European Journal of Applied Positive Psychology
Vol 2, Article 3, 2018
ISSN 2397-7116
www.nationalwellbeingservice.com/journals

REVIEW PAPER

Efficacy of mindfulness in the classroom

Suzanne M DeLuca[1], Jess L Gregory[1] and Danette V Day[2]

Abstract

This article contextualizes mindfulness and examines a portion of the literature on mindfulness based interventions in the classroom. Mindfulness or the result of intentional, moment-to-moment awareness in a kind and discerning way can be cultivated with practice. There are many different mindfulness practices which can be utilized in a classroom environment. Some of the popular mindfulness practices are grounded in Kabat-Zinn's Mindfulness Based Stress Reduction program which incorporates sitting meditation, mindful yoga, mindful eating and the body scan. Mindfulness practices can be modified to fit the classroom setting and the grade level of students. With a growth in the number of studies involving mindfulness in the classroom this article explores the question of its efficacy with children and seeks to answer the question: is mindfulness in the classroom effective and what are the studies reporting?

Keywords: *Mindfulness - efficacy - schools - classrooms - academic success - student success - social-emotional learning*

Abstrait

Cet article contextualise la pleine conscience et examine une partie de la littérature sur les interventions basées sur la pleine conscience dans la salle de classe. La pleine conscience ou le résultat d'une conscience intentionnelle et momentanée d'une manière aimable et perspicace peut être cultivée avec la pratique. Il existe de nombreuses pratiques de pleine conscience qui peuvent être utilisées dans un environnement de classe. Certaines des pratiques populaires de pleine conscience sont fondées sur le programme de réduction du stress basé sur la pleine conscience de Kabat-Zinn qui comprend la méditation assise, le yoga conscient, l'alimentation consciente et le scan corporel. Les pratiques de pleine conscience peuvent être modifiées pour s'adapter au milieu de la classe et au niveau scolaire des élèves. Avec une augmentation du nombre d'études impliquant la pleine conscience dans la salle de classe, cet article explore la question de son efficacité avec les enfants et cherche à répondre à la question: la pleine conscience dans la salle de classe est-elle efficace et quelles sont les études?

Mots clés: *Pleine conscience - efficacité - écoles - salles de classe - réussite scolaire - réussite des élèves - apprentissage socio-émotionnel*

Corresponding author

Jess L Gregory
Educational Leadership and Policy Studies, Southern Connecticut State University, 501 Crescent Street, New Haven, CT 06515, USA
email: gregoryj2@southernct.edu

Affiliations

[1] Southern Connecticut State University, New Haven, CT, USA

[2] Education Department, Fitchburg State University, Fitchburg, MA, USA

Funding

None declared

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest in respect to their authorship or the publication of this paper.

Acknowledgments

Figure 1. Mindfulness Meditation Model (*Tang, Hölzel, & Posner, 2015;* Reprinted by permission from Macmillan Publishers Ltd: Nature Reviews Neuroscience, advance online publication, 18 March 2015 (doi:10.1038/nrn3916))

Mindfulness is quickly becoming a mainstream term and practice in fields such as medicine, health services and more recently, school classrooms (Weare, 2013). In the last decade, professionals in many fields have begun recommending mindfulness-based interventions to promote health and well-being (Burke, 2009). As it relates to education, with the expanding demands of testing and standards-based curricula shrinking the available time during the school day, the question becomes; is mindfulness effective in the classroom? This paper is a review of the mindfulness literature in education settings it aims to define and contextualize mindfulness and examine several on mindfulness-based interventions in the elementary and secondary classroom. This review of mindfulness in the classroom literature seeks to specifically explore the efficacy of mindfulness.

Background

The term mindfulness describes moment-to-moment awareness and is cultivated by purposefully paying attention to things one may not usually give credence to in everyday life (Kabat-Zinn, 1990). Mindfulness is the awareness that results from intentionally paying attention in a kind and discerning way (Shapiro, Carlson, Astin, & Freedman, 2006). Originally established in Eastern meditation practices, mindfulness is based in concepts such as non-striving, non-judgment, patience, trust and kindness (Kabat-Zinn, 1990). Thera (1962) describes mindfulness as the heart of Buddhist meditation. Secularization of mindfulness in the western world was popularized in the 1970's by Kabat-Zinn, a researcher at the University of Massachusetts Medical Center. He created the first Mindfulness Based Stress Reduction (MBSR) program at UMass, then called the Stress and Relaxation Program which was an eight-week course on mindfulness for chronically ill patients (Kabat-Zinn, 1982).

In a landmark study, because it was the first of its kind, Kabat-Zinn (1982) revealed that 65% of patients with chronic pain who participated in 10-weeks of the Stress Reduction and Relaxation Program had reduced levels of pain from practicing mindfulness meditation. A striking observation was many of the patients had considerable improvement in all pain categories and improvement was maintained at 2.5, 4, and 7 months follow up. One of the reasons mindfulness is effective at reducing pain is because it invokes the relaxation response, which is a set of neurological processes in the brain responsible for calming individuals (Lazar, et al., 2000).

Research in neuroscience is beginning to reveal that meditation experiences can alter areas of the brain and this phenomenon is called neuroplasticity (Lutz, Dunne, & Davidson, 2007). Neuroplasticity in simple terms means that neurons change as a result of repeated experience and then create a corresponding change in behavior (Shaw & McEachern, 2001). Mindfulness includes at least three neurological components that work together to compose a process of enhanced attention, improved emotion regulation and altered self-awareness (Tang, Holzel, & Posner, 2015). Figure 1 is one model of mindfulness meditation proposed by Tang, et al. (2015) that depicts the different stages of mindfulness meditation practice and the early, middle and advanced stages of mindfulness practice involving varying amounts of effort. This is consistent with Kabat-Zinn's (1990) components of mindfulness; awareness, attention and non-striving.

This model illustrates how mindfulness helps with self-regulation of emotions, awareness and attention. Schools implementing mindfulness are typically trying to assist students to enhance these aspects of self-regulation and attention (Beauchemin, Hutchins, & Patterson, 2008). Practiced over time, mindfulness can lead to what Tang, et al. (2015) depict in the model as effortless where one no longer strives or exerts excessive effort and is simply present in the moment. Similarly, Shapiro, et al. (2006) discuss the attitudes of patience, compassion and non-striving inherent in mindfulness that help one develop the capacity to sit with unpleasant experiences and avoid the tendency to always seek pleasing experiences. Again, here is the notion of being with whatever is occurring nonjudgmentally in the moment whether pleasant or not.

Equally important to neurological aspects of mindfulness is the cognitive element of mindfulness. Langer (1997) examines mindfulness through a cognitive lens opposed to a meditation viewpoint. The majority of her mindfulness research is based

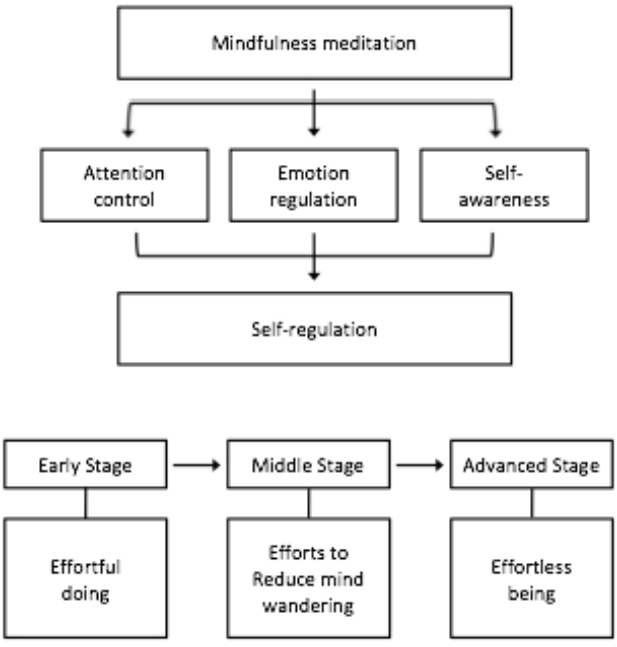

Figure 1: Mindfulness Meditation model (Tang, Hölzel, & Posner, 2015; Reprinted by permission from Macmillan Publishers Ltd: *Nature Reviews Neuroscience*, advance online publication, 18 March 2015 (doi:10.1038/nrn3916))

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on non-meditative interventions. According to Langer (1997), a mindful approach to life and learning includes continuous creation of new categories, openness to new information and an awareness of more than one perspective. Langer & Moldoveanu (2000a) argue mindfulness is the process of drawing novel distinctions which results in keeping one rooted in the present moment. Awareness of and paying attention to the present moment is a key aspect of mindfulness.

Mindfulness is an organized discipline to create new kinds of control and wisdom in one's life based on the inner abilities for relaxation, paying attention and awareness (Kabat-Zinn, 1990). These qualities when practiced over time can lead to reduced stress, anxiety and promote social functioning and academic performance in students (Beauchemin, Hutchins, & Patterson, 2008). Mindfulness developed in teachers produced calmness and the clarity needed to recognize what instruction was necessary, what issues were important to focus on, and how to de-stress when teaching their students (Author, 2014).

A two-component mindfulness model described by Bishop et. al (2004) which is similar to Kabat-Zinn's definition involves first, self-regulating attention on immediate experiences and second, adopting a specific orientation toward experiences depicted by curiosity, openness and acceptance. A main component of mindfulness is awareness of the present and maintaining a non-judgmental attitude toward whatever thought, feeling or physical sensation arises.

In contrast to mindfulness is the construct of mindlessness which Langer (1997) describes as being stuck in old categories and automatic behavior that functions from a lone perspective. This automatic way of being causes one to miss opportunities to think creatively and takes one out of the present moment. In many ways, this form of mindlessness is rampant in today's educational systems globally where students are rewarded for learning by rote and being taught there is a single way to learn a specific topic. Empirical data affirm that those in the mindfulness test group show superior creativity, learning and more novel experiences opposed to those in the control group (Langer, 1997, 2000a).

The Practices of Mindfulness

There are many different mindfulness practices which can be utilized in a classroom environment. Some of the popular mindfulness practices are grounded in Kabat-Zinn's Mindfulness Based Stress Reduction program which incorporates sitting meditation, mindful yoga, mindful eating and the body scan (Kabat-Zinn, 1990). Schure, Christopher & Christopher, (2008) utilized yoga, meditation and qigong with graduate students. Mindful Schools, an organization dedicated to bringing mindfulness practices in schools incorporates a walking mindful activity, body scan and breath meditation with students (Mindful Schools, n.d.). The different practices can be modified to fit the setting and grade level.

The sitting meditation consists of sitting in a comfortable position on a chair or on a cushion on the floor. The meditator is instructed to close their eyes or gaze down at the floor and then to focus their attention on the inhale and exhale. This is referred to as vipassana or insight meditation in the Buddhist tradition (Black, Milam, & Sussman, 2009). However, in a secular setting typically mindfulness meditation practice is introduced as breath awareness or simply sitting meditation.

Body scan is another form of mindfulness meditation practice and it involves laying down on the floor or on a mat in comfortable clothing for the duration of the exercise. The meditator is guided through a 30-minute meditation that begins with focusing attention on one's toes and ends with attention focused on the crown of the head. The object of the body scan is to be present with and aware of sensations in each area of the body. The meditator is guided to hold a non-judgmental attitude and to bear witness to whatever arises during the meditation. An attitude of acceptance is suggested and as the mind wanders the meditator is guided back to the present moment. Body scan is part of the regular Mindfulness Based Stress Reduction practice as described by Kabat-Zinn (1990).

Mindful yoga is another common practice in mindfulness and it typically involves a 30-minute gentle yoga session although it can be modified for different settings. Yoga means "yoke" or "to join" in Sanskrit and it is the practice of uniting our spirit and body (Sivinanda Yoga Center, 2000). In mindful yoga, the form of yoga practiced is Hatha Yoga which is the physical practice of yoga, differentiated from the philosophical and spiritual practice also part of yoga tradition (Salmon, Lush, Jablonski, & Sephton, 2008). An individual is guided through a series of basic yoga poses with the intention to be aware of body sensations in the present moment while maintaining an attitude of non-striving. This awareness and non-striving, that is, the attitude of not forcing or trying to attain a particular perfect posture is the mindfulness framework of the yoga practice. Yoga also helps individuals to increase strength and flexibility (Sivinanda Yoga

Center, 2000). In the context of mindfulness, yoga is considered mindful movement (White, 2012).

Eating mindfully is another activity regularly practiced in the Mindfulness Based Stress Reduction curriculum. Traditionally, the meditation practice is done with participants eating a raisin (Kabat-Zinn, 1990). Individuals are given a single raisin and are instructed to hold the raisin in their hand, look at it closely and notice it's color, texture and smell. The raisin is then brought to the lips slowly and individuals notice any sensations of salivation or body changes in anticipation of eating the raisin. Finally, participants are told to put the raisin in their mouth and chew slowly while bringing full attention to how it feels in their mouth and notice how the raisin tastes. Kabat-Zinn reports most people find the activity highly satisfying and they feel as though they are tasting a raisin for the first time. In a study by Kidd, Graor and Murrock (2013), women in a mindful eating group reported feeling more confident and in control as they discovered how their thoughts and feelings affected eating. Clearly, mindful eating can have a positive impact on an individual as shown by these studies. However, in a classroom setting it could pose an issue due to children with food allergies so educators may need to skip or modify that particular practice.

PURPOSE

While the preceding section served as a primer on mindfulness and its practice, the next section focuses on mindfulness in the classroom and a review of several research studies completed across the country and abroad with children in school. The studies are varied and the ages range from elementary to high school level. This section attempts to explore to what degree mindfulness in the classroom is an effective intervention.

FINDINGS

Mindfulness in the Classroom

In the last two decades, there has been a plethora of research and interventions involving mindfulness and adults (van de Weijer-Bergsma, Langenberg, Brandsma, Oort, & Bogels, 2014). Recently, however, the field of research has shifted to examining mindfulness interventions with children and adolescents specifically in the school setting (van de Weijer-Bergsma, 2014, et al.). With recent studies of mindfulness in the classroom we explore the efficacy of mindfulness in the classroom with children. Is mindfulness in the classroom effective and what are the studies reporting? Baer (2003) argues mindfulness is efficacious clinically in adults but does this hold true for children? This section will focus on a sample of studies involving children and adolescents in classrooms who have participated in mindfulness interventions, and implications for future educational leadership.

In many scenarios, the curricula for primary and secondary school students in a mindfulness-based intervention focuses on age-appropriate mind and body practices (Meiklejohn et al., 2012). The goal of the practices can vary from school to school but generally are targeted at increasing attention, focus, social and emotional learning, self-regulation, and reducing stress (Meiklejohn et al.). Typically, schools either hire a mindfulness trainer to implement the program directly to students, or school teachers are trained in mindfulness and they teach the practice to their classroom for a set period of time, anywhere from 6-12 weeks (Britton et al., 2014). There are pros and cons of each implementation model which are beyond the scope of this review.

Social and emotional learning (SEL) is a key aspect in education curricula as educators strive to, not only help students achieve academically, but also provide enrichment and support for emotional competence (Schonert-Reichl et al., 2015). Mindfulness-based interventions fit congruently within a social-emotional framework because mindfulness is heavily focused on helping one to be present with their emotions, thoughts, and physical sensations with an aim to reduce stress and promote self-regulation (Kabat-Zinn, 1990). According to Kabat-Zinn (1990) self-regulation is the process of maintaining stability of functioning, and at the same time adaptability to new situations. A study by Schonert-Reichl et al. (2015) investigated the effectiveness of an SEL program using mindfulness interventions and reported that mindfulness training in combination with practicing optimism, gratitude and kindness helped students improve cognitive skills and gain significant increases in social and emotional competence. Facilitating student learning of this critical skill through the process of mindfulness is a potential argument to educational leadership for even wider use of mindfulness in the classroom.

In order for children to learn it is critical they have the capacity to focus their attention (Napoli, Krech, & Holley, 2005). Mindfulness is one vehicle to attaining focus and attention because much of the practice of mindfulness is training the mind to focus attention on the present moment. In a randomized trial of mindfulness-based cognitive therapy to promote attention,

European Journal of Applied Positive Psychology 2018, 2, Article 3, ISSN 2397-7116

results indicated that after 12 weeks of mindfulness, children exhibited significantly less attention problems compared to the start of the mindfulness program (Semple, Lee, Rosa, & Miller, 2010). Similarly, in a quantitative research study by Napoli et al., (2005) results supported a possible treatment effect on selective attention. Langer (1997) notes that employing mindfulness interventions with research subjects repeatedly shows the ability to focus and remember specific details opposed to those in control groups. Based on some of these findings it appears mindfulness can be effective in helping students gain focus and attention.

In addition to increasing focus and attention, mindfulness has been shown to help reduce stress in students from elementary school to secondary school (Mendelson et al., 2010; Metz et al., 2013; van de Weijer-Bergsma et al., 2014). A study in an elementary school in the Netherlands showed mindfulness had an effect on primary prevention of stress in children (van de Weijer-Bergsma et al., 2014). Post-test results 7 weeks later revealed mindfulness continued to have a primary preventive effect on stress (van de Weijer-Bergsma et al., 2014). The results are significant because it demonstrates the possibility of mindfulness to not only help reduce stress but to prevent stress from occurring. A mindfulness-based stress reduction intervention with adolescents reported a decrease in stress related symptoms such as headaches, jaw tightness and nervous leg movement (Sibinga et al., 2011). In times of stress it can be beneficial to incorporate a healthy way of coping which is precisely the gift mindfulness offers to many who practice.

Thus far, mindfulness in the classroom has been shown to help increase focus, reduce stress and enhance social and emotional learning. (Baer, 2003; Mendelson, et al., 2010, Schonert-Reichl et al., 2015 & Semple, et al., 2010) This evidence based body of research is hopeful for leaders and students in education as these qualities are key for success in school. It might be worth school leader's efforts to explore mindfulness for implementation at their school based on the research. The next section discusses some of the criticisms of mindfulness research, the efficacy of mindfulness and recommendations for the future.

Mindfulness in the classroom research is often criticized for lacking large and randomized controlled studies (RCT's) (Baer, 2003; Greenberg & Harris, 2012). However, Mendelson et al. (2010) performed such a study utilizing yoga, breathing techniques and guided mindfulness practices with urban fourth and fifth grader students who were roughly 9 to 11 year old. The study found support for feasibility in implementing mindfulness in urban public schools and support for mindfulness in reducing stress among youth (Mendelson et al., 2010). In another randomized controlled study with 300 urban student participants, researchers found that mindfulness instruction improved psychological functioning and may alleviate negative effects of stress and trauma-associated symptoms of youth (Sibinga, Webb, Ghazarian, & Ellen, 2016).

Though there are some valuable randomized mindfulness studies published, researchers in the field call for more high quality, empirical, large scale, robust studies to further this growing field (Greenberg & Harris, 2012; Baer, 2003; Burke, 2010). However, this can be challenging as K-12 classroom sizes tend to be small which inhibits large numbers for RCT's. Additionally, program fidelity should be considered as well. Strong assurances of fidelity can draw money to programming yet there would need to be some type of built in mechanism to ensure fidelity especially since there is such a wide array of avenues through which to teach and implement mindfulness.

Research on the impacts of mindfulness in the classroom is nascent and while several studies show reasonable support for feasibility and acceptability of mindfulness with children, these are limited by empirical evidence of efficacy with younger groups of students (Burke, 2011). Specifically addressing the guiding question of this review, is mindfulness in the classroom effective; the research reported illustrates that the implementation for mindful practices is promising to improve focus and attention, to reduce stress and to cultivate social and emotional learning competency (Beauchemin, et al., 2008; Semple, et al., 2010; Sibinga et al., 2011). Baer (2003) notes mindfulness-based stress reduction may meet the criteria for the "probably efficacious" designation because it was shown to be more effective than wait-list control groups. This is encouraging evidence for the continuation and expansion of mindfulness in the classroom.

There is a call for educational leadership to incorporate mindfulness in the classroom to enhance learning and promote educational change (Langer & Moldoveanu, 2000b; Meiklejohn, et al., 2012). Even though the field of mindfulness in the classroom is still growing many schools are implementing the practice with success (Metz, et al., 2013; Schonert-Reichl, et al., 2015; White, 2012). These early successes can be used as arguments to further the field and persuade leadership to embrace wider classroom implementation. Additionally, mindfulness is well-documented to be highly effective in the adult population over two decades of studies (Baer, 2003; Davidson, et al., 2003; Kabat-Zinn, 1982;

Morone, Greco, & Weiner, 2008). Not only does this support the use of mindful practices with the adult educators in schools who influence the daily practices in classrooms, but also with the leaders of buildings who steward the climate and culture of schools. This existing research base can also set the stage for further studies to be replicated on the efficacy of mindfulness in the classroom.

CONCLUSIONS

This literature review sought to explore efficacy of mindfulness in the classroom. After examining several studies on mindfulness-based interventions in both elementary and secondary classrooms results indicate that mindfulness in the classroom is showing promise in improving focus and attention, reducing stress and cultivating social and emotional competency. Although many of the studies included are small and there is room for more randomized controlled trials and larger studies, the field of research on mindfulness is growing. Leaders in education could improve their schools by including mindfulness in professional learning for educators and promoting mindfulness in the classroom as a tool to help reduce stress and increase focus and social and emotional learning in students based on the evidence provided thus far. Leaders could make a case for funding mindfulness-based interventions if they ground their argument in the literature. However, caution is warranted as mindfulness and the research surrounding its efficacy with children in the classroom are still in a stage of infancy. Yet, positive impacts of mindfulness with adults are well documented, spanning decades, thereby providing further legitimacy to this growing body of research on the effectiveness of mindfulness in the classroom. ■

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Citation

DeLuca, S., Gregory, J. L. , & Day, D. V. (2018). 'Efficacy of Mindfulness in the Classroom', European Journal of Applied Positive Psychology, 2, 3, 1-8. Retrieved from: http://www.nationalwellbeingservice.org/volumes/volume-2-2018/volume-2-article-3/

Biographies

Suzanne DeLuca is with the Educational Leadership and Policy Studies department of Southern Connecticut State University, New Haven, CT, USA
Email: DelucaS2@southernct.edu

http://orcid.org/0000-0002-4003-9933

Jess L Gregory is with the Educational Leadership and Policy Studies department of Southern Connecticut State University, New Haven, CT, USA
Email: gregoryj2@southernct.edu

http://orcid.org/0000-0003-1343-0563

Danette V Day is with the Education Department, Fitchburg State University, Fitchburg, MA, USA
Email: DDay@fitchburgstate.edu

http://orcid.org/0000-0003-3992-051X