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ORIGINAL ARTICLE

Intrapersonal capacities for sustainability: a change agent perspective on the 'inner dimension' of sustainability work

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Abstract

An ongoing discussion in education for sustainable development (ESD) research has focused on defining a list of agreed upon sustainability competencies required for the work of sustainability change agents. This discussion has included the consideration of an 'Intrapersonal' perspective that considers the role of inner qualities in change agents and how this impacts their ability to implement sustainability. While many researchers have looked at the 'inner dimension' of sustainability work, the identification and function of an 'Intrapersonal' competence remains in question. Utilizing practitioner responses, this paper identifies eight Intrapersonal capacities that change agents described as beneficial to their implementation of sustainability. These capacities are the ability to: Hold complexity, Foster a learner's mindset, Deeply value others, Let be, Show up as one's full self, Regulate and manage the self, Persist with lightness and Ensure one's wellbeing. The study provides insights into the identification of the capacities and their relationship to a wider Intrapersonal research field. It also discusses the implications this perspective has on education for sustainable development should it consider incorporating such capacities into teaching and learning. While much literature in the field is of conceptual nature, this paper offers an empirical contribution by including the voice and perspective of change agents to the Intrapersonal discussion.

Keywords Education for sustainable development · Competence · Capacities · Change agents · Intrapersonal · Sustainability

Introduction

The role of the competencies needed by sustainability change agents has been part of a continued discussion within sustainability research and a consensus has emerged suggesting 'specialized' competencies are needed if change agents are to effectively implement sustainability (Burns et al. 2015). The development of several competence frameworks has created some clarity around these specialized competencies, with the framework by Brundiers et al. (2021) in particular gaining significance in this field. While the application of this framework is increasing, further study is needed on numerous fronts, including consideration of an 'Intrapersonal' competence for change agents as a significant component of the frameworks' evolution and function (Redman and Wiek 2021). The desire for development of an Intrapersonal competence reflects calls by other researchers for greater understanding regarding the role that an individual's inner dimension plays in the implementation of sustainability, a topic seen to be lacking in research and understanding (Frank 2021; Ives et al. 2020; Wamsler 2020). Despite this call, convergence on what exactly constitutes an 'Intrapersonal' competence remains challenged with research considering the ambiguous nature of the concept, the variety of language and terminology used to describe it and how a defined Intrapersonal competence can support the implementation of sustainability (Brundiers et al. 2021; Jaakkola et al. 2022). This study aims to contribute to this discussion by identifying a number of Intrapersonal capacities described as important by sustainability change agents in their work and that could be beneficial in contributing to the development of an Intrapersonal competence understanding.

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Sustainability and the 'inner dimension'

In recent academic discussions, various scholars have engaged with the notion that sustainability implementation requires the development of individuals' 'inner dimension' if society is to successfully transition toward sustainability. This 'inner dimension' has been defined by Wamsler and Brink (2018, p. 55) as the subjective domain of individuals' 'mindsets, worldviews, beliefs, values and emotions' which, if developed, offer the potential for a wider cultural shift toward sustainability and more effective action by individuals. While this terminology has yet to receive consensus, disparate research from various disciplines has considered the topic of beneficial inner skills from both a sustainability (Andrews 2017; Dlouhá et al. 2019; Ives et al. 2020; Lehtonen et al. 2018; Mock et al. 2019; Salovaara and Soini 2021) and facilitation and leadership perspective (Avolio and Gardner 2005; Jordan 2011; Mackewn 2004; Scharmer 2009) without coming to a converging or defined list of 'inner' capacities or one competence. Some examples consider the need in change agents for a 'post conventional level of cognitive (and probably moral) development,' (Waddock 2013, p. 105), while others suggest higher-order dispositions and the development of a critical moral consciousness as integral traits existing within sustainability change agents (Podger et al. 2010). Further examples include the need for agents to cultivate emotional awareness and sensitivity (Lehtonen et al. 2018) and to develop compassion and empathy as value sets guiding conscious action (Bendell et al. 2017; Raami 2019). Ojala (2013) suggests emotional insight and coping mechanisms in individuals engaged in sustainability action are needed, as does Verlie (2019) who discusses the needs for sustainability educators to internalize the ability to 'learn to live' with the climate crisis and the fundamental distress it causes. Giangrande et al. (2019) and Andrews (2017) speak of required 'psychosocial prerequisites' that help address sustainability such as the ability to cultivate presence, be aware of internal and external surroundings, hold contradictory thoughts and feelings, and find inner states of peace and compassion, for oneself and others.

This research suggests that understanding the inner dimension of change agents remains a significant focal point for researchers, as they examine the conditions of effective action. For sustainability researchers, in the context of ongoing competence research, utilizing this research to understand the inner dimension of change agents may prove beneficial as part of the fields desire to develop an Intrapersonal competence.

Towards an intrapersonal competence

A tangible development in this area of the inner dimension and sustainability has been the call for an Intrapersonal competence in the context of an emerging and agreed upon sustainability competence framework (Brundiers et al. 2021). In addition to the more disparate literature described above, a number of recent studies have attempted to move the field toward a more refined 'Intrapersonal' competence understanding (Frank 2021; Frank and Stanszus 2019; Giangrande et al. 2019; Jaakkola et al. 2022; Redman and Wiek 2021). For example, Frank (2021) offers a conceptual framework of 'personal competencies' that directly responds to the affective–motivational challenges of sustainability and includes (1) self-awareness, (2) value clarity, (3) emotional resilience, (4) self-care, (5) the ability to access and cultivate ethical virtues and (6) the ability to access and cultivate mindsets of sustainability. Jaakkola et al. speak of self-awareness and emotional resilience as key elements that constitute what they describe as the 'personal sphere' of sustainability work (2022) and the competencies framework itself, initially developed by Wiek et al. (2011), describes an early understanding of an Intrapersonal Competence as a self-awareness and self-care competence that promotes 'the ability to be aware of one's own emotions, desires, thoughts, behaviors and personality, as well as to regulate, motivate, and continually improve oneself' (Brundiers et al. 2021, p. 20). The Intrapersonal competence is also seen to provide the 'ability to avoid personal health challenges and burnout in advancing sustainability transformation through resilience orientated self-care' (Redman and Wiek 2021, p. 6).

A number of key conceptual challenges have emerged from these research pieces that require further study. One question is whether the Intrapersonal competence is a 'specific and unique competence' or is 'more accurately captured by other concepts, such as mindsets, and potentially should not be considered as a competence, but rather as 'moderators' of the other competencies' (Brundiers et al. 2021, p. 25), while another remains the difficulty in navigating the 'terminological confusion' that exists in the field of study (Brundiers et al. 2021, p. 14). The uncertainty around these questions means researchers are yet to propose a 'unified' Intrapersonal competence definition, an outcome that would also require consideration of how an Intrapersonal competence would relate to the 'agreed upon' competencies framework being adopted by researchers in the field (Brundiers et al. 2021; Redman and Wiek 2021). Further room for development has also been seen in the need to include an empirical and practitioner perspective in this ongoing research discussion (Frank 2021). Some research in this area has emerged (e.g., Inner Development Goals 2021), but remains developing and situated outside the academic competencies discussion that this research occupies. Further questions consider the ability to measure and develop these competencies, an aspect that remains important to educators should they wish to

deliberately develop and teach an Intrapersonal competence. This study situates itself within this competencies discussion and aligns with the field's attempt to develop a robust understanding of the Intrapersonal competence, its relationship with the developing competence framework, its impact on sustainability as well as its educational implications.

Aim

This study thus examines the experience and perspective of sustainability change agents in the context described above. It aims to identify a set of capacities that describe potential elements of an Intrapersonal competence to provide deepened understanding of the domain. The aim of the paper is to provide empirical data to inform a study area that has to date offered mostly conceptual analysis (Frank 2021; Jaakkola et al. 2022).

Methodology

The study adopted a qualitative approach in which participant descriptions of 'facts, feelings and experiences' have been 'interpreted by the researcher' (Savin-Baden and Major 2013) using a thematic analysis approach. Thematic analysis was chosen as it offers a flexible tool that provides a rich, detailed, yet complex account of the data allowing the researcher to determine themes and patterns (Peel 2020). The authors' role as educators and researchers in sustainable development, who have been considering Intrapersonal concepts within these fields, led the study using a 'theoretical' thematic analysis in which these contexts provided a 'theoretical or analytical interest.' This meant the analysis was done with the explicit purpose of uncovering the 'Intrapersonal' aspects emerging from the data (Braun and Clarke 2006).

Drawing from outside sources that allow for new insights is a 'typical' approach for education research within sustainability science (Barth and Michelsen 2013). This was done with the intention of examining (the internal) practice of change agents in the context of their work (sustainability change) (Peel 2020) to extract theory and to then apply it back to practice (Savin-Baden and Major 2013) when considering the research findings as implications for education and research.

The data was gathered using a semi-structured qualitative survey sent to the alumni of the Master's in Strategic Leadership of Sustainability (MSLS). The program was founded in 2004 and now has over 800 alumni from approximately 90 countries. The alumni operate across a range of sustainability-related disciplines and vocations and their roles range from corporate sustainability positions to facilitation, consultation and educational work that considers social and ecological sustainability contexts. While tracking all alumni is difficult, a map of their LinkedIn profiles reveals that at least 50% of the alumni work in change agent roles in sustainability, although anecdotally the number is probably closer to 80%. The survey revealed that more than 90% of graduates found meaningful sustainability change work within 2 years of graduation; 37% even within 2 months. The selection of the population sample is further discussed in the limitations.

Survey design and distribution

The MSLS alumni regularly interacts through a social media group, a listserv and email, all of which were used to communicate the survey. The researchers created a two-minute video explaining the purpose of the research and sent written invitations via the above channels. The full survey focused on the overall experience alumni had during the program and the effect it had on their work thereafter. One subsection consisted of four open-ended, qualitative questions specifically relating to the Intrapersonal dimensions of their work. This part of the survey was semi-structured and asked questions using an intrapersonal perspective as a predefined topic, while allowing space for descriptive answers that provided rich data points for the researchers (Busetto et al. 2020). The questions were:

1. A statement about leadership that many of you are probably familiar with is Bill O´Brian´s quote "The success of an intervention depends on the interior condition of the intervenor." What are your reflections on this quote?
2. What is this interior condition for you? Can you explain what makes it up for you? Please describe it to the best of your ability…
3. Below we will give you a set of usually mentioned sustainability change agent skill sets. Please describe to us any intrapersonal skills you think are relevant in this context. You can provide multiple intrapersonal skills for each as well as repeat skills.

- Utilizing systems and complexity thinking
- Working in diverse teams
- Developing and inspiring a shared vision
- Engaging and motivating a wide range of stakeholders
- Building alliances and collaborative networks
- Working with participatory processes
- Questioning the status quo
- Proposing and testing new solutions

4. Are there other intrapersonal skills that you rely on regularly in your work?

The terms 'interior condition' and 'Intrapersonal dimension' are familiar to graduates, as this terminology is used in written resources and class discussions. The first two questions were intended for prime respondents to consider the role of the internal state, before the third question which aimed to encourage tangible descriptions of Intrapersonal capacities used by practitioners within each proposed area. The eight areas used in question 3 were familiar to respondents as the program uses them in the program's skills map (Ayers et al. 2020); however, they would also be understood without prior exposure to them.

The survey was open from October 21 to November 18, 2019. Of about 800 alumni, 215 responded to the survey in general and 154 respondents answered the Intrapersonal questions. Respondents could choose whether to remain anonymous or share their name with the researchers.

Conducting a thematic analysis: creating themes

Initial inductive clustering

Survey answers were inductively examined by one researcher to thematically analyze narrative trends and patterns. Respondent answers were reviewed, shortened into general codes, and clustered based on the prevalence in the data of certain 'terms, words, phrases or concepts and the frequency and relationships by which they occur-that is what is said and how it is said' (DeJaeghere et al. 2020, p. 33). No quantitative measurements were recorded regarding the number of mentions, as this was an exploratory phase of research; rather patterns of responses based on similar quotes, wording and descriptions were synthesized together in a flexible approach that utilized researcher judgment that considered how participants articulated similar themes across the entire data set (Braun and Clarke 2006). This thematic grouping resulted in the articulation of eight specific thematic areas described in Table 1 and sub-themes consisting of repeated keywords prevalent in each theme, i.e., 'awareness, presence, empathy'. This inductive approach utilized repeated handling of the data to make coherent sense of the different perspectives of respondents and is a common method for finding meaningful narratives in educational research (Savin-Baden and Major 2013).

Detailed deductive analysis

To sense check the inductive phase and to gain further clarity on the prevalence of emerging themes within the data, a second researcher utilized themes from the initial analysis and examined all respondent answers again using Atlas.ti software. Statements and keywords displaying evidence of each theme were coded by mention. Repetitive keywords and statements without a significant change in context were considered as a single mention and statements could be coded in more than one theme. The number of mentions of each theme and examples of theme quotes are presented in Table 1 In this step, a category called 'Other' was also added to account for thematic areas that did not fit the initial set of eight, thus also acting as a check on these categories. No major new themes emerged from this further analysis. Any outliers from this category were discussed and either recategorized into existing themes, removed as a knowledge piece or general skills, or discarded based on their lack of relevance.

Results

Table 1 provides an overview of the eight capacities arranged in order of the number of mentions. The most mentioned capacity was to 'regulate and manage the self' with the least being to 'foster a learner mindset.' For each capacity, respondents also mentioned practices they engage in to foster these capacities. These are presented matched with supporting literature in Table 3 in the discussion.

Discussion

This study identified eight Intrapersonal capacities as important in the implementation of sustainability from the perspective and experience of 154 sustainability change agents. 'Regulate and manage the self' (159 mentions) and 'Ensure one's well-being' (136) were significant capacities that emerged, while change agents also suggested important Intrapersonal areas include the ability to 'Deeply value others,' (142) 'Show up as one's full self' (118), 'Hold complexity' (111), 'Let be' (104), 'Persist with lightness' (99) and 'Foster a Learner's Mindset' (84). These findings and their implications are discussed below.

Connecting findings to an emerging intrapersonal competence perspective

These results share similarities and differences with several studies in the field that examine the topic of an 'Intrapersonal' competence for sustainability, and the results of this study highlight a number of distinct and consistent themes emerging across this literature (Frank 2021; Frank and Stanszus 2019; Giangrande et al. 2019; Jaakkola et al. 2022; Redman and Wiek 2021). For example, the themes of self-awareness and self-care, offered as an initial Intrapersonal

Table 1 Identifying eight intrapersonal capacities

The ability to	Mentions	Respondent quotes
… regulate and manage the self	159	'Your mind, your interior world is like an ocean. And even though you can have storms happening out there, it is only happening on the surface; most of your body—well your mind, is actually steady and strong' (r 207) 'to be aware what is my emotions and what belongs to others' (r 187) 'there's a fundamental need to be aware of our inner condition, be aware of our personal limitations, to be able to intervene in a sustainable and effective way' (r 213) 'am I relaxed? Am I in flow? Am I constricted? Am I anxious? Am I operating from a place of relaxation and centeredness or a place of anxiety/control' (r 21) 'ability to control unexpected emotions (anger, frustration), stay calm and balance' (r 207)
… deeply value others	142	fostering empathy and collaboration' (r 35) 'genuine interest in others' (r 27) 'knowing that not just one person has the answers, like the community identify the solution' (r 24) 'interest in inclusion, participation from team members' (r 201) 'a commitment to working with those who hold different opinions than you' (r 184)
… ensure one's wellbeing	136	'trust and care for my soul, body, mind' (r 35) 'sleep well, eat well, exercise, spend time in nature, be conscious about down time and me time' (r 206) 'I am spending much more time on hosting myself so that I can serve the people around me in my work' (r 196) 'I've learned that taking care of yourself is also part of being a leader and that every big societal change starts within' (r 168)
… show up as one's full self	118	'to make sure what our values are, what we believe in, what we want the world to be' (r 183) 'to have 100% acceptance of oneself, taking 100% responsibility for oneself, ones actions… acting with integrity' (r 204) '(having) a deep awareness of what we bring into the world' (r 3) '(knowing) who am I, and why I am intending an intervention' (r 215) 'staying true to myself and my values' (r 205)
… hold complexity	111	'to see the complexity of the world and navigate it' (r 35) 'ability to not know, to hold paradox and ambiguity' (r 176) 'tolerate uncertainty' (r 199)
… let be	104	'awareness that a better solution may always be out there' (r 24) 'persistence/perseverance, but also the ability to let go' (r 207) 'let go of (one's) ego' (r 207) 'Letting go. By opening myself to different perspectives and not idealising the path to sustainability' (r 186) 'The ability to recognise one's own priorities, the ability to let go of some of those priorities in order to create a shared vision' (r 184) 'letting go of perfection' (r 164)
… persist with lightness	99	'belief that change is possible and we have the capacity to influence the way of the world' (r 133) 'positive outlook, hope, humour' (r 210) 'fostering hope within oneself and others' (r 196)
… foster a learner's mindset	81	'Receptive to feedback' (r 23) 'Through learning we re-create ourselves, become able to do something we never were able to, we reperceive the world and our relationship to it' (r 211) 'fostering a growth mindset' (r 206) 'open mind, curiosity, eagerness to learn and reflect, the courage to fail' (r 183)

understanding by Redman and Wiek (2021), were also found by this study and in other literature suggesting an agreed upon theme. However, the emergence of other capacities in this study points to a broader understanding of this Intrapersonal competence. For example, one finding of this study, the capacity to 'Persist with lightness,' is described as the deliberate cultivation of hope and humor in sustainability work, suggesting a relationship with self-care and resilience, but also offering an insight into the benefits of utilizing hope and purpose as *intentional tools* in sustainability work. This aligns with Frank's consideration of 'accessing and cultivating mindsets for sustainability' which asks for individuals to construct a 'pro-active and positive attitude towards the world' as they seek to overcome the challenges posed by sustainability work (Frank 2021, p. 1237). Other alignments occur, such as Giangrande et al.'s (2019) suggested need for change agents to have 'the ability to hold contradictory thoughts and feelings without having to resolve the contradictions' (p. 6) which is similar to the capacity of 'Holding complexity', and 'the ability to experience and

deepen love and connection to yourself, other humans and the non-human world' (p. 6) which aligns with the capacity of 'Deeply valuing others.' Table 2 shows an overview of connections between the existing literature and this study's results.

The comparison table highlights how this study's findings relate to other competence-related studies and indicates that themes of agreement are emerging, specifically across the themes of self-awareness, self-care and to a lesser extent across the themes of 'valuing others' and 'showing up as one's full self.' One exception was the outcome of 'Developing a learner's mindset,' which was not present in other literature, potentially because it is closely associated with the cognitive capacity of learning and therefore not seen as an Intrapersonal capacity. This beginning of an alignment and unification will need to be built upon if a defined Intrapersonal competence is to occur.

Connecting findings to existing inner dimension literature

Outside of the more focused competence discussion, literature from a wide range of fields has considered 'inner dimension' skills discussed in the introduction. Table 3 gives an overview of how these research findings align with studies from a wider field of 'inner dimension' research.

For example, the capacity of 'Holding complexity', aligns with Jordan's concept of 'complexity awareness,' which promotes change agents' ability to skillfully engage with wicked issues, which is described as the ability by which a 'person notices, expects, and can handle the complexity of a task' (Jordan 2011, p. 59). Another example suggests empathy is a 'prerequisite for understanding the plurality of sustainability from different perspectives or facing collaborators as equals and being compassionate' (Salovaara and Soini 2021, p. 79), aligning with the study's identification of 'Deeply valuing others'. Furthermore, 'Showing up as one's full self,' mirrors the belief that 'effective leadership requires an inner process, in which a leader must first be grounded in an understanding of self' (Burns et al. 2015, p. 92), and aligns with other studies suggestions that change agent impact often stems from a developed sense of identity grounded in defined moral values in service to others, humanity and social justice (Andrews 2017; Podger et al. 2010).

'Regulating and managing the self' was highlighted by numerous other studies as an important capacity (Ives et al. 2020; Lehtonen et al. 2018). Wamsler and Brink (2018) suggest that using non-judgmental awareness (through mindfulness) that continuously pays attention to subjective momentary experience is crucial to cultivating an open, accepting, benevolent and compassionate attitude needed for sustainability work, while 'Ensuring one's wellbeing,' was also supported by other studies. Described in this study as the ability to 'ensure the mental, physical and emotional resources required' for sustainability work, Brundiers and Wiek (2017) speak of a similar definition, suggesting preventative self-care as a skillset needed to ensure professionals' ability to complete their tasks while preventing or coping with distress, frustration, fatigue, and burnout. Other studies suggested the need to develop restorative contemplative practices (Eaton et al. 2016) or the cultivation of 'passion' and 'purpose' as ways to ensure change agents' physical and mental wellbeing as they work over time (Andrews 2017; Mock et al. 2019; Shrivastava 2010).

These examples provide some small insights into how the findings of this study relate to other literature that touch on, but do not explicitly examine Intrapersonal concepts from a competence perspective, thus enhancing the validity of the results of this study, and also creating an emerging coherency regarding the identification of Intrapersonal perspectives in other academic research.

Relating the capacities to the sustainability competencies framework

One key question emerging from previous research was how an Intrapersonal understanding operates in relationship to what is emerging as an 'agreed upon competencies framework' in which the competencies are seen as interrelated (Brundiers et al. 2021). This question asks whether the Intrapersonal serves to *underpin* all other competencies presented by the framework as moderators, or if the capacities can be seen to constitute a competence in themselves (Brundiers et al. 2021). From the perspective of this research, we suggest there *is a role* for the capacities in supporting the implementation of the other competencies and that they do so by supporting the 'motivational and attitudinal' components of the defined competencies, but also that they can potentially help with moderation of the other competencies. As to whether the capacities can be synthesized and included as a single competence, we remain more hesitant to adopt a position on it. Utilizing Jaakkola et al.'s (2022) definition of competence, we consider it possible as the capacities can be seen as knowledge and skills able to be developed, but also as personal dispositions with the potential for growth. If we adopt the requirements for performance and measurement suggested in other research (Brundiers et al. 2021), we are more hesitant, considerate of the difficulties of measuring these capacities in terms of subjective growth or in the ability to correlate their impacts on tangible sustainability outcomes. Table 4 offers a theoretical suggestion for potential relationships.

Table 2 Relating the capacities to other Intrapersonal studies

This study 'The ability to…	(Frank 2021)	(Giangrande et al. 2019)	(Redman and Wiek 2021)	(Frank and Stanszus 2019)	(Jaakkola et al. 2022)
Hold complexity…'		'The ability to hold contradictory thoughts and feelings without resolution' (p. 6)		'Learned to tolerate challenges' (related to sustainability) (p. 14)	
Foster a learners mindset…'					
Deeply value others…'	'The ability to access and cultivate ethical values' 'Openness, empathy, curiosity, gratitude and humility' (p. 1237)	'The ability to experience and deepen love and connection to yourself, other humans and the non-human world' (p. 6)			Awareness of one's relation to others and compassion towards oneself and others (p. 8)
To let be…'		'Find inner states of peace and compassion, for oneself and others' (p. 6)			
Show up as one's full self…'	Values clarity -'connected to intrinsic sustainability orientated values' (p. 1236)			'Obtained detailed insights into affective-motivational challenges and their automatic coping mechanisms' (Self reflexivity/ Self-awareness) (p. 14)	Awareness of one's positionality (p. 8)
Regulate and manage the self…'	Self-awareness 'awareness of one's inner states and processes' (p. 1236)	'The ability to cultivate awareness; the skill to be present' (p. 6)	'Self-awareness and self-regulation' (p. 6)	Ability to'tolerate challenges' (Emotional regulation/ emotional resilience) (p. 14)	Awareness of one's emotions, desires, thoughts, values, assumptions, and behaviors (p. 8)
Persist with lightness…'	Cultivate mindset for sustainability—'a constructive, proactive posture towards the world' (p. 1236)				
Ensure one's wellbeing…'	Building emotional resilience and self-care (p. 1236)	'Knowledge of stress and how to know when you are stressed to reduce stress and avoid burnout' (p. 6)	'Avoid personal health challenges and burnout through resilience orientated self-care' (p. 6)	'Improvement in wellbeing as a result of increased self-awareness, self-care, self-acceptance and self-compassion' (p. 14)	Emotional resilience (p. 8)

Table 3 Supporting the capacities with existing literature

Capacity	Description	Practice developing, cultivating, exhibiting…	Literature
The ability to…			
… hold complexity	The ability to cope with large amounts of information, uncertainty, ambiguity, and paradox	… sense making	(Ferdig 2007; Inner Development Goals 2021; Jordan 2011)
		…. patience	(Frank and Stanszus 2019; Giangrande et al. 2019; Mackewn 2004)
		…. presence	(Dlouhá et al. 2019; Giangrande et al. 2019; Scharmer 2009)
… foster a learner's mindset	The ability to be curious and renew one's knowledge, skills and perspective	… flexible, open-mindedness and ability to change	(Mackewn 2004; Raami 2019)
		… ability to let go	(Bendell and Little 2015; Wals and Benavot 2017)
		… humility and the ability to admit when one was wrong	(Burns et al. 2015)
		… eagerness to reflect and learn	(Ayers et al. 2020; Brundiers and Wiek 2017)
		…. curiosity	(Burns 2016; Raami 2019)
… deeply value others	The ability to see and honor diverse perspectives and people	… inclusivity	(Ayers et al. 2020; Hooks 1994; Salovaara and Soini 2021)
		… genuine care	(Podger et al. 2010; Waddock and Kuenkel 2020)
		… ability to honour and accept multiple perspectives (decentre)	(Allen et al. 2014; Brown 2011; Giangrande et al. 2019; Hooks 1994; Jordan 2011)
		… empathy and compassion	(Brundiers and Wiek 2017; Dlouhá et al. 2019; Ives et al. 2020; Lehtonen et al. 2018; Salovaara and Soini 2021)
		… kindness and generosity	(Avolio and Gardner 2005)
		… appreciation for all	(Jaakkola et al. 2022; Macy and Brown 2014)
		… ability to listen	(Scharmer 2009)
… to let be	The ability to be present, accept what is and let go of attachments	… presence	(Brown and Kasser 2005; Eaton et al. 2016; Gunnlaugson 2006; Wamsler et al. 2018)
		… open-mindedness and non-judgement	(Mabsout 2015; Scharmer 2009)
		… humility	(Bottery 2016; Ferkany 2015; Sadler-Smith and Akstinaite 2021)
		… patience	(Leighter and O'Keefe 2019; Raami 2019)
		… ability to contemplate	(Brown and Kasser 2005; Eaton et al. 2016; Wamsler 2020)

Table 3 (continued)

Capacity	Description	Practice developing, cultivating, exhibiting…	Literature
… show up as one's full self	The ability to show one's strengths, weaknesses, values, and vulnerability	… authenticity	(Burns et al. 2015; Salovaara and Soini 2021)
		… ability to recentre	(Hunter 2009; Macy and Brown 2014; Mackewn 2004)
		… a clear identity	(Andrews 2017; Bendell et al. 2017; Frank 2021; Frank and Stanszus 2019; Jaakkola et al. 2022; Podger et al. 2010)
		… acting from vulnerability	(Dlouhá et al. 2019; Fry and Egel 2021)
		… acting from values	(Blok et al. 2016; Ferdig 2007; Frank 2021; Venhoeven et al. 2013)
		… courage	(Efthimiou 2017)
… regulate and manage the self	The ability to cultivate self-awareness of one's reactions and balance them when needed	… self-awareness of values, beliefs, mental models, patterns, triggers, etc.	(Dlouhá et al. 2019; Eaton et al. 2016; Frank 2021; Frank and Stanszus 2019; Jaakkola et al. 2022; Mackewn 2004; Metcalf and Benn 2013)
		… mindfulness, in the moment, of mental, emotional, and physical sensations	(Andrews 2017; Burns 2016; Dlouhá et al. 2019; Giangrande et al. 2019; Jordan 2011; Lehtonen et al. 2018; Mabsout 2015; Wamsler and Brink 2018)
		… awareness of one's intention, attitude, and motivations	(Ferdig 2007; Frank 2021; Redman and Wiek 2021; Wamsler 2020)
		… ability to regulate and manage emotions (grounding)	(Andrews 2017; Brundiers et al. 2021; Ives et al. 2020)
… persist with lightness	The ability to persevere with positivity and cultivate optimism and hope	… lightness, use of humour and imagination	(Cloutier and Pfeiffer 2015)
		… optimism, positivity, and hope	(Evans 2015; Ojala 2012; Pihkala 2018)
		… driven, passion and purpose	(Andrews 2017; Shrivastava 2010)
		… persistence and agency	(Mock et al. 2019; Ojala 2013)
		… focus and rigor	(Broman et al. 2017)
		… courage	(Blok et al. 2016; Hicks 2018; Visser and Courtice 2011)

Table 3 (continued)

Capacity	Description	Practice developing, cultivating, exhibiting…	Literature
… ensure one's wellbeing	The ability to ensure the mental, physical and emotional resources required	… resilience	(Frank 2021; Jaakkola et al. 2022; Lehtonen et al. 2018; Mock et al. 2019; Pihkala 2018; Wamsler et al. 2018)
		… one's boundaries	(Brundiers et al. 2021; Brundiers and Wiek 2017; Giangrande et al. 2019; Ives et al. 2020; Mock et al. 2019)
		… knowing how to rest and renew energy	(Andrews 2017; Brundiers and Wiek 2017; Burns et al. 2015; Pelenc et al. 2015)
		… self-esteem and self-confidence	(Almers 2013; Almers 2013; Helne and Hirvilammi 2015)
		… ability to consider one's physical state	(Helne and Hirvilammi 2015; Redman and Wiek 2021; Shrivastava 2010)

The intrapersonal as integral to sustainability practice

This research aligns with Jaakkola et al.'s (2022) view of Intrapersonal capacities as personal dispositions that help change agents navigate the challenges of sustainability and that can be further developed. We suggest that a more detailed understanding of the Intrapersonal sphere can support change agents in deliberately cultivating this inner base to support their sustainability work. This study shows that the surveyed change agents are aware of this connection. Firstly, it allows them to understand the field with greater clarity by developing a self-awareness (through clarifying one's mental models, values and beliefs, psychological patterns, and reactions). It also supports long-term engagement by offering coping mechanisms for difficult processes and by promoting resilience, connection and the cultivation of hope (ensuring one's wellbeing, capacity to cope and ability to foster hope). Finally, it encourages cognitive and somatic practices of regulation and response to complex situations. It is through the cultivation of these capacities that change agents develop skills that allow them to respond to the personal and professional challenges of sustainability. In a field calling for inclusive transdisciplinary processes on complex issues, conscious design and facilitation of these processes remains an integral element of potential success—being able to manage the complexity around and inside of them is key (Jordan 2011).

Implications for education for sustainable development

Raami (2019), among others, suggests that the development of self-knowledge abilities and internal understanding are trainable; however, Dlouha et al. (2019) argue it is difficult to teach objective, implementable competences that develop students' internal qualities with transmissive pedagogies. One significant question thus is how ESD learning environments can design pedagogy, learning outcomes and assessment protocols for this emerging Intrapersonal competence and a number of pedagogical pathways have emerged.

The development of contemplative and reflective pedagogies has been suggested as an option that promotes Intrapersonal development, (Ayers et al. 2020; Eaton et al. 2016; Wamsler 2020) as have transformational learning environments that seek to promote active disorientation with reflection to promote self-knowledge (Bryant et al. 2021; Mezirow 1997). Furthermore, pedagogies encouraging hope, purpose, love, and peace in a time of socio-ecological crisis have connected sustainability and spirituality and gained acceptance as increasingly important to sustainability practice (Fry and Egel 2021; Ojala 2017). As these practices find their way into educational programs, they offer students more access

Table 4 Relating the intrapersonal capacities to the competencies framework (Redman and Wiek 2021)

	Systems thinking	Anticipatory/futures thinking	Normative/values thinking	Strategic thinking	Interpersonal/collaborative	Integrated problem solving	Implementation
Hold complexity	Being able to understand and make sense of large amounts of information and being able to hold the paradox, ambiguity, and uncertainty inherent in this complexity	Being able to hold future uncertainty, consider potential negative futures and strategically plan away from them. Have the ability to navigate long-term decision-making uncertainty	Able to hold vast amounts of information, accept uncertainties regarding sustainability outcomes and processes, comprehend opposing sustainability understanding, needs and desired outcomes	Support comfort with long-term, diverse stakeholder processes that may include failure, uncertainty and lack of measurable successes	Ensure continued involvement over long-term strategic transitions with the ability to engage in highly dynamic situations with numerous stakeholders	Able to handle significant amounts of dynamic information and coordinate diverse groups of people with uncertain outcomes. Adopt complexity approaches to problem solving and solutions	Negotiate dynamic elements of implementation process, including uncertainty around people, time, impact and potential outcomes
Foster a learners mindset	Flexibility and an eagerness to constantly re-learn and allow for a curious examination of systems and their properties, and understanding of systems dynamics	The ability to experiment, be adventurous, willing to fail as one suggests possible paths and actions toward an uncertain future and learn from history	Provide openness to novel ideas and outcome, a curiosity for life-long learning of sustainability-related topics, and reflexivity around one's own values and perspectives	Curiosity and flexibility in dynamic transition situations that require numerous iterations, diverse stakeholders and results in learning	Curiosity and capacity to learn from diverse perspectives and engage in iterative collaborative process with a mindset of community learning	Cultivating curiosity, flexibility and a growth mindset in an ongoing project or process, developing expertise in numerous skills and tools. Adopt learning through experimentation	Learn through doing and willingness to fail, be eager to reflect and respond, engage others from similar processes and develop individual and collective learning cycles
Deeply value others	The ability to view and map systems from different perspectives that include all voices and perspectives, remove oneself (decenter) as the locus of understanding	The ability to recognize, value and consider diverse voices and visions in future planning, humbly and respectfully valuing and potentially confronting differing epistemologies	The genuine care and compassion to explore and hold differing values, epistemologies, and perceptions and needs, from diverse stakeholders	Provide increased awareness to create inclusive collaborative projects with beneficial outcomes for all stakeholders Ability to allow others to lead	Ensure inclusive collaborative processes and consider diverse personal, cultural, epistemological perspectives with kindness and compassion. Allow others to lead and step back when they do	The ability to reflect and return to the reason and impact of process outcomes on people and the planet. Include all relevant voices in problem solving and reflect on one's legitimacy to solve problems	Hold everyone as equal and valuable as choices of implementation are made

Table 4 (continued)

	Systems thinking	Anticipatory/futures thinking	Normative/values thinking	Strategic thinking	Interpersonal/collaborative	Integrated problem solving	Implementation
Let be	To be able to face large amounts of (challenging) information with a sense of openness and non-judgment. A willingness to shift pre-conceived personal ideas for an emergent collective system understanding, and to step back when needed	Accept experimental responses in building sustainable futures, detach from outcomes, and accept lack of control of potential futures	Accept the potential limitations of normative sustainability plans and strategies, detach from difficult audiences and demographics when negotiating/implementing	Ability to tolerate difficult and uncertain collaborative and transition outcomes	Comfort with 'trusting' the process and letting go of control, allow collective wisdom to emerge without judgment	Cultivate the ability to exist within large-scale, dynamic long-term processes with potentially little control Trusting the positive emergent potential of the larger process	Prototype, try and let go. Detach from outcome and engage in trust
Show up as one's full self	Being cognizant of one's values, intentions and bias when working/being in systems, being authentic in the process and understanding one's legitimacy and right to engage in the topic	Be able to speak authentically about difficult truths, needs and fears and to embrace the uncertainty of futures thinking and planning with equanimity	As a sustainability change agent, one will be doing values-based work, requiring self-understanding and courage to take responsibility for one's role within the system, and lead change with humility and authenticity	Guide collaboration and strategic outcomes from an authentic position, promote 'skin in the game'. Ability to reflect on legitimacy and right to intervene	Collaborating with integrity and honesty, promoting authentic conversations. Promoting wellbeing through development of individual and collective purpose and shared values. Role modeling authenticity and vulnerability	Authentically lead values-based change with courage. Participate in values aligned communities of practice engaged in problem solving	Have the courage to act, to show vulnerability and willingness to demonstrate personal values and resilience during implementation
Regulate and manage the self	Sense, understand and regulate one's voice, reaction within a larger system, be able to temper one's responses to confronting, divergent or opposing information	Ability to recognize and regulate one's own ego with regard to futures planning and processes. Recognize intrinsic reactions to potential futures	Personal values may be challenged in this work, requiring the self-awareness and ability to self-regulate and respond constructively	Self-awareness and self-regulation during participation or facilitation of strategic processes	Ability to manage triggers, regulate emotions and desires to provide self-aware facilitation and participation. Courage to sense and speak to other ways of knowing (feelings, tacit body awareness)	Regulate one reaction to success, failures and difficulties faced in the processes of problem solving	Mindfully manage and regulate self during implementation. Manage disappointment and failure and choose actions according to personal intentions and motivations

Table 4 (continued)

	Systems thinking	Anticipatory/futures thinking	Normative/values thinking	Strategic thinking	Interpersonal/collaborative	Integrated problem solving	Implementation
Persist with lightness	The mapping of sustainability using systems competences can provoke a challenge to cognition, emotional and spiritual wellbeing as difficult outcomes, and relationships and truths are potentially discovered	Be able to create positive visions and persist in holding futures thinking and planning processes with lightness, hope and positivity. Challenging established power structure requires courage and inspiration	Maintain agency and hope in the face of oppositional values, missed goals, targets and information that can be challenging mentally and emotionally	Foster cultures and narratives of curiosity, togetherness, hope and celebration within interventions	Cultivating a meaningful collective experience that promotes agency, hope and persistence	Persistence in the face of challenges while working toward sustainability solutions, while cultivating requires positivity, focus and agency	Cultivate hope and optimism during implementation, and engage in humor during long-term implementation challenges
Ensure one's wellbeing	Ensure the capacity to engage in long-term, large-scale system work that involves significant amounts of information through mental, physical and emotional resilience	This occasionally challenging process requires self-confidence that our contribution is valuable, and the ability to set necessary boundaries when self-care and replenishment is required		Ensure personal resilience which can support commitment to and involvement in long-term strategic transition processes that may include failures	Ensure one's capacity to contribute over the long term in practically and emotionally difficult environments, including self-confidence to lead or participate in group and social projects and processes	Ensure mental, physical, and psychic resilience in long-term and complex transition processes	Develop inner resilience and renew one's own energies, self-confidence, and self-esteem to lead difficult processes and continually show up in sustainability related work

to internal understanding and self-discovery. The repeated mention of meditation, mindfulness and journaling as practices that support Intrapersonal development in the survey also offers insights into the methods that change agents use to cultivate and strengthen their intrapersonal skills.

Some of these tools are well utilized by current educators (Ayers et al. 2020; Shrivastava 2010; Wamsler and Brink 2018), suggesting that certain pedagogies already offer the potential for Intrapersonal development without needing significant redesigns.

Still, the development of concrete educational practices remains integral to grounding theoretical competencies research in tangible sustainability outcomes and is only just emerging within educational programs (Wamsler 2020). This means developing tangible pedagogical designs that promote the development of the inner dimension in the service of sustainability (Murray 2011), while also considering how pedagogies that allow educators to address issues of ecological distress and discomfort due to sustainability issues in the classroom can be used (Verlie 2019). The Master's of Strategic Leadership towards Sustainability (MSLS) utilizes these Intrapersonal capacities as part of its skills map, using them as intentional guides in the development of personal leadership for sustainability. Students are asked to pick and practice one capacity for each learning period, developing them in consultation with staff and self-report their development (Ayers et al. 2020). While the program has deliberate learning outcomes and assessment points as part of this process in an attempt to fit into the higher education legal framework, further work is being considered on how to transparently embed the capacities within year-round learning. Asking students to reflect on how different educational experiences stimulate growth in the Intrapersonal capacities in response to disorientation and discomfort has been one avenue. While pedagogical designs using the capacities remain emergent and further research is required to develop robust assessment and measurement outcomes, use of the capacities has led to a positive response from students as they seek to develop intrapersonal qualities that impact their ongoing work as sustainability change agents.

Limitations

This study has several limitations. Firstly, the use of surveys means that participants self-report behavior or use of capacities, without the researchers being able to witness these behaviors or their context in action. This is a common challenge discussed in competency/capacity assessment, but as Frank and Stanszus (2019, p. 1239) conclude "qualitative self-reports… might in fact be suited as a means to reconstruct learners´ personal competencies", meaning that while not perfect, they currently are one of the best tools researchers may utilise in these types of studies.

Similarly, the respondents are self-identifying as sustainability change agents without measurable proof that their work and behavior does indeed lead to sustainability transformations. While research to correlate internal capacities and long-term sustainability outcomes is interesting and needed, it seems advanced given the state of the field. Based on the demographics of the alumni network discussed in the methodology section, however, the researchers do feel confident enough that respondents indeed work toward these transformations and are thus a valid source to offer insights into the role of the inner dynamics.

Secondly, the use of alumni from a single educational program (MSLS) means that respondent answers may not present a wide spectrum of understanding of Intrapersonal concepts. The program pedagogy, with its focus on 'sustainability leadership,' utilizes elements of 'internal understanding,' 'personal awareness and self-leadership' as main learning outcomes. This means respondents have a developed language and share epistemology regarding intrapersonal understanding. Thus, outcomes may not precisely represent other programs that utilize similar concepts differently; while differing semantics exist elsewhere, the process offers a robust insight into practitioner perspective of Intrapersonal understanding and potentially could be repeated across numerous programs to develop further insights of Intrapersonal perspectives and language.

While thematic analysis approaches provide a useful methodology for qualitative educational research that aims to draw conclusions from participant experience (DeJaeghere et al. 2020), this study acknowledges that a member check with participants would have provided quality assurance in regard to the study's findings, allowing for correction of any misinterpretation of the data. While adding robustness, this was beyond the scope of this study. While we encourage further research examining participants' actions and testing in other contexts to enhance the validity of the results, we suggest that an early identification of Intrapersonal capacities offers a significant contribution, especially given the urgency of the sustainability challenge.

Furthermore, terminology offered another limitation for this study with uncertainty around which wording and definitions were most appropriate. In developing a set of characteristics to describe an Intrapersonal understanding, the question of whether they are latent capacities that require cultivation or capabilities that exist innately highlights the difficulties of defining a metaphysical internal competence. This study has adopted the 'capacity' definition presented by Glasser and Hirsch (2016) due to the belief that capacities must first enter awareness and then be practiced before becoming a capability, and that competencies include

both performance and potential aspects (Jaakkola et al. 2022; Vare et al. 2022). However, this study remains limited in its required use of non-agreed upon definitions and hopes to contribute to a developing consensus of Intrapersonal terminology in the field.

Finally, the mapping to literature also comes with limitations and difficulties. We did not use a systematic literature review, but rather utilized knowledge of the topic and literature based on experience as researchers across these fields. While a systematic review would be a valuable addition in future studies, it was not the intention for this project, and the disparate nature of the disciplines would make this a difficult task. The literature served to support the relevance and validity of the study and we acknowledge the potential of omissions in literature. It is thus not presented as an exhaustive list, but rather as the beginning of a coherent literature map that provides a supportive scaffold to the empirical findings.

Conclusion

By identifying eight Intrapersonal capacities described by sustainability change agents, we hope to contribute to the ongoing discussion regarding sustainability competencies that has been developed by other scholars and researchers in the field. The findings, derived from a practitioner perspective and supported with literature, identifies eight distinct capacities that support change agents in working toward sustainability in a number of ways, including by providing them a grounded inner dimension from which to act, as well as helping them cope with the challenging task of engaging with sustainability. This research suggests that an Intrapersonal understanding aligns with a number of other perspectives in the field, and offers some additional perspectives beyond an awareness and self-care competence. By identifying Intrapersonal capacities that support change agent action, this study intends to offer a language that allows the deliberate and systematic development of capacities beneficial to implementing complex sustainability work. We hope that the articulation is useful to ESD educators as they seek to develop pedagogies that contribute to the development of the Intrapersonal dimension, thus further empowering and equipping current and future change agents working in the field of sustainability.

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