9 During design studio, I make judgments about whether other people's work is good or bad (for example when doing group work or during design reviews / crits)

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

10 I find design reviews / crits enjoyable

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

11 I am physically affected by anxiety before design reviews / crits (for example stomach upset, heart beat increase, sweaty, generally 'feeling nervous')

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

12 Studying architecture allows me to be creative

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

13 I am able to manage my time well; I am not rushed or left feeling behind in my study

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

14 I experience high levels of stress in relation to my architectural study

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

15 I find it easy to work with others, even though different people can have different approaches to working (for example in student groups)

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

16 I approach my design studio work with curiosity

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

17 I am aware of the spaces and places around me

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

18 I am aware of how my body is feeling (for example my sensations, breathing, posture)

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

19 Overall I am happy when engaging with architecture

(never or very rarely true / rarely true / sometimes true / often true / very often or always true)

20 If you would like to elaborate on any of the previous questions please feel free to add comments here

(open field for text)

Part 3 – your opinions about being an architect

Again please rate each of the following statements using the scale provided. Choose the answer that best describes your own opinion of what is generally true for you at this point in time.

1 Being a successful architect (student or professional) requires creativity

(strongly agree / agree / neutral / disagree / strongly disagree)

2 Being a successful architect (student or professional) requires compassion for others

(strongly agree / agree / neutral / disagree / strongly disagree)

3 Architecture is extremely demanding and takes up all of a students or professional's time

(strongly agree / agree / neutral / disagree / strongly disagree)

4 Being a successful architect (student or professional) requires curiosity

(strongly agree / agree / neutral / disagree / strongly disagree)

5 Being a successful architect (student or professional) requires excellent time management

(strongly agree / agree / neutral / disagree / strongly disagree)

6 Architecture is a stressful profession

(strongly agree / agree / neutral / disagree / strongly disagree)

7 Being a successful architect (student or professional) requires being very aware of space

(strongly agree / agree / neutral / disagree / strongly disagree)

8 Being a successful architect (student or professional) requires being aware of your own body

(strongly agree / agree / neutral / disagree / strongly disagree)

9 Architects need to be judgemental

(strongly agree / agree / neutral / disagree / strongly disagree)

Part 4 – WEMWBS Warwick Edinburgh Mental Wellbeing Scale

Below are some statements about feelings and thoughts. Please tick the box that best describes your experience of each over the last 2 weeks:

STATEMENTS	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been feeling interested in other people	1	2	3	4	5
I've had energy to spare	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling good about myself	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been feeling confident	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5
I've been feeling loved	1	2	3	4	5
I've been interested in new things	1	2	3	4	5
I've been feeling cheerful	1	2	3	4	5

Survey 2 – ex-post training evaluation (immediately after course)

Part 1 – Your engagement with mindfulness

Please remember all answers are anonymous…

1 How many of the weekly mindfulness training sessions did you attend?

1,2,3,4,5,6,7,8

2 How often did you undertake the home practices that were set each week

Every day as prescribed / most days, not skipping or shortening many / some days, but not sometimes only briefly / only occasionally / very occasionally or never

3 Were there any obstacles / hindrances / reasons that prevented you from participating (PLEASE DESCRIBE)

(open field for text)

4 Did you enjoy the training?

Yes all the time / yes but not regularly/ Sometimes / No

5 What did you find most useful about the training?

(open field for text)

6 Has the mindfulness training influenced your life in certain areas? If so, how?

(open field for text)

7 Was this training relevant to your architecture course? If so, how?

(open field for text)

8 Does mindfulness play a part in your daily life?

Yes regularly / yes but not regularly, Sometimes / No

9 Are you planning to continue using mindfulness in the future?

Yes all the time / yes but not regularly/ Sometimes / No

Part 2 – Your experiences, thoughts and feelings about studying architecture

This repeats the same 'part 2' questions as in survey 1.

Part 3 – your opinions about being an architect

This repeats the same 'part 3'questions as in survey 1.

Part 4 - WEMWBS

This repeats the same 'part 4' questions as in survey 1.

Survey 3 – ex-post training evaluation (6 months after course)

Part 1 – Your engagement with mindfulness

1 Does mindfulness play a part in your daily life?

Yes regularly / yes but not regularly, Sometimes / No

2 Please describe what aspects of mindfulness you have continued with since the course (if answering 'no' above please skip to the next section)

(open field for text)

Part 2 – Your experiences, thoughts and feelings about studying or practicing architecture

This repeats the same 'part 2' questions as in survey 1. Note – where a student has graduated, they may substitute the word 'study / student' for 'practice / practitioner.

Part 3 – your opinions about being an architect

This will repeat the same 'part 3' questions as in survey 1.

1 Open question – are there any other comments you would like to make about mindfulness and architecture? Please comment here

(open field for text)

Part 4 - WEMWBS

This repeats the same 'part 4' questions as in survey 1.

Appendix B. Case Study 2 Survey Questions

Part 1 – 'The Campus Experience'

The first exercise is the "Campus Experience", carried out during the course hours, starting from our building and ending at the Path/Valley. The second exercise is the "View and Sketch" which consisted of quick sketching in your sketch books and, creating 'visual interpretations' from derived themes afterwards.

1 Did you attend course at the day of 'Campus Experience' task? (If not, skip the related part of survey)

(yes / no)

2 How effective was 'Campus Experience' in increasing your spatial and bodily awareness?

(not at all/fairly / moderately/ greatly / extremely)

3 If has been effective, how/ in what way?

(open field for text)

4 Did 'Campus Experience' affect you during other tasks in this course (IAED 392), in the SHORT TERM e.g. end project 'You are Here' etc.?

(not at all/ fairly / moderately/ greatly / extremely)

5 If has been effective, how/ in what way?

(open field for text)

6 Did 'Campus Experience' affect you in the LONG TERM e.g. other courses, other design processes, general outlook etc.

(not at all/ fairly / moderately/ greatly / extremely)

7 If has been effective, how/ in what way?

(open field for text)

8 What aspects of 'Campus Experience' were most useful or valuable?

(open field for text)

9 How would you improve 'Campus Experience' assignment?

(open field for text)

Part 2 – 'View and Sketch'

10 Did you attend course at the day of 'View and Sketch' task? (If not, skip the related part of survey)

(yes / no)

11 How effective was 'View and Sketch' in increasing your sketching skills?

(not at all/fairly / moderately/ greatly / extremely)

12 If has been effective, how/ in what way?

(open field for text)

13 How effective was 'View and Sketch' in increasing your creativity?

(not at all/fairly / moderately/ greatly / extremely)

14 If has been effective, how/ in what way?

(open field for text).

15 Did 'View and Sketch' affect you during other tasks in this course, in the SHORT TERM e.g. end project 'You are Here' etc.?

(not at all/ fairly / moderately/ greatly / extremely)

16 If has been effective, how/ in what way?

(open field for text)

17 Did 'View and Sketch ' affect you in the LONG TERM e.g. other courses, other design processes, general outlook etc.

(not at all/ fairly / moderately/ greatly / extremely)

18 If has been effective, how/ in what way?

(open field for text)

19 What aspects of 'View and Sketch' were most useful or valuable?

(open field for text)

20 How would you improve 'View and Sketch' assignment?

(open field for text)

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