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Mindfulness, Education, and the Sustainable Development Goals

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Introduction

Education plays a dual role in sustainable development: it is both a means and an end. Since the sustainable development discourse began, calls have been made for it to be used (as a means) to achieve sustainable development goals (SDGs). Indeed, its potential to both raise awareness of problems and to promote the skills, capacities, and motivation needed to address these problems makes it an obvious choice and approach to address any SDG (Rieckmann et al. 2017; Wamsler et al. 2012). As an end, education is classically seen as a process that reveals the potential and talents of human beings in the pursuit of a good life and for the betterment of the common good (Klafki 2000). Ensuring that human beings have the opportunity to embark on this journey can be considered as a SDG in its own right (Foster 2001).

Both ambitions are reflected in the United Nation's SDG 4. A key target is here the provision of learning environments that are safe, non-violent, and effective (Target 4.A). Others are the need to substantially increase the number of young people and adults in education and training (Target 4.4) and the bold goal to ensure that all learners are capable of contributing to sustainable development (Target 4.7). Delivering these SDGs (education as a means), and ensuring that all human beings can adequately educate themselves (education as an end), requires teaching and learning environments that are based on ethical principles (e.g., non-violence, equity, respect). Furthermore, they should enhance the quality of learning processes for diverse groups of learners and provide safe spaces to critique development trajectories and their sustainability impacts.

In the search for new pedagogies and innovative approaches to educational practice, mindfulness has gained significant attention in recent decades (Schonert-Reichl and Roeser 2016). It is gaining popularity as an innovative approach to support learning processes in a number of different ways. Most recently, it has also caught the interest of practitioners, researchers, and policymakers in Education for Sustainable Development (ESD).

In this chapter, we critically assess the connection between mindfulness, education, and ESD. The aim is to explore the potential of mindfulness as an educational innovation in the context of the SDGs, in particular SDG 4. After providing some background to the philosophy and practice of mindfulness (section "Mindfulness"), we systematically analyze and present its linkages with education in general (section "Mindfulness and Education") and, subsequently, with education for sustainability in particular (section "Mindfulness in Education for Sustainable Development"). In this context, two highly relevant fields of application in ESD are discussed in greater depth: climate change and resilience (section "Field of Application: Education for Sustainable Climate Change Mitigation, Adaptation, and Resilience") and consumption (section "Field of Application: Education for Sustainable Consumption"). We conclude with some critical perspectives and possible ways forward (section "Critical Reflections and Ways Forward").

Mindfulness

The concept of mindfulness is rooted in Buddhist psychology and was introduced into Western science around 40 years ago. It originates from the Pali term sati and its Sanskrit counterpart smrti, literally meaning memory, recognition, and consciousness (Pali Text Society 2012). Its role within Buddhism relates to Buddha's teachings, which are based on the Four Noble Truths, namely, (1) the observation of suffering, (2) the identification of its sources, (3) the realization that suffering can be overcome, and (4) the understanding that there is a path to achieve the latter (Digha Nikaya 1998). The path to overcoming suffering is called the Eightfold Path, whose seventh element is samma sati or right mindfulness (Bodhi 2013). The exact meaning of right mindfulness is controversial, especially since academic interest in the topic has increased at the beginning of the twenty-first century (Williams and Kabat-Zinn 2013).

Although current mindfulness research is characterized by conceptual ambiguity (van Dam et al. 2018), in Western culture and science, mindfulness is most commonly defined as intentional, nonjudgmental attentiveness to the present moment (Kabat-Zinn 1990). It is seen as an inherent quality of human consciousness that is accessible to – and empirically assessable in – individuals, independent of their religious or spiritual beliefs (Baer 2003). This conceptualization forms the operational foundation for the vast majority of mindfulness research, including in relation to education (Bergomi et al. 2013; Grossman 2015, 2019). Since its introduction into Western science, an extensive body of research has linked it to established theories of attention, awareness, emotional intelligence, and other cognitive-emotional functions (Brown et al. 2007; Carroll 2016; Goleman 2011). In addition, various theories and methods have been developed to assess it as a temporary state (e.g., Lau et al. 2006); an enduring *trait*, in terms of one's predisposition to be mindful in daily life (e.g., Baer et al. 2006); and a practice (mindfulness training, e.g., Black 2011). Without training, trait mindfulness appears to be stable over time (e.g., Brown and Ryan 2003). However, empirical studies suggest that repeated mindfulness training can cultivate greater state mindfulness over time, which presumably contributes to increases in trait mindfulness (Kiken et al. 2015). The literature makes a conceptual distinction between two categories of mindfulness practices: mindfulness meditations (MMs) and mindfulness-based interventions (MBIs) (cf. Hanley et al. 2016). Even though this distinction is not clear-cut, MMs usually describe different practices that are rooted in spiritual traditions (e.g., Zen, Vipassana). In contrast, MBIs usually refer to secular mindfulness practices. They can incorporate MMs but generally do so within a larger collection of activities and therapeutic techniques. In this context, mindfulness-based cognitive therapy and mindfulness-based stress reduction are the most prominent and well-researched (Chiesa and Malinowski 2011).

Over the past two decades, mindfulness in general and MBIs in particular have received increasing attention in academia and various fields of practice, including psychology,

medicine, businesses, sports, and even the military (see van Dam et al. 2018). The number of scientific publications on the topic has multiplied tenfold over the past 10 years (AMRA 2018). Several studies suggest that MBIs can have positive effects, e.g., on health and well-being (Grossman et al. 2004), emotional regulation (Hill and Updegraff 2012), as well as memory, attention, and cognitive performance (Eberth and Sedlmeier 2012; Zenner et al. 2014). In addition, MBIs are attributed to interpersonal qualities, such as compassion, empathy, and prosocial behaviors (Luberto et al. 2018) and the potential to stimulate ethical virtues (e.g., courage or equanimity; see Grossman 2015). For these reasons, the mindfulness has recently also received growing attention in the field of education.

Mindfulness and Education

The introduction of mindfulness in education has been characterized by the following developments:

- It has been piloted in different educational arenas, from kindergarten to adult learning, targeting both students and teachers.
- It was primarily intended to change deviant behavior, promote personal resilience, and improve student performance.
- Cultivating ethical virtues has only recently been explored as a potential application, with implications for sustainability.
- Today, mindfulness is receiving mainstream acceptance in education.

Various forms of mindfulness practices have been used in educational contexts for many years (Bush 2011; Morgan 2015). However, it was not until around the post-2000 years that such practices received renewed attention among educators, following a broader interest in mindfulness in other fields (cf. section "Mindfulness"). Since then, mindfulness has penetrated all areas of education, from preschool to K-12 (kindergarten to grade 12), and higher and adult education

(Schonert-Reichl and Roeser 2016). This interest has been denoted by some commentators as a "contemplative turn" (Ergas 2018), a "postsecular turn" (Wu and Wenning 2016) or a "therapeutic turn" (Hyland 2009) in education. At the same time, critics have noted that this renewed interest in mindfulness was spurred by surprisingly divergent interests (Ergas 2015). At least three different motivations have been identified.

The first, and maybe most prominent motivation, concerns its clinical use in the Western world. Clinical studies have shown that mindfulness can counteract symptoms of depression, stress, anxiety, attention dysfunction, and other related symptoms (Grossman et al. 2004). This inherently pathological notion sees mindfulness as a remedy can treat or prevent medical disorders or other health issues. In education, this line of reasoning is reflected in attempts to use mindfulness as an intervention to remedy aggressive and maladaptive classroom behaviors (Singh et al. 2007; Franco et al. 2016). It can, it is argued, help to mitigate deviant behaviors and thus improve students' functioning in education systems.

The second rationale is based on a more salutogenetic narrative. Rather than counteracting the causes of unwanted behavior, the emphasis here is on using mindfulness as a practice and resource to strengthen factors that contribute to good health. In education, this is manifested in programs and studies that explore the positive contribution that mindfulness can make to maintaining and improving individual resilience to stress, both among teachers and students (Meiklejohn et al. 2012). Mindfulness, it is argued, can prepare learners and teachers to cope with the demands and hardships of educational settings.

The third rationale positions mindfulness as a contributor to broader efforts to enhance students' academic performance. Typically, research in this vein refers to the demonstrated effects of mindfulness on awareness and concentration and links these to academic attainment (Beauchemin et al. 2008). Mindfulness, it is argued, can help to boost the quality of academic work in educational settings (cf. section "Mindfulness").

It goes without saying that these motivations are idealized forms and understandings that, in reality, often overlap. However, given the fact that education is a concept that is defined by purposiveness, it is important to bear in mind that these different emphases and framings of mindfulness have paved the way for its infusion into the education system over time. Today, mindfulness is receiving mainstream acceptance in education (e.g., Rhodes 2015). The number of academic publications on mindfulness and education is steadily increasing and multiplied tenfold between 2006 and 2014 (Schonert-Reichl and Roeser 2016). Such studies have mainly investigated the potential of mindfulness to equip learners with social-emotional skills and consequently improve learning outcomes, and the well-being of teachers and learners, and improve learning environments (preschool, primary, and secondary education, as well as higher education). This trend is strengthened by the appearance of numerous textbooks on mindfulness and education, ranging from scientific handbooks (e.g., Schonert-Reichl and Roeser 2016) to practical guides "for cultivating mindfulness in education" (e.g., Nhất-Hạnh and Weare 2017). The emergence of international organizations and networks, such as the Association for Contemplative Mind in Higher Education (ACMHE 2015), the Mind and Life Education Research Network (MLERN 2019), the Association for Mindfulness in Education (2019), or the British-based Mindfulness Initiative (2019), provides further proof of mindfulness' influence in today's youth and adult education systems.

More recently, a fourth potential has attracted the interest of educators. This relates to a long-standing controversy in the field of mindfulness research: its role in cultivating broader ethical virtues (Grossman 2015; Monteiro et al. 2015). According to critics, mainstream education has been almost exclusively been preoccupied with the three aforementioned motivations (i.e., coping with maladaptive behaviors, improving grades, and individual resilience). This preoccupation, and the widespread neglect of the ethical dimension in mindfulness practice, has prompted scholars to call for a revolution in the use of mindfulness in education. Proponents argue however that this revolution should be more critical of, and explicitly address the (unintended) side effects of, mindfulness (cf. section "Field of Application: Education for Sustainable Consumption"). Most importantly, the reinvention of mindfulness in education should place the cultivation of "moral and civic virtues" at the forefront (Simpson 2017). Mindfulness, it is argued, can support transformation by clarifying and challenging values, as well as enabling a radical critique of society. Such deliberations have been a major driver in the introduction of mindfulness training into ESD.

Mindfulness in Education for Sustainable Development

Our analysis revealed the following aspects:

- Compared to education in general, mindfulness has received little attention in sustainability teaching and learning.
- It has only recently been explicitly promoted as a new way of teaching and learning that is needed to create a more sustainable society.
- The notion of "ecological mindfulness" has emerged, which promotes a different way to learn and foster scientific understanding and action.
- Recently, scholars have argued that mindfulness can improve sustainability institutions and curricula. Innovative examples have emerged.

In contrast to the prominent role of mindfulness in education in general (section "Mindfulness and Education"), it has, so far, received limited attention in the ESD context, especially in academia (Wamsler et al. 2018). It is only recently that contemplative teaching methods, including mindfulness, have explicitly been promoted by scholars, practitioners, and mindfulness networks as a new way to address socio-ecological challenges and create a more just, compassionate, reflective, and sustainable society (Gugerli-Dolder et al. 2013; Wamsler et al.

2018). This development is primarily based on the rationale that mindfulness has the potential to support pro-social and pro-environmental behavior, human-nature connections, critical thinking, ethics, and virtues (cf. sections "Mindfulness" and "Mindfulness and Education" and "Field of Application: Education for Sustainable Climate Change Mitigation, Adaptation and Resilience" and "Field of Application: Education for Sustainable Consumption").

In line with this, the concept of "ecological mindfulness" has been emerging in sustainability teaching (Mueller and Greenwood 2015; Sol and Wals 2015). Underlying this notion is the idea that the proliferation of segmented knowledge fields is inconsistent with the interdisciplinary and hybrid learning needed to foster scientific and cultural understanding and actions leading to socioecological change. Hence, ecological mindfulness suggests that the integration of thought, rather than its separation, should be the purpose of sustainability teaching and learning. Accordingly, scholars argue that the ecological mindfulness of teachers is crucial in shaping students' understanding of nature-society relations and that it requires integrating indigenous, cultural knowledge and practices (such as mindfulness) within existing scientific frameworks (Chinn 2015).

In addition, an increasing number of pioneering scholars are calling for mindfulness-based approaches to improve educational institutions and curricula oriented toward sustainability and well-being. It is argued that, in the context of sustainability, teaching and learning require spaces where diverse ecological, holistic, and place-responsive perspectives can take root, be nurtured, and flourish into ways of knowing, being, and becoming that serve people, places, and the planet (Greenwood 2013; Sameshima and Greenwood 2015; Wamsler 2019). In line with the first four potentials of mindfulness that have been identified in education in general (cf. section "Mindfulness and Education"), it is argued that teaching should become a way to work toward a "learning system" in which people collectively become more capable of withstanding setbacks and addressing complex sustainability challenges (Sol and Wals 2015).

Two innovative examples for creating such learning systems and systematically integrating mindfulness into ESD can be found at Lund University (in Sweden) and Leuphana University Lüneburg (in Germany). The Lund University Centre for Sustainability Studies (LUCSUS) set up the Contemplative Sustainable Futures Program at the end of 2015. The program aims to explore the role of inner dimensions and transformation for sustainability and to create space and opportunities for learning, knowledge development, and networking on the topic. Building blocks include teaching, research, and networking activities, which also explore the interlinkages between mindfulness and the SDGs (LUCSUS 2015). Outcomes have, so far, included the establishment of the following: (i) an Experimental Learning Lab on mindfulness in sustainability science, practice, and teaching; (ii) the integration of mindfulness-based approaches into existing courses in environmental studies and sustainability science; (iii) a new master's-level course on "Sustainability and Inner Transformation" with a linked Practice Lab; (iv) a professional knowledge database and network; and (iv) various research studies and frameworks for more integral research and education (Wamsler 2019). The integration of mindfulness into existing courses includes, for instance, a written reflection on students' learning in relation to the five key aspects of mindfulness (observing, describing, acting with awareness, nonjudgment, and reactivity) (Baer et al. 2006); encouraging mindful interactions during listening, debating, reflecting, and working together; and voluntary mindfulness sessions. The latter do not only address individual, but also social and ecological dimensions.

At Leuphana University, courses in sustainability science are offered that experiment with two, new pedagogical approaches which incorporate mindfulness practice: reflexive knowledge generation (Frank 2018; Frank and Fischer 2018) and self-inquiry-based/self-experience-based learning (Frank and Stanszus 2019). In the reflexive knowledge generation format, students systematically observe the way they deal with new information about controversial sustainability issues, for example, meat consumption. The

aim is to make them aware of the nonintellectual factors that often unconsciously influence the ways in which we deal with new information and arguments, laying the ground for more open, modest, and benevolent reasoning processes. Self-inquiry and experienced-based learning make students themselves the object of inquiry. Here, students engage in a personal sustainable transformation project designed to encourage them to observe and reflect upon their subjective experience.

Field of Application: Education for Sustainable Climate Change Mitigation, Adaptation, and Resilience

Mindfulness has been applied to various ESD topics. Most progress is observed in the fields of (i) consumption and (ii) climate change mitigation, adaptation, and resilience. Regarding the latter, we identified the following aspects:

- Mindfulness-based teaching and learning methods are increasingly explored to address new demands caused by climate change (e.g., individual capacities and qualities).
- In contrast to climate change mitigation, there is little academic discourse on mindfulness-based education regarding climate change adaptation and risk reduction.
- Innovative approaches are, however, emerging, within both private and academic institutions.

In the context of growing climate and disaster risks, and associated uncertainties, sustainability is increasingly being referred to as a learning challenge (Doppelt 2017; Whitehead et al. 2017; Wamsler 2018). It is argued that, in addition to creating appropriate forms of governance, legislation, and regulation, alternative forms of education and learning are needed for people to develop the capacities and qualities that will enable them to contribute to alternative, climate-adapted behaviors, lifestyles, and systems, both individually and collectively (Sol and Wals 2015).

Increasing research on behavioral sciences and economics supports this understanding (cf. Camerer et al. 2005).

Consequently, mindfulness-based teaching and learning methods are being explored, particularly in the context of educational activities that focus on climate change mitigation (i.e., measures and strategies to reduce the causes of climate change). Examples are the revision and development of new syllabuses on global environmental politics, sustainability leadership development, and "mindful climate action" (e.g., Barrett et al. 2016; Litfin and Abigail 2014).

At the same time, there is little academic discourse on mindfulness regarding climate change adaptation and risk reduction education (i.e., regarding measures and strategies to reduce the impacts of climate change). This is surprising, given the fact that these topics can be very sensitive, and trigger memories of sorrow and vulnerability (Wamsler et al. 2018; Wamsler and Raggers 2018), making mindfulness-based approaches a potentially valuable approach. It also neglects emerging research on the interlinkages between mindfulness, climate change mitigation, and adaptation. Individual mindfulness disposition might, for instance, influence people's perceptions of climate change and risk, their motivation to support climate policies, and the kinds of actions that are (not) taken (Wamsler 2018; Wamsler and Brink 2018).

Based on the increasing knowledge in the field, innovative initiatives are being developed. Neuroscience-based mindfulness training is, for instance, increasingly offered by private organizations to assist people (including students, teachers, and professionals) to cope with, and address, climate-enhanced adversity (Doppelt 2017). An innovative example from academia is the "Sustainability and Inner Transformation" course at LUCSUS (originally named "Mindfulness, Compassion and Sustainability") (Wamsler 2019; LUCSUS 2015). The overall aim of the course is to critically assess the potential role of inner transformation for sustainability. The objectives are threefold. Firstly, it allows students to develop a critical understanding of the potential interlinkages between inner transformation and

sustainability (theories and practices). Secondly, inner transformation theories and practices are assessed in relation to specific sustainability fields, including sustainable climate change mitigation, adaptation, and risk reduction. Thirdly, the course allows students to engage in, and critically reflect on, the nature of inner transformation and its salience in sustainability science and learning. In this context, mindfulness is explored as an inherent human capacity that has the potential to support such transformation. The course is very popular with both students and scholars and has been acknowledged as being the first of its kind (Egan 2019). It is closely linked to the research and network of the Contemplative Sustainable Futures Program (cf. section "Mindfulness in Education for Sustainable Development"). Another network that addresses the link between mindfulness and climate change-related issues is, for instance, The Mindfulness and Social Change Network, which focuses on strengthening mindful pathways toward social justice and environmental sustainability (Mindfulness and Social Change Network 2019).

Field of Application: Education for Sustainable Consumption

With respect to the application of mindfulness to consumption and lifestyles, we identified the following aspects:

- Over the past decade, mindfulness has increasingly been linked to sustainable consumption, both in research and education.
- Related claims are based on five mechanisms that could, in theory, support the development of sustainable consumption and lifestyles.
- Innovative educational approaches have recently been implemented to test-related claims.

Like the application of mindfulness to ESD in general, there is increasing interest in relation to consumption and lifestyles. Such developments are based on research that has identified five

mindfulness mechanisms that could theoretically support the development of sustainable consumption behavior (Fischer et al. 2017). The first concerns enhancing introspective capacities, thereby laying the ground for changing previously unconscious routines. This is thought to help elucidate and diminish unconscious, non-sustainable consumption choices. Secondly, mindfulness practice may be help to clarify and support the role of nonmaterial values in people's lives. The third mechanism refers to recent findings that claim that mindfulness explicitly increases pro-social behavior. Pro-social behavior is, in turn, positively linked to pro-environmental intentions and behavior. Fourth, mindfulness is associated with a greater capacity to make congruent choices that may narrow the attitude-behavior gap and support more sustainable consumption patterns. The fifth mechanism has recently been suggested by Geiger et al. (2019). They found that mindfulness may foster sustainable lifestyles due to its potential to improve physical health and well-being.

Drawing upon these theoretical developments, innovative educational approaches have recently been proposed. The German research project BiNKA (Education for Sustainable Consumption through Mindfulness Training) was the first study designed to empirically investigate the potential through an 8-week consumer-focused mindfulness course to foster sustainable consumption (Stanszus et al. 2017). Reported effects mostly related to changes in attitudes and intentions, a reduced focus on material values, and the ability to observe inner states and processes related to consumer behavior (Geiger et al. 2018). The BiNKA study has inspired a variety of other teaching activities at Leuphana University. One example is the seminar "Transformation toward sustainable consumption: Individual and personal perspectives," where mindfulness training was used to sensitize students to their inner states and processes as part of the process of deliberately changing their consumer behavior (Frank and Stanszus 2019).

Critical Reflections and Ways Forward

Despite an exponentially growing body of literature and extensive interest in education and mindfulness, research on mindfulness in ESD is still in its infancy. Nevertheless, past developments, increasing knowledge, and emerging innovations clearly indicate its potential to contribute to education and the SDGs, both as a means and as an end.

However, related explorations require actively considering and engaging in critical debates and associated challenges. Concerns have, for instance, been voiced with regard to the significance and validity of mindfulness research. A number of conceptual and methodical flaws have been identified, mainly concerning the quantitative (and by far most frequent) approach to its study (e.g., van Dam et al. 2018; Grossman 2015, 2019). There are calls for a more humble and cautious interpretation of the (allegedly) positive effects of mindfulness training, together with a more nuanced and differentiated inquiry, based on a clear definition of mindfulness and a transparent description of the related intervention or practice. The integration of a variety of disciplinary and methodological approaches is also warranted. The tendency to simplify the concept and focus on its positive effects has in parts also driven its social rejection.

Mindfulness should not be seen as a universal panacea. Instead, any potential negative applications or side effects need to be actively considered, such as its potential instrumentalization for undesirable purposes, or to reproduce neoliberal ideologies of self-optimization (Reveley 2016; Walsh 2016). In addition, it is important to adapt its use to the context of sustainability and associated fields of application (Whitehead et al. 2017; Wamsler 2018).

By actively considering these critiques and challenges, mindfulness can become a vehicle for critical, improved education and social change (rather than individual self-optimization), a field which is clearly underexplored and highly relevant with regard to the SDGs, particularly SDG 4 and 4.7. This could mark the beginning of a radical engagement with inner and outer transformation, facilitated by a more comprehensive engagement with the critical potential of mindfulness in ESD. While this next phase is only just appearing on the horizon, there are strong indications that mindfulness will continue to permeate mainstream educational practice and ESD. Influential players, such as the United Nations Educational, Scientific, and Cultural Organization (UNESCO), have started to openly advocate for better recognition of cognitive, socio-emotional, and behavioral dimensions of learning in SDG-related education (Rieckmann et al. 2017), with mindfulness being the leading facilitator for such learning (Bresciani Ludvik and Eberhart 2018).

Cross-References

▶ Awareness in Educational Ethics
▶ Contemporary Trends in Education
▶ Human Behaviour Change for Sustainable Development: Perspectives Informed by Psychology and Neuroscience
▶ Transformative Education to Address all SDGs

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