

We have all climate solutions: Embracing Evolution over Revolution in Management Education

Abstract

In response to Laasch's (2023) call for a radical transformation in Responsible Management Learning and Education (RMLE), this article explores the potential of an evolutionary approach to achieve a paradigm shift towards positive futures. Laasch advocates for revolutionary actions to disrupt entrenched paradigms, but this paper posits that incremental, adaptive changes can be equally, if not more, effective. Grounded in change management theories, the paper argues that continuous improvement and Complex Adaptive Systems theory can foster sustainable transformations. Employing Habermas' theories of communicative actions and transferring prescriptive theorising in management research into an educational context, the paper proposes to revisit our assumptions and paradigms and to transform the curricula in our business schools. Emphasizing systems thinking and practical climate change mitigation education, the paper provides actionable strategies for business schools to mainstream climate solutions across all disciplines. Finally, it introduces strategic foresight and future literacy as essential competencies, underscoring their role in envisioning and navigating towards sustainable and resilient futures. This comprehensive approach aims to equip future business leaders with the skills and knowledge needed to effectively address global sustainability challenges.

Introduction

In his recent provocative essay, Laasch (2023) calls for a radical transformation in the approach to Responsible Management Learning and Education (RMLE), advocating for a shift that disrupts the entrenched paradigms of economic growth and managerial practices in the face of pressing climate challenges. Laasch posits that only through a revolutionary recalibration of RMLE can we hope to address the urgency and magnitude of the environmental crises that threaten our global ecosystem. His argument centres on the necessity for academic institutions to adopt radical stances, urging a departure from incremental and accommodative strategies which he views as inadequate for achieving the substantial changes needed in business education and practice. While the urgency of integrating sustainability and ethics into business education cannot be overstated, we propose an alternative perspective that champions an evolutionary approach to paradigm shifts within RMLE. Unlike revolutionary changes, which are characterized by abrupt and often disruptive transformations, an evolutionary approach advocates for incremental advancements and adaptations that collectively lead to significant shifts in the prevailing educational paradigms. This paper argues that evolutionary changes are not only feasible but may also result in more sustainable and effective outcomes in the context of RMLE.

The appeal of evolutionary changes lies in their capacity to integrate deeply into the existing educational frameworks, allowing for gradual adaptation and learning, which can foster a more inclusive and comprehensive transformation. Such changes leverage existing structures and resources, minimizing resistance and enhancing the likelihood of long-lasting impact. By drawing upon both theoretical insights and empirical evidence, this rejoinder aims to

demonstrate that a paradigm shift in RMLE does not necessarily require a disruptive or revolutionary event; it can also be the culmination of sustained, progressive changes within the academic and educational landscape. Thus, while acknowledging the merits of Laasch's call for urgency, this paper seeks to expand the discourse by illustrating that the path to significant educational reform in the realm of sustainability and ethics can also be forged through thoughtful, continuous, and contextually aware evolutionary changes.

Theoretical Foundations

The debate between revolutionary and evolutionary change is central to discussions on organizational transformation and educational reform. While revolutionary approaches seek rapid and sweeping changes to overturn existing paradigms, evolutionary approaches advocate for gradual, incremental change that accumulates over time, eventually leading to significant transformations. The theoretical underpinning of evolutionary change draws upon change management theories and real-world academic insights that support the efficacy of this approach in RMLE.

Incremental Change and Continuous Improvement in RMLE

The theory of incremental change, grounded in the principles of continuous improvement and exemplified by the Kaizen philosophy, posits that small, consistent modifications can lead to significant transformative outcomes over time. This approach is particularly applicable in the realm of RMLE, where the integration of sustainability and ethical considerations must be handled with sensitivity to the established educational structures and cultural norms (Imai, 1986). Adaptive incrementalism, a key component of this theory, involves making gradual adjustments to curricula in response to emerging educational needs and societal shifts. This allows educational institutions to remain agile and responsive, adapting over time to incorporate new content and pedagogical approaches effectively. The incremental nature of these adjustments ensures that changes are deeply assimilated into the educational framework, thereby minimizing resistance and enhancing the overall effectiveness of the initiatives.

Empirical support for this approach is robust. Studies such as those conducted by Godemann et al. (2014) have shown how universities incrementally adapting their programs to incorporate the United Nations Principles for Responsible Management Education (PRME) can deeply embed sustainability into the curriculum. This gradual integration helps in fostering a deeper understanding and acceptance among students without the resistance often encountered with radical curricular innovations. Moreover, the integration of sustainability topics into existing courses, rather than creating standalone sustainability courses, has been demonstrated to be less resource-intensive and disruptive while enhancing student learning experiences. This method of curricular innovation allows for sustainability concepts to be connected with traditional business disciplines, thus enhancing their applicability in real-world scenarios (Moon & Orlitzky, 2011).

By leveraging the principles of incremental change and continuous improvement, educational institutions can cultivate a culture of ongoing adaptation and enhancement. This method not only facilitates the integration of crucial topics such as sustainability and ethics into business education but also aligns with the natural pace of learning and acceptance among faculty and students. Such an approach enhances the likelihood of successful and lasting educational transformations, ensuring that changes are sustainable and effectively integrated into the broader educational objectives. Therefore, the incremental change and continuous

improvement model offers a compelling framework for integrating sustainability and ethical considerations into business education. By leveraging small, continuous modifications within existing courses and curricula, educational institutions can achieve significant transformative outcomes that are both sustainable and aligned with the broader goals of RMLE.

Complex Adaptive Systems Theory in RMLE

Complex Adaptive Systems (CAS) theory, with its origins in disciplines as varied as ecology, economics, and systems theory, offers a powerful lens for understanding the dynamics of educational change within business schools. This theoretical framework build upon foundational work by Dooley (1997) posits that educational systems, much like ecological or economic systems, exhibit greater resilience and adaptability when they evolve through gradual, iterative modifications rather than abrupt, large-scale reforms. This insight is particularly pertinent to the field of RMLE, where the integration of sustainability and ethical considerations into business curricula often requires nuanced and adaptive approaches.

Educational institutions, with their intricate networks of stakeholders, policies, and cultural norms, can be effectively conceptualized as complex adaptive systems. This framework posits that significant changes within such systems emerge not from top-down mandates or abrupt, radical shifts, but through the dynamic interactions and adaptations of the system's individual components (Davis & Sumara, 2006). In the context of RMLE, this perspective underscores the potential for evolutionary change processes, where gradual adaptations at various levels cumulatively lead to substantial transformations in educational paradigms. Understanding educational institutions as complex adaptive systems highlights the role of connectivity and interdependence among various elements of the educational ecosystem. For instance, faculty members, students, administrative policies, and external societal pressures all interact in ways that can unpredictably influence the direction and nature of change. As noted by Morrison (2013), these interactions can foster emergent behaviours and ideas, which gradually permeate through the system, leading to substantive, albeit unanticipated, outcomes.

This systems-based approach has been supported by empirical research in educational settings. For example, a study by Uhl-Bien and Arena (2017) demonstrated how adaptive leadership within university settings facilitated emergent network dynamics that promoted innovative responses to sustainability challenges. These findings suggest that leadership in educational institutions does not need to impose radical changes but rather can guide the evolution of ideas and practices through facilitation and support of adaptive networks. Furthermore, the practical application of this theory in RMLE can be seen in how curricular innovations are implemented and spread. A notable instance is the initiative by several business schools to incrementally incorporate ethics and sustainability into their existing programs. By allowing faculty to experiment with and adapt new teaching methods and content within their courses, schools encourage a bottom-up approach to curriculum development. Over time, successful adaptations are naturally selected for wider implementation, leading to a gradual but steady shift in educational norms and values. This process was detailed in a case study by Barrett and Fry (2017), which examined how incremental curricular innovations at a business school led to a significant shift in teaching practices and student engagement with complex global issues.

Viewing educational institutions as complex adaptive systems provides a robust theoretical basis for advocating an evolutionary approach to integrating sustainability and ethical considerations into business education. It emphasizes the power of distributed changes and the potential for significant transformation arising from the collective adaptations of individual actors within the educational ecosystem. This perspective not only enriches our understanding of how change occurs in educational settings but also offers practical pathways for fostering sustainable and impactful educational reforms.

Incrementalism in Policy Making for RMLE

The theory of incrementalism in policy making asserts that effective and sustainable policy change typically occurs through a series of small, incremental adjustments rather than through wholesale, radical shifts. This approach, prominently advocated by Charles Lindblom (1959) in his discussions on public policy, emphasizes practicality and minimal disruption, facilitating continuous learning and adaptation. In the context of RME, incrementalism offers a pragmatic pathway for integrating ethical and sustainable practices into business school curricula and administrative policies. Incrementalism in policy making supports the idea that small, manageable changes allow for the testing and refining of policies in real-time, which can lead to more robust and well-adapted solutions over time. This approach is particularly suitable for RME, where the integration of new ethical standards and sustainability practices into existing frameworks can be complex and fraught with potential resistance. By implementing incremental changes, educational institutions can ensure that these new policies are introduced in a way that is both acceptable and effective, allowing faculty, students, and administrators to gradually adapt to new ways of thinking and operating.

An example of incrementalism in action can be found in the sustainability journey of Interface, Inc., a global leader in modular carpet design. As detailed by Amodeo (2008) in Interface successfully developed a seminal sustainability strategy and culture through incremental changes. This approach, dubbed "cultural incrementalism," involved small, steady steps that collectively transformed the company's identity and operations towards greater sustainability. The Interface model illustrates how consistent, incremental policy shifts can fundamentally alter an organization's culture and operational focus, providing a valuable blueprint for RME within business schools. In developing RME strategies, educational leaders can draw from the Interface example to foster a culture of sustainability and ethics incrementally. This might involve initially integrating sustainability topics into a few courses and gradually expanding these teachings across the curriculum. Similarly, administrative policies supporting sustainable campus operations can be introduced in phases, starting with manageable projects such as recycling programs or energy efficiency upgrades and gradually moving towards more comprehensive sustainability initiatives. The incremental approach allows for the modification and improvement of policies based on feedback and learning derived from each step. This not only enhances the suitability and effectiveness of the policies but also builds a strong foundation of commitment and understanding among all stakeholders involved. Furthermore, it reduces the risk of backlash that often accompanies more radical changes, thereby smoothing the transition towards a more sustainable and ethically focused educational environment.

Diffusion of Innovations Theory in RMLE

The Diffusion of Innovations Theory, developed by Everett Rogers (1962), offers a framework for understanding how new ideas and practices spread within societies,

particularly through specific channels over time among the members of a social system. This theory is particularly relevant to the field of RMLE as it provides insights into how innovations related to sustainability and ethics can be effectively integrated into business schools and universities. At the heart of this theory is the concept that innovations are more likely to be adopted and sustained if they are perceived as advantageous, compatible with existing values and practices, relatively easy to adopt, triable, and observable in their effects. These characteristics significantly influence the rate and extent to which new ideas and practices are absorbed within an educational context. In the context of RMLE, Diffusion of Innovations Theory suggests that the introduction of new curricular elements or educational practices related to sustainability should be handled in a way that aligns with existing institutional norms and values. This alignment ensures a smoother integration and greater acceptance among faculty and students, thereby enhancing the likelihood of sustained adoption. The theory underscores the importance of gradual implementation, which allows the educational community to explore and adapt to new concepts without feeling overwhelmed. This gradual approach is critical in RMLE, where concepts such as corporate social responsibility or sustainable management might initially seem at odds with traditional business education paradigms focused predominantly on profitability and market competition.

The application of Diffusion of Innovations Theory to eco-innovations in the broader context provides valuable insights for RLME. As Karakaya, Hidalgo, and Nuur (2014) set out in their study on the diffusion of eco-innovations, it becomes clear that for environmental technologies and practices to be embraced, they must be strategically introduced in ways that stakeholders find accessible and aligned with existing practices. This review highlights that the successful diffusion of eco-innovations often relies on the perceived direct relevance and benefits these innovations offer to adopters, a principle that can be directly applied to the adoption of sustainability-focused curricula in business schools. For educational leaders aiming to embed sustainability and ethics into business education, it is crucial to position these innovations within the existing educational frameworks and cultural norms. Leaders should focus on communicating the relevance and advantages of RMLE innovations, facilitating triability through pilot programs, and visibly showcasing the benefits of these new practices. This approach not only encourages wider acceptance and adoption but also ensures that these educational innovations are more likely to be integrated sustainably and effectively over the long term. By ensuring that these innovations are compatible with existing values and practices and introduced in a manageable, phased manner, educational institutions can enhance their adoption and long-term sustainability, ultimately fostering a more responsible management education landscape.

Socio-technical Transition Theory in RMLE

Socio-technical Transition Theory, and specifically the Multi-Level Perspective (MLP) on transitions, provides a robust framework for understanding how systemic changes in society, including those in educational systems, occur through dynamic interactions among different levels of structure: niches, regimes, and landscapes. This theory is particularly pertinent to RMLE as it explores how sustainable educational practices can emerge and stabilize through gradual transitions rather than abrupt, comprehensive shifts in educational regimes. According to MLP, transitions occur through the interplay between niches (the locus for radical innovations), regimes (the entrenched systems and practices that dominate current structures), and landscapes (the broader macroeconomic, cultural, and environmental contexts that provide the background for regime and niche interactions). Innovations in RMLE, such

as new pedagogical approaches or curricula focusing on sustainability, typically start in niches. Sustainable change in RMLE, as per MLP, often results from incremental and coordinated changes across these three levels. For instance, niche innovations in RME might include experimental courses that integrate sustainability deeply into their curriculum, developed and tested within forward-thinking business schools. Over time, successful innovations can influence broader educational regimes by demonstrating the efficacy and relevance of incorporating sustainability into business education. Meanwhile, changes in the educational landscape, such as increasing societal demand for ethical and environmentally conscious business practices, can exert pressure on educational institutions to adopt these niche innovations.

Regimes in RMLE consist of existing curricular structures, accreditation standards, and educational policies that currently govern institutions. These regimes often resist change due to their stability and the interconnectedness of their components. However, as Geels (2019) discusses, shifts within the landscape—such as regulatory changes, shifts in public opinion, and technological advancements—can create windows of opportunity for niche innovations to influence and eventually integrate into regimes. Geels (2019) elaborates on how socio-technical transitions occur, not just through technological innovations but also through changes in practices, perceptions, and policies—all of which are relevant to RMLE. For example, as public and corporate emphasis on sustainability grows, educational institutions may feel increased pressure to adapt their offerings to include more courses on sustainable business practices, which may initially emerge as niche offerings but gradually become part of the core business school curriculum. For policymakers and educational strategists, understanding the dynamics of MLP can guide the development of strategies that facilitate the adoption of sustainable practices in RMLE. This might involve fostering niche innovations through pilot programs and research initiatives, influencing regime-level changes by updating accreditation standards and curricular guidelines, and aligning educational goals with broader societal changes in the landscape. By recognizing the need for alignment and gradual transitions across different levels of educational systems, stakeholders can more effectively promote and implement sustainable changes that are both impactful and enduring.

These theoretical frameworks and empirical studies support the notion that evolutionary approaches in RMLE not only facilitate a more organic integration of new ideas and practices but also enhance the resilience and relevance of educational transformations. By fostering an environment where change is continuous and adaptive, educational institutions can more effectively prepare students to meet the challenges of sustainability and responsible management in a dynamic world.

Reframing the Growth vs. Degrowth Debate:

In the ongoing discourse surrounding responsible business and the climate crisis within RMLE, the debate often polarizes around concepts of growth versus degrowth. This binary perspective can obscure more nuanced and comprehensive pathways toward sustainability. Traditional discussions that prioritize quantitative measures like GDP are increasingly challenged by scholars who advocate for a redefinition of 'growth' to emphasize quality and sustainability over mere economic expansion. Jackson, in his seminal work "Prosperity Without Growth" (2009), questions the conventional wisdom that equates economic growth with progress, proposing that true prosperity comes from enhancing the quality of life and ecological health, rather than merely expanding economic measures. Similarly, Buch-Hansen and Nesterova (2023) argue for a nuanced understanding of degrowth that involves reducing

environmentally harmful activities while expanding beneficial ones, aligned with profound societal changes. Their approach, grounded in critical realism, suggests that transformations need to occur across multiple dimensions: material transactions with nature, social interactions, social structures, and inner consciousness.

Further enriching this debate, the concept of regenerative capitalism, as articulated by Fullerton (2015), introduces a framework that guides businesses and economies towards practices that restore, renew, and revitalize their own sources of energy and materials. Fullerton's principles, such as promoting robust circulatory flows and balancing efficiency with resilience, suggest that economic systems should not just sustain but improve the ecosystems they depend on. This model of regenerative capitalism is particularly resonant for RMLE, which seeks to embed sustainability deeply within the fabric of business education, encouraging future business leaders to pioneer practices that enhance systemic health and vitality.

The conversation around economic models in RMLE also draws on the work of Mazzucato and Raworth. Mazzucato (2018) emphasizes the need for reevaluating how economic value is created and defined, proposing shifts toward responsible and sustainable business practices. Raworth's Doughnut Economics (2017) advocates for an economic model that respects planetary boundaries while fulfilling social foundations, aligning closely with the goals of RMLE to balance profit-making with ethical considerations and sustainability. Moreover, the differentiated economic needs of global regions suggest that a one-size-fits-all approach may not be viable. As Kerschner (2010) discusses, while affluent nations might explore post-growth models, developing regions may still require economic growth to meet basic needs. This differentiation is crucial in international policy discourse and in RMLE curricula, which must prepare managers to operate effectively across diverse global contexts. The integration of social, environmental, and economic goals in RMLE is further underscored by the United Nations' Sustainable Development Goals (SDGs), which provide a framework for assessing progress beyond traditional economic metrics. These goals highlight the interconnectedness of global challenges and emphasize the multifaceted nature of solutions, which are fundamental teachings in RMLE. Finally, the equity and justice aspects brought to light by the climate justice movement emphasize that policies and business strategies must distribute both the benefits of economic activities and the burdens of climate action equitably. This approach supports a 'just transitions' framework within RMLE, advocating for changes that allow all stakeholders to adapt fairly and effectively. The path to a sustainable future in RME may thus lie not strictly in choosing between growth and degrowth but in redefining what growth means in the context of a finite planet and integrating principles of regenerative capitalism.

Paradigm Shifts: Multiple New Ways

Before redefining what growth means, it is crucial to reflect on how concepts like growth are developed. We often perceive elements such as economic rationality as inherent to any business system, but it is important to recognize that our current business and economic systems are man-made constructs, not givens. For instance, the Anglo-American approach, which emphasizes that everything must make 'business sense' or requires a 'business case,' was established at a specific historical point. While this paradigm has become dominant globally, cross-cultural studies show that managers in other countries do not necessarily adhere to this economic rationality. Molthan-Hill (2015) highlights that German managers prefer to speak of 'survival in the competition.' In her research, the term 'Mitbewerber,'

better translated as ‘co-applicant,’ reflects a view where competitors also need to survive within the competition.

Two decades ago, Molthan-Hill (2008) noted significant debate among translators on how to translate ‘business case’ into German, with about 23 potential translations discussed. However, by 2024, the term ‘business case’ is used directly in German sentences, such as ‘Für dieses Projekt müssen Sie einen Business Case erstellen,’ reflecting a shift towards the Anglo-American understanding. A longitudinal study on this shift could provide insights into changes in the economic reasoning of German managers, potentially influenced by international competition. In "The Theory of Communicative Action," Habermas (1984/1987) argues that many social systems, including capitalism, are not perceived as human creations. Actors within these systems often view their methods as inherently rational and necessary. Habermas distinguishes between such systems and what he calls the ‘lifeworld,’ where we can access a multitude of possibilities for interpretation and action. Within social systems, we use ‘instrumental reason,’ focused on efficiency and functionality, whereas ‘communicative reason’ in the lifeworld allows us to question and potentially transform existing systems by drawing on broader, more inclusive rationalities.

Habermas (1984) concludes, "Thus communicative reason does not simply encounter ready-made subjects and systems; rather, it takes part in structuring what is to be preserved" (p. 398). Applying Habermas’ theories, we can revisit existing systems to understand their ‘instrumental reason’ and use ‘communicative reason’ to improve them. Alternatively, we could explore novel economic ideas, such as those proposed by Silvio Gesell (1862-1930). Gesell, neither purely capitalist nor socialist, combined key elements of both ideologies. He advocated for free markets as essential to economic well-being but also recognized that capitalism could lead to widespread poverty, increasing inequality, and recurring economic crises (Silvio Gesell Foundation, 2024). Gesell’s theories were influential, discussed extensively by John Maynard Keynes (2017) in "The General Theory of Employment, Interest and Money" (1936). Despite their historical significance, Gesell’s ideas have been largely forgotten, especially in the English-speaking world.

While revisiting Gesell’s theories is valuable, we propose a different approach: combining prescriptive theorizing in management research with incremental changes. This paradigm shift in RMLE involves theorizing about positive futures and co-creating new business systems that lead to these desired outcomes. By leveraging both incremental adaptations and visionary thinking, we can foster sustainable and impactful transformations in business education.

Prescriptive Theorizing in Management Research: Inspiration for Management Education

In response to the grand challenges of our time, such as climate change, Hanisch (2024) advocates for embracing prescriptive theorizing in management research. According to Hanisch, descriptive theory-building focuses on analyzing existing social phenomena to define, explain, and predict outcomes (Sutton and Staw, 1995; Bacharach, 1989; Pfeffer, 1997). In contrast, prescriptive theorizing addresses normative and instrumental questions of "how things should be" and "how they can be achieved" (Freeman, 1999; van Aken, 2004). This approach takes a prospective view, aiming to actively elicit or produce desired outcomes (Landa, 1983). Thus, descriptive and prescriptive theorizing pursue complementary goals of understanding and guiding social behavior. While some prescriptive theories, like Freeman's

(1999) Stakeholder Theory, have driven positive societal change, many researchers prefer descriptive theorizing, viewing prescriptive approaches as normative and unscientific. This preference disregards the inherent norms and values within the current research paradigm. Hanisch suggests reflecting on underlying assumptions and values even when using descriptive theory-building approaches. He strongly recommends prescriptive theorizing, as it can offer new theories to address challenges and suggest practical solutions where descriptive theories may only highlight what does not work (Hanisch, 2024).

An illustrative example involves a researcher whose findings indicated that environmental performance interventions were ineffective because companies prioritize shareholder returns, a legal obligation in his country. This perspective shows that research focused solely on existing constraints fails to provide actionable solutions. Hanisch (2024) summarizes that confronting pressing issues demands not only articulating ideal outcomes but also providing a roadmap for their realization. Prescriptive theorizing bridges the gap between theoretical conceptualization and practical application. To further our discussion, we must consider the concept of ‘consensual reasoning’ in relation to our proposed changes to RMLE. Achieving predefined future goals requires agreement on these goals. While individual goals may vary due to religious beliefs, social norms, and differing views of good and evil, our earlier discussions suggest that new common goals should replace outdated ones like maximizing shareholder value.

One example of ‘consensual reasoning’ is Habermas' (2019) discourse ethics. In 1992, discourse ethics were applied to design an energy mix for Baden-Württemberg, Germany. Participants from various societal backgrounds engaged in open discourse, separating facts from values, such as assessing nuclear risks and climate change scenarios. After establishing scientific facts, values were debated, leading to four future scenarios based on different value combinations, which were then presented to elected representatives for final decisions. This project illustrates the importance of a shared goal achieved through consensus (Apel, 2016). Another approach is ‘disciplined imagination,’ as suggested by Gümüşay and Reinecke (2022). They propose building theories by first defining desirable futures and then designing theories to achieve them. These theories are then tested in existing organizations to see if they lead to the intended outcomes. While articulating these outcomes is normative, so too are the assumptions underlying descriptive theories. ‘Disciplined imagination’ allows for exploring different perspectives, including underrepresented or new ones, to transform them into testable theories. Gümüşay and Reinecke (2022) argue that by articulating how radical ideas can become real, they can no longer be dismissed as ‘unrealistic.’ These ideas can be discussed in mainstream debates, taught to students, and legitimized as possible alternatives. We encourage researchers to develop and test new theories using ‘disciplined imagination.’ Furthermore, we advocate for incorporating future learning in RMLE, which will be elaborated upon in the practical ideas section for transforming RMLE.

Embracing Evolution in Management Education

While we advocate for embracing evolutionary changes in Responsible Management Education (RME), we also recognize the need for radical transformation. Our approach differs in emphasizing the process of achieving this transformation. Theorizing a future without a roadmap is problematic; radical new theories can disengage learners when there is a stark discrepancy between the envisioned future and current reality with no clear path to bridge the gap. Building on insights from the previous section, we suggest using prescriptive theorizing in RMLE and ‘disciplined imagination’ to explore Future Literacy and Foresight.

We propose designing detailed roadmaps to achieve these envisioned futures while utilizing current knowledge on reducing greenhouse gas emissions and integrating these into curricula. Initially, we will present ideas for small incremental changes before addressing the necessary larger changes, which must happen simultaneously and urgently.

Climate Change Education (CCE) has gained momentum in RME and is demanded by various stakeholders of business schools, including students (Yale et al., 2016; Maloni et al., 2021), faculties, and companies (McKenzie, 2021). Many business schools and universities are responding to this demand. For example, Harvard University's (2022) Climate Education Report states that "90% of student survey respondents said they would like to engage with alumni on climate topics as part of courses or in an extracurricular capacity" (p. 13). The report recommends four interconnected efforts: faculty hiring, institutionalizing a standing committee on climate education, staffing and substantially funding a climate education accelerator program, and establishing an external climate education advisory committee (p. 26).

A common misunderstanding is that CCE is solely climate change science education, focusing on scientific processes such as the carbon cycle or the greenhouse gas effect. However, science education is only one dimension of CCE. The other two dimensions—climate change mitigation education (CCME) and climate change adaptation education (CCAE)—are more pertinent to RME. Table 1 outlines all three dimensions of CCE and their relevance to business schools. More detailed suggestions on teaching CCE can be found in the chapter "Climate Change Mitigation Education in Business Schools: Now It Is Time to Save the Day!" (Molthan-Hill et al., 2023a), which includes perspectives from senior management and passionate faculty members on achieving either top-down or bottom-up incremental change.

Incorporating CCME into every business discipline ensures students are equipped with the necessary tools and frameworks to transform their respective fields. For example, in accounting, students should learn carbon accounting and integrate it into corporate reporting. In economics, they should study policies that incentivize the transition to a low-carbon society and explore new models such as 'Doughnut Economics.' In strategy, students need to understand how to design future-oriented corporate strategies. These incremental changes collectively contribute to a substantial shift in business education, aligning it with sustainability goals.

By leveraging these approaches, business schools can achieve significant transformative outcomes that are sustainable and aligned with broader RMLE objectives. This dual approach of incremental changes supported by strategic foresight and future literacy ensures that educational transformations are both impactful and resilient.

Integrating Climate Change Mitigation Education Across Disciplines

In the third edition of our "Sustainable Management: A Complete Guide for Faculty and Students" (Molthan-Hill, Ed., 2023), we have provided detailed suggestions for integrating Climate Change Mitigation Education (CCME) into various disciplines. This guide serves as an excellent starting point for faculty and trainers who wish to incorporate climate solutions into their teaching, even when time-constrained. For each discipline, such as marketing, we offer three ready-made 50-minute sessions. These sessions are designed so that the instructor can spend 20 minutes reviewing the instructions and then deliver the lesson effectively.

Additionally, we provide a short summary for each discipline, key readings, and further ideas for extended teaching periods. One example of an experiential learning activity recommended in the book (p. 452) is a greenhouse gas consultancy project. This project, detailed further in Molthan-Hill et al. (2020) and Molthan-Hill et al. (2017), involves students working on real-world climate solutions for businesses.

In 2010, inspired by the climate solutions my students designed in the module "The Sustainable Organisation," I developed a student-led greenhouse gas management consultancy project. This project was embedded in the core curriculum of an undergraduate course at Nottingham Business School (NBS) and has been available to all final-year undergraduate students for the past 12 years. It has since been replicated in other schools within Nottingham Trent University (NTU) and other institutions. Approximately 2,100 students and 360 organizations, mainly SMEs, have engaged with this project. The work was showcased at COP21 in Paris as an exemplar of best practice in climate change education (UNDESA, 2015). In 2015, the project won "The Guardian University Award for Business Partnership" in collaboration with NetPositive Ltd (Guardian, 2015). The benefits of this approach and its impact on learning were also recognized with a BAM Education Practice Award in 2021.

For those interested in replicating this project, our "Handbook of Carbon Management" (Molthan-Hill et al., 2023b) provides comprehensive resources for designing lectures and seminars. This handbook is also useful for faculty who wish to integrate smaller or larger units into their teaching or corporate work. It includes dedicated chapters on topics like the digital footprint and food, each of which can be applied at both individual and organizational levels, such as transforming university or business school catering. While we advocate for incremental change across all disciplines, business schools could also be more ambitious by creating new Master's programs, ideally in collaboration with other disciplines (Molthan-Hill et al., 2021; Molthan-Hill et al., 2019). Ultimately, we recommend that every learner's curriculum includes Climate Change Education (CCE), particularly CCME, alongside acquiring generic competencies such as systems thinking, which will be discussed in the next section.

Systems Thinking and Systems Practice

Starting Climate Change Education (CCE) can feel as challenging as tackling climate change itself. To assist educators worldwide, we have developed the Climate Literacy Training for Educators, Communities, Organisations, and Students (CLT-ECOS 2024). This eight-hour program covers essential topics in CCE, including climate change science and related solutions, climate justice, emissions reduction for consumers, carbon calculations from everyday activities to cryptocurrencies, multisolving, and most importantly, systems thinking and practice.

In both CLT-ECOS and the En-ROADS (2024) workshops, we emphasize systems thinking to identify high-impact solutions and achieve co-benefits when implementing these solutions. The En-ROADS (Energy-Rapid Overview and Decision-Support) simulator, designed by Climate Interactive in collaboration with MIT Sloan and Ventana Systems, is an excellent teaching tool. It demonstrates the connections between different climate solutions and their impact on temperature reduction. We run En-ROADS as a mini-game where learners work to reduce the temperature increase to 1.5°C. Often, participants are surprised to realize that achieving the Paris Agreement target is possible but requires simultaneous implementation of

multiple solutions. They also find that some of their preconceived notions, such as the effectiveness of offsetting, need to be re-evaluated. After the En-ROADS exercise, we examine the broader systems that influence and are influenced by climate solutions. For example, we explore the link between transport emissions, global warming, and health problems like asthma from air pollution. Our focus in CLT-ECOS is always on solutions, showcasing successful examples of multisolving like the 'Ciclovía Bogotá,' where main streets in Bogotá are closed to traffic on Sundays, allowing residents to enjoy the city without cars and air pollution (Guillermoprieto, 2019), and vertical farming and green curtains in Japan (Molthan-Hill et al., 2023).

Mastering systems thinking and systems practice should be a key learning outcome for every business degree. Many problems in organizations and society remain unsolved because managers have not learned to think in systems. As Repenning et al. (2017) point out, we often attribute problems to easily identifiable, proximate causes, such as a poorly trained individual or a broken part, rather than addressing the underlying system that generates these issues. Solving immediate problems will not prevent future occurrences unless we tackle the system-level causes. Systems thinking helps us analyze problems by considering all possible causes and feedback loops, often revealing that the most significant change can come from unexpected parts of the system. A valuable learning tool is 'Fishbanks,' a game designed by Dennis Meadows, John Sterman, and Andrew King from MIT (Fishbanks, 2024). In this game, students compete to maximize profits in the fishing industry but often overlook the critical loop that fish need to regenerate, highlighting the importance of sustainable practices.

Systems practice, or 'Systems Thinking in Practice' (Systems Thinking Hub, 2024), combines systems literacy—such as the ability to draw systems diagrams—with practical application to improve actions in specific situations (Ison and Straw, 2020). Our curricula should provide opportunities for students to draw and understand systems, identify relevant loops and levers, and develop solutions to complex, 'wicked' problems.

Futures Literacy and Strategic Foresight

Since 2012, UNESCO (2024) has emphasized the importance of Futures Literacy, defining it as follows:

“Futures Literacy helps people understand why and how we use the future to prepare, plan, and interact with the complexity and novelty of our societies. Through structured on-the-ground learning-by-doing activities known as Futures Literacy Laboratories (FLLs), communities and individuals can learn about the origins of what they imagine and can empower them to diversify their actions.”

While every aspect of Futures Literacy merits discussion, we recommend reading "Transforming the Future: Anticipation in the 21st Century" by Riel Miller and UNESCO for a comprehensive overview. Here, we focus on Foresight, a key tool in Futures Literacy. By anticipating and exploring various futures, we can design different scenarios and choose our preferred options. Working backward from these desired futures, we can identify the steps needed to achieve them. This approach is widely used by governments and organizations. For instance, the EU's "Reference Foresight Scenarios" (Vesnic-Alujevic et al., 2023) utilize the Oxford Scenario Planning Approach with input from over 100 experts, envisioning scenarios like "Storm," where societies become more self-centered, and "Opposing Views," where society splits into regenerative and exploitative alliances.

Foresight can also be applied at the organizational and individual levels. For example, learners can envision their towns in the future after discussing the 15-minute city concept (Pertusini, 2021), where neighborhoods contain all necessary amenities within a 15-minute walk from home, reducing reliance on fuel-burning transport and saving time spent commuting. On an organizational level, "Strategic Foresight" (Schwarz, 2024) can be integrated into corporate strategy and introduced in RME. Strategic Foresight involves various definitions and tools (Rohrbeck et al., 2015), offering a rich starting point for classroom discussions on future corporate strategies. Learners can explore different Foresight tools, as illustrated in Figure 1 and further explained by Schwarz (2024).

One method used in Strategic Foresight is the "Delphi Method" (Von der Gracht, 2024), where experts anonymously address complex problems through written surveys. This method prevents prominent experts from influencing others, avoiding the bandwagon effect. In contrast, Habermas' (2019) discourse ethics approach involves participants meeting to question experts based on detailed written information. In my experience with this approach in 1992, separating facts and values and allowing equal questioning rights led to in-depth analysis and understanding between participants with opposing views.

Both the Delphi Method and discourse ethics emphasize the importance of expert and public discussions on current and future developments to decide on positive futures. Teaching these methods in business schools and allowing students to evaluate their benefits and shortcomings can prepare future leaders to utilize strategic foresight effectively. By integrating Futures Literacy and Strategic Foresight into RME, we equip learners with the tools to anticipate and shape desirable futures, making informed decisions that align with sustainable and ethical business practices.

Effective Problem Solving

In their article "The Most Underrated Skill in Management," Reppenning et al. (2017) emphasize that effective problem solving involves envisioning a future state, identifying the gap between the current state and the desired future, and determining the steps needed to bridge that gap. Our Climate Literacy Training for Educators, Communities, Organisations, and Students (CLT-ECOS) includes an activity that embodies this approach: The Positive Futures Scenario Game (Molthan-Hill et al., 2018). In this game, learners design a positive future as if they had all the powers in the world. They start by choosing from 25 cards, each representing a potential solution to climate change, such as "Changing diets" or "Educating girls." They then sequence these solutions chronologically, ending with two cards: "Carbon emissions have reduced" and "Living costs have improved." By narrating the story of their positive future, participants create a roadmap and are encouraged to take notes on how to make this future a reality, one step at a time. While identifying as many steps as possible is crucial for effective problem-solving, it is equally important to show learners the potential consequences of inaction. We combine the storytelling of positive futures with an exercise in which learners experience a troubled future if current practices continue unchanged. Learners arrange cards depicting problems already faced worldwide and predict what might happen in two, five, or ten years. In our virtual trainings, this exercise elicited strong emotional responses, so we adapted it to include support for dealing with climate anxiety and other negative emotions.

Climate Mentoring and Coaching

Integrating climate coaching and mentoring into teaching materials is essential for Responsible Management Education (RME). Clearly identifying problems related to environmental destruction and biodiversity loss often causes anxiety and other challenging emotions in both learners and lecturers. Suppressing these emotions can lead to further issues, so it is vital to include coaching and mentoring elements in RME (Blaj-Ward and Molthan-Hill, 2023).

Balancing Education and Advocacy

As Responsible Management Educators, we must balance educating students and advocating for specific viewpoints. This balance is crucial as we navigate the dual responsibilities of imparting knowledge and fostering critical thinking without imposing our socio-political biases. Hockerts (2015) suggests that our primary goal should be to educate, not advocate. This involves providing students with access to diverse perspectives and theories, including those underlying historical and contemporary social movements. By teaching the science behind issues and the theories of change that have shaped societal transformations, educators can help students understand the complexity of socio-political changes without mobilizing them for specific causes.

This approach aligns with the foundational principles of higher education, where critical engagement and independent thought are paramount. Educators should facilitate an environment of open inquiry and debate, presenting students with multiple viewpoints and the theoretical underpinnings of various ideologies without swaying them towards a predetermined conclusion. Such an educational practice respects the diverse backgrounds and beliefs of students and fosters a learning atmosphere conducive to the development of well-rounded, critically thinking individuals.

By engaging with a variety of perspectives, students are better prepared to form their own opinions and make informed decisions. This process is essential in RME, where the ability to think critically about ethical dilemmas, sustainability issues, and corporate responsibility is crucial. Analyzing case studies from multiple angles helps students appreciate the complexity of real-world issues and the importance of context in decision-making processes. Responsible management education is fundamentally about fostering a nuanced understanding of complex issues and equipping students with the analytical skills necessary to navigate and influence the world around them. By maintaining a clear distinction between educating and advocating, educators can uphold the integrity of their profession and contribute positively to the intellectual growth of their students. This balanced approach not only prepares students to face global challenges but also instills in them the capacity for lifelong learning and ethical leadership.

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Feedback from Jen

Wow! This is some big, wide, and deep thinking. Keep this up and try to do some selection and curation as you go.

1. Tone and style is fine. Just try to have some citations for big claims where you make them. Also, you can refer to your own studies in the first person.
2. You and Alex will need to prioritize theories. There are many, and I think it dilutes the argument because you are trading off space where you could make deeper linkages to RME practices. I see some more examples coming via the CLT-ECOS, and this will help.
3. When discussing models, try as much as you can to link to educational examples (Ex. Interface--isn't there an incremental change story from the P/RME community that exists that could be used instead?)
4. When you determine the final structure, you need to add more details to the introduction about the theories you are leveraging at the beginning. This helps set the stage more. Now, I don't have a sketch of what's coming, and then there are many frameworks and models, and my brain doesn't know what to do with them. Prepping the reader upfront a little more adds more cohesion.
5. Tables will help in several ways:
 - a. Compare Radical to Incremental change theories.
 - b. Detail models and the implications to RME at various levels. There are many ways you can discuss these (E.g., activities, assessments, course design, program design, administration, faculty evaluation) or instructor, student, admin or whatever makes sense. What we need to see is some framework that educators and, to some extent, administrators can walk away with after reading the article.

I hope this makes sense. Do what you can and we'll work through it over time.

Also, do you have a link from me to submit this essay? If not, I'll resend.