

Designing an Educational Mindfulness Experience for Future Leaders

by

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ABSTRACT

Living in a world filled with mindful leaders is the vision of the Mindfulness & Leadership Club at MIT Sloan School of Management. Yet, the path to developing mindful leaders within an academic setting is unclear and ill-defined. This study uses human-centered design research to develop principles for designing a graduate student educational mindfulness experience. The goal of the experience is to enable graduate students to build a sustainable mindfulness practice and learn how mindfulness applies to leadership. The primary research question explored is: *how might we use design research to create a mindfulness experience for students that builds a lasting habit and develops future mindful leaders?* Secondary research provides insight to understand both the benefits of mindfulness and mindful leadership and existing methods for teaching mindfulness. Findings illustrate the value of mindfulness and mindful leadership, but existing programs do not focus on connecting mindfulness to leadership or focus on graduate students in an academic setting. Primary research, consisting of one survey (n = 52) and 34 interviews, validates the need for mindfulness education within the MIT Sloan graduate student community and informs a refined definition of mindfulness and mindful leadership. Barriers hindering students from developing a habit of mindfulness are identified with recommendations for addressing those barriers. Research findings result in eight design principles that serve to guide the development of a mindful leadership program for graduate students at MIT Sloan, which can be adapted to meet the needs of different graduate school programs. Future efforts can build on this work by co-creating an educational experience for prototyping and testing. To supplement this work, additional research be conducted into existing graduate student mindfulness programs, habit building, and adult learning processes.

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Chapter 1: Introduction

What is mindful leadership, and how might one become a mindful leader? While there may never be one answer to either of these questions, recent research suggests that there is value in trying to find a suitable answer. Mindfulness has become a hot topic; something cited as helping leaders become more effective and focused in the workplace (King & Haar, 2017; Reb et al., 2015; Taylor, 2021; Wasylkiw et al., 2015). Research studying the impact of mindfulness on performance, leadership, and health appears promising, raising questions for how people can put the ambiguous concept into practice. Given the complex, dynamic world we live in today, where leaders constantly have to manage uncertainty and respond to unexpected events, mindfulness is only becoming more critical.

These questions are especially important to contemplate in a business school setting, where graduate students come each year to pursue a variety of degrees that aim to support leadership development. Many hope to learn key skills that will enable them to continue building successful careers, moving up in their respective organizations to take on leadership positions. Some even arrive at school with the goal of developing their leadership capabilities and dedicate time throughout their experience to define their personal leadership style.

Within this unique setting, there is an opportunity to support students in becoming a mindful leader; someone able to realize the benefits seen and heard in research. This is the mission of the Mindfulness & Leadership (M&L) Club within the Massachusetts Institute of Technology (MIT) Sloan School of Management. Founded in 2019, the M&L Club seeks to provide a space for graduate students at the Sloan School of Management to develop mindful leadership capacities and offer a community for students looking to develop or maintain a mindfulness

practice. The club works closely with the MIT Leadership Center, looking for opportunities to collaborate and support one another on initiatives.

Yet, the club is still in its infancy and mindfulness remains a new concept within the Sloan School of Management. The path to developing mindful leadership remains unclear. This is exacerbated by a number of challenges. First, mindful leadership remains ill-defined in the literature. Second, the method for developing mindful leaders in an academic setting is not well studied. Third, the concept of mindfulness is nebulous and can be difficult to grasp. Fourth, there is a diverse group of students with varying mindfulness backgrounds and experiences that are in need of support. Given these challenges, there is a need to further examine how an educational experience for mindful leadership could be designed for graduate students at Sloan and more broadly for other graduate programs.

Furthermore, the M&L Club spent the last three years testing different ideas for developing mindful leaders and building interest within the graduate community. A significant amount of this work centered around supporting the development of mindfulness practices. A number of important considerations were identified through feedback from students, conversations with prior M&L Club presidents, and first hand experience leading the club. First, students shared two critical needs related to mindfulness: (1) they do not know where to start, and (2) they feel that they do not have time to develop a mindfulness practice. Second, club leaders observed two key challenges: (1) students struggle to build and maintain a mindfulness habit, and (2) the intensity of the semester schedule presents constraints due to student availability and stressors. By using a human-centered approach, there is an opportunity to design an education experience aligned to students' needs.

This thesis aims to support the design of such educational mindfulness experience for future leaders in business school. The goal of the experience is to enable graduate students to build a sustainable mindfulness practice and learn how to apply mindfulness in a leadership role. The primary research question explored is: *how might we use design research to create a mindfulness experience for students that builds a lasting habit and develops future mindful leaders?* To answer this question, there are four sub-questions studied. (1) What is mindfulness? (2) What is the relationship between mindfulness and leadership? (3) What are the barriers to developing a mindfulness habit? (4) How can students begin developing into a mindful leader in school? The intended outcome is the development of design principles and guidelines for developing a mindful leadership experience. This output aims to support both the M&L Club and the MIT Leadership Center in further clarifying and refining their approach to developing mindful leaders and providing a starting point for developing similar programs in higher education.

Chapter 2: Background

Five topics are analyzed to provide evidence supporting the need for mindfulness practice development and mindful leaders: (1) how mindfulness is defined, (2) the benefits of mindfulness, (3) how mindfulness has been studied in relation to leadership, (4) the benefits of mindful leadership, and (5) how leadership development has attempted to develop a mindfulness capacity within individuals.

2.1 Defining Mindfulness from Literature

In order to begin designing an educational experience to train future leaders on mindfulness, a foundational understanding of mindfulness and how it is defined in literature is fundamental. Mindfulness is rooted in Buddhism and other contemplative traditions, where awareness and attention are cultivated (Brown & Ryan, 2003). As a result, these practices have existed for over 2,500 years (Wells, 2015). Originally defined in Sanskrit as “Sati,” mindfulness is an essential part of Buddhist practice and promotes attentive awareness and remembering in combination with non-judgement, acceptance, kindness, and friendliness (Passmore, 2019; van Beekum, 2016). In this definition, it is not about promoting well-being, but rather about having a conscious awareness of the here and now (Brown & Ryan, 2003). The history of mindfulness and its traditional understanding needs to be incorporated into any design created to ensure students have a foundational understanding of the origins of mindfulness practice and beliefs.

Mindfulness is often conceptualized as both a trait and a state of being or consciousness (Brown & Ryan, 2003; Pinck & Sonnentag, 2018). However, Sauer & Kohls suggest that mindfulness is rather a way of living, paying attention to perceptual processes (2011). There is a

commonly used secular definition of mindfulness. Definitions may deviate slightly, but the majority define mindfulness as paying attention in a particular way, on purpose without evaluating, analyzing, categorizing, or judging the unfolding experience, and requiring an openness and receptiveness to what's happening, both internally and externally. Mindfulness is described as having many attributes that explain its embodiment. It brings a moment-to-moment awareness of internal emotions and thoughts with an external awareness of what's happening around you in your environment (Pinck & Sonnentag, 2018; Sanyal & Rigg, 2021; Sauer & Kohls, 2011; van Beekum, 2016). Mindfulness requires a curious and open mindset that is accepting and non-judging of the here and now, both positive and negative (King & Haar, 2017; Pinck & Sonnentag, 2018; van Beekum, 2016). It enables a deeper understanding of sensations, emotions, drives, and the self; a more non-reactive, equanimous stance towards experiences; and a greater awareness of one's biases, habits, and assumptions for clearer thinking and more informed decisions (Kenny et al., 2020; Pinck & Sonnentag, 2018; Reb et al., 2015; Sanyal & Rigg, 2021; Sauer & Kohls, 2011; van Beekum, 2016; Wells, 2015). It embodies intention in the present moment and is in contrast to automatic, habitual functioning (Brown & Ryan, 2003; Reb et al., 2015). These descriptions and definitions illustrate how mindfulness is multifaceted and it will be important to incorporate these different attributes into any design for students to gain a holistic perspective.

There are concerns about how mindfulness has taken form in the west. The nickname "McMindfulness" refers to a limited, shallow practice that may not offer holistic benefits, but has become popularized (Reb et al., 2015). These critiques highlight the diversion of mindfulness from traditional Buddhist and contemplative practices, which does not accurately capture the complexity of the original meaning or the Buddha's account of sati (Arendt et al., 2019; van Beekum, 2016). Reb et al. acknowledge that the modern description and practice has benefited many in discovering themselves, yet there are concerns that this new form of mindfulness can

support unwholesome goals and reinforce corporate greed, aversion, and delusion when separated from its ethical foundations (2015; van Beekum, 2016). Rupprecht et al. described a new generation of mindfulness training programs in development. The first generation stripped out the ethical dimension existing within Buddhist understanding of mindfulness and were individualistic, therapeutic, and instrumental. The new generation aims to reincorporate the ethical components from Buddhist traditions (Rupprecht et al., 2019). These concerns must be acknowledged and Buddhist ethical components need to be integrated into the design of this study's solution to ensure the concepts shared are not enabling unethical practices nor causing appropriation of traditional practices.

2.2 Clarifying the Benefits of Mindfulness

Understanding the benefits of mindfulness and its supporting research is important for underwriting the value of developing a mindfulness experience and informing the development of any solution. Today we are living in a world overloaded with information. A significant amount of our time is spent using technology to socialize, learn, work, and navigate the world. Students in business school are in the process of developing new skills, crafting a personalized leadership style, and learning how to effectively work in teams, all while navigating a new landscape. The learning environment is stressful and fast-paced. There are almost endless stimuli being thrown at students, who are trying to prioritize and determine where to exert their energy. The literature identifies a wide range of benefits resulting from mindfulness that can serve students in school. These benefits have the opportunity to enhance the lives of students and support them into the future.

Ample studies demonstrate these **health** benefits. Two meta-analyses found that mindfulness improved anxiety and depressive mood symptoms (Sauer & Kohls, 2011). Wasylikiw et al. cited

a decrease in negative mental health outcomes resulting from rumination (2015). Mindfulness Awareness Practice (MAP) has also been found to benefit those suffering from irritable bowel syndrome, chronic pain, chronic fatigue, and fibromyalgia (Wasylikiw et al., 2015). Sauer & Kohls confirmed this, finding benefits for both psychological and psychophysiological variables (2011; Wasylikiw et al., 2015). In addition to physical and mental health, Kinsler highlighted the value derived from the behavior promoted through mindfulness, which optimizes well-being and human flourishing (2014). There is significant evidence demonstrating the impact of mindfulness on one's health, which can positively impact and support students both in their time at school and beyond.

Stress regulation, self-compassion, and resilience have been found to result from mindfulness practice. Mindfulness enables individuals to be better equipped for dealing with negative affective states and stressful events (Arendt et al., 2019). People become less vulnerable to negative feelings associated with failure, rewards, status, conflicts, and opinions of others. They develop the capacity to observe positives in life. Wells found that mindfulness meditation practice is correlated with positive changes in the brain, including deeper awareness, positive outlooks, neuroplasticity, and resilience (2015). Furthermore, Reb et al. find that self-compassion is fostered through mindfulness, which enables one to repeatedly persist in the face of failure (Reb et al., 2015). Developing a mindfulness practice can support students in managing difficult emotions and building resilience, which can serve them throughout their life.

Mindfulness has been shown to reduce **mind wandering**. Evidence shows that mind-wandering is associated with poor work performance, which is linked to poor delay gratification and working memory. Mohapel describes two neural circuits that pair together, the mind-wandering default mode and the attentional central executive system (2018). The amount of toggling one does between the two systems is associated with one's ability to retain focus. Mohapel found that

excessive multitasking degrades the ability to switch between the two systems, whereas mindfulness practice enhances the neural switch. They argue that people need to engage in activities (e.g., mindfulness practice) that help to restore long-term focus (Mohaphel, 2018). Furthermore, Sauer & Kohls found that mindfulness enhances limited attentional resources, increasing the availability of mental capacities (2011). As such, students that practice mindfulness can benefit from enhanced focus, supporting them in daily activities.

Mindfulness has been shown to increase **empathy**. Both Sauer & Kohls and Lange et al. argue that mindfulness directly fosters empathy in individuals (2011; 2018). Empathy allows individuals to be more understanding by observing and holding the feelings of others, which can support relationship building. Lange et al. argue that a higher level of empathy helps individuals understand others' needs and emotions, which promotes a higher quality relationship (Lange et al., 2018). Lastly, a systematic review found that mindfulness is positively associated with pro-sociality (Rupprecht et al., 2019). Students can benefit from building greater empathy, as it can provide an opportunity to build relationships and support conflict resolution.

Enhanced **self-awareness** is likely to result from mindfulness practice. Kinsler suggests that mindfulness offers a window into the self (Kinsler, 2014). By actively and regularly observing one's own behavior and thoughts, self-knowledge emerges with a deeper understanding of how we interact with others (Passmore, 2019). It also provides insight into our dynamic emotional states and offers an opportunity to understand and accept our emotions (Kinsler, 2014). Building self-awareness can support students in learning how to work with their emotions and giving them more power to shape their interactions with others.

Mindfulness supports the development of a **less biased perspective** and understanding of the world around us. The practice encourages an empirical view of reality, fostering unbiased

information processing (Kinsler, 2014). This enables one to experience, observe, and accept what is present with a non-goal oriented and non-judgmental attitude (Passmore, 2019). By promoting a more receptive stance towards one's surroundings, mindfulness supports a reduction in categorical thinking (Sauer & Kohls, 2011). It also aims to reduce the ego's involvement in the perceiving of the world, which leads to a less defensive manner (Reb et al., 2015). Ultimately, mindfulness provides a grounded understanding of a situation as it exists (Dunoon & Langer, 2011), which can support students in seeing the world more clearly and gaining a greater perspective on any experience they encounter.

Mindfulness improves **communication** skills by supporting the use of more objective language and creating space for active listening. Dunoon identified three interrelated aspects of language that reflect mindful communication: (1) descriptive rather than judgmental language, (2) opting for conditional versus absolute language, and (3) trying to share any hidden information (Dunoon & Langer, 2011). These behaviors aim to cultivate a shared understanding by creating space for discussion and staying open to what others may bring to the conversation. Similarly, Arendt et al. suggest that mindful communication offers individuals the opportunity to fully share their ideas without being influenced by automatic reactions or premature interpretations (Arendt et al., 2019). This communication style can build understanding, compassion, and trust between individuals, which can help students navigate difficult conversations and develop meaningful relationships.

Lastly, mindfulness enhances **emotional regulation**. This supports individuals both internally and in interpersonal relationships. Hulshegar et al. found mindfulness helped improve individuals' emotional regulation strategies (2013). It offers individuals a greater capacity for working with difficult or negative emotions (Rupprecht et al., 2019) and was found to contribute to both greater job satisfaction and reduced stress (Wasylikiw et al., 2015). Additionally, this

capability supports emotional intelligence, which is seen as the ability to recognize and manage emotions of oneself and others in any interaction (Rupprecht et al., 2019). Overall, mindfulness creates space between stimulus and response, allowing one to notice an emotion and choose how to move forward. It allows one to take a step back from their own experience and be more responsive, rather than reactive (Arendt et al., 2019; Reitz & Chaskalson, 2016). Building a greater ability to regulate emotions can support students in their everyday lives.

In summary, there are significant benefits that can result from developing a mindfulness practice. These benefits support students' well-being, their ability to interact with others, and enables the building of meaningful relationships. There is a great opportunity for students to begin cultivating this skill within the school environment. Additionally, these benefits highlight key areas of focus for design and can serve as an incentive to encourage student participation in any educational experience.

2.3 Framing the Relationship Between Mindfulness and Leadership

To validate the need for mindful leaders and inform the development of design principles for mindfulness education, prior research studying the relationship between mindfulness and leadership is reviewed. While students in school may not yet be leading organizations or departments, they can still be a mindful leader of themselves, teams, clubs, or others. This aims to provide a foundational knowledge of the relationship between mindfulness and leadership for informing solution design.

2.3.1 Mindfulness Supports Leadership Style Development

Previous researchers sought to show how mindfulness supports the development of a specific leadership style, rather than focusing on defining mindful leadership itself. These styles are often framed within a workplace setting. Four leadership styles are outlined to explain the previous research conducted.

Table 1: The leadership styles that mindfulness has been shown to support are documented in the table with a definition and the relationship defined between mindfulness and the particular style of leadership.

#	Leadership Style	Definition	Relationship to Mindfulness
1	Transformational Leadership	Defined “as a mutually stimulating relationship between leaders and subordinates” that “supports, inspires, and motivates employees through several behaviors” (Pinck & Sonnentag, 2018, p. 2).	Mindfulness is believed to enable attentive and inspiring behavior that characterizes transformational leadership (van Beekum, 2016). Lange et al. found a positive relationship between mindfulness and transformational leadership (Lange et al., 2018). Additionally, Kroon et al. found mindfulness to compensate for a lack of transformational leadership by fostering employee resilience, self-management and intrinsic motivation (2017).
2	Authentic Leadership	Defined as a multi-level, multi-dimensional construct that allows for unobstructed operation of one’s core self in daily experiences (Kinsler, 2014; Reb et al., 2015). The key components include self-awareness, value, identity, emotions, and motives or goals (Kinsler, 2014). It requires self-awareness and self-regulation and allows for unbiased processing and clarity (Reb et al., 2015).	Both Baron and Kinsler suggest that mindfulness can support leaders in defining their personal motivation and encouraging a less automatic way of living (Baron, 2016; Kinsler, 2014). Additionally, Reb et al. draws the direct connection between mindfulness and awareness, citing mindfulness as a method for developing awareness, which is identified as a gap in the literature (2015)
3	Servant Leadership	Defines those who lead by serving and fostering follower development (Reb et al., 2015). These individuals detach from	Rupprecht et al. found trait mindfulness to be positively related to aspects of servant leadership and follower well-being (Rupprecht et al., 2019).

		self-serving behaviors (Reb et al., 2015).	
4	Self-Leadership	Defined as a self-influencing process that increases personal effectivity and performance (Furtner et al., 2018). Rupperecht et al. described self leadership as distinct but related to active leadership (e.g, transformational), and that improvements are likely to be associated with improvements in leadership style (Rupperecht et al., 2019).	Brown and Ryan identified mindfulness as a contributor to the fulfillment of basic needs via self leadership (2003). Additionally, Furtner et al. found that self-leadership has a positive association with the observation component of mindfulness and suggest that mindfulness may positively influence both self-regulation and self-leadership (Furtner et al., 2018).

Prior research illustrates how mindfulness can support the development of better leaders for the world. Yet, the research is limited in not considering how mindfulness influences leadership more broadly. These authors also fail to define mindful leadership. This presents an opportunity to explore the relationships between mindfulness and leadership more openly to gain a holistic understanding of mindful leadership benefits.

However, Wells, Dunoon, and Langer do offer definitions for mindful leadership. Wells defines mindful leadership as presence-based rather than trait-based, where leaders enact traits by their way of being (Wells, 2015). While this framing of mindful leadership is helpful for differentiating leadership styles, it does not clarify what traits mindful leaders embody nor how its presence is demonstrated by leaders.

In comparison, Dunoon & Langer identified 10 behaviors that are important to practicing mindful leadership that can inform the design of the solution. They argue that openness is the key in applying mindfulness to the practice of leadership (2011). These behaviors include:

1. “Drawing on explicit and implicit aspects of current realities and preferred futures to build a shared understanding regarding a contentious problem” (p. 13);
2. “Engaging the hidden intelligence available in various stakeholders in order to understand and make sense of multiple perspectives” (p. 13);
3. “Working to eliminate perverse patterns and practices of defensive behaviors” (p. 13) and recognizing their own defensive patterns and behaviors;
4. “Eliciting contributions to leadership action from any individual or group” to address the current issue (p. 13);
5. Being aware that those seeking to exercise leadership can never have a monopoly on relevant knowledge and that they bring unconscious beliefs, interests, values, and assumptions;
6. Elevating the quality of the interaction above concerns for task achievement;
7. Accenting deep listening and considering other opinions;
8. Enabling intrinsic motivation in all people rather than looking to a leader for motivation;
9. Observing, reflecting, practicing, and asking the right questions to continue developing their proficiency in this leadership style;
10. Holding the terms leader and leadership as overlapping but distinct constructs.

These are valuable in describing mindful leaders’ interactions with others, actions in various situations, and knowledge. There is an opportunity to validate these behaviors through primary research. Yet, the authors still do not offer a definition of mindful leadership nor do they offer insight for how these behaviors are developed and taught.

2.3.2 The Value of Mindful Leaders

As previously discussed, there are significant benefits to developing a mindfulness practice and when this mindfulness practice is embodied by a leader, there are even greater benefits. Mindful leaders do not only serve themselves, but also their followers. Learning how to be a mindful leader in school offers students an opportunity to be a better leader and support others in the process. Additionally, the benefits outlined further validate the need for developing mindful students who will become future leaders.

Resilient leaders are better able to manage stress and navigate constantly changing professional landscapes (Beddow, 2018), which is particularly relevant given the complex and dynamic world we are living in today, where situations are constantly evolving and unexpected events occur (e.g., COVID-19 Pandemic). Their resilience can support followers in building a tolerance for ambiguity and uncertainty (Pinck & Sonnentag, 2018). Pairing this with an increased focus, mindful leaders are better suited to deal with complex challenges ("Mind the gap: Can mindfulness support effective leadership development," 2020). Additionally, their objective perspective offers clarity for improved decision making and goal implementation (Lippincott, 2018; Reb et al., 2015; Wasylikiw et al., 2015). As such, mindfulness can support improved leadership capabilities.

From an interpersonal perspective, empathetic, self-aware, and emotionally regulated leaders are better able to understand their followers' needs and develop positive, supportive relationships (Lange et al., 2018; Reb et al., 2015). Reb et al. and Pinck and Sonnentag revealed a positive relationship between leader mindfulness and follower outcomes (2015; 2017; Lange et al., 2018). Reb et al. also found that mindful leaders contribute to an increase in employee job performance, job satisfaction, need satisfaction, and reductions in emotional

exhaustion (2015). Furthermore, the improved relationships were cited as key to enhanced teamwork and collaboration ("Mind the gap: Can mindfulness support effective leadership development," 2020). Mindful leaders are better able to care for and improve the overall follower experience.

Lastly, numerous studies show that mindful leaders have enhanced performance. Lange et al. found that highly mindful leaders are better equipped to succeed in their role compared to their counterparts and their study highlights the importance of mindfulness as a tool for optimizing leadership quality (Lange et al., 2018). Similarly, King & Harr found that leadership performance may ultimately be improved through mindful leaders who are more present at work and that managers with higher self-awareness were more likely to demonstrate stronger leadership behaviors (2017). Lastly, Karssiens et al. argue that mindfulness contributes to leadership effectiveness and creativity (2014). Ultimately, there are many benefits that can be derived from mindful leaders who are better able to support themselves, their followers, and their organization. Mindful leaders can better serve the world, and there is an opportunity to begin developing mindful leaders within school, as students' leadership styles and beliefs are still being shaped.

2.4 Mindful Leadership Development Programs

There are multiple ways that people have approached teaching mindfulness to leaders. The table below outlines six different approaches to developing mindful leaders. The objective, outcomes, and implications for this study are outlined for each.

Table 2: Different approaches identified in literature are described with their objectives and outcomes.

Considerations for this study are offered based on the findings.

#	Approach	Objective	Outcomes	Study Considerations
1	8-week Mindfulness Based Stress Reduction (MBSR) Program	Developed by Jon Kabat Zinn, the MBSR program aims to support participants in learning how to see stressors or distressing life events in a different light (Sauer & Kohls, 2011). It is designed to support an individual experience (Baron, 2016).	Khoury et al. conducted a meta-analysis of MBSR studies to evaluate the efficacy of MBSR for nonclinical populations. Results from analyzing 29 studies show that “MBSR is moderately effective in reducing stress, depression, anxiety and distress, and in ameliorating the quality of life of healthy individuals” (Khoury et al., 2015, p.1)	The successful and well-known MBSR program can provide a valuable foundation for sharing a secular mindfulness practice that aims to build a meditation habit. However, the program does not address Buddhist traditions. It is individually focused and does not address leadership capabilities.
2	Intensive Weekend Retreat	The weekend retreat aimed to cultivate systematic development of practice found in traditional forms of mindfulness-based interventions within a community (Wasylikiw et al., 2015).	In the intensive retreat study, results showed the participants had significant increases in mindfulness and corresponding decreases in stress sustained across 8-weeks following the retreat. Furthermore, participants reported significant positive changes in leadership effectiveness (Wasylikiw et al., 2015).	This study shows promising results, however the longevity of sustained practice is unclear and participants self-reported leadership effectiveness, which may limit the results due to personal biases.
3	Three-year Leadership Program	The three-year leadership programs aimed to develop awareness through experiments involving life stories in the first year, develop the ability to have impact through action in their second year, and develop a greater awareness of how to assume leadership of a group in an authentic and motivating way in their fourth year (Sanyal & Rigg, 2021).	Results indicated that participation in the program increased mindfulness scores and showed that mindfulness was positively associated with authentic leadership. These scores showed a slight decrease in the first year before clearly increasing in the following years. Baron asserted this phenomenon resulted from participants initially feeling uncertain or hesitant, doubting their abilities when first exploring these new attitudes and behaviors (Sanyal & Rigg, 2021).	While this approach demonstrates a method for increasing mindfulness, it required three years of participation and after the first year, mindfulness scores decreased. Given the two year time limit of most graduate students, this may not be a feasible option and requires a serious commitment, which may be a challenge given the many priorities held by graduate students today.
4	10-week Workplace Mindfulness Training	The 10-week workplace mindfulness training aimed to transform leader capabilities by providing insights and	In this study, 13 leaders working in six organizations completed a 10-week workplace mindfulness training program. This study showed that the training impacted three	This training appears to be a feasible option and demonstrates positive results. However, the study was conducted in a workplace setting, and it is

		<p>practical tools to increase self-awareness, understand and work with contents of the mind, and engage with followers and teams. The structure is similar to mindfulness-based interventions, but is tailored to the workplace (Rupprecht et al., 2019).</p>	<p>self-leadership capacities: mindful task management, self-care, and self-reflection; and two leadership capacities: relating to others and adapting to change (Rupprecht et al., 2019). Specifically, the study showed that participants gained self-awareness and became more attuned to their personal limits and need for self-care. They enhanced their ability to work with difficult emotions, both within themselves and with others. They improved their ability to support followers in dynamic situations and de-escalate situations that feel distressing (Rupprecht et al., 2019). Individually, they were better able to handle difficult emotions and therefore were ready to seek out feedback (Rupprecht et al., 2019). Additionally, participants were able to improve their relationships with others and capacity for collaboration (Reitz & Chaskalson, 2016; Rupprecht et al., 2019). Participants showed increased resiliency and a greater ability to manage risks, adapt, and accept change ("Mind the gap: Can mindfulness support effective leadership development," 2020; Reitz & Chaskalson, 2016; Rupprecht et al., 2019).</p>	<p>unclear how it could be translated into an academic setting. Furthermore, the workplace context may have limited the definition of leadership to work, excluding the broader leadership perspective outlined in this study.</p>
5	<p>Integrated into Leadership Development Programs and Action Learning</p>	<p>Integrating mindfulness into action learning aims to offer opportunities for repetition and practice. Specifically, mindfulness is threaded into concepts of managing people, leading change, team development, and performance management (Sanyal & Rigg, 2021).</p>	<p>Sanyal & Rigg's study results indicated that following this intervention, managers took action to improve self-care and well-being, created space for reflection, increased self-control in managing workload, attempted to maintain work-life balance, increased awareness of physical and mental fitness needs, and shared mindfulness with others (2021). For this to be effective,</p>	<p>This method appears to be a valuable approach, which may fit in well with the academic setting given the pre-existing action learning labs. However, this study was not conducted in an educational context, so it is unclear if the same outcomes would result from this method. Additionally, the study claims that there needs to be sufficient dedicated time and</p>

			the study found that there needed to be clear links drawn between mindfulness and leadership, sufficient dedicated time and integration of mindfulness into the curriculum, and supported through practice (Sanyal & Rigg, 2021).	integration into the program, but it does not clarify how much time is required.
6	One-on-one Coaching	Integrating mindfulness into coaching offers the opportunity for flexibility and adaptation to meet the needs of the client and serve their interests (Passmore, 2019).	While Passmore did not conduct a study to demonstrate the results of mindfulness coaching, the author asserts that there are four benefits that may result for both the coach and coachee: (1) in preparing for coaching, (2) in maintaining focus during sessions, (3) in managing emotions in coaching, and (4) in teaching clients mindfulness (2019).	There is no evidence supporting the benefits suggested by this study. While these benefits could be realized, this solution may not be scalable for many students and may not be cost efficient.

The studies reviewed offer a variety of solutions to consider in designing a mindfulness experience for graduate students. The MBSR program is a well-known, reputable program, but it does not address leadership and is individually-focused. The Intensive Weekend Retreat demonstrated positive results, but these were self-reported and sustainability is a concern. The Three-Year Leadership Program also demonstrated increased levels of mindfulness, but the timeline is infeasible within a two-year graduate program. The 10-week Mindfulness Training offers a feasible option that demonstrates positive results for leadership, but is tailored to a workplace setting. Integrated into Leadership Development Programs and Action Learning has a great potential for MIT Sloan, as action learning is a core part of the graduate student curriculum. Yet, similar to the 10-week Mindfulness Training program, it was not conducted in an academic setting, therefore the results may not be transferable. Additionally, the amount of integration needed is not provided. Lastly, One-on-One Coaching conceptually is another option with high potential, as coaching is already integrated into some leadership courses at MIT Sloan. However, there was not a study conducted to demonstrate the impact suggested by the

author. Each approach offers ideas for how to build a successful experience, but is not a perfect solution for the context and goals of this study. Therefore, these ideas and methods would need to be tested within the academic setting with graduate students to understand their effectiveness.

The literature does offer a number of participant needs and considerations for mindfulness training. First, the teachings and tools shared need to inspire implementation. Without the motivation, the impact will not be realized (Baron, 2016). Sustained impact has been found when leaders continue practicing meditation or have a daily formal practice (Reb et al., 2015; Rupprecht et al., 2019). Reitz & Chaskalson found that leaders who practiced at least 10 minutes per day progressed significantly more than others (2016). The solution needs to result in sustained participant implementation.

Second, participants can benefit from clear links drawn between mindfulness and a leader's role, which requires sufficient time and integration into the curriculum (Sanyal & Rigg, 2021). While the time requirement is not defined, the solution needs to explicitly articulate the relationship between mindfulness and leadership and communicate its significance. The background information outlined in this chapter can serve as a foundation for communicating these needs.

Third, allocating space and encouraging people to practice together if desired are other recommendations to support practice adoption (Reitz & Chaskalson, 2016). Building a community to support one another in implementation could have a positive impact on adoption. The solution developed needs to consider how the experience could be community-oriented for students.

Chapter 3: Methods

For this study, interviews and a survey are conducted for primary research. Survey data are analyzed to assess the level of mindfulness amongst the MIT Sloan graduate student body in an effort to validate the need for a mindfulness educational experience. Data from interviews aims to answer the four research questions outlined in the introduction. The data are synthesized to identify common themes, which are turned into insights for understanding the research questions posed. These findings inform the development of design principles for creating a graduate experience focused on mindfulness. Each process employed throughout the study is described.

3.1 Mindfulness Attention Awareness Scale Survey

The survey conducted aims to assess mindfulness levels within the MIT Sloan graduate student body. This insight validates the need for a mindfulness education and offers quantitative data to support the development of a mindfulness experience for graduate students.

The survey used in this study is the Mindful Attention Awareness Scale (MAAS), which assesses individual differences in frequency of mindful states over time. Developed by Kirk Warren Brown, Ph.D. and Richard M. Ryan, Ph.D. and published in the *Journal of Personality and Social Psychology*, the survey focuses on the presence or absence of attention to and awareness of what is occurring in the present (Brown & Ryan, 2003).

It has been shown to be reliable and valid for use in both college student and general adult populations. MAAS is cited in numerous papers reviewed and applied to assess mindfulness

levels of participants in previous mindfulness studies. However, there are limitations to the survey, as it does not cover acceptance, openness, and curiosity, which are viewed as components of mindfulness (Baer et al., 2006).

MAAS consists of 15 questions, each scored on a 6-point scale ranging from almost always (i.e., 1) to almost never (i.e., 6). High scores indicate high levels of mindfulness, whereas low scores represent low levels of mindfulness. The expected time for completion is 10 minutes (Positive Psychology Center, n.d.), which reduces the burden placed on survey respondents.

The population selected for this survey included MIT Sloan Graduate Students. Survey distribution occurred through three communication channels in an effort to elicit responses from different programs within the MIT Sloan Graduate Community. First, students participating in study interviews (i.e., students with and without a mindfulness practice) were asked to complete the survey following their interview. Second, survey requests were sent out to multiple WhatsApp messaging groups. This is one of the primary communication channels within the community. These groups included students in the Integrated Design and Management (IDM) program, women MBA students in Sloan, and students in one section of the MBA class, which included both Leaders for Global Operations (LGO) and MBA students. Third, the survey was distributed through email to Sloan Fellows, who are participating in a one-year executive MBA program. The distribution approach aimed to target different groups within the MIT Sloan Graduate Community.

The survey received 53 responses. However, one respondent indicated that they were not an MIT Sloan Graduate Student, so their responses were removed prior to analysis. The analysis was conducted with 52 responses (i.e., $N = 52$). Given that the purpose was not to test the validity of the survey within this population, the data captured were used to generate an average

mindfulness score across all respondents. To do this, both the mean and standard deviation were calculated for each question across all respondents. Additionally, the mean and standard deviation were calculated across all items to produce an average mindfulness score for all respondents.

3.2 Semi-Structured Interviews

Semi-structured interviews were conducted to gather data to better understand how to answer the four research questions: (1) What is mindfulness? (2) What is the relationship between mindfulness and leadership? (3) What are the barriers to developing a mindfulness habit? (4) How can students begin developing into a mindful leader in school? Interviews sought to provide insight into mindfulness beliefs and perceptions, the definition of mindfulness and mindful leadership, common challenges faced by students in developing a mindfulness habit, and methods for teaching mindfulness and leadership.

To achieve these goals, interviews were conducted with four user populations: Mindfulness Teachers; MIT Sloan Lectures and Coaches; Sloan Graduate Students with a Mindfulness Practice; and Sloan Graduate Students without a Mindfulness Practice. Mindfulness Teachers included people who teach mindfulness to others. The setting of the teaching varied from yoga and meditation centers to university settings. MIT Sloan Lectures and Coaches included MIT faculty and staff that are associated with the MIT Leadership Center. Each person had some knowledge of mindfulness and interest in incorporating it into their classroom, if they had not already. Sloan Graduate Students with a Mindfulness Practice included any graduate student who claimed to have a mindfulness practice. All of these students are members of the Mindfulness & Leadership Club at Sloan. Sloan Graduate Students without a Mindfulness Practice included any students who did not have a mindfulness practice. Some of these

students are participants in the Mindfulness & Leadership Club, but have minimally engaged in the club's offerings, if at all.

The study received Institutional Review Board (IRB) approval through the Committee on the Use of Humans as Experimental Subjects (COUHES) at MIT. Prior to each interview, participants reviewed and signed a written consent form for their participation in the study. At the beginning of each interview, participants were asked to confirm their consent for participation. Interview sessions were recorded if participants consented.

The two tables below summarize key information to understand the interview facilitated with each user group. For each user group, the first table outlines the target quantity of interviews, the actual number of interviews facilitated, the objective of the interview, and the intended outcomes. The second table captures the discussion topics covered, the average number of questions, the format of interview, and the average duration.

Table 3: Interview user groups are outlined with the objective for the interview, intended outcomes, and target and actual quantities of interviews for each group.

#	User Group	Target Quantity	Actual Quantity	Objective	Intended Outcome
1	Mindfulness Teachers	3 - 5	9	Understand mindfulness education and its role in leadership development	<ol style="list-style-type: none"> 1. Understand their definition of mindfulness 2. Learn how mindfulness is traditionally taught and shared 3. Identify key introduction practices needed to understand the concept 4. Learn from experienced teachers how mindfulness applies to leadership
2	MIT Leadership Lecturers / Coaches	5 - 8	5	Identify existing mindfulness teachings and goals for sharing	<ol style="list-style-type: none"> 1. Identify coach and lecturers' definition and understanding of mindfulness

				mindfulness practices	<ol style="list-style-type: none"> 2. Understand their perspective of mindfulness in leadership 3. Understand their barriers to teaching mindfulness and it's application to leadership 4. Understand their gaps in knowledge 5. Understand their needs in a solution to teach mindfulness and build the leadership capacity in students
3	Graduate Students with a Mindfulness Practice	7 - 10	8	Identify purpose for practice and what practices have resonated	<ol style="list-style-type: none"> 1. Understand how students learned about and became interested in mindfulness 2. Understand what practices supported their learning and practice development 3. Understand what tools have contributed to their habit formation 4. Understand the challenges, barriers, or pain points experienced throughout their mindfulness learning journey 5. Understand motivating factors that enable their mindfulness practice
4	Graduate Students without a Mindfulness Practice	7 - 10	12	Identify perceptions of mindfulness, barriers, and needs for an educational experience	<ol style="list-style-type: none"> 1. Identify perceptions and definitions of mindfulness 2. Understand experience with mindfulness and barriers to engagement or participation 3. Identify knowledge gaps and opportunities for building support for developing a mindfulness practice 4. Understand student needs and how a mindfulness practice can support their personal and professional journey

Table 4: Interview facilitation specifics are described for each user group, including the discussion topics, the number of questions, the interview format, and the average duration.

#	Study Population	Discussion Topics	Number of Questions	Format	Average Duration
1	Mindfulness Teachers	<ul style="list-style-type: none"> • Mindfulness Definition • Leadership Application • Enabling Mindfulness Practice • Teaching Introductory Mindfulness • Mindful Leadership Training 	13	Virtual via Zoom	45 - 60 minutes
2	MIT Leadership Lecturers / Coaches	<ul style="list-style-type: none"> • Mindfulness Definition • Leadership Application • Teaching Mindfulness 	9	Virtual via Zoom	45 - 60 minutes
3	Graduate Students with a Mindfulness Practice	<ul style="list-style-type: none"> • Mindfulness Definition • Mindfulness Journey • Mindfulness Barriers • Mindfulness Practice • Leadership Application 	15	Virtual via Zoom and In-person	45 - 60 minutes
4	Graduate Students without a Mindfulness Practice	<ul style="list-style-type: none"> • Mindfulness Related Activities • Mindfulness Definition • Mindfulness Experience • Mindfulness Barriers 	12	Virtual via Zoom and In-person	45 - 60 minutes

In total, 34 interviews were conducted across the four user groups. Interview participants were recruited through a variety of methods. First, students were recruited through the MIT Sloan Mindfulness & Leadership Club communication channels. Students recruited from these channels have previously shown interest in learning about mindfulness. Both students with and without practices were identified through this outreach. Second, additional students without a mindfulness practice were recruited through convenience sampling, as being a student provided easy access to other students. Third, lectures and coaches were recruited through convenience sampling within the MIT Leadership Center. Lastly, mindfulness teachers were recruited through purposeful sampling, convenience sampling, and snowball sampling.

Looking across interview participants, there are some trends to consider when evaluating the data. First, the participants in this study are highly educated. The highest degree or level of education within the group included 18.2% with a Bachelor's Degree, 63.6% with a Master's Degree, and 18.2% with a Doctorate. Second, the majority of the participants identified as a woman (87.9%) compared to the 12.1% who identified as a man. Third, the majority of participants were between the ages of 25 to 39 (66.7%). Of the remaining participants, 21.1% were ages 40 to 60 and 12.1% were above the age of 60. These demographics may play a role in shaping the findings of the interviews.

Additionally, the number of years practicing mindfulness and the frequency of mindfulness practice varied greatly amongst participants, as expected. The two charts below illustrate the years of practice and the frequency of practice. The majority of Mindfulness Teachers have been practicing for 10+ years, with only two practicing for 6-10 years. Similarly, the majority of this group practice mindfulness daily, with only two participants practicing 4-6 or 2-3 times per week. Students with a Mindfulness Practice have a wider range of responses; years practicing ranges from 1-2 years to 10+ years and practice frequency ranges from daily to weekly with the exception of one student practicing monthly. As expected, Students without a Mindfulness Practice have the lowest scores; participants reported having 0 to 2 years of practice and the frequency of practice ranges from none to monthly with the exception of one student reporting bi-weekly. Lastly, the Lecturers and Coaches who responded to the survey show a wide variety of responses; the years of practice range from 1-2 years to 10+ years and the frequency of practice ranges from daily to monthly. This range of experience provides value in obtaining a diversity of responses across individuals with varying levels of mindfulness knowledge. Additionally, the demographics show that the user groups requiring specific experience and knowledge meet those criteria for the study.

To maintain participant privacy and confidentiality, an identifier was created for each interviewee. Based on the order of interviews, each participant was given a unique number, which is paired with “P” (e.g., P01, P02, etc.). The unique identifiers were used throughout the research and synthesis process to de-identify the data, and names of participants were never matched with the identifiers nor stored together.

Table 5: Interview facilitation specifics are described for each user group, including the discussion topics, the number of questions, the interview format, and the average duration.

ID	User Group	Age	Gender	Highest Education	Years	Frequency
P01	Mindful Student (MS)	40 to 60	Woman	Master's Degree	10+	4-6 times / week
P02	Mindful Student (MS)	25 to 39	Woman	Master's Degree	1 - 2	Daily (1+ times / day)
P03	Mindfulness Teacher (MT)	25 to 39	Woman	Master's Degree	6 - 10	Daily (1+ times / day)
P04	Mindful Student (MS)	25 to 39	Woman	Master's Degree	3 - 5	2-3 times / week
P05	Lecturer / Coach (LC)	60+	Woman	Doctorate Degree	6 - 10	2-3 times / week
P06	Mindful Student (MS)	25 to 39	Woman	Bachelor's Degree	3 - 5	4-6 times / week
P07	Non-Mindful Student (NMS)	25 to 39	Woman	Bachelor's Degree	0	Did not practice
P08	Mindful Student (MS)	25 to 39	Woman	Bachelor's Degree	3 - 5	Weekly (once a week)
P09	Mindful Student (MS)	25 to 39	Woman	Master's Degree	1 - 2	4-6 times / week
P10	Mindful Student (MS)	25 to 39	Woman	Bachelor's Degree	6 - 10	Weekly (once a week)
P11	Lecturer / Coach (LC)	60+	Woman	Master's Degree	10+	Daily (1+ times / day)
P12	Non-Mindful Student (NMS)	25 to 39	Man	Master's Degree	0	Monthly (once a month)
P13	Mindful Student (MS)	25 to 39	Woman	Bachelor's Degree	10+	Monthly (once a month)
P14	Mindfulness Teacher (MT)	40 to 60	Woman	Doctorate Degree	10+	Daily (1+ times / day)
P15	Mindfulness Teacher (MT)	40 to 60	Woman	Doctorate Degree	10+	Daily (1+ times / day)
P16	Non-Mindful Student (NMS)	25 to 39	Woman	Master's Degree	1 - 2	Monthly (once a month)
P17	Non-Mindful Student (NMS)	25 to 39	Woman	Master's Degree	1 - 2	Bi-Weekly (once every 2 weeks)
P18	Non-Mindful Student (NMS)	25 to 39	Woman	Master's Degree	1 - 2	Monthly (once a month)
P19	Lecturer / Coach (LC)	40 to 60	Woman	Master's Degree	3 - 5	Monthly (once a month)
P20	Non-Mindful Student (NMS)	25 to 39	Woman	Master's Degree	1 - 2	Did not practice
P21	Mindful Student (MS)	25 to 39	Woman	Master's Degree	10+	4-6 times / week
P22	Mindful Student (MS)	25 to 39	Man	Master's Degree	1 - 2	Weekly (once a week)

P23	Mindfulness Teacher (MT)	60+	Woman	Doctorate Degree	10+	Daily (1+ times / day)
P24	Mindful Student (MS)	25 to 39	Man	Master's Degree	1 - 2	Daily (1+ times / day)
P25	Non-Mindful Student (NMS)	25 to 39	Woman	Master's Degree	0	Did not practice
P26	Mindfulness Teacher (MT)	40 to 60	Woman	Master's Degree	10+	Daily (1+ times / day)
P27	Mindfulness Teacher (MT)	40 to 60	Woman	Doctorate Degree	10+	4-6 times / week
P28	Mindful Student (MS)	25 to 39	Woman	Master's Degree	3 - 5	2-3 times / week
P29	Mindfulness Teacher (MT)	60+	Woman	Doctorate Degree	10+	2-3 times / week
P30	Lecturer / Coach (LC)	Not available	Woman	Master's Degree	6-10	Not available
P31	Mindfulness Teacher (MT)	25 to 39	Man	Master's Degree	10+	Daily (1+ times / day)
P32	Mindfulness Teacher (MT)	25 to 39	Woman	Master's Degree	6 - 10	Daily (1+ times / day)
P33	Non-Mindful Student (NMS)	25 to 39	Woman	Bachelor's Degree	0	Did not practice
P34	Lecturer / Coach (LC)	40 to 60	Woman	Master's Degree	1 - 2	Monthly (once a month)

Chart 1: A depiction of the number of years interview participants have been practicing or studying mindfulness, which provides a visual representation of the range of mindfulness expertise.



Chart 2: A depiction of how frequently interview participants practiced mindfulness in the last two months, which offers a visual representation of the range in regular mindfulness practices among interviewees.



3.3 Synthesizing Qualitative Interview Data

Interview data synthesis aimed to generate insights that answered the four research questions. The interviews served as an opportunity to diverge and collect a large quantity of qualitative data, and the synthesis process served to converge towards answers. To achieve this goal, a framework was developed to synthesize data relevant to the four research questions both within and across user groups. The four key topics included Mindfulness Understanding, Mindfulness and Leadership Relationship, Barriers and Habit Formation, and Educational Mindfulness Needs. Subtopics were defined for each that tied directly to the discussion topics covered in interviews. The data for each Key Topic and Subtopic were first synthesized within user groups and then synthesized across user groups to generate insights. All interview data were anatomized to preserve participant identities and increase the validity of findings. The table below outlines the relationship between Key Topics and Subtopics.

Table 6: The key topics for interview synthesis are depicted with their respective subtopics that were derived from interview discussion topics.

#	Key Topic	Subtopics (i.e., Discussion Topics)
1	Mindfulness Understanding	<ul style="list-style-type: none"> ● Mindfulness Definitions ● Mindfulness Impact
2	Mindfulness and Leadership Relationship	<ul style="list-style-type: none"> ● Leadership Application
3	Barriers and Habit Formation	<ul style="list-style-type: none"> ● Mindfulness Barriers ● Enabling Mindfulness Practice ● Mindfulness Practice
4	Educational Mindfulness Needs	<ul style="list-style-type: none"> ● Teaching Introductory Mindfulness ● Mindful Leadership Training ● Teaching Mindfulness ● Mindfulness Journey ● Mindfulness Related Activities ● Mindfulness Experience

To gather the data for synthesis, the notes from each interview were reviewed and coded for quotes that captured key information illustrating each Subtopic. Each piece of data was extracted from the notes and copied into the framework built in a Miro board (i.e., online, virtual whiteboard), as shown below in Image 1. Once all the data were collected in the framework, data synthesis began for each user group, as a first step. Qualitative data were grouped together based on commonalities to develop themes following an affinity diagramming approach. Image 2 illustrates the synthesis approach within user groups, where the user group color remains consistent on the board. The data are synthesized for each user group’s relevant Subtopics.

Image 1: The Miro Board capturing all qualitative data collected from each user, grouped by Subtopics.



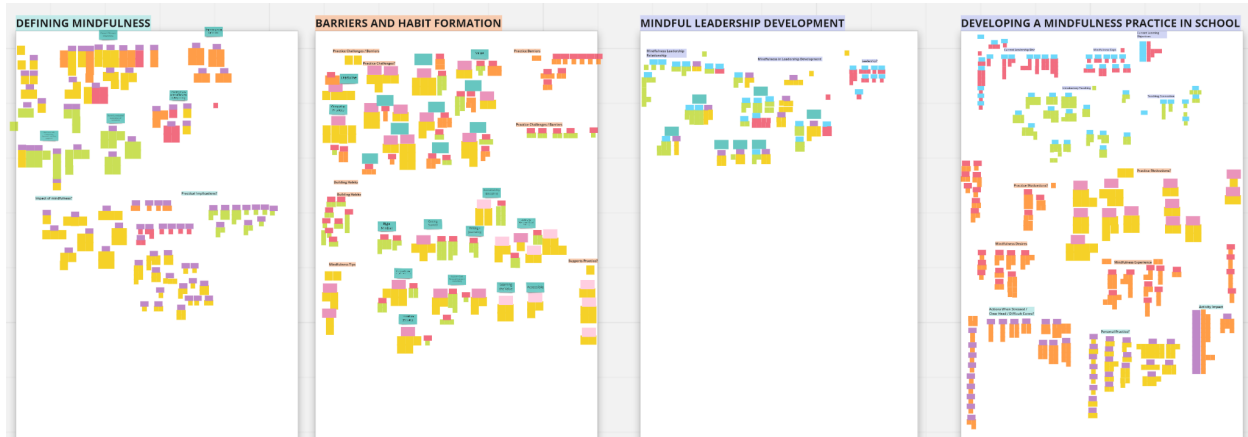
Image 2: The Miro Board capturing all qualitative data synthesized within user groups for each subtopic. The color sticky note indicates the user group.



Following user group synthesis, each theme was copied into the Key Topic boards for across user group synthesis. Each theme developed was analyzed to ensure at least three participants

from the same user group voiced the idea or sentiment. Following this analysis, common themes were grouped together to identify key findings (See Image 3). These key findings were applied to answer the research questions, along with findings from the literature review.

Image 3: The Miro Board capturing all qualitative data synthesized by Key Topic across all user groups.



The final research question analyzes the data collected and considers the mindfulness programs identified in literature to generate design principles for developing an educational experience for graduate students. First, a current state analysis is provided to offer an understanding of what currently exists. This includes a review of MIT Sloan leadership courses and introductory mindfulness courses. It also aims to offer an understanding of student experiences with mindfulness, such as mindfulness practices, practice motivations, prior learning experiences, and desires for mindfulness. This knowledge offers contextual knowledge to inform the design principles. Recommendations identified to address common barriers are iterated to address current state needs and incorporate literature findings to produce design principles.

Chapter 4: Results

4.1 Survey Findings

Results from the MAAS survey show that Sloan graduate students have a low level of mindfulness, especially in comparison to other populations who have taken the same assessment, as shown in Table 7 below. These findings suggest that there is a need for Sloan graduate students to become more mindful if they seek to achieve the benefits outlined in the literature review. Additionally, this data further supports the need for a mindfulness education for students to begin building a mindfulness practice. Table 7 below compares the Sloan graduate students to other participants from the study conducted by Brown and Ryan (2003). Table 7 outlines the mean and standard deviation for each question on the survey. This offers insight into where students are being more and less mindful in their daily lives.

Table 7: A comparison of the mean MAAS scores between MIT Sloan Graduate Student respondents and four populations studied in the original paper by Brown and Ryan (2003).

Group	MAAS Score (Mean)	Standard Deviation	Sample Size
Sloan Graduate Students	3.43	0.54	52
Active Zen Meditators	4.38	0.65	42
Adults	3.95	0.64	42
Undergraduates	3.85	0.68	90
Cancer Patients	4.27	0.64	58

Table 8: The mean score and standard deviation for each MAAS survey question is documented for the MIT Sloan Graduate Student population. High scores signify higher levels of mindfulness and vice versa.

MAAS Survey Question		Mean Score	Standard Deviation
1	I could be experiencing some emotion and not be conscious of it until some time later.	3.44	1.29
2	I break or spill things because of carelessness, not paying attention, or thinking of something else.	4	1.64
3	I find it difficult to stay focused on what's happening in the present.	3.23	1.44
4	I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	2.48	1.20
5	I tend not to notice feelings of physical tension or discomfort until they really grab my attention.	3.67	1.45
6	I forget a person's name almost as soon as I've been told it for the first time.	2.46	1.34
7	It seems I am "running on automatic," without much awareness of what I'm doing.	3.46	1.41
8	I rush through activities without being really attentive to them.	3.58	1.29
9	I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.	3.67	1.34
10	I do jobs or tasks automatically, without being aware of what I'm doing.	3.71	1.23
11	I find myself listening to someone with one ear, doing something else at the same time.	3.21	1.39
12	I drive places on 'automatic pilot' and then wonder why I went there.	4.13	1.66
13	I find myself preoccupied with the future or the past.	2.67	1.41
14	I find myself doing things without paying attention.	3.52	1.46
15	I snack without being aware that I'm eating.	4.19	1.57

Of the questions posed in the survey, three questions scored the lowest amongst respondents. These included: (4) I tend to walk quickly to get where I'm going without paying attention to what I am experiencing along the way; (6) I forget a person's name almost as soon as I've been told it for the first time; and (13) I find myself preoccupied with the future or the past. In comparing these statements with Dunoon & Langer's (2011) framework of 10 behaviors, we see a disconnect between mindful leaders and these habits. Dunoon & Langer highlight the importance for leaders to draw on current realities and preferred futures to build shared understanding of a challenge. Yet, preoccupation with the past and future could severely limit

one's ability to create this shared understanding of a current problem. Furthermore, the authors assert that mindful leaders elevate the quality of their interactions with others above their concerns for task achievement and engage in deep listening to consider other opinions. Yet, forgetting people's names almost immediately after an introduction does not demonstrate deep listening nor quality interactions. Additionally, walking quickly without paying attention to your surroundings may highlight difficulty in prioritizing quality interactions over task achievement. These findings indicate opportunities for students to enhance their levels of mindfulness for improved leadership behaviors.

4.2 Interview Findings

Results and key findings derived from interviews are described for three research questions explored in the thesis: (1) What is mindfulness? (2) What is the relationship between mindfulness and leadership? and (3) What are the barriers to developing a mindfulness habit?

4.2.1 Question 1: What is mindfulness?

Looking across groups, there is a divergence in the definition and understanding of mindfulness. Those with a mindfulness practice offered definitions that are more closely aligned with the literature (Brown & Ryan, 2003; Kenny et al., 2020; Passmore, 2019; Pinck & Sonnentag, 2018; Reb et al., 2015; Sanyal & Rigg, 2021; Sauer & Kohls, 2011; van Beekum, 2016; Wells, 2015) compared to those without a practice. Findings corroborate the definition found in literature and present insights to understanding mindfulness. Four themes in the data are discussed: *Present Moment Awareness*, *Creating Space*, *Open Mindset*, and *Embodiment*.

Present Moment Awareness

“Being aware of what’s going on in the most present sense of the term; both physically, mentally, emotionally. What is going on right now? Aware and attentive to what your surroundings are, your body, and [how] you fit into it” (P6, MS)

The majority of interview participants, across all groups, defined mindfulness as present moment awareness, which aligns with the definitions in literature (Pinck & Sonnentag, 2018; Sanyal & Rigg, 2021; Sauer & Kohls, 2011; van Beekum, 2016). In expanding on this definition, the type of awareness varied across groups, offering a more multifaceted view. Students with a mindfulness practice described different attributes to this present moment awareness, including situational awareness, meta-awareness (i.e., awareness of thoughts), emotional awareness, task awareness, self-awareness, and the awareness of the interaction between the self and the environment (P2, P4, P6, P8, P9, P10, P22, P24, P28). This breadth of awareness highlights the valuable knowledge gained through experiencing and studying mindfulness. This understanding goes beyond a more tangible definition by penetrating components of the lived experience.

In comparison, students without a mindfulness practice only identified self-awareness, task awareness, and body awareness (P7, P12, P17, P18, P20, P25, P33). This subset of descriptions is tangible, yet limited. It does not offer a holistic perspective. Rather, these describe many beginner experiences of practicing mindfulness, as cited by mindfulness teachers sharing introductory practices with newcomers.

Lecturers and coaches identified fewer attributes, only citing the awareness of the interaction between the self and the environment (P5, P11, P19, P30, P34). While this behavior is incredibly valuable, it highlights the limited view of mindfulness through the lens of leadership

development. The identification of only the interaction suggests a leadership focus may center on the way a leader interacts with their environment and others. This fails to acknowledge the multifaceted nature of awareness accessible at any moment in time that could serve a leader.

While still acknowledging present moment awareness, mindfulness teachers focused more on the nature of awareness. However, in describing the type of awareness, they identified emotional awareness (i.e., recognizing one's moment-to-moment emotions) and meta-awareness (i.e., awareness of thoughts or awareness of thinking) (P14, P15, P26, P31). Additionally, their descriptions offered more specificity into the meaning of these types of awareness. One teacher described present moment awareness as “bringing your attention, body, mind, and spirit back into the present moment” (P26). Another described it as, “Aware of actions, mental processes, [and] clarity of mind, action, and thought [at] a given time, in real time” (P31). These descriptions give another level of depth that was not heard from other user groups.

Creating Space

*“It’s the pausing and being present .. then being able to use that awareness to make a choice”
(P34, LC)*

In interviews mindfulness was described as creating space between stimulus and response to act with intention and make a decision. This perspective emerged in the data from lectures and coaches, as well as students both with and without mindfulness practices. This definition of mindfulness is primarily cited by lectures and coaches, who bring a leadership-centric view to understanding mindfulness (P11, P19, P34). This definition aims to explain the value of mindfulness to leaders and captures a practical benefit of practice. While the majority of students did not express this same perspective, there were a few who did (P1, P2, P16, P18).

As noted earlier, this outcome of mindfulness is valuable, yet is limited. This suggests that studying mindfulness through the lens of leadership will likely not offer a holistic understanding and raises questions about how to share the practice in a way that allows students to realize all the benefits of mindfulness practice.

Open Mindset

“Open, receptive awareness with curiosity, non-judging, and equanimity” (P27, MT)

As noted earlier, mindfulness teachers described not only the type of awareness, but also the nature of that awareness. The nature of awareness is described with equanimity and non-judgment, openness, and compassion (P3, P14, P15, P23, P27, P29). Compassion is described as both self-compassion and compassion for others. Participant 15, a Mindfulness Teacher, highlighted the need for self-compassion, explaining that approaching mindfulness with the goal of self-improvement can leave people “wandering in a desert of a very harsh landscape.” One must be self-compassionate, as it is “an important part of the alchemy” (P15). A few mindful students also cited the importance of openness and equanimity (P10, P21). These findings support the definition of mindfulness found in literature, which cites the need for a curious and open mindset that is accepting, non-judging, and a more non-reactive, equanimous stance towards experiences. Additionally, the Buddhist definition builds on this by incorporating kindness and friendliness, which is similar to compassion. Furthermore, compassion is also highlighted as a benefit derived from mindfulness practice.

Embodiment

“What does it mean to be embodied? A living, breathing, constantly changing entity, and how does it change based on the environment that it is in?” (P32, MT)

Mindfulness teachers shared a deep understanding of mindfulness centered on embodiment. While the mindfulness teachers interviewed did not have a strong group alignment on this theme, the individuals voicing these attributes have extensive practices. These findings indicate that mindfulness can be summarized as a dynamic process of embodied exploration and cultivation (P23, P26, P32). The dynamic process acknowledges that one's level of mindfulness is constantly changing moment to moment. Embodied exploration suggests that mindfulness provides "an opportunity to explore our experience" (P23) and it "can show up in literally every way of being" (P26). The definition offered by Wells (2015) of mindful leadership is presence-based, not trait-based, which further encapsulates the idea of embodiment. Lastly, cultivation describes where we are "fueling our attention" and manifesting "a state of mind with an intention" (P32). The Buddhist definition acknowledges this cultivation of awareness and attention.

Beyond these four themes, the data highlighted a lack of understanding of mindfulness within the student population without a mindfulness practice. The definitions offered into introspection, reflection, and self-care (P16, P17, P33). Additionally, some students described mindfulness practices as mindfulness itself (P7, P12). While this is not surprising, it does highlight the importance of communicating the definition clearly to prevent misperceptions from arising, especially those that may stop a student from practicing. For example, one student said, "I've never pursued mindfulness. [I am] already really introspective and overanalyze everything" (P33). This quote captures a clear misunderstanding of the practice that is preventing the student from exploring mindfulness when it is evident that they could benefit from developing a mindfulness practice. In crafting a student experience, the communication of mindfulness and the practice needs to be clear.

4.2.1.1 A New Definition of Mindfulness

Research findings highlight important considerations for designing an experience for students to learn mindfulness. First, there is great value in studying and practicing mindfulness to gain a deeper understanding of it from your own experience. This is critical for teachers sharing the practice with students. Without this knowledge, the definition shared can become shallow or limited, preventing a holistic understanding for why mindfulness is valuable for leaders. Second, the research conducted offers a revised definition of mindfulness: *a dynamic process of embodied exploration and cultivation through internal and external present awareness with equanimity, non-judgment, openness, and compassion.*

4.2.2 Question 2: What is the relationship between mindfulness and leadership?

In interviews, participants were asked to identify the relationship between mindfulness and leadership. Seven themes emerged from the data that describe key attributes and skills demonstrated by mindful leaders. These themes are Emotion Recognition and Management, Self-Awareness, Clear and Expansive Perspective, Compassion, Calm, Intentional Action, and Supportive of Others, ordered by the number of participants supporting the finding.

Emotion Recognition and Management

“More tuned into your emotional experience and the more you can become aware of your emotional experiences, the better you can show up for others” (P26, MT)

Participants described how mindful leaders are more aware of their emotions (P3, P14, P15, P26). Through this awareness, they are better able to pause in the moment, creating space between stimulus and response to make a choice. This skill enables mindful leaders to better

regulate their emotions, act less impulsive, and be more emotionally intelligent in their interactions (P3, P5, P6, P10, P11, P14, P15, P19, P21, P22, P26, P27, P29, P30, P32, P34). This offers space to be more empathetic by seeking to listen, understand, and connect with others (P1, P6, P13, P15, P22, P29).

Self-Awareness

“I step in and out of a leadership role when needed ... recognizing my strengths and weaknesses to allow the solution to move further along” (P19, LC)

Participants described how self-awareness is critical in leadership (P1, P10, P11, P13, P14, P19, P22, P23, P27, P28, P29, P30, P34). Self-awareness offers leaders insight into their strengths and weaknesses. This knowledge can be applied to identify when to depend on others, ask for help and step in to lead a group forward (P19). This self-awareness helps one understand how they fit within the present ecosystem (P22). This offers the freedom to choose where to exert one’s energy (P29).

Self-awareness also supports one’s interactions with others and shapes interpersonal relationships (P34). It offers insight into how you communicate with others and how that impacts your interaction (P22). It can be seen in how you treat others and yourself (P10, P13, P23). Furthermore, self-awareness provides an understanding of how your feelings, thoughts, and biases influence your perspective (P23, P27, P28). This gives you the power to step back from your perception and change how you communicate and interact with others to have more positive experiences.

Clear and Expansive Perspective

“Seeing a wider picture because you’re open to more information” (P15, MT)

Participants explained how mindfulness enables leaders to have situational awareness with clarity. It offers the ability to absorb your surroundings, put aside your ego as a leader, and gain clarity of the bigger picture (P1, P3, P4, P10, P15, P27, P31, P32). Mindful leaders can acknowledge when they are seeing the world through the lens of their own projection (P32) and remain open to more information, “taking in a lot of different data points” to create a broader understanding (P31). One participant described, “Outside of the box thinking ... I can think outside [through] a different perspective. There’s many different perspectives we can take” (P27). Ultimately, this expansive view gives leaders the ability to make better decisions for others and their organizations (P4, P31).

Compassion

“It’s compassion in leadership; in yourself and to others. It’s giving people the time they need and listening” (P13, MS)

Mindful students and mindfulness teachers identified the connection between leadership and compassion (P3, P10, P13, P14, P27, P28, P32). Both compassion for others and self-compassion are cited as being critical to leadership. Both groups identified the value of compassion for others in leadership, citing how it supports leaders in building empathy and finding common humanity, which serves in building relationships (P3, P10, P13, P27, P28). This leads to more thoughtfulness and “more kindness versus accusations” (P28). This is critical in having difficult conversations and offering grace to others (P14). Additionally, participants communicated the need for self-compassion in leadership (P3, P10, P13). Having self-compassion allows one to first acknowledge one’s own humanness and learn how to show oneself grace (P3). This serves as a prelude to doing this for others, which ultimately supports improved relationships and listening (P10, P13). Lastly, one mindfulness teacher explained how compassion arises through the practice of mindfulness (P32).

Calm

“I don’t know how you can successfully lead a team or organization without finding a way to calm oneself down because anytime you are responsible for anything, there will be moments of confusion and upheaval” (P29, MT)

Mindfulness teachers and students with a mindfulness practice identified stress management and grounding as a skill of mindful leaders (P1, P14, P32). Mindfulness serves to support leaders in removing stress and gaining clarity to not panic in challenging situations (P10, P29). This allows individuals to be a confident and calm presence for their team (P8).

Intentional Action

“It’s the intention. The way you approach the world, people, and the work you do.” (P13, MS)

Students with a mindfulness practice identified acting with intention as a behavior of mindful leaders. As described above, both the skill of emotional recognition and management and the ability to hold a clear and expansive perspective create space for individuals to respond intentionally, leading to “better outcomes with non-judgment and acceptance” (P8). This enables one to see the larger problems we as society need to work towards together (P21). It also gives one the ability to consciously make decisions with a clear understanding of why they are making that choice (P13).

Supportive of Others

“My interpretation of leadership is that you are able to serve your community of followers as an encouraging mentor ... and support them” (P3, MT)

Supporting others is a common theme identified in connecting the concepts of mindfulness and leadership. Participants explained the need for leaders to put others before themselves and support them in their work (P3, P10). Mindfulness enables individuals to tune into their own self and feelings, as a way of becoming “more available to others” (P8). Additionally, it enables one to change their style (e.g., leadership, communication) to meet the needs of their team members (P4).

4.2.2.1 Expanding Mindful Leadership Models

When comparing the answers across user groups, it is clear that mindfulness teachers and mindful students see a more robust relationship between mindfulness and leadership. In comparison, lecturers and coaches identified only Emotional Recognition and Management and Self-Awareness. This further highlights a potentially narrow understanding of mindfulness identified in the previous section and raises questions about limitations resulting from studying mindfulness through the lens of leadership.

In reflecting on Dunoon & Langer’s framework of 10 behaviors important to practicing mindful leadership, the interview results make it difficult to validate the behaviors outlined (2011). This is due to the specificity of the behaviors described in the framework. The connection between mindfulness and leadership described by study participants was more general. However, there are four behaviors in the list alluded to in the themes identified: “working to eliminate perverse patterns and practices of defensive behaviors;” “eliciting contributions to leadership action from any individual or group” to address the current issue; awareness that they bring unconscious beliefs, interests, values, and assumptions; and deep listening (Dunoon & Langer, 2011, p. 13). Additional research could be done in the future to dive into the seven themes identified above and extract more specific behaviors to compare with Dunoon & Langer’s framework.

Furthermore, Wells defined mindful leadership as presence-based rather than trait-based, where leaders enact traits by their way of being (2015). Interview findings support this assessment, as all themes center around the way leaders show up in the world and interact with others in-the-moment. Lecturers and coaches provided insight to build on this definition of mindful leadership.

The majority of lecturers and coaches described leadership as a shared process of change emerging when people organize around a problem (P5, P19, P34). The problem is at the center and leadership results as a byproduct of solving the problem. The MIT Leadership Center defined it as *the process of solving problems that won't be otherwise handled in the existing system*. Within this model, individuals step in and out of a lead role based on their strengths and weaknesses to enable forward progress. This requires mindfulness; being present with internal and external awareness, staying open to what comes, and acting in-the-moment based on the situation ("MIT Leadership Center Overview," n.d.).

4.2.2.2 A New Definition of Mindful Leadership

Reflecting on the themes identified by participants - Emotion Recognition and Management, Self-Awareness, Clear and Expansive Perspective, Compassion, Calm, Intentional Action, and Supportive of Others - it is clear how these presence-based attributes would serve to reinforce the action-oriented, problem-centered model. Uniting these ideas to define mindful leadership provides an aim for an educational mindful experience. Mindful leadership can be defined as a *dynamic and shared process of solving problems through embodied internal and external present awareness with equanimity, non-judgment, openness, and compassion*. Design principles will focus on developing this leadership capacity within students.

Mindfulness is experiential and embodied. It is seen in the way that individuals show up for others and hold space for them in the moment. Those who regularly practice mindfulness (i.e., mindfulness teachers and mindful students) are able to see greater benefits derived from mindful leaders. These benefits are not transactional; rather they center around compassion, clarity, intentionality, support, and composure. This discrepancy highlights the value for students to develop a mindfulness practice, not just for leadership, but for their life. It also suggests that an educational experience needs to center around mindfulness, not leadership.

4.2.3 Question 3: What are the barriers to developing a mindfulness habit?

In discussing barriers to developing a mindfulness practice, ten common challenges were identified by students with a mindfulness practice, students without a mindfulness practice, and mindfulness teachers reflecting on their experiences working with students. These commonalities provide opportunities for designing an experience that overcomes regularly seen obstacles. Additionally, mindfulness teachers and students with a mindfulness practice provided insight on how to form a habit. Their recommendations are grouped into themes and linked back to the barriers identified.

There are ten barriers identified to developing a mindfulness habit. Some barriers were voiced more prominently by different user groups, which can be seen between students with and without mindfulness practices. The last barrier (i.e., 10) is the only theme voiced only by students without a mindfulness practice. The barriers are described below with quotes capturing the voices of study participants.

Table 9: Barriers hindering student mindfulness practices are documented with supporting quotes from interview participants.

#	Barrier	Supporting Quote	Participants
1	Time Constraints and Competing Priorities	<p>"I've been struggling with how I think of the added value of meditating versus other things. With time as the ultimate resource constraint, what will I get the most value out of reading, running, mediating, yoga?" (P22, MS)</p> <p>"Meditation and mindfulness does so much for my life, but when I get busy, for some reason it's the first thing to go" (P10, MS)</p> <p>"There's so much going on. It feels weird to take the time." (P25, NMS)</p>	P1, P3, P4, P8, P10, P12, P13, P14, P15, P21, P22, P24, P25, P28, P29, P31
2	Lack of Routine in School	<p>"I haven't had a routine, so it's been hard to find time." (P22, MS)</p> <p>"[The thing] I struggle with the most is the concept of it being part of my day versus another thing on my to do list." (P28, MS)</p> <p>"Right now I'm experiencing a lot of new things, and that takes me out of the routine." (P12, NMS)</p>	P2, P4, P8, P12, P22, P28
3	Struggling to Get Started	<p>"The flywheel effect is very real. It's hard to get started, but once you notice those benefits it's hard to stop" (P10, MS)</p> <p>"The second you fall off, the harder it becomes to get back on and there's a lot of self-judgment" (P8, MS)</p> <p>"It's such a hard habit to start doing ... there's a lot of effort to start" (P6, MS)</p>	P6, P7, P8, P9, P10, P18, P24
4	Impatience in Long-term Results	<p>"You won't see a lot of benefit after one session. You have to look over months or years." (P27, MT)</p> <p>"I get impatient if I don't see results quickly." (P7, NMS)</p> <p>"Short term benefit is almost non-existent." (P24, MS)</p>	P4, P7, P10, P16, P20, P26, P27
5	Maintaining Discipline	<p>"It's hard to be disciplined enough to keep it going." (P13, MS)</p> <p>"I feel I have to be disciplined about it, and it's hard for me to be consistent." (P7, NMS)</p> <p>"Consistency was a bigger challenge; setting aside those times diligently." (P1, MS)</p>	P1, P7, P13, P18, P28

6	Experiencing Discomfort in Practice	<p>“The time when I spend alone with my thoughts is not always positive ... [it] becomes a negative experience” (P25, NMS)</p> <p>“Frequently, it is that old, unresolved memories suddenly pop up out of the blue; for some, there’s trauma and it’s important for people to know that it can happen.” (P27, MT)</p> <p>“Not wanting to sit with my uncomfortable thoughts and feelings ... it’s just a lot of not fun thoughts” (P10, MS)</p>	P3, P6, P10, P14, P15, P18, P20, P25, P27
7	Questioning the Value	<p>“I couldn’t see what’s in it for me” (P20, NMS)</p> <p>“I struggle with the opportunity cost of meditation. Why would I be silent by myself?” (P16, NMS)</p> <p>“The hardest part was telling myself why I need to meditate” (P24, MS)</p>	P4, P14, P16, P18, P20, P24, P25, P26, P29
8	Social Perceptions and Stigmas	<p>“I wish it was more accepted and [there] wasn’t judgment for taking time for yourself” (P8, MS)</p> <p>“I think if it was more common place, it would feel more comfortable” (P17, NMS)</p> <p>“I don’t want to talk about it or share it with others. I don’t tell people a lot” (P24, MS)</p>	P2, P3, P8, P17, P24, P27, P32
9	Feeling Incompetent	<p>“I suck at it. I really struggle. I can’t stop the thoughts.” (P25, NMS)</p> <p>“It’s awkward to feel like the new person or you don’t know what you’re doing” (P17, NMS)</p> <p>“It feels a little silly, or ‘I’m not doing this correctly,’ or ‘it’s not like what everybody else says it is’” (P18, NMS)</p>	P3, P7, P17, P18, P25, P27,
10	Losing Interest	<p>“I’m unwilling to go much further with what I know of mindfulness. It’s not a lack of belief; it’s a lack of interest.” (P16, NMS)</p> <p>“When I woke up this was the first thing I needed to do. [What happened?] Lost interest probably” (P18, NMS)</p> <p>“I get bored very easily” (P7, NMS)</p>	P7, P16, P18

Within groups, results show that students with mindfulness practices struggle with (1) *Time Constraints and Competing Priorities*, (2) *Lack of Routine*, (3) *Getting Started* (i.e., after losing their regular practice), (8) *Social Perceptions and Stigmas*, (4) *Impatience in Long-term Results*,

and (5) *Maintaining Discipline*. Those who do not have a mindfulness practice often experience challenges with (9) *Feeling Incompetent*, (7) *Questioning the Value*, (6) *Experiencing Discomfort in Practice*, (4) *Impatience in Long-term Results*, and (10) *Losing Interest*. Comparing these differences suggests that students with a mindfulness practice struggle to make it a habit and fit it into their daily life. Those without a practice experience more barriers that result from not having a deeper understanding of mindfulness and not yet seeing the need for it in their life.

Both mindfulness teachers and students with mindfulness practices offered recommendations and tips for building a mindfulness habit. There are ten themes identified across the two user groups. Each theme is linked back to the respective barrier addressed.

Table 10: Recommendations are offered to address barriers preventing mindfulness practice in students.

#	Recommendation	Description	Barriers Addressed
1	Sharing with a Like-Minded Community	Creating cohorts or a community for individuals to share their experiences and learn from others (P2, P3, P4, P6, P14, P15, P21, P22, P23, P24, P26, P29)	8, 9
2	Starting Small with Regularity	Choosing something small that can be done regularly or daily and doesn't feel like a big commitment to begin building a practice (P1, P3, P4, P6, P14, P23, P26, P27, P28, P29)	3
3	Establishing Accountability	Having someone or a community to hold you accountable without labeling it accountability, which asserts a power dynamic and a standard (P1, P8, P10, P15, P23, P24, P26, P27, P29, P31)	5
4	Exploring and Creating a Personal Practice	Experimenting with different practices to learn what works for them, exploring mindfulness in joyful activities, and using curiosity to mindfully create a personalized practice (P1, P3, P9, P13, P15, P22, P23, P26, P27)	6, 10
5	Integrating it into Daily Routines	Finding opportunities to insert mindfulness into their day either by making it part of their routine, habit pairing, or defining cues in their environment that trigger a	1, 2

		mindfulness practice (P4, P8, P15, P22, P23, P24, P26, P27, P29)	
6	Setting a Practice Intention	Defining and writing down an intention for starting a mindfulness practice to have clarity on its purpose in their life and to track progress on how they've grown through the practice (P4, P6, P9, P22, P31)	4
7	Writing and Journaling Experiences	Logging and writing down their practice to reflect on the experience and begin noticing their thoughts (P3, P14, P15, P23, P26)	4, 7, 10
8	Interacting with Mindfulness Experts	Finding mindfulness experts or those who have significant experience to learn about the practices (P4, P8, P9, P21)	7
9	Having Accessible Guidance	Finding guidance through different mediums (e.g., books, mobile applications, journals, audio) to support the development of a practice and assist in maintaining focus (P9, P10, P24)	7, 8
10	Having an Open Mind and a Clear Need for Change	Identifying where you need change in your life, remaining open to learning a new practice that feels uncomfortable and vulnerable, and bringing a sense of curiosity (P14, P15, P26, P29)	1-10

Mindfulness teachers voiced a greater need for (1) *Sharing with a Like-Minded Community*, (2) *Starting Small with Regularity*, (3) *Establishing Accountability*, (4) *Exploring and Creating a Personal Practice*, (7) *Writing and Journaling Experiences*, and (10) *Having an Open Mind and a Clear Need for Change*. In comparison, students similarly saw the need for (1) *Sharing with a Like-Minded Community*, (2) *Starting Small with Regularity*, (3) *Establishing Accountability*, and (4) *Exploring and Creating a Personal Practice*. In contrast, they saw a greater need for (5) *Integrating it into Daily Routines*, (6) *Setting a Practice Intention*, (8) *Interacting with Mindfulness Experts*, and (9) *Having Accessible Guidance*. These differences provide insight for the design of an experience that includes both teachers and students, acknowledging needs that may not be widely shared amongst both groups. These needs serve to inform the development of design principles for a graduate student mindfulness educational experience.

4.2.3.1 Design for Barriers

There are a wide variety of barriers that need to be designed for an educational experience to ensure students are able to build a habit of mindfulness. The recommendations made by mindfulness teachers and mindful students offer a foundation for beginning designing. Given the different barriers experienced by people with a mindfulness practice and those without a mindfulness practice, multiple levels of mindfulness experience will need to be considered in the design.

Chapter 5: Design Recommendations

5.1 Question 4: How can students begin developing into a mindful leader in school?

To answer this question, there needs to be a comprehensive understanding of the current state of mindfulness education and graduate student body needs. This current state analysis covers four topics: (1) MIT Sloan Leadership Courses, (2) Introduction to Mindfulness Courses, (3) Student Motivations, and (4) Prior Mindfulness Experiences Amongst Students.

5.1.1 Mindfulness in Existing MIT Sloan Leadership Courses

From the interviews with both lecturers and coaches working with the MIT Leadership Center, it is evident that there is an interest in incorporating mindfulness into the leadership curriculum. This is explicitly seen in the MIT Leadership Center's Leadership Model. Within the model, there are three levels of leadership: individual, team, and organization. Leadership starts from within at the individual level; here, mindfulness is specifically identified as a core component that enables one to be objective about the subjective ("MIT Leadership Center Overview," n.d.). This need was corroborated by the majority of interviewees (P5, P19, P30, P34).

To achieve this goal, there have been efforts to incorporate mindfulness into the classes. There were a number of methods cited; four were most commonly shared. (1) *Integrated mindful moments*, which ranged from starting the class with silence and standing to "land in the room" to breathing exercises, check-ins, and even meditations (P5, P30, P34). (2) *Discussion of and reflection on group meta-awareness*. This included discussions about the group's dynamics and thinking processes (P11, P30, P34). (3) *Student-to-student feedback* on their actions (P5, P11,

P34). This included praise and how their actions were received and perceived by others (P11). (4) *Coaching sessions* with executive coaches to develop greater self-awareness (P5, P11, P19). These coaches are integrated into the classroom as well, which offers them insight into the team or group dynamics. Additionally, both journaling and internal reflection were cited as important components of mindfulness integration as well (P19, P34).

Through these discussions, it was clear that there are specific goals amongst the interviewees for the incorporation of mindfulness into the curriculum. The aim is focused on self-awareness, self-regulation, and situational awareness (P5, P11, P19, P30, P34). These goals are captured in the definitions of mindfulness that center on creating space between stimulus and response to make a decision. Self-regulation and situation awareness are also discussed as goals for improving team dynamics and interpersonal relationships.

One course in particular, Individual Development Lab (ID Lab), focuses on the individual-level of the leadership model, which incorporates the mindfulness competency. The student interest in this course has increased significantly over the three years it has been running. The current course capacity is 60 students, divided into two sections with 30-students. This past year 180 students were not able to register for the course given class capacities (P34). This indicates student interest in self-exploration and individual development, which suggests that there might be an increased interest in mindfulness.

The Center has worked to increase access to this course material by offering different formats. The format of this course has taken both short and long form (i.e., a semester-long course and a 4-day intensive course). The semester-long course allows students time to build the skill. However, it is competing with other priorities. The 4-day version offers students a more immersive experience without any other course requirements. Yet, it is only four days. The

Center has not yet collected data to assess which format is more sustainable for habit formation (P34).

While the work shared sounds promising, interview participant responses suggest that there is still a mindfulness gap in their programming. Many feel that they are still in the process of experimenting and testing different approaches for incorporating mindfulness (P5, P19, P34). Participant 19, a Lecturer, said, “We’ve run a lot of experiments, but we don’t have our own definition” (P19). Participant 34, a Lecturer, said, “There is a lot of important work to be done to figure out how to do this right”. It is clear that there is an interest in mindfulness, but uncertainty in the approach for integration with leadership development. Additionally, there is an acknowledgement that the staff lack the necessary mindfulness expertise (P19, P34). These gaps provide opportunities for finding meaningful ways to bridge mindfulness and leadership in the classroom.

However, Participant 11, an Executive Coach, indicated that they did not see the need for mindfulness to be incorporated in the classroom. This participant believes that mindfulness means too many things today; rather, there should be greater focus on building consciousness and awareness. To an extent, this comment indicates a lack of mindfulness understanding. In response to this participant’s assertion, Brown and Ryan would argue that mindfulness is consciousness, which is composed of attention and awareness (2003). Furthermore, the definition presented in response to Research Question 2 explains the connection to awareness and consciousness through embodied exploration and cultivation. Therefore, mindfulness is the need and remains relevant.

5.1.1.1 An Opportunity to Define a New Approach at MIT

The majority of participants indicated an interest in incorporating mindfulness into their leadership curriculum. While prior efforts have been made to integrate mindfulness, questions remain about the best approach. Students have also shown significant interest in self-exploration and individual development, and this interest cannot be supported today. The design principles from this study can offer a clearer path forward for the MIT Leadership Center.

5.1.2 Understanding Existing Approaches to Introductory Mindfulness

Understanding how introductory mindfulness and mindfulness and leadership courses are taught today provides additional insight for design. As such, Mindfulness Teachers were asked to share their experiences teaching introductory mindfulness courses to beginners, highlighting any experiences focused on drawing a connection between mindfulness and leadership. In response to this question, participants shared (1) how introduction to mindfulness has been taught, (2) how they teach introduction to mindfulness, and (3) key considerations for teachers.

First, multiple of the Mindfulness Teachers from this study discussed longer-term introductory mindfulness programs for students. The programs highlighted ranged from 4-8 weeks (P14, P15, P26, P32). The teachers cited value in these programs: “great stepping stone to get into a mindfulness practice” (P26); “by the end of the eighth week, most had incorporated it into their lives” (P14); and “pre-designed curriculum that has been studied” (P15). This commonality highlights the importance of longer-term programs with multiple sessions. It also presents an opportunity to tap into existing programs that may meet student needs. In particular, one program, Koru Mindfulness, was designed for college students and may be especially relevant (P15). This program is offered through MIT Wellness today.

Second, Mindfulness Teachers shared a variety of ways in which they teach mindfulness to new students. Participants discussed their approach for defining mindfulness, communicating the value proposition, and practicing mindfulness with beginners.

The approach to define mindfulness varies by the teacher and often is based on the context of the course. For example, a wellness teacher focuses on the impact on the nervous system (P15), while a professor teaching a course on Buddhism and Meditation focuses on philosophy (P27). A teacher in the more general setting explained starting with either the secular definition or asking students to find an example from their own life to explore as a mindful experience (P3).

The majority of the participants interviewed highlighted the need to communicate the value of mindfulness. Similar to the definition, the value shared depended on the audience. Many of the benefits shared centered around increasing self-knowledge, creating space for decision making, and finding authenticity and empowerment (P3, P14, P26, P29, P31).

There was greater alignment amongst the teachers in selecting mindfulness exercises to share with newcomers. The four primary exercises included meditations (P14, P15, P23, P26, P29), body scans (P3, P14, P15, P23, P27, P31, P32), breathing exercises (P3, P14, P15, P26, P29, P31), and sense-specific practices (e.g., mindful eating, sound meditation, guided imagery, etc.) (P3, P15, P23, P26, P27, P29). Based on the feedback collected, these four exercises appeared to resonate the most with beginners. Additionally, participants highlighted the value in having participants reflect on and share their experiences with others in the session (P3, P27, P31).

Third, participants highlighted key considerations for teaching introductory mindfulness: accessibility, adaptability, history, and expectations. Teachers need to make mindfulness feel accessible to students. The language used in the session cannot be esoteric and may need to be adapted to the specific context (e.g., emotional agility and situational awareness) (P14, P26). Furthermore, students need to know that anyone can practice mindfulness, it will likely feel uncomfortable at first, starting small counts, and if you miss a day, you can start again the next (P3, P26, P29, P32). Building on these concepts, teachers need to adapt the teaching to their audience. The choice of exercises, information consumption, and overall approach may need to depend on the group (e.g., body scans are not an effective approach when working with a population experiencing physical pain) (P3, P14, P23). The history of mindfulness needs to be acknowledged (P14, P29). Finally, teachers must be currently practicing mindfulness, so they are prepared to support students through their experience (P29, P32).

Unfortunately, one major gap found in the research was the availability of an introductory training that connects mindfulness to leadership. Only one Mindfulness Teacher had teaching experience sharing the connection between mindfulness and leadership to students (i.e., undergraduates). The session followed an approach of defining mindfulness, sharing the value, and facilitating an exercise. The key topics of discussion included identifying emotions, self-awareness, stress reduction, and connection. An exercise of self-reflection was cited as a success. In this exercise, students were asked to identify admirable and non-admirable leadership traits, discuss why those arose, and how mindfulness could foster and guard against those traits, respectively (P3). Sadly, there are no data to assess the impact of the session. Furthermore, there does not appear to be widespread training focused on mindfulness and leadership for students.

5.1.2.1 Mindfulness Courses Offer a Foundation

Overall, there are some valuable insights shared to consider in the development of design principles. While there is not one unified approach for teaching introductory mindfulness, the information captured provides a foundation for understanding the components of an introductory experience. It also offers key considerations in the development of any educational experience. Lastly, there is a clear opportunity to develop an introductory mindfulness training that connects mindfulness to leadership.

5.1.3 Identifying Student Mindfulness Motivations for Design

Gaining insight into student motivations for learning and developing a mindfulness practice is critical to devising an effective educational experience. Conversations with both Students with a Mindfulness Practice and Students Without a Mindfulness Practice provide an understanding of what students need based on their level of experience.

In comparing the student groups, there are more common drivers between those with a practice and those without. Nine themes emerged from the data; six among Students with a Mindfulness Practice and three for those without a practice, described below.

Table 11: Student motivations for developing and sustaining a mindfulness practice of those with and without an existing practice are described.

#	Motivation	Description
Students with a Mindfulness Practice		
1	Opportunity to Learn	Students cited their desire to learn about mindfulness, curiosity in mindfulness theory, and interest in reading mindfulness science (P1, P4, P6, P28).
2	Experiencing the Benefits	Students cited feeling better as a result of their practice and having a method for working with their emotions (P1, P10, P13, P28).

3	Respected Recommender	Students described feeling encouraged to try mindfulness following the recommendation of a respected person in their life (i.e., family member, friend, therapist, boss) (P2, P8, P9, P22).
4	Personal Growth	Students explained how their desire for self-improvement, skill development, and growth motivated their mindfulness practice (P4, P6, P28).
5	Spiritual Development	Students described their interest in seeking an inward practice that connected with their spirit and for some, their religion (P1, P9, P28).
6	Mental Health Support	Students explained their ability to aid mental health challenges through mindfulness practice to find peace and calm (P1, P8, P28).
Students Without a Mindfulness Practice		
1	Self-Care	Students described wanting to make time for themselves, being more aware of how they feel, and taking better care of themselves (P7, P17, P18, P20).
2	Clearing the Mind	Students described wanting to gain more control over their mind, clearing their thoughts and turning off their brain to rest (P7, P12, P17, P25, P33),
3	Belief in the Benefits	Some students simply explained that they believe it would be good to have in their life either because someone told them or they heard from someone that it would be beneficial (P17, P20, P25).

These motivations communicated by students are important to remember when designing an experience. While the specific motivations highlight a lack of understanding amongst students without a mindfulness practice, it provides insight into the limited knowledge one might have when walking into a room to try mindfulness for the first time. These motivations need to inform the design principles to ensure students feel encouraged to engage in any solution developed. More specifically, these motivations need to inform the design of content, exercises, and communications, as well as the development of curriculum format and experience.

5.1.4 Learning from Students' Prior Mindfulness Experiences

As previously discussed, graduate students come to MIT Sloan with a variety of backgrounds and experiences with mindfulness. Understanding these experiences, especially the successes and failures, will provide insight to defining principles that can support habit formation.

Students with a Mindfulness Practice engage in a variety of activities to support their practice. In the data, there are clear commonalities. The majority of these students practice meditation (P1, P4, P6, P8, P9, P13, P21, P22, P28), journaling (P6, P9, P10, P13, P28), walking meditation (P1, P4, P10, P13, P28), yoga (P2, P8, P13, P22, P28), and mindful exercise (P2, P8, P22, P24). Some students engage in breathing exercises (P1, P2, P21) and creative activities (P1, P2, P13), such as theater, dance, painting, or drawing. A few students also noted the importance of in-the-moment micro-practices (P9, P24), body scans (P6, P9), spending time outdoors (P10, P13), and sleep routines (P4, P28) as methods for integrating mindfulness into their lives. This breadth of practices demonstrates the students' view of mindfulness being greater than meditation and their ability to find mindfulness in both enjoyable activities and their day-to-day. A number of these mindfulness activities (e.g., breathing exercises, body scans, meditation, journaling, and walking meditation) were cited as important exercises for students by the Mindfulness Teachers interviewed. This further demonstrates the importance of these activities in building a mindfulness practice.

Students without a Mindfulness Practice have experienced mindfulness in a variety of ways. The majority of students have explored yoga (P7, P12, P16, P17, P25) and meditation mobile applications (e.g., headspace and calm) (P7, P12, P16, P17, P20, P25). A few others mentioned trying meditation (P12, P17, P18) and mindful physical activity (P12, P25) as other mindful experiences. These students explained learning about mindfulness through three

mediums: classes that incorporated mindfulness (e.g., gym or leadership classes) (P16, P17, P20, P25); discussions with friends and family (P7, P16, P18); and news and media sources (P12, P16, P20). Yet these experiences have not been sufficient in enabling these students to build a mindfulness practice. Considering the barriers shared by the majority of Students without a Mindfulness Practice (i.e., (9) *Feeling Incompetent*, (7) *Questioning the Value*, (6) *Experiencing Discomfort in Practice*, (4) *Impatience in Long-term Results*, and (10) *Losing Interest*), it is possible that the learning experiences did not offer a deep enough understanding of mindfulness, effectively communicate the value, nor spark curiosity for exploration. Additionally, none of the students shared any learning experience centered on a mindfulness curriculum. Rather, all experiences integrated mindfulness into another curriculum. This indicates that simply adding mindfulness into another course may not provide the depth of knowledge nor the guidance needed to build a habit of mindfulness and overcome common barriers experienced by beginners.

When Students without a Mindfulness Practice were asked what they do when they're stressed, need to clear their head, or have a difficult conversation, the data show some similar reactions amongst the group. The most common activities include exercising (P7, P12, P16, P17, P18), engaging in creative endeavors (music, dancing, art) (P7, P16, P18, P20, P25), talking to others (e.g., friends, family, and partners) (P7, P12, P17, P18), journaling (P7, P16, P17, P20), and watching television (P17, P20, P25, P33). Less common responses include listing or mapping ideas in their head onto paper (P7, P16, P17), engaging in religious activities (P16, P18, P33), and walking alone (P16, P33). Many of these activities do not seem unhealthy; however, a few respondents did report negative experiences, such as disengaging from others, engaging in self-destructive habits, internalizing stress, crying, and eating unhealthy foods (P18, P25, P33). While this is not the majority of participants, it is important to note that they are likely not the only students who engage in unhealthy behaviors when dealing with difficult situations. The more

common responses present opportunities for those without a mindfulness practice to begin finding mindfulness in their daily lives.

Lastly, Students Without a Mindfulness Practice were asked to share what they'd want to support their mindfulness journey. Participants did not share many common responses, but six themes were identified for consideration. First, the majority of students indicated their desire for a mindfulness group to speak with about their experiences and find support (P12, P17, P20, P25). Second, students voiced an interest in building a mindfulness routine that can be incorporated into their life regardless of what they're doing (P12, P17, P18). Third, students want it to easily fit into their day-to-day and lifestyle (P7, P16, P17). Lastly, a few students voiced an interest in obtaining formal credit for this work (P17, P25), receiving more guidance (P18, P33), and having ways to explore mindfulness (P7, P25).

5.1.4.1 Reframe and Design for Needs

Students with and without Mindfulness Practices share some similar mindfulness experiences. For some, these experiences did not inspire nor lead to a mindfulness habit. Results indicate that a learning experience dedicated to mindfulness could support beginners in developing the knowledge needed to overcome initial mindfulness barriers. In comparison, other students have created mindfulness practices centered around activities that both groups engage in. The perspective taken in approaching these activities changes the experience and highlights opportunities for Students Without a Mindfulness Practice to meet their needs, specifically fitting it into their lifestyle and daily routine. Additional needs identified (i.e., community, guidance, exploration, and credit) will all be considered in the development of the design principles.

5.1.5 The Clear Opportunity for Mindfulness Education

Current state findings offer key considerations and opportunities for designing a mindfulness educational experience for graduate students at MIT Sloan. The MIT Leadership Center sees the importance of incorporating mindfulness into their curriculum. While efforts have been made to do this, there is a lack of confidence in the current approach taken. The Center may be lacking the needed expertise to fully integrate mindfulness and currently does not have capacity to meet existing student demand for their current class most aligned with mindfulness (i.e., ID Lab).

At present, introductory mindfulness courses do not fully meet the need, as the connection to leadership is not often discussed. However, key learnings from mindfulness teachers can inform the design. Their methods for teaching mindfulness provide ideas for design, and their key considerations outline important requirements for development. Additionally, the common approach of longer-term programs indicates the need for a longer-term experience.

Lastly, student motivations and needs provide insight to understand what may draw students to begin and continue developing a mindfulness practice. Motivations include learning, personal care and development, respected recommenders, and practice benefits. Student needs center around having community, receiving guidance, enabling exploration, receiving credit, fitting within lifestyle, and building routine. Addressing these findings will offer a student-centric design.

5.2 Design Principles for Mindful Leadership Education

The current state analysis offers critical knowledge for framing the design principles. The recommendations and tips identified for building a mindfulness habit in research question 3 are

applied in the context of MIT Sloan for mindful leadership development. The eight principles below provide a guide for designing a mindfulness experience to meet graduate student needs.

1) Establish Accountability through Cohort Community

A like-minded cohort of committed students needs to be formed. This group needs to be a space for students to share their experiences and learn from others' experiences. It also needs to establish accountability to each other, the learning, and the teachers. Within the context of the community, this should not be labeled as "accountability," as this creates an unhealthy power dynamic. Rather, it should be viewed as a partnership. Lastly, this community serves to establish routine, creating space for students to consistently show up and focus on mindfulness.

In order for this community to be effective, it needs to be prioritized by the students and create discipline. To achieve this aim, the community should be associated with academic units and ideally would take the form of a course. This would increase capacity for students interested in this topic, offer an easy way for students to "get started," and provide a longer-term program that can follow similar existing mindfulness training programs.

2) Employ Mindfulness Experts as Instructors and/or Subject Matter Experts

Mindfulness Teachers need to be incorporated into the curriculum. These individuals should be formally trained and currently practicing mindfulness. They could serve as a lecturer or guest lecturer. Their focus should be on sharing mindfulness lessons and practices, offering guidance to students just beginning their mindfulness journey, demystifying mindfulness and deconstructing common myths, and communicating the

value of developing a practice. Incorporating these individuals will give students the opportunity to learn from and have regular access to experts who are better suited to answer any questions that arise. Lastly, bringing in these individuals addresses concerns about not having the right expertise or knowledge needed to teach the material and could support increased capacity.

3) Center Learning on Exploring and Designing a Personal Mindfulness Practice

Students need to be guided through an exploration of different mindfulness practices in order to design a personalized practice that fits their lifestyle, integrates into their daily routines, and sparks curiosity. Leading students through a human-centered design process to design their practice provides an opportunity for students to mindfully build their experience through discovery, prototyping, testing, and iteration. This approach encapsulates exploration, experimentation, and reflection, which mindfulness teachers recommended. It offers students the opportunity to start small and explore finding mindfulness in activities they enjoy, which could lessen the initial discomfort. Starting by identifying students' assumptions about mindfulness could allow for those to be validated or invalidated throughout the journey. They could log their experiments, write about the experience, and reflect on what they liked and disliked. This also offers students autonomy to test methods for integrating mindfulness into their day-to-day life, either through habit pairing, cue pairing (e.g., pause and take a breath when the phone rings), or other opportunities that students identify for themselves. The goal of this experience is to spark curiosity, create a safe space to fail, make the commitment feel open and flexible, and empower students to find their own meaning in the practices.

This experience would be exercise-driven and highlight the benefits of mindfulness. It offers students the opportunity to learn, focus on their personal development and self-care, establish discipline in mindfully experiencing the world, and continuously spark interest. Additionally, a workbook could support students by guiding them through this experience.

4) Require an Open Mindset

Students in the course need to have an open mind towards the world and be prepared to question their beliefs. They must be curious and committed to learning about mindfulness. Without this mindset and receptivity, the experience will not be effective and this mindset could hinder others in the group. To achieve this end, there needs to be a method for screening students to ensure they meet this need.

5) Start with Personalized Intention Setting

At the beginning of the class, students need to set an intention for their experience, physically writing down their hopes for the experience. This will offer students clarity on their purpose for taking this course and support them in maintaining commitment towards achieving their hopes. It can be used to track their progress and growth. Additionally, students could take the MAAS assessment to visualize a quantifiable measure for their mindfulness and see if it changes by the end of the course. This could support students who feel impatient in waiting for long-term results.

6) Ensure Material is Adaptable and Accessible for a Diverse Student Group

Both the material and teachers need to be adaptable to meet student needs and ensure the sessions are accessible. The language employed, exercises, and approach for information sharing may need to shift for students to understand and embrace the content. Understanding what material and exercises could be adapted and changed for different populations is critical. Additionally, gathering feedback throughout the experience can offer insights to continue adapting the sessions to better meet student needs.

7) Incorporate Mindfulness History and Contemplate Secular Mindfulness

Integrate the history of mindfulness into the course to ensure students understand the origins and ethical questions surrounding the secular practice of mindfulness. This aims to address concerns identified in both literature around the emergence of “McMindfulness” and from Mindfulness Teachers around the lack of historical knowledge.

8) Incorporate Leadership Applications and Benefits to Clearly Draw the Connection

Integrate leadership applications throughout the mindfulness-centered curriculum and highlight benefits of mindfulness that serve leaders. As previously stated, the material needs to center on mindfulness and encourage habit development among students. Yet, there remains a need to clearly draw connections between mindfulness and leadership throughout the material.

This could be accomplished in many ways. First, the connections between mindfulness and leadership, both from literature and interviews, can serve as key topics in material. This could include sessions centered on emotional regulation and management,

self-awareness, clear and expansive perspective, compassion, calmness, intentional actions, and supportive of others. Second, discussions following mindfulness lessons and exercises could center on how this applies to leadership, drawing on students' experiences (e.g., serving in a leadership role, working with leaders, etc.). Furthermore, exercises could be built to practice employing these practices in a leadership capacity. Giving students the space to consider and discuss both how it has previously applied and could apply in the future will be a critical part of the learning.

These eight design principles aim to guide the design and development of an educational experience for graduate students at MIT Sloan to learn mindfulness. These principles are only the beginning; there is more work to be done to design, prototype, and test the experience with graduate students. Additional information presented in this study (e.g., the background) can serve as inputs for design and development.

Careful consideration must be taken in bringing these principles to life given the wide range of concepts discussed. Any solution generated needs to present mindfulness in a manner that is both authentic to its original conception and comprehensible to the student audience. These requirements must be maintained, while the form and medium of the solution can change.

Chapter 6: Conclusions and a Path Forward

We live in a highly complex, dynamic world, filled with incessant stimuli. Mindfulness is needed more than ever to stay focused and grounded in the present moment. This is especially critical for leaders who are expected to lead through ambiguity, maintain perspective, and adapt quickly to changing environments. This study takes a human-centered approach through design research to develop principles for designing a graduate student mindfulness educational experience at MIT Sloan. There are significant benefits to developing a mindfulness practice (e.g., improved health, reduced mind wandering, increased self-awareness) and having mindful leaders (e.g., improved performance and interpersonal relationships). Yet, there are many barriers to developing a practice, and there is not a clear path for learning how to become a mindful leader, especially not within a school setting. Meanwhile, graduate students begin school each year with the goal of learning key skills that will enable them to continue building successful careers. Some even arrive at school with the goal of developing their leadership capabilities. As such, there is a unique opportunity to support graduate students in becoming future mindful leaders, as they strive to develop both personally and professionally.

This research explored *how we might use design research to create a mindfulness experience for students that builds a lasting habit and develops future mindful leaders* within the MIT Sloan graduate community. The goal of the experience is to enable graduate students to build a sustainable mindfulness practice and learn how to apply mindfulness in a leadership role. Four sub-research questions were studied to answer this question. Primary and secondary research confirmed the need for a mindfulness educational experience within the MIT Sloan graduate student community and illustrated an opportunity for designing an experience that connects

mindfulness to leadership. To solve this problem, eight design principles are defined for developing such educational mindfulness experience for future leaders: (1) Establish Accountability through Cohort Community; (2) Employ Mindfulness Experts as Instructors and/or Subject Matter Experts; (3) Center Learning on Exploring and Designing a Personal Mindfulness Practice; (4) Require an Open Mindset; (5) Start with Personalized Intention Setting; (6) Ensure Material is Adaptable and Accessible for a Diverse Student Group; (7) Incorporate Mindfulness History and Contemplate Secular versus Buddhist Mindfulness; and (8) Incorporate Leadership Applications and Benefits to Clearly Draw the Connection. These principles serve to guide the design of an experience for developing mindful leaders.

Employing a human-centered approach enabled the development of principles that support student needs, address MIT Leadership Center needs and constraints, and consider lessons learned from those who have been teaching mindfulness for many years. It offered those impacted by any future solutions an opportunity to shape the outcomes of the study. Without an understanding of student or MIT Leadership Center needs, the results may not have been viable nor desirable, thwarting any future efforts. Hence, any future work building on this thesis must continue a human-centered approach; co-creating, testing, and piloting solutions to design an experience that is desirable for students, viable for the MIT Leadership Center, and feasible within MIT.

While the principles defined are specific to the MIT Sloan graduate community's needs, they offer a foundation for other graduate programs looking to develop an educational experience for mindful leadership. These principles can be tailored and edited to meet the unique needs of other schools and student communities. Furthermore, this study illustrates a human-centered approach to designing a mindfulness experience for students that aims to address their needs in

the specific context of their day-to-day life. This approach could be replicated by others to develop design principles for developing a mindful leader experience in any context.

As a next step, these design principles need to be utilized in co-creation sessions with MIT Sloan graduate students, representatives from the MIT Leadership Center, and mindfulness teachers. Together, this group needs to brainstorm different solutions that meet the principles outlined. These outputs of the session need to be prioritized, and one concept must be selected for prototyping. Key representatives from each stakeholder group should work together to test the concept, gather feedback, and iterate on the design to create a more refined prototype.

There are a few limitations within this study to consider when applying the results. First, due to a number of policies, the survey could not be distributed to all graduate students at MIT Sloan. As such, the responses may only be representative of a subset of the population and individuals self-selected into responding. Second, some interview participants were recruited via personal connections. These individuals may present a bias in the findings due to existing relationships. However, each participant recruited did meet the requirements for their user group. Third, the majority of interview participants identified as a woman. This was the result of various factors (i.e., self-selection, personal connections, and recommended participants).

Looking forward, future research could focus on exploring these limitations by generating a larger sample size for the survey, pairing the survey with academic classes, interviewing more participants identifying as a man, and soliciting random interview participants through other means (e.g., offering compensation). Additionally, future research could build on these findings by studying existing graduate student mindfulness programs, habit building, and adult learning processes.

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Appendix

Mindfulness Teachers Interview Guide

Introduction

Thank you for making the time to talk with me today. My name is Allie, and I am a graduate student in MIT's Integrated Design and Management program. I am working on my thesis, which aims to develop an educational mindfulness experience for students in Sloan.

I wanted to talk with you today about mindfulness and leadership. I am interested in hearing about your experience sharing mindfulness with others, it's application to leadership, and how students have developed a consistent practice.

The information gathered will inform the development of a mindfulness experience for students.

Before we get started, I want you to know:

- *This is completely voluntary, so if at any point you do not want to continue, let me know and we can stop.*
- *There are no right or wrong answers. I am here to learn from you.*
- *This is meant to be an informal discussion and semi-structured. I have a list of questions to guide the conversation, but I am really interested in hearing more about your experiences and thoughts on the topic.*

Before we jump in, do you have any questions?

Interview Questions

Topic	Questions
Background	<ul style="list-style-type: none"> ● To start us off, tell me a little about yourself and your mindfulness background. <ul style="list-style-type: none"> ○ When did you begin practicing? ○ When did you begin teaching? What led you to start?
Mindfulness Definition	<ul style="list-style-type: none"> ● How do you define mindfulness? ● Can you share a story or example that illustrates your definition of mindfulness?
Leadership Application	<ul style="list-style-type: none"> ● How do you think it applies to leadership? ● What connections do you see between the two constructs? Do you see any disconnects?
Enabling Practice	<ul style="list-style-type: none"> ● What do you believe is necessary for students to build a mindfulness habit? ● What barriers do you often hear or see from students in maintaining a practice? ● Have you found anything to be successful in supporting the development of sustained practice?
Teaching Introductory Mindfulness	<ul style="list-style-type: none"> ● When you teach mindfulness to a beginner, how do you first communicate what it is? ● How do you share the practice with people for the first time? ● What practices do you find resonate the most with new students? ● What baseline knowledge is necessary for people to start learning about mindfulness? ● From your experience, what is the critical foundation needed to understand and be mindful? <ul style="list-style-type: none"> ○ What practices or exercises have you found to be successful in sharing this knowledge?
Mindfulness Leadership Training	<ul style="list-style-type: none"> ● Do you have any experience helping students see the connection to leadership? <ul style="list-style-type: none"> ○ If so, how did you tie the two concepts together? ○ Were there any practices that you found to be successful for the students' learning?
Looking Forward	<ul style="list-style-type: none"> ● Before we conclude, is there anything else that you would like to share about teaching mindfulness? ● Do you have any questions?

Closing

Thank you again for your time. If you remember anything else that you'd like to share or have any additional questions for me, please feel free to reach out at the email on this invite. The information you shared today will inform my thesis and solution for creating an educational mindfulness experience for students.

If I have any questions, do you mind if I follow up with questions?

Lecturer / Coach Interview Guide

Introduction

Thank you for making the time to talk with me today. My name is Allie, and I am a graduate student in MIT's Integrated Design and Management program. I am working on my thesis, which aims to develop an educational mindfulness experience for students in Sloan.

I wanted to talk with you today about mindfulness and leadership. I am interested in hearing about your understanding of and experience with mindfulness, your approach to teaching leadership, and thoughts on incorporating mindfulness into leadership training.

The information gathered will inform the development of a mindfulness experience for students.

Before we get started, I want you to know:

- *This is completely voluntary, so if at any point you do not want to continue, let me know and we can stop.*
- *There are no right or wrong answers. I am here to learn from you.*
- *This is meant to be an informal discussion and semi-structured. I have a list of questions to guide the conversation, but I am really interested in hearing more about your experiences and thoughts on the topic.*

Before we jump in, do you have any questions?

Interview Questions

Topic	Questions
Background	<ul style="list-style-type: none">● To start us off, tell me a little about yourself and how long you've been teaching.<ul style="list-style-type: none">○ What is your current role at Sloan?
Mindfulness Background	<ul style="list-style-type: none">● How do you define mindfulness?● What does it mean to you?● Can you share a story or example that showcases your definition of mindfulness?
Leadership Application	<ul style="list-style-type: none">● How would you define leadership?● How do you teach leadership today?<ul style="list-style-type: none">○ What exercises do you teach students?○ What are the core concepts you share with students?● Do you see mindfulness playing a role in leadership development? If so, how?
Teaching Mindfulness	<ul style="list-style-type: none">● Is mindfulness part of your curriculum today? If not, why?<ul style="list-style-type: none">○ If so, how do you teach it? What practices or exercises do you share?● What gaps do you see in the curriculum as it relates to mindfulness learning?● If mindfulness is to be integrated into your curriculum, what are your learning objectives for it?

Looking Forward	<ul style="list-style-type: none"> • Before we conclude, is there anything else you'd like to share about your goals for integrating mindfulness into your teaching? • Do you have any final questions for me?
Closing	
<p><i>Thank you again for your time. If you remember anything else that you'd like to share or have any additional questions for me, please feel free to reach out at the email on this invite. The information you shared today will inform my thesis and solution for creating an educational mindfulness experience for students.</i></p> <p><i>If I have any questions, do you mind if I follow up with questions?</i></p>	

Students with a Mindfulness Practice Interview Guide

Introduction	
<p><i>Thank you for making the time to talk with me today. My name is Allie, and I am a graduate student in MIT's Integrated Design and Management program. I am working on my thesis, which aims to develop an educational mindfulness experience for students in Sloan.</i></p> <p><i>I wanted to talk with you today about mindfulness. I am interested in hearing about your understanding of and experience with mindfulness, challenges you've experienced in your practice, and how you believe it relates to leadership.</i></p> <p><i>The information gathered will inform the development of a mindfulness experience for students.</i></p> <p><i>Before we get started, I want you to know:</i></p> <ul style="list-style-type: none"> - <i>This is completely voluntary, so if at any point you do not want to continue, let me know and we can stop.</i> - <i>There are no right or wrong answers. I am here to learn from you.</i> - <i>This is meant to be an informal discussion and semi-structured. I have a list of questions to guide the conversation, but I am really interested in hearing more about your experiences and thoughts on the topic.</i> <p><i>Before we jump in, do you have any questions?</i></p>	
Interview Questions	
Topic	Questions
Background	<ul style="list-style-type: none"> • To start us off, do you mind telling me a little about yourself and what brought you to Sloan?
Mindfulness Definition	<ul style="list-style-type: none"> • How do you define mindfulness? • What does it mean to you? • Can you share a story or example that showcases your definition of mindfulness?
Mindfulness Journey	<ul style="list-style-type: none"> • Tell me about your mindfulness journey. When did you first learn about mindfulness? • What drew you to the practice? • What did you find interesting or surprising initially?
Mindfulness Barriers	<ul style="list-style-type: none"> • Do you find mindfulness hard? If so, why? • What challenges have you experienced in your practice? • When have you fallen out of practice? What has brought you back?

	<ul style="list-style-type: none"> If you could have anything in the world to support your practice, what would you want?
Mindfulness Practice	<ul style="list-style-type: none"> Tell me about your mindfulness practice. What do you engage in to practice? How has your practice changed over time? What keeps you motivated to practice? Have you been able to apply your practice to leadership?
Leadership Application	<ul style="list-style-type: none"> How do you see the relationship between mindfulness and leadership? What role do you believe mindfulness plays in leadership development?
Looking Forward	<ul style="list-style-type: none"> Before we conclude, is there anything else that you'd like to share about your experience with mindfulness? Do you have any questions for me before we end?
Closing	
<p><i>Thank you again for your time. If you remember anything else that you'd like to share or have any additional questions for me, please feel free to reach out at the email on this invite. The information you shared today will inform my thesis and solution for creating an educational mindfulness experience for students.</i></p> <p><i>If I have any questions, do you mind if I follow up with questions?</i></p>	

Students Without a Mindfulness Practice Interview Guide



Introduction	
<p><i>Thank you for making the time to talk with me today. My name is Allie, and I am a graduate student in MIT's Integrated Design and Management program. I am working on my thesis, which aims to develop an educational mindfulness experience for students in Sloan.</i></p> <p><i>I wanted to talk with you today about mindfulness. I am interested in hearing about your understanding of and experience with mindfulness and experiences managing difficult emotions.</i></p> <p><i>The information gathered will inform the development of a mindfulness experience for students.</i></p> <p><i>Before we get started, I want you to know:</i></p> <ul style="list-style-type: none"> <i>This is completely voluntary, so if at any point you do not want to continue, let me know and we can stop.</i> <i>There are no right or wrong answers. I am here to learn from you.</i> <i>This is meant to be an informal discussion and semi-structured. I have a list of questions to guide the conversation, but I am really interested in hearing more about your experiences and thoughts on the topic.</i> <p><i>Before we jump in, do you have any questions?</i></p>	
Interview Questions	
Topic	Questions
Background	<ul style="list-style-type: none"> To start us off, do you mind telling me a little about your background and what brought you to Sloan?
Mindfulness	<ul style="list-style-type: none"> Tell me about what you do when you feel like you need to clear your head?

Related Activities	<ul style="list-style-type: none"> • What do you do when you feel stressed? • What do you do after you have a difficult conversation? • How do these activities make you feel? • Why do you choose these activities?
Mindfulness Definition	<ul style="list-style-type: none"> • How do you define mindfulness? • What does it mean to you? • Can you share a story or example that illustrates mindfulness?
Mindfulness Experience	<ul style="list-style-type: none"> • Have you had any experiences learning about or engaging in mindfulness? <ul style="list-style-type: none"> ◦ If so, can you describe them? • How did you respond to these experiences?
Mindfulness Barriers	<ul style="list-style-type: none"> • How would you describe your experiences with mindfulness? • Have you had the opportunities to learn about mindfulness that you turned down? <ul style="list-style-type: none"> ◦ If so, why? • Have you considered exploring mindfulness and/or some practices? Why? <ul style="list-style-type: none"> ◦ If yes, did you follow through? If not, why did you get stuck?
Looking Forward	<ul style="list-style-type: none"> • Before we close, is there anything else you'd like to share about your thoughts on mindfulness? • Do you have any final questions for me?
Closing	
<p><i>Thank you again for your time. If you remember anything else that you'd like to share or have any additional questions for me, please feel free to reach out at the email on this invite. The information you shared today will inform my thesis and solution for creating an educational mindfulness experience for students.</i></p> <p><i>If I have any questions, do you mind if I follow up with questions?</i></p>	

Interview Participant Demographic Survey

Mindfulness Interview Questionnaire

Thank you for taking the time to participate in an interview! This brief questionnaire aims to gather some general information about you and your background prior to our interview.

 alharris@mit.edu (not shared) [Switch account](#) 

* Required

1) What is your name? *

Your answer _____

2) How old are you? *

- 18 to 24
- 25 to 39
- 40 to 60
- 60+

3) How do you describe your current gender identity? *

- Woman
- Man
- Transgender
- Non-Binary
- Prefer not to respond
- Prefer to self-describe

If you prefer to self-describe, please write below.

Your answer _____

4) What is your highest degree or level of education? *

- Some High School
- High School
- Associates Degree
- Bachelor's Degree
- Master's Degree
- Professional Degree (e.g., MD, DDS, JD)
- Doctorate Degree
- Prefer not to respond
- Other: _____

5) How many years have you been practicing and/or studying mindfulness? *

- 0
- 1 - 2
- 3 - 5
- 6 - 10
- 10+

6) In the last two months, about how frequently have you practiced mindfulness?

*

- Did not practice
- Monthly (once a month)
- Bi-Weekly (once every 2 weeks)
- Weekly (once a week)
- 2-3 times / week
- 4-6 times / week
- Daily (1+ times / day)

Mindfulness Attention Awareness Scale Survey

Section 1 of 2

Mindfulness Study Survey



BACKGROUND

The following survey is collecting data for an Integrated Design and Management Master's Thesis focused on studying mindfulness and leadership. The purpose of this survey is to gather insight on mindfulness within the graduate Sloan student body.

This survey was developed by Kirk Warren Brown, Ph.D. and Richard M. Ryan, Ph.D. to assess the core characteristic of dispositional mindfulness. The survey was initially published in the Journal of Personality and Social Psychology, titled "The benefits of being present: Mindfulness and its role in psychological well-being" (2003). There are 15-items, and it should take approximately 10 minutes or less.

Are you a graduate student at MIT Sloan? *

Yes

No

After section 1 Go to section 2 (Mindfulness Questions) ▼

Section 2 of 2

Mindfulness Questions



INSTRUCTIONS

Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.

1) I could be experiencing some emotion and not be conscious of it until some time later. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never

2) I break or spill things because of carelessness, not paying attention, or thinking of something else. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never

3) I find it difficult to stay focused on what's happening in the present. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never

4) I tend to walk quickly to get where I'm going without paying attention to what I experience along the way. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never

5) I tend not to notice feelings of physical tension or discomfort until they really grab my attention. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never

6) I forget a person's name almost as soon as I've been told it for the first time. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never

7) It seems I am "running on automatic," without much awareness of what I'm doing. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never

8) I rush through activities without being really attentive to them. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never

9) I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never

10) I do jobs or tasks automatically, without being aware of what I'm doing. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never

11) I find myself listening to someone with one ear, doing something else at the same time. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never

12) I drive places on 'automatic pilot' and then wonder why I went there. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never

13) I find myself preoccupied with the future or the past. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never

14) I find myself doing things without paying attention. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never

15) I snack without being aware that I'm eating. *

	1	2	3	4	5	6	
Almost Always	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Almost Never