# MSUS Culminating Experience Final Report

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Mindiac: Mindfulness for the Sustainability Professional

## 1. Abstract

In recent years, contemplative discourse has guided fields as diverse as psychology, medicine, and spiritual practice. With sustainability's emergence as a caring profession, we believe mindfulness can contribute to the conversation. Exercises that develop skills such as active listening, preventative self-care, and self-awareness are explored through the five facets of mindfulness: non-reactivity, observing, acting with awareness, describing, and non-judging of experience (Baer, Smith, Hopkins, Krietmeyer, & Toney, 2006). Thus, we have created an online publication called Mindiac that utilizes the five facets of mindfulness to help sustainability professionals develop and refine intangible skills that will help them solve sustainability problems. Through interviews, framework identification, research, and online publishing software, fifteen articles on mindfulness were created. The six-part publication will equip sustainability professionals with tools to navigate complex situations in applied settings. The publication can be accessed using this link: https://joom.ag/G9fa

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## 3. Introduction and Background

When a person practices mindfulness, he or she focuses attention on the present moment in a non-judgmental and accepting way (Brown & Ryan, 2003; Kabat-Zinn, 1990; Linehan, 1993; Marlatt & Kristeller, 1999). Although mindfulness has been defined in various ways, all definitions include intentional awareness (Amel, Manning, Scott, 2009). Mindfulness has several components: non-reactivity, observing, acting with awareness, describing, and non-judging of experience (Baer, et. al., 2006).

Mindfulness originated in eastern spiritual traditions, but has recently been adapted for secular applications in the mental-health and medical fields. These applications include dialectical behavior therapy, mindfulness-based stress reduction (MBSR), mindfulness-based cognitive therapy, acceptance and commitment therapy, and relapse prevention for substance abuse (Baer et al., 2006). Each of these applications breaks mindfulness down into a set of skills that can be learned and practiced. Research on the relationship between mindfulness and sustainability is new. What has been done suggests that the practice of mindfulness contributes to subjective well-being, empathy, compassion, effective communication, and sustainable behavior— all of which are pertinent skills and behaviors for sustainability professionals (Ericson, Kjonstad, Barstad, 2014). We believe that helping sustainability professionals to develop intangible skills by providing tangible mindfulness exercises can improve sustainability practice in the same way it has improved practice in mental-health and medical fields.

The success of sustainability professionals is mainly measured by the real-world change they enact (Brundiers, Wiek, 2017). This success depends heavily on developing professional skills like active listening, empathy, self-compassion, self-care, self-awareness, and battling burnout (Brundiers, Wiek, 2017). Although academic settings excel in providing content knowledge and methodological expertise, academia is not proficient in guiding students in the acquisition of these skill sets. Therefore, students are often thrown into learning these skills through volunteering, internships, or employment opportunities. While all are valuable experiences, these opportunities are insufficient in providing self-guided practices to sharpen skills, reflection, peer mentoring, and evidence-supported practices (Brundiers, Wiek, 2017). Plus, while many enter the field because that want to make a positive impact, they often find themselves overwhelmed while tackling sustainability challenges. They experience mental and emotional distress because of the urgency, complexity, and interconnectedness inherent in sustainability issues (Brundiers, Wiek, 2017). Mindiac focuses on enhancing inner sustainability through mindfulness, which emphasizes beneficial elements for the social pillar of sustainability. Exercises included in the publication like active listening and empathy foster increased social abilities. The same intangible skills learned through mindfulness also enhance productivity in the workplace. Through improved self and emotional awareness, preventative self-care, and observation, mindfulness practitioners learn skill sets that help with negotiation, effective communication, handling high workloads, and improve self-confidence in decision making abilities. A study by Slutsky, Chin, Raye, and Creswell (2018) found that employees who participated in a six-week mindfulness training seminar displayed higher levels of focus, conflict resolution, job

satisfaction, rational thinking, and emotional resilience when compared with employees who only participated in a half day mindfulness seminar. Simply put, happy, productive workers are better for the company, individual, and economy as a whole. Although mindfulness training has a focus on internal sustainability, environmental attitudes and behaviors are brought to the forefront when internal awareness of values are discovered. A study by Ericson, Kjønstad, and Barstad (2014) suggests that, "Well-being, empathy, and awareness of values can in turn lead to more sustainable behaviors." Assuming our intentions align with environmental stewardship, mindfulness can improve the individual's impact on the environment. Hence, providing a publication with the tools and resources needed to work on a diverse range of skill sets is necessary for success in the sustainability field.

## 4. Literature Review

The majority of keystone pieces that were represented in our previous literature review are no longer relevant as they focused on mindfulness and millennials. Since our intended audience has shifted to sustainability professionals, we felt it was best to exclude the papers from this literature review. Similarly, our argument supporting connections between mindfulness facets and professional sustainability skills has evolved, so the Amel, Manning, Scott (2009) study has been excluded.

We found that the most cited, respected, and thorough study of mindfulness measures was a paper by Baer, Smith, Hopkins, Krietemeyer, and Toney (2006). The paper examined whether the top five mindfulness questionnaires were internally consistent and correlated with each other, with meditation experience, and measures of other constructs expected to be related or unrelated to mindfulness. The results established that the available mindfulness questionnaires are internally consistent and, to a large extent, correlated with each other. After the analysis, the five questionnaires were administered to 613 undergraduate students five facets of mindfulness were extracted from the psychometric properties to create a consolidated mindfulness framework. The authors concluded that mindfulness is best evaluated using five criteria: non-reactivity, observing, acting with awareness, describing, and non-judging of experience. The five-facet mindfulness framework is the organizational foundation for our mindfulness publication.

To connect mindfulness with sustainability, we needed a second framework that identified core competencies and skills for sustainability professionals. We chose a paper by Brundiers and Wiek (2017) that identifies interpersonal and professional skills needed for sustainability work. The article presents a summary of professional skills that are synthesized from the literature, and explains why those skills are particularly relevant for sustainability professionals. From the publication, we identified six skills and matched them to the appropriate facets and exercises based on the psychological derivation of the skill.

Several studies support the psychological benefits of mindfulness: Hölzel, Lazar, Gard, Schuman-Olivier, Vago, Ott, 2011; Killingsworth, Gilbert, 2010; Banks, Eddy, Angstadt, Nathan, Phan, 2007; Lutz, Slagter, Dunne, Davidson, 2008; Tang Hölzel, Posner 2015; Congleton, Hölzel, Lazar, 2015; Hölzel, Carmody, Vangel, Congleton, Yerramsetti, Gard, Lazar, 2010; Creswell, Way, Eisenberger, Lieberman, 2007. For example, a study conducted by

Creswell et. al (2007) found that the mindfulness practices of being non-judgmental and describing and labeling with words is associated with ever-present emotional reactions. Study participants who regularly practiced mindfulness did not activate the fight-or-flight region of the brain (the amygdala) during a labeling exercise, while participants who did not practice mindfulness did activate the amygdala. In other words, mindfulness practice prevented the study participants from feeling anxious or stressed when they labeled their emotions. Similarly, mindfulness enhanced functioning in the prefrontal cortex (PFC), which aids in decision making. By practicing mindfulness, we can make the brain's decision-making pathways more efficient, and keep the brain from tapping into the flight-or-flight during decision making. By, being non-judgmental, and describing and labeling emotions, sustainability practitioners can approach their ongoing emotional reaction in a useful way. When we practice self-compassion and empathy, we are literally learning to process emotional reactions differently, in a way that make us less likely to let anxiety or stress influence our decisions.

Next, we needed to find self-guided exercises that build specific skills in the Brundiers-Wiek framework. A methodology toolkit from Fritzsche, Fischer, Böhme, and Grossman (2018) contains mindfulness exercises for sustainable consumption. Although consumption is not our focus, we referenced the toolkit throughout production and included the Act Now exercise for our publication. Despite a focus on consumption, the exercise included in the toolkit alleviates the tendency to fall into auto-pilot by suggesting an engaging and productive alternative. Therefore, the exercise in the toolkit address parallel topics in our publication. Additionally, the format and tone of the toolkit has been a useful model. Our research has also led us to reference entire databases and include exercises from the evidence-based sites of Your Skillful Means and the Greater Good Science Center at the University of California, Berkeley. These sources are user-friendly databases where you can input a specific skill and find peer-reviewed articles supporting the effectiveness of the provided exercises.

One well-supported mindfulness method is Mindfulness Based Stress Reduction (MBSR) training. MBSR's effectiveness is proven by Baer, Carmody, and Hunsinger (2012), who detail the procedures of the course as well as the direct benefits that MBSR exhibits. Their study showed consistent MBSR practice enhances mindfulness skills and reduces negative psychological symptoms. These benefits align with the sustainability skills (active listening, self-awareness, battling burnout, preventative self-care, self-compassion, empathy) explained in the Brundiers and Wiek paper, and provide credible support for the mindfulness based exercises we suggest in the publication.

## 5. Project Approach and Intervention Methods

*Preliminary Research*

We developed and administered a survey to gauge the interest in and general knowledge about sustainability among millennials. The survey responses were used to inform our preliminary content for the online publication. The survey group showed a preference for online articles versus printed articles, with 68.7% of millennials rarely reading printed magazines and 66.3% reading articles online regularly. As a result, we changed the format of our publication to be

online. Respondents were familiar with present awareness (the observation facet) as an aspect of mindfulness, but were not inclusive of the other four facets: non-reactivity, non-judgmentalism, acting on autopilot, and describing and labeling with words. The publication aims to provide our audience with a more complete picture of mindfulness. Only 14.5% of respondents were not interested in reading a mindfulness magazine, so we expect the publication to be well received. One notable caveat is that survey respondents were millennials who were not exclusively involved in sustainability.

*Content Criteria Framework*

We conducted a literature review to find out how scholars characterize, measure, and apply mindfulness. The review included peer reviewed scientific papers from Google Scholar and Academic Search Premier. We identified articles for our review by using the keywords "mindfulness based interventions," "wellbeing + mindfulness," "mindfulness frameworks," "mindfulness mechanisms," "mindfulness facets," "mindfulness based facets," "mindfulness strategies for sustainability," "mindfulness characteristics," and "mindfulness + sustainability." In each search, we used articles that contained the maximum number of searched keywords, read them, and determined if they were relevant for our research. We only used articles found on the first two search pages, as pages past that became increasingly irrelevant to our topic. Additionally, we received article leads from the bibliographies of the most relevant articles.

Once we analyzed our guiding frameworks, we needed a way to connect the skills to the facets. In the same fashion as above, we researched the neural and psychological components of the mindfulness facets. We identified articles using the keywords "psychological functions of mindfulness meditations," "neuroscience behind mindfulness," "neuroscience of mindfulness meditation," "how the brain functions," "how mindfulness can change your brain." Similarly, we used the bibliographies of applicable papers as leads to find others. We created a chart (below) that helped us defend specific connections between facets and skills using psychological data, formal mechanisms, and exercises that improve those mechanisms. We start with the facets, which we learned from the Baer et. al (2006) framework. Then, we identify the mechanisms behind each facet using a paper from Hölzel et. al (2011). Next, using cross-checked psychological data research, we addressed how each mechanism affected specific areas of the brain. Then, we researched self-guided mindfulness exercises that impacted the associated brain area. Finally, we connected the exercises to skills that they directly improve using the Brundiers-Wiek (2017) framework and evidence supporting the exercises.

| *Facet* | *Mechanism* | *Associated Brain Areas* | *Exemplary Instructions/Exercise* | *Skills* |
|---|---|---|---|---|
| Non-reactivity | Emotion regulation; expose oneself to internal experience without reactivity | Ventro-medial prefrontal cortex, hippocampus, amygdala | Exposing oneself to whatever is present in the field of aware- ness; letting oneself be affected by it; refraining from internal reactivity<br><br>*Exercises:*<br>• Check the Facts<br>• Pay Attention to Positive Events<br>• Active Listening Exercise, HEAR Exercise | Active Listening |
| Observing | Body Awareness | Insula, temporo-parietal junction | Focus on an object of internal experience; sensory experiences of breathing, emotions, or other body sensations<br><br>*Exercises:*<br>• Full Body Awareness<br>• Emotional Awareness Meditation<br>• A Basic Meditation to Train Awareness | Self-awareness |
| Non-judgmental & Describing and Labeling with Words | Emotion Regulation: reappraisal: decentering | (Dorsal) prefrontal cortex, activation, Amygdala | Approaching ongoing emotional reactions in a different way (non-judgmentally, with acceptance)<br><br>*Exercises:*<br>• Self-compassion Meditation<br>• Disrupting Negative Thought Exercise<br>• Seeing Good in Others Exercise<br>• Emotion Validation | Self-compassion & Empathy |

| *Facet* | *Mechanism* | *Associated Brain Areas* | *Exemplary Instructions/Exercise* | *Skills* |
|---|---|---|---|---|
| Acting on Autopilot | Attention Regulation | Decreased activation of Default Mode Network (DMN)<br><br>Anterior cingulate cortex | Sustaining attention on the chosen object; whenever distracted, returning attention to the object. Becoming aware of mental tendencies and using them purposefully, rather than letting them take over.<br><br>*Exercise:*<br>• Gratitude Practice<br>• Act Now Exercise | Battling Burnout<br>Self-care |

*Content Creation*

Each of the five facets of mindfulness will be a section of the publication. Every section will have three articles. To develop the articles, we conducted interviews with Arnim Wiek and Katja Brundiers, who authored our guiding framework for professional skills in sustainability to find out what intangible skills they find most important for those entering the field. Then, we contacted and conducted interviews with mindfulness experts (Appendix A) to discover what tools and practices can help someone develop those skills.

Every section follows a set format: a profile of the facet (what it is, how to do it, why you should do it, and why we know), a sustainability problem in narrative form that uses the skills in a professional context, and exercises the reader can practice to enhance that skill. The reader will follow a case study through each facet, and gain a full picture of the interconnectedness of mindfulness skills. For instance, being non-reactive and non-judgmental are very intertwined, so applying them in silos is not realistic. Articles will take various forms: storyline narratives, interviews with mindfulness leaders, recommended readings, and interactive links. Upon opening the publication, readers should be able to easily understand and apply the facets of mindfulness.

*Article Review Evaluations*

We intended for each article to be reviewed by an editorial board made up of two sustainability graduate students, two ASU faculty members, and two members of the public unaffiliated with the School of Sustainability. The reviewers would have used a scorecard (see Appendix B) to rate 12 indicators (in the categories of content, design, and grammar) on a scale of 1-4, with 4 being "exemplary." Scores for each article would have been averaged and only articles with a score of at least 36 would have been included in the publication. For articles scoring between 30 and 35, we would have requested feedback and revised before inclusion. However, because of time constraints, we were not able to complete this phase. In its place, we brought articles to be edited at ASU's graduate writing center, the graduate writing tutor for the School of Sustainability, and conducted informal peer reviews.

*Post Publication Survey*

The online publication will provide an optional user survey that solicits immediate thoughts, perspectives, and feedback. The survey is intended to identify immediate changes in thought patterns, perceptions and attitudes towards mindfulness, realization of positive/negative habits, and barriers to implementation from readers. The survey will be located at the end of each section of the publication and will be indicated by a lotus symbol. The brevity of the survey and the consistency of its placement is how we incentivized our audience to take the survey.

## 6. Outcomes/Findings

Our project does not measure the effect on the current state. We anticipate sustainability professionals will read our publication and be encouraged to start a mindfulness practice, but we are not able to measure the success of this intervention. At the end of the publication, and within each section, the reader will be prompted to answer immediate survey questions. This data will not be available for collection or analysis during the time span of the project, however, it will inform us how the publication was received by our audience.

We believe our publication plays into the integration of mindfulness in sustainability by making it easier for sustainability professionals to apply the concepts to their own occupation. We are able to provide evidence and information, an example story, and self-guided exercises to practice the skills discussed in the section. Each piece represents a different pathway to the reader. Since we have variations in styles of communication, we are more likely to reach our audience in a way that they best understand.

## 7. Recommendations

Since we do not have a formal client, our readers are our clients. In the publication, we recommend readers practice self-guided meditation exercises to either start or continue their mindfulness practice. The meditation exercises should be practiced over a long period of time to enhance or refine the skill sets described in the publication. The publication is designed to ease the sustainability professional into the concept of mindfulness by providing an introduction section that describes a brief history about mindfulness, debunking any myths or misconceptions the reader may have, describing what the five facets of mindfulness are, and why mindfulness matters for sustainability professionals. The conclusion section is designed to equip the reader with tools to continue their practice after reading the publication as time constraints and the busyness of life tends to fizzle people out of their practice. In terms of sustainability, the exercises and lessons laced throughout the publication focused predominantly on inner sustainability. We challenged the readers to enhance their self-awareness capacity, regulate

emotions and behaviors, listen and observe intently to the inner self, and allow thoughts to enter and exit non-judgmentally. This intrapersonal competence needs to be developed to assist with interpersonal competence and the four other core competencies (systems thinking, anticipatory, normative, and strategic competence) (Wiek, Withycombe, Redman, 2011).

## 8. Conclusions

Mindfulness is a personal, contemplative practice, and has numerous applications in varying fields. Encouraging sustainability professionals to incorporate mindfulness into their work is a natural fit. Many sustainability challenges take root in human action, so addressing inner sustainability is one of the most effective intervention points. Mindiac is a mere beginning phase in the full integration between sustainability and mindfulness practice. However, the engaging and informative nature of the publication shows professionals how easy it is to incorporate mindfulness into one's daily routine. Our project provides beginners with important tools for starting a mindfulness practice. While we have been able to produce the publication itself, we have not had the time to test the effectiveness of the publication, which could be a separate project. Students in future cohorts may test the effectiveness of the publication through control groups, and supplement the new data with results the in-text survey. Control groups could test the exercises presented in the publication for a predetermined amount of time. How did these exercises impact participants? Was there a change in feelings and behavior in the workplace? Did the participant notice changes in mood? What were some barriers to implementation? Any of these questions are substantial starting points for continued research. Additionally, it would be helpful to gather data on the current state of mindfulness practice in the field of sustainability. Which areas of sustainability are most involved in mindfulness practice? To what extent? Why do some areas practice mindfulness, and others do not? This data can be collected through interviews and testimonies. After the completion of this stage, participants may be asked to participate in the exercises for an allotted time to measure impacts. These measures may be more qualitative than quantitative. In summary, the breadth of mindfulness research in the field of sustainability presents a novel opportunity for students. Our publication is an excellent tool for facilitating that research, acting as a starting point, or providing context for future projects exploring the intersection of contemplative discourse and sustainability.

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# 10. Appendices and Acknowledgments

*Appendix A*

*List of Mindfulness Professionals*

Dr. Arnim Wiek: PhD, Associate Professor, School of Sustainability, ASU

Dr. Daniel Fischer: PhD, Assistant Professor of Sustainability Education, School of Sustainability, ASU

Mr. Jason Papenfuss: PhD Student, School of Sustainability, ASU

Dr. Katja Brundiers: PhD, Assistant Research Professor, School of Sustainability, ASU

Dr. Sari Roth-Roemer: PhD, Health Psychologist in community practice

Dr. Scott Cloutier: PhD, Assistant Professor, School of Sustainability, ASU

Ms. Susan West: Owner and general manager, M2 Well-being, LLC

Ms. Barbara Crisp, Herberger Institute for Design and Arts

*List of Other Interviewees*

Ms. Lois Parshley: Freelance Journalist and Photographer

Ms. Mary Hoff: Ensia Editor and Chief

Ms. Kimber Lanning: Local First Arizona

Appendix B

Quality Control Scorecard
First Draft

**Score Values**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Needs Improvement | Average | Above Average | Exemplary |

| ***Quality Control of Online Magazine*** | |
|---|---|
| *Evidence Standards* | |
| **Indicator** | **Score** |
| Mindfulness facets or mechanisms utilized | x |
| Connects to sustainability in meaningful way | x |
| References at least two credible data sources | x |
| Provides a solution, not just information | x |
| Total = X | |
| *User Experience* | |

| | |
|---|---|
| Grabs audience's attention within introduction | x |
| Meets audience criteria standards | x |
| Proper grammar and writing style | x |
| Clear and effective writing | |
| Total = X | |
| *Aesthetics* | |
| No more than two pages of text without breaks | x |
| Photos are clear, not grainy | x |
| Easy to read font size and style | x |
| Pages are not crowded, airy feel | x |
| Total = X | |