Argentinian Journal of Applied Linguistics
Vol. 7, No. 2 November 2019, 110-125

Mindfulness for human-centred digital learning

Agnieszka Palalas* - AU – Athabasca University, Canada

(Received 14/12/18; final version received 03/09/19)

ABSTRACT

Drawing from a decade of informed exploration, educational research and personal practice, this reflective article discusses the construct of mindfulness and its application in digital learning, including language learning. Latest discoveries in neuroscience and scientific research in mindfulness, have bridged the science and practice of mindfulness providing evidence on its positive effects on human-centred teaching and learning. Regular mindfulness practice can alter the function and structure of the brain and help learners train their mind to, among other skills, pay attention in a purposeful way and not get distracted by the abundance of external and internal stimuli. It can promote learners' awareness, self-regulation, and other metacognitive skills so they become more resilient and ready to face the challenges of the increasingly-overwhelming digital world.

Keywords: digital learning, language learning, human-centred design, mindfulness practice, self-regulation

RESUMEN

A partir de una década de exploración informada, investigación en educación y práctica personal, este artículo reflexivo analiza el concepto de atención plena y su aplicación al aprendizaje digital, incluido el aprendizaje de idiomas. Los últimos descubrimientos en neurociencia y la investigación científica de la atención plena han servido de puente entre la ciencia y la práctica de atención plena proporcionando evidencia sobre sus efectos positivos en la enseñanza y el aprendizaje centrados en el ser humano. La práctica habitual de la atención plena puede alterar la función y la estructura del cerebro y ayudar a los estudiantes a entrenar sus mentes para, entre otras habilidades, prestar atención de manera resuelta y no distraerse con la abundancia de estímulos externos e internos. Puede promover la conciencia de los estudiantes, la autorregulación y otras habilidades metacognitivas para que sean más resistentes y estén listos para enfrentar los desafíos del mundo digital cada vez más abrumador.

Palabras clave: aprendizaje digital, aprendizaje de idiomas, diseño centrado en el hombre, práctica de atención plena, autorregulación

* Corresponding author, e-mail: mref3k4@gmail.com

THIS REFLECTIVE ARTICLE is based on over a decade of informed exploration and educational research - exploratory case studies, ethnography, and action research that I conducted with online and mobile learning graduate students (L1 and L2 speakers), as well as personal practice. It introduces the construct of mindfulness and situates it in the context of digital learning, including mobile/computer-assisted language learning. Drawing on recent literature and scientific evidence from interdisciplinary research, this discussion encourages educators to incorporate mindfulness practices to provide human-centred learning design and practice with focus upon the people, their shared human needs and experience. Considering the very limited research in the area of mindfulness in language learning, the key goal of this article is to invite language educators to reflect on and research the application of the knowledge shared hereby within their own educational contexts.

Latest discoveries in neuroscience, enabled by innovative neuro-imaging technologies, combined with over 35 years of scientific research in mindfulness, have bridged the science and practice of mindfulness, pointing to multiple benefits of the practice. Mindfulness as a scientific construct sits in the intersection of many disciplines, including, neuroscience, psychology, neurobiology, sociology, anthropology, religious studies, and education. The study of mindfulness examines human nature, human consciousness, and the shared human condition. It concerns the nature and function of our attention, awareness, self-regulation, emotional and cognitive discipline, as well as integrity. Increasingly popular investigations into mindfulness not only provide evidence on its effects on the human brain but also continue examining the works of our brain and nervous system to expose the human condition we all share. While many of the challenges we experience, in learning as well as other aspects of life, are a function of the structure and operation of the brain, our surroundings and the tools that we use have an evident impact on our mental well-being. The same digital technologies that open up new learning possibilities can be a source of unhealthy mental and physical habits that hinder the learning experience.

As discussed in more depth in an earlier publication (Palalas, 2018), the current digital learning context is characterized by multiple challenges on our attention with people feeling digitally overwhelmed, experiencing information overload, as well as experiencing persistent distraction and chronic distractibility, both internally and externally. The desire to multitask in order to attend to the overpowering number of competing responsibilities often leads to mental immobility, stress, and frustration as the human brain rapidly switches from one task to another, resulting in the inability to give enough attention to any of them. This often leads to the state of *Continuous Partial Attention*: "trying to follow and deal with everything while, in fact, failing to focus on anything" (Stone, 2006). This unwelcomed state of fragmented attention becomes a habit of mind, resulting in what Rose (2013) termed as "rapidly shifting, perpetually overstimulated" hyper-attention. Not only has our attention been overstrained but it has also become a commodity in the world of attention economy (Palalas, 2018) in which we live and learn.

There are numerous other challenges that characterize the digital learning context. These include but are not limited to: the impact on language and communication, including its hyperpersonal dimension (Walther, 2007); the online privacy and safety concerns; the ever-increasing pace of living and time pressures (Levy, 2016); the feeling of isolation in the world of social media; the issues of mental health and burnout of teachers and learners; and resultant increasing pressures on our self-regulation and time management, just to mention the most glaring ones. These have an evident impact on the learning experience within the classroom and also the well-being of the stakeholders. For instance, feedback on the quality of learning experience that I gathered from both mobile language learning students and graduate-level online learning students (Palalas, Mavraki, Drampala, & Krassa, 2018; Palalas, Karakanta, Mavraki, Drampala, & Krassa, in press), as part of research on mindfulness in digital learning, pointed to students' exhaustion and frustration with the need to do more studying in less time due to all the various demands coming from their professional and personal lives. While appreciating the flexibility afforded by digital learning, the students used the following phrases to describe their learning experience prior to the introduction of mindfulness practices: "no time to think," "no time off," "expected to be working 24/7," "need to produce quickly," "sense of overload and confusion," and "stressed by the always-on lifestyle and its requirements." Other themes that emerged from their comments included feeling distracted and experiencing an urge to multitask to stay current and socially included, for example, checking text messages while participating in an online Adobe Connect session. Respondents also referred to information overload and its fragmentation, requiring skills to weed through the information-intensive digital content (including fake news). Some of the learning technology-related feedback pointed to the multiplicity of technological tools, often misused. Another conflicting theme was that using digital technology to learn sometimes brought about a feeling of being impersonal and disconnected from others, as opposed to the intended online connection and communication with classmates and teachers; some even referred to feeling isolated in the "network of connections."

When asked about the kind of support learners needed from their online/mobile learning facilitators, the three key themes were a need for guidance on how to use technology wisely for connection and meaningful communication; how to "create greater calmness and clarity" in the course (despite the busyness outside the classroom); how to "organize their time online and offline" towards more effective and enjoyable learning. Respondents also repeatedly stressed that they needed help to self-regulate and keep their work-life-study balance so that they were able to continue course participation. It is worth noting that when encouraged to spend less time on their devices but apply more focus and intentionality to the on-device time, the majority of students expressed fear of being disconnected from the information and "action" available online.

This feedback combined with research and personal mindfulness practice informed my investigation into the effects of mindfulness practices in digital learning, including language learning. Some of the strategies incorporated into my teaching and their impact are discussed in the second part of this article, after the discussion of the concept of mindfulness, along with related mind-brain-body practices and their potential benefits.

Defining Mindfulness

The contemporary construct of mindfulness has been examined and described in literature through a variety of multidisciplinary lenses. It builds on different traditions of thinking, diverse epistemologies, and sciences. It bridges spiritual traditions and their focus on transforming the "self" with the evidence-based understanding of the habits of mind offered by contemporary sciences. One of the broadly accepted definitions of mindfulness has been submitted by Kabat-Zinn (1990, 1994, 2003): "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment" (Kabat -Zinn, 2003, p. 146). The whole-person, mind-body process of actively being in the present moment involves attention on the experience of what unfolds both internally (thoughts, body sensations, and emotions) and in the environment. This perspective has roots in contemplative traditions, such as Buddhism, "where conscious attention and awareness are actively cultivated" (Brown & Ryan, 2003, p. 822). Two central components to such a view of mindfulness are: (1) regulation of attention on the immediate experience, and (2) approaching experiences with curiosity, openness, as well as acceptance, regardless of whether they are positive or negative. Cultivating mindfulness helps to "train skills by placing some constraint or imposing some discipline on a normally unregulated mental or physical habit" (Mind and Life Education Research Network - MLERN, 2012, p. 2).

In the tradition of socio-cognitive psychology, Ellen Langer and her co-authors (Langer, 1992, 1993, 2000; Langer & Moldoveanu, 2000; Pirson, Langer, Bodner, & Zilcha-Mano, 2012) have been more selective in defining mindfulness as "the process of active drawing of distinctions that increase live options for thinking, feeling and action" (Moldoveanu, 2016). Langer demonstrated in her numerous studies that people could be either in a mindless state where they miss a lot of significant information or in a state of mindfulness - a flexible state of mind in which people are actively engaged in the present (2000), a state of conscious awareness when they are "implicitly aware of the context and content of information… a state of openness to novelty in which the individual actively constructs categories and distinctions" (Langer, 1992, p. 289). Langer (1993) further elaborated that "mindfulness is a state of mind that results from drawing novel distinctions, examining information from new perspectives [many possible perspectives], and being sensitive to *context*" (*emphasis in original*; p. 44), as well as to the conditional nature of information. She also warned that, in educational settings, when information is presented in

absolute terms, such teaching might foster mindlessness and rigid mind-sets (2000). Perkins, Jay, and Tishman (1993), citing Langer's research, referred to the construct of mindfulness as a thinking disposition because it concerns "how disposed people are to process information in an open, alert, flexible way" (p. 74). Langer's socio-cognitive approach considers mindfulness as a means to enhance problem-solving and other goal-oriented cognitive tasks; it also often involves working with and manipulating information external to the learner (Baer, 2003).

What the two views on mindfulness appear to have in common is an active process of noticing what situates the observer in the present, being aware of the "now" and thus experiencing a choice. Regularly practicing and cultivating our awareness, attention, and discipline, enhances our ability to make skillful choices of where to place our attention and when to allow the auto-pilot mode. Thus, mindfulness helps us to distinguish what is and what is not important, thereby informing our seeing and knowing. Essential to the mindfulness perspective is also the value of experiential knowledge and first-person knowing.

In my research, I have followed the definition put forward by Kabat-Zinn and popularized by numerous works of Western researchers, clinicians, and educators who incorporated mindfulness principles in their practice. Indeed, mindfulness has been seen in the recent years as a therapy, strategy, philosophy and even a lifestyle to help people manage their minds and bodies better in the face of the everyday-life challenges and stress. Creating a learning environment infused with mindfulness practices has been proven to promote connected learning that shifts focus away from digital tools, albeit often indispensable, and back to the individuals communicating in their shared space.

Contemplative Pedagogy and Practice

The construct of mindfulness falls under the umbrella of contemplative science, which studies the mind-brain connection. Informed by the science, contemplative pedagogy incorporates into the curriculum an array of contemplative practices to offer holistic learning (or whole-person learning; Brown, 2014) that respects our human nature, our needs and wants, as well as our innate capacity for learning and knowing. Contemplative practices have been integrated by many into their teaching with the aim of helping the learner to connect the knower and the known (Barbezat & Bush, 2014). These practices include silent reflection, witnessing, beholding, journaling, meditation, self-inquiry, deep listening, silence, dance, work, volunteering, and many others. Their goal is to deepen our understanding and insight, improve our attention and awareness, as well as cultivate compassion and self-compassion while one's mind is present with one's body (Miller, 2013). These practices provide a strategy and a space for people to listen to themselves, to others, and to the knowledge present in the world around them. They support critical reflection by offering a methodology for "thinking through" that transcends understanding by intellectual analysis

and allows to connect with knowing from the emotional, psychological, creative, physical and spiritual vantage points, as well as the intersection of these points (Brown, 2014; Hart, 2004; Haynes, 2005; Miller, Irwin, & Nigh, 2014; Zajonc, 2013).

Contemplative practice, including mindfulness-based techniques, activates metacognitive modes and connections that promote first-person investigations leading to "unobstructed" meaning-making and the unpacking of our personal misunderstandings and pseudo-beliefs. This allows us to access our innate knowing and connect it with the knowing that exists in the connections between people and spaces around us. Hyland (2009) observes that mindfulness practices can have positive impact on the personal growth and development of learners of all ages.

Cultivating Mindfulness

Drawing from the discoveries of neuroplasticity, "the malleability of the brain, observable as changes in neuronal structure and connectivity" (Lillard & Erisir, 2011), experience changes the brain (Goleman & Davidson, 2017; Hanson, 2016; Kays, Hurley, & Taber, 2012; Lillard & Erisir, 2011) and we have a choice to shape our experience. Neuroplasticity is activity-dependent: sensory, repeated motor, and cognitive activity drive alterations in human neural circuits producing functional changes (Lillard & Erisir, 2011). Relatedly, the science behind mindfulness provides evidence that our experiences, behaviours, and practices, for instance regular meditation, can alter our mind, brain and body over time (Goleman et al., 2017). Mindfulness practice promotes neurogenesis, the process by which new neurons are generated, and neural circuits are being formed, weakened, strengthened, and purged, *willfully* shaping the brain through self-directed neuroplasticity (Hanson & Mendius, 2009; Schwartz & Begley, 2002; Schwartz, Stapp, & Beauregard, 2005). Schwartz et al. (2005) noted that the basic thesis of self-directed neuroplasticity research is that directing attention "will affect both the experiential state of the person and the state of his/her brain" (p. 1313). Furthermore, "[m]indfulness training supports volitional control of attention toward a selected object" (Leyland, Rowse, & Emerson, 2019, p. 109). Thus, regular practice over time, including that incorporated into curriculum, can alter psychological and neurological functions of the brain-mind-body connection, such as attention and emotion regulation. Most neuroplasticity is incremental, not dramatic, hence requiring systematic practice.

In short, attention directs change. We are the architects of our own brain and can use intentional attention practice to shape the direction of the plasticity of our brain, and along the way, new brain and mental habits can be formed. This ability is essential to our well-being as well as to our ability to learn, both at conscious and unconscious levels. Integrating mindfulness practices that strengthen our self-regulation of attention, awareness, and emotion, while connecting us to our innate knowing and to our surroundings, can have a profound impact on learners' experiences both in class and beyond.

Moreover, mindful communication strategies encourage us to put attention and awareness on our words and meaning, shifting the focus from the product to the process of communication and meaning-making, as well as from the negative (e.g., errors in communicative output) to the positive (e.g., co-created meaning) – learner-empowering practices and feedback which are particularly of benefit in the language classroom.

Benefits of Mindfulness

There is a considerable body of research reporting benefits of mindfulness-based practices and interventions. It has been demonstrated that cultivating and increasing mindfulness can result in positive impact on our health, longevity, and well-being. Some of the cited psychological and physical impacts include better attention skills (e.g., Becerra, Dandrade, & Harms, 2016; Jha, Krompinger, & Baime, 2007; Sedlmeier et al., 2012); improved immune functioning (e.g., Carlson, Speca, Faris, & Patel, 2007; Davidson et al., 2003; Hanson et al., 2009); emotional and mental well-being (e.g., Carmody & Baer, 2008; Chiesa & Serretti, 2009; Hanson et al., 2009; Hassed, De Lisle, Sullivan, & Pier, 2009; Hofmann, Sawyer, Witt, & Oh, 2010; Hölzel et al., 2013; Teasdale et al., 2000; Shapiro, Brown, & Biegel, 2007; Siegel, 2007, 2016); strengthened empathy and compassion (e.g., Hanson et al., 2009; Hutcherson, Seppala, & Gross, 2014; Hofmann, Grossman, & Hinton, 2011; Siegel, 2007, 2016); and richer, more positive personal relationships (e.g., Carson, Carson, Gil, & Baucom, 2004; Coatsworth, Duncan, Greenberg, & Nix, 2010).

While these aspects are of great importance in the whole-person learning environment, studies on mindfulness in education have also identified other positive effects specific to the educational context. Findings of these studies pointed to the following advantages of mindfulness practice: improved cognitive functioning (e.g., Jha, Rogers, & Morrison, 2014; Maynard, Solis, Miller, & Brendel, 2017; Ortner, Kilner, & Zelazo, 2007; Vickery & Dorjee, 2016) and readiness to learn (David & Sheth, 2009); reduced anxiety and stress levels (e.g., Ratanasiripong, Park, Ratanasiripong, & Kathalae, 2015; Song & Lindquist, 2015); increased self-regulation (e.g., Meiklejohn et al., 2012; Tang et al., 2007); improved awareness and attention (e.g., David & Sheth, 2009; de Bruin, Meppelink, & Bögels, 2015); better academic performance (e.g., David & Sheth, 2009; Schonert-Reichl et al., 2015; Schonert-Reichl & Roeser, 2016); improved resilience of students and teachers (e.g., Jennings et al, 2013; Meiklejohn et al., 2012). Other advantages for learners comprise the promotion of self-reflection and self-calming; social and emotional learning; pro-social behaviours and healthy relationships; improved participation in consequence of impulse control - all of them leading to holistic well-being (David & Sheth, 2009).

Accordingly, mindfulness practice can be transformative not only to our students' learning but also to their general well-being, if more consideration is given to true human nature and how our basic needs are affected by changing environments. Cognitive and emotional growth and awareness may align, particularly in language learners, with the

language awareness approach and its five interrelated domains: affective, social, power, cognitive and performance (James & Garrett, 1991). When students are encouraged to become autonomous learners and active contributors to their language learning journey (James et al., 1991), they can benefit cognitively and affectively from deeper exploration, reflection, and analysis of language for deeper understanding (Svalberg, 2007), amongst other strategies. A non-threatening learning environment characterized by trust, interaction, self-discovery, and focus on the positive is essential to language awareness methodology.

Safety First

Discussing the full extent of the various human needs of learners and how they can be addressed by mindfulness practices deserves a comprehensive volume. This article merely signals the issue by looking at the basic desire for safety and connection with others, and situating it in the learning context.

Seeking Safety and Emotional Regulation

Jensen (2008), in his comprehensive investigation of brain-based learning, advocated working with natural tendencies of the human brain to create holistic brain-based learning environments. Jensen observed that "the brain structures involved in emotional processing influence cognition" (p. 85) because of their role in perceptual processing, safety or threat evaluation, motivational evaluation, self-regulation of states, and memory modulation. With the brain being a natural extension of the body (Damasio & Dolan, 1999), educators need to consider the "complex interplay between emotional states and cognition" (Jensen, 2008, p. 82), starting with primary emotions, such as our pre-programmed negativity bias and "fight or flight" reactions. A closer look at the autonomic nervous system and social-emotional processes highlights the essential human need to feel safe and avoid any potentially dangerous situation that would cause anxiety and stress (Porges, 2011; 2015).

Feeling safe is critical to human development and learning (Durlak, 2015). Therefore, creating safe, non-threatening environments (physically and mentally) is the sine-qua-non condition to promoting learning. It starts with the way the seating is arranged in the class or avoiding excessive noise when using mobiles for learning on-the-go, and extends to the emotional atmosphere created in the learning environment. While positive emotional states support learning, negative emotions can narrow our scope of attention and thinking (Sousa, 2006), hindering our cognitive processes. Although some level of stress may improve motivation, feeling safe and secure is critical to thinking abilities. Jensen (2008) submits that educators should create environments in which negative emotions are processed and positive ones celebrated. Correspondingly, latest research in language learning points to the significance of fostering positive emotions and reducing negative ones in the classroom (Dewaele & MacIntyre, 2014; MacIntyre & Gregersen, 2012; MacIntyre, Gregersen, & Mercer, 2016).

Digital learning environments introduce additional threats to the learning environment, hence practice of emotional regulation should be incorporated into the design of human-centered digital learning. Mindfulness practices, such as mindful communication, time-outs, deep breathing, meditation, or reflecting on feelings promote emotional regulation; they can increase positive mood and lower rumination and negative internal narrative. By accepting "what-is" non-judgmentally and refraining from internal reactivity, one can increase reflection, positive reappraisal, resulting in a non-threatening learning context that encourages experimentations and communication.

Social Brain

Moreover, our autonomic nervous system unconsciously mediates social engagement, trust, and intimacy in order to ensure safety (Porges, 2011), which has additional implications to the design of learning. Porges (2015) elaborates that social engagement and co-regulation are critical to human experience. This notion is associated with the concept of "social brain," introduced by the evolutionary anthropologist, Dunbar (1998), which addresses the social nature of human condition and cognition (Mercer, 2013). The ability of the social brain to instinctively attune to others, their underlying emotions and mental states may indeed play a role in learning and academic performance (Blakemore, 2010; Mercer, 2013). According to the social brain hypothesis, connecting with and attuning to others helps build new neural connections that are central to learning and teaching (see Mercer, 2013 for a more in-depth discussion of the social brain, language, and goal-directed collective thinking). While this concept deserves more focus in future interdisciplinary research, it is observable that the rapid social interactions, that characterize modern life and digital-based communication, frequently do not support the need of our social brain to share and connect at the levels that produce interpersonal or intrapersonal benefits. It is hence of great importance to slow down and invest in nurturing interpersonal connections.

To this end, one of the strategies that could be integrated into the curriculum is mindfulness-based practices that have been found to reinforce empathy and compassion (Hanson et al., 2009; Hutcherson et al., 2014; Hofmann et al., 2011; Siegel, 2007, 2016) and enrich relationships (Parker, Nelson, Epel, & Siegel, 2015). In addition, mindful listening and speaking strategies are designed to quiet the habitual chatter of the mind thus allowing for deeper communication and language practice. Mindful communication also supports the development of intercultural competences.

Mindfulness Practice in Digital Language Learning: Examples

This examples have been selected based on the feedback from my students, EFL speakers, who experienced the effects of mindfulness practice in their online classroom. An abbreviated list of such practices includes:

- mindfulness and neuroscience training, and discussion forum for students;

- safe, non-threatening, empowering environment (synchronous and asynchronous): choice based on dialogue, focus on process versus product, mindful feedback (language and content), time and space boundaries negotiation;
- self-regulation through self-awareness and reflection: journaling (mind & digital habits); self-inquiry, introspection; insights, "a-ha" moments;
- mindful, respectful, and relational language to express messages of support, gratitude, and compassion;
- centering breathing practice: slow down, notice, and redirect energy/awareness;
- intentional attention practice (focusing attention on intention);
- mindful expression, speaking and listening;
- mindfulness reminders and messages;
- virtual meetings designed to enable attention and emotion regulation;
- socio-emotional presence emphasized;
- conflict handled mindfully;
- mindful reading activities (reading aloud alternating readers by line/sentence, e.g., "lectio divina" to promote attention, varied voices, and deep meaning-making).

Conclusions

Human-centred learning design and practice need to concentrate on the people, their shared human needs and experience. The latest mindfulness research, informed by multidisciplinary studies, highlights the inherent human needs and behaviours, and the way they can be addressed through the body-mind practice exemplified above. The seven attitudinal foundations of mindfulness practice, according to Kabat-Zinn (1990), are the cultivation of non-judging, patience, beginner's mind, trust, non-striving, acceptance, and letting go. Regular mindfulness practice, based on these notions, can alter the function and structure of the brain and actually help the learner train the mind to, among other skills, pay attention in a selective and purposeful way and not get distracted by the abundance of information and other external as well as internal stimuli, including those coming through multiple digital channels. As evidenced in literature, through regular practice, learners can foster their awareness, self-regulation, and resilience. These competences are essential in the context of digital learning characterized by fast pace, fragmentation, and distraction.

In addition, mindfulness practice has proven to promote emotion regulation that is central to cognition and indispensable in overcoming affective barriers common among language learners. Positive emotional climate is also associated with the quality of connection and communication with other people. Learners' social brain and their need for a safe, connected learning environment is essential to successful learning; it can be supported by cultivating socio-emotional presence and mindful communication. A whole-person learning environment also encourages deeper engagement and first-person knowing that can be accessed through reflective practice and expression, for instance journaling, self-inquiry,

and introspection. Inner subjective experience and insights deserve more consideration in the design of learning spaces, as they contribute not only to the personal growth of individual learners, but also to communication and collective meaning-making. Language classroom that encourages mindful listening and speaking combined with other contemplative practices of the body-mind, can promote holistic embodied learning that integrates four language skills with other channels of communication. I submit that just the way we can train our bodies through daily exercise in the gym, we can train our minds in the "neuro gym" of the mindfulness-infused language classroom to become stronger learners and communicators. Further research is needed to explore the many facets of the use of mindfulness practices and concepts in digital language learning. I strongly encourage language educators to contribute to this worthy inquiry.

References

Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical psychology: Science and practice*, *10*(2), 125-143.

Barbezat, D. P., & Bush, M. (2014). *Contemplative practices in higher education: Powerful methods to transform teaching and learning*. John Wiley & Sons.

Becerra, R., Dandrade, C., & Harms, C. (2016). Can Specific Attentional Skills be Modified with Mindfulness Training for Novice Practitioners?. *Current Psychology*, 1-8.

Blakemore, S. J. (2010). The developing social brain: implications for education. *Neuron*, *65*(6), 744-747.

Brown, R. C. (2014). Inner to outer: The development of contemplative pedagogy.

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: mindfulness and its role in psychological well-being. *Journal of personality and social psychology*, *84*(4), 822-848.

Carlson, L. E., Speca, M., Faris, P., & Patel, K. D. (2007). One year pre–post intervention follow-up of psychological, immune, endocrine and blood pressure outcomes of mindfulness-based stress reduction (MBSR) in breast and prostate cancer outpatients. *Brain, Behavior, and Immunity*, *21*(8), 1038-1049.

Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of Behavioral Medicine*, *31*(1), 23-33.

Carson, J. W., Carson, K. M., Gil, K. M., & Baucom, D. H. (2004). Mindfulness-based relationship enhancement. *Behavior Therapy*, *35*(3), 471-494.

Chiesa, A., & Serretti, A. (2009). Mindfulness-based stress reduction for stress management in healthy people: a review and meta-analysis. *The Journal of Alternative and Complementary Medicine*, *15*(5), 593-600.

Coatsworth, J. D., Duncan, L. G., Greenberg, M. T., & Nix, R. L. (2010). Changing parent's mindfulness, child management skills and relationship quality with their youth:

Results from a randomized pilot intervention trial. *Journal of Child and Family Studies*, *19*(2), 203-217.

Damasio, A., & Dolan, R. J. (1999). The feeling of what happens. *Nature*, *401*(6756), 847-847.

David, D. S., Sheth, S. (2009). *Mindful teaching and teaching mindfulness: A guide for anyone who teaches anything*. Simon and Schuster.

Davidson, R. J., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S. F., ... & Sheridan, J. F. (2003). Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic medicine*, *65*(4), 564-570.

de Bruin, E. I., Meppelink, R., & Bögels, S. M. (2015). Mindfulness in higher education: Awareness and attention in university students increase during and after participation in a mindfulness curriculum course. *Mindfulness*, *6*(5), 1137-1142.

Dewaele. J.-M., & MacIntyre, P. D. (2014). The two faces of Janus? Anxiety and enjoyment in the foreign language classroom. *Studies in Second Language Learning and Teaching, 4*(2), 237-274.

Dunbar, R. (1998). The social brain hypothesis. *Evolutionary Anthropology, 6,* 178–189.

Durlak, J. A. (Ed.). (2015). *Handbook of social and emotional learning: Research and practice*. Guilford Publications.

Felver, J. C., & Jennings, P. A. (2016). Applications of mindfulness-based interventions in school settings: An introduction. *Mindfulness, 7*(1), 1-4. https://doi.org/10.1007/s12671-015-0478-4

Goleman, D., & Davidson, R. J. (2017). *Altered traits: Science reveals how meditation changes your mind, brain, and body*. Penguin.

Hart, T. (2004). Opening the contemplative mind in the classroom. *Journal of Transformative Education*, *2*(1), 28-46.

Hanson, R. (2016). *Hardwiring happiness: The new brain science of contentment, calm, and confidence*. Harmony.

Hanson, R., & Mendius, R. (2009). *Buddha's brain.* Oakland: New Harbinger.

Hassed, C., De Lisle, S., Sullivan, G., & Pier, C. (2009). Enhancing the health of medical students: outcomes of an integrated mindfulness and lifestyle program. *Advances in health sciences education*, *14*(3), 387-398.

Haynes, D. (2005). Contemplative practice and the education of the whole person. *ARTS: The Arts in Religious and Theological Studies*, *16*(2), 8-10.

Hofmann, S. G., Grossman, P., & Hinton, D. E. (2011). Loving-kindness and compassion meditation: Potential for psychological intervention. *Clinical Psychology Review*, *13*, 1126-1132.

Hofmann, S. G., Sawyer, A. T., Witt, A. A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, *78*(2), 169–183.

Hölzel, B. K., Hoge, E. A., Greve, D. N., Gard, T., Creswell, J. D., Brown, K. W., ... & Lazar, S. W. (2013). Neural mechanisms of symptom improvements in generalized anxiety disorder following mindfulness training. *NeuroImage: Clinical*, *2*, 448-458.

Hutcherson, C. A., Seppala, E. M., & Gross, J. J. (2008). Loving-kindness meditation increases social connectedness. *Emotion*, *8*(5), 720.

Hyland, T. (2009). Mindfulness and the therapeutic function of education. *Journal of Philosophy of Education*, *43*(1), 119-131.

James, C., & Garrett, P. (1991). *Language awareness in the classroom*. Longman, London.

Jennings, P. A., Frank, J. L., Snowberg, K. E., Coccia, M. A., & Greenberg, M. T. (2013). Improving classroom learning environments by Cultivating Awareness and Resilience in Education (CARE): Results of a randomized controlled trial. *School Psychology Quarterly*, *28*(4), 374.

Jensen, E. (2008). *Brain-based learning: The new paradigm of teaching*. Corwin Press.

Jha, A. P., Krompinger, J., & Baime, M. J. (2007). Mindfulness training modifies subsystems of attention. *Cognitive, Affective, & Behavioral Neuroscience*, *7*(2), 109-119.

Jha, A. P., Rogers, S. L., & Morrison, A. B. (2014). Mindfulness training in high stress professions: Strengthening attention and resilience. In *Mindfulness-Based Treatment Approaches (2nd Edition)* (pp. 347-366).

Kabat-Zinn, J., (1990). Full catastrophe living: Using the wisdom of your body and mind to face stress, pain and illness. *Dell Publishing, New York*.

Kabat-Zinn, J. (1994). Wherever you go, there you are: Mindfulness meditation in everyday life. *London: Piatkus Google Scholar*.

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present, and future. *Clinical Psychology: Science and Practice*, *10*(2), 144-156.

Kays, J. L., Hurley, R. A., & Taber, K. H. (2012). The dynamic brain: neuroplasticity and mental health. *The Journal of Neuropsychiatry and Clinical Neurosciences*, *24*(2), 118-124.

Langer, E. J. (1992). Matters of mind: Mindfulness/mindlessness in perspective. *Consciousness and Cognition*, *1*(3), 289-305.

Langer, E. J. (1993). A mindful education. *Educational Psychologist*, *28*(1), 43-50.

Langer, E. J. (2000). Mindful learning. *Current Directions in Psychological Science*, *9*(6), 220-223.

Langer, E. J., & Moldoveanu, M. (2000). The construct of mindfulness. *Journal of Social Issues*, *56*(1), 1-9.

Leyland, A., Rowse, G., & Emerson, L. M. (2019). Experimental effects of mindfulness inductions on self-regulation: Systematic review and meta-analysis. *Emotion (19)*1, 108-122.

Levy, D. (2016). Mindful tech: Developing a more contemplative and reflective relationship with our digital devices and apps. *The Journal of Contemplative Inquiry*, *3*(1).

Lillard, A. S., & Erisir, A. (2011). Old dogs learning new tricks: Neuroplasticity beyond the juvenile period. *Developmental review*, *31*(4), 207-239.

MacIntyre, P., & Gregersen, T. (2012). Emotions that facilitate language learning: The positive-broadening power of the imagination. *Studies in Second Language Learning and Teaching, 2*(2), 193-213.

MacIntyre, P. D., Gregersen, T., & Mercer, S. (2016). *Positive psychology in SLA*. Buffalo, NY: Multilingual Matters.

Maynard, B. R., Solis, M., Miller, V., & Brendel, K. E. (2017). Mindfulness-based interventions for improving cognition, academic achievement, behavior and socio-emotional functioning of primary and secondary students. *Campbell Systematic Reviews*, *13*.

Meiklejohn, J., Phillips, C., Freedman, M. L., Griffin, M. L., Biegel, G., Roach, A., ... & Isberg, R. (2012). Integrating mindfulness training into K-12 education: Fostering the resilience of teachers and students. *Mindfulness*, *3*(4), 291-307.

Mercer, N. (2013). The social brain, language, and goal-directed collective thinking: A social conception of cognition and its implications for understanding how we think, teach, and learn. *Educational Psychologist*, *48*(3), 148-168.

Mind and Life Education Research Network (MLERN). (2012). Contemplative Practices and Mental Training: Prospects for American Education. *Child Development Perspectives*, *6*(2), 146–153. http://doi.org/10.1111/j.1750-8606.2012.00240.x

Miller, J. P. (2013). *The contemplative practitioner: Meditation in education and the workplace*. University of Toronto Press.

Miller, J. P., Irwin, M., & Nigh, K. (2014). *Teaching from the thinking heart: The practice of holistic education*. Information Age Publishing, Charlotte, NC.

Moldoveanu, M. (2016). The Construct of mindfulness amidst and along conceptions of rationality. In *Critical Mindfulness* (pp. 25-43). Springer, Cham.

Ortner, C. N., Kilner, S. J., & Zelazo, P. D. (2007). Mindfulness meditation and reduced emotional interference on a cognitive task. Motivation and Emotion, 31(4), 271-283.

Palalas, A. (2018). Mindfulness in mobile and ubiquitous learning: Harnessing the power of attention. In Yu S., Ally M., Tsinakos A. (Eds.) *Mobile and ubiquitous learning: Perspectives on rethinking and reforming education* (pp. 19-44). Springer, Singapore.

Palalas, A., Mavraki, A., Drampala, K., & Krassa, A. (2018, April). Mindfulness in online and blended learning: Collective autoethnography. In A. Palalas, H. Norman, & P. Pawluk (Eds.), *Blended learning in the age of social change and innovation: Proceedings of the 3rd World Conference on Blended Learning* (pp. 84-96). Greece: International Association for Blended Learning.

Palalas, A., Karakanta, C., Mavraki, A., Drampala, K., & Krassa, A. (in press). Mindfulness in online learning: Supporting learner self-regulation.

Parker, S. C., Nelson, B. W., Epel, E. S., & Siegel, D. J. (2015). The science of presence. *Handbook of mindfulness: theory, research, and practice*, 225.

Perkins, D., Jay, E., & Tishman, S. (1993). New conceptions of thinking: From ontology to education. *Educational Psychologist*, *28*(1), 67-85.

Pirson, M., Langer, E. J., Bodner, T., & Zilcha-Mano, S. (2012). The development and validation of the Langer mindfulness scale-enabling a socio-cognitive perspective of mindfulness in organizational contexts. Fordham University Schools of Business Research Paper.

Porges, S. W. (2011). The polyvagal theory: Neurophysiological foundations of emotions, attachment, communication, and self-regulation. *Journal of the Canadian Academy of Child and Adolescent Psychiatry, 21*(4), 313.

Porges, S. W. (2015). Making the world safe for our children: Down-regulating defence and up-regulating social engagement to 'optimise'the human experience. *Children Australia*, *40*(2), 114-123.

Ratanasiripong, P., Park, J. F., Ratanasiripong, N., & Kathalae, D. (2015). Stress and anxiety management in nursing students: biofeedback and mindfulness meditation. *Journal of Nursing Education*, *54*(9), 520-524.

Rose, E. (2013). *On Reflection: An Essay on Technology, Education, and the Status of Thought in the 21st Century*. Canadian Scholars' Press.

Schonert-Reichl, K. A., Oberle, E., Lawlor, M. S., Abbott, D., Thomson, K., Oberlander, T. F., & Diamond, A. (2015). Enhancing cognitive and social–emotional development through a simple-to-administer mindfulness-based school program for elementary school children: A randomized controlled trial. *Developmental psychology*, *51*(1), 52.

Schonert-Reichl, K. A., & Roeser, R. W. (Eds.). (2016). *Handbook of mindfulness in education: Integrating theory and research into practice*. Springer.

Schwartz, J. M. & Begley, S. (2002). *The mind and the brain: neuroplasticity and the power of mental force*. New York: Harper Collins.

Schwartz, J. M., Stapp, H. P., & Beauregard, M. (2005). Quantum physics in neuroscience and psychology: a neurophysical model of mind–brain interaction. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *360*(1458), 1309-1327.

Sedlmeier, P., Eberth, J., Schwarz, M., Zimmermann, D., Haarig, F., Jaeger, S., & Kunze, S. (2012). The psychological effects of meditation: a meta-analysis. *Psychological Bulletin*, *138*(6), 1139.

Shapiro, S. L., Brown, K. W., & Biegel, G. M. (2007). Teaching self-care to caregivers: Effects of mindfulness-based stress reduction on the mental health of therapists in training. *Training and Education in Professional Psychology*, *1*(2), 105.

Siegel, D. (2007). *The mindful brain: Reflection and attunement in the cultivation of well-being*. NY: W.W. Norton & Company.

Siegel, D. J. (2016). *Mind: A journey to the heart of being human*. WW Norton & Company.

Song, Y., & Lindquist, R. (2015). Effects of mindfulness-based stress reduction on depression, anxiety, stress and mindfulness in Korean nursing students. *Nurse Education Today*, *35*(1), 86-90.

Sousa, D. A. (2006). *How the brain learns.* Corwin Press*,* Thousand Oaks.

Stone, L. (2006). Attention: The *Real* Aphrodisiac. *Talk at the Emerging Technology Conference*, San Diego, CA, 2006.

Svalberg, A. (2007). Language awareness and language learning. *Language Teaching, 40*, 287-308.

Tang, Y. Y., Ma, Y., Wang, J., Fan, Y., Feng, S., Lu, Q., ... & Posner, M. I. (2007). Short-term meditation training improves attention and self-regulation. *Proceedings of the National Academy of Sciences*, *104*(43), 17152-17156.

Teasdale, J. D., Segal, Z. V., Williams, J. M. G., Ridgeway, V. A., Soulsby, J. M., & Lau, M. A. (2000). Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and Clinical Psychology*, *68*(4), 615.

Vickery, C. E., & Dorjee, D. (2016). Mindfulness training in primary schools decreases negative affect and increases meta-cognition in children. *Frontiers in Psychology*, *6*, 2025.

Walther, J. B. (2007). Selective self-presentation in computer-mediated communication: Hyperpersonal dimensions of technology, language, and cognition. *Computers in Human Behavior, 23*(5), 2538-2557.

Zajonc, A. (2013). Contemplative pedagogy: A quiet revolution in higher education. *New Directions for Teaching and Learning*, *2013*(134), 83-94.