



Reconceptualizing Training and Development for Sustainability Competency Formation

Vikram Deshmukh¹* and Geetha Manoharan²

^{1,2}SR University, Warangal, Telangana, India

*deshmuvikram724@gmail.com

geethamanoharan1988@gmail.com

Abstract. The increasing complexity of environmental, social, and economic challenges requires organizations to rethink how sustainability competencies are developed within the workforce. Traditional training and development (T&D) approaches, which primarily focus on short-term performance and technical skills, are insufficient for addressing sustainability-related demands. This conceptual paper reconceptualizes training and development as a strategic and transformative process for sustainability competency formation. Drawing on interdisciplinary literature from human resource development, sustainability studies, and organizational learning, the paper argues that sustainability competencies encompass not only knowledge and skills but also values, systems thinking, ethical reasoning, and change-oriented mindsets. It proposes a shift from episodic, compliance-driven training toward continuous, experiential, and reflective learning embedded in everyday work practices. The paper further emphasizes the role of organizational culture, leadership support, and inclusive learning environments in enabling sustainability-oriented capability building. By integrating training and development with sustainability objectives, the paper contributes to theory and practice by positioning workforce learning as a critical driver of long-term organizational resilience and sustainable value creation.

Keywords: Training and Development; Sustainability Competencies; Organizational Learning; Organizations.

1 Introduction

The rising rate of environmental pollution, social and economic disparities, and unpredictability of the economic conditions has placed sustainability as a core issue in the agenda of organizational activities within industries and geographical areas. The emerging trends in defining success and long-term value creation of organizations are being redefined by climate change, resource dearth, the changing demographic and increasing expectations of stakeholders. The concept of sustainability, in this context, can no longer be found in the environmental management or corporate social responsibility functions, but it is now a strategic, organization wide imperative necessitating new forms of thinking, working, and learning. The most signif-

icant element of this change is the acquisition of sustainability skills among the employees [1].

Training and development (T&D) have long been an important tool and means of increasing the employees' skills, enhancing the performance, and assisting the organizational competitiveness [2]. Traditional T&D methods, nevertheless, have put significant focus on technical skills, efficiency, and short-term business results. Consequently, organizations must go beyond the relatively basic skill-based training frameworks to more comprehensive ways of forming competencies [3]. Competency of sustainability goes beyond being functional or technical. With the help of these competencies, the employees are capable not only of saving sustainability policies but also promoting sustainable innovation and decision-making [4].

1.1 Context of Sustainability in Modern Organizations

The issue of sustainability has taken centre stage as a strategic concern in both contemporary organizations as they strive to cope with mounting environmental risk, regulatory burden and stakeholder demands. Consequently, companies are incorporating environmental, social, and governance (ESG) objectives into their strategic plans, business processes, and performance systems [5]. As a result, organizations should develop a workforce that can help stimulate innovation, serve as a resilient force, and be responsible in business practices [6].

1.2 Rationale for Competency-Based Approaches

Competency-based methods pay equal attention to knowledge, as well as to skills, values, and application of behavior. Sustainability issues are also multidimensional and involve system thinking, partnership, moral decision making and strategic perspective with a long-term horizon. They assist in development of a culture in which sustainability is integrated in day-to-day activities so that the employees can maintain an active role in organizational change and long-term orientation [7]. Theoretically, research in the field of training and development and sustainability has been created in parallel and not interconnected, to a greater extent. The areas of human resource development that have been given priority from the time of its inception have been performance improvement and career development, and sustainability scholarship has been given emphasis on organizational strategies, governance, and reporting.

2 Literature Review

2.1 Understanding Sustainability Competencies

Sustainability competencies are termed as the systemic combination of knowledge and skills, attitudes and values that enable individuals to confront complicated sustainability challenges in their occupational fields. This involves holistic competence

beyond technical skill, which involves analytical, ethical, interpersonal, and anticipatory skills [8]. Contemporary sustainability challenges, i.e. climate change, biodiversity loss, disruption of the supply chain, and social injustices are characterized by complexity and multi-generational consequences [9]. Moreover, the competencies of sustainability help in culture-building in an organization [10]. Finally, the knowledge of sustainability competencies is a cornerstone upon which the organizational aim to change its conventional, compliance-driven sustainability efforts to transformational, values-driven sustainability leadership.

2.2 Defining Sustainability Competency

Sustainability competency may be described as the aggregate ability of the individual to utilize knowledge, skills, attitudes, and values to facilitate sustainable development in the organizational and society set-up. Sustainability competency is multidimensional in nature as opposed to traditional competencies, which deal with technical operations. Its re-invites intellectual capacities like critical thinking and problem diagnosis, affective character like empathy and ethical consciousness and behavioural abilities such as collaboration and action strategy [11]. Thus, defining sustainability competency provides a foundation for designing training programs and development pathways that build a workforce prepared for the evolving sustainability landscape [12].

2.3 Core Competency Frameworks (Systems Thinking, Futures Thinking, etc.)

There are competencies to sustainability, which are described in several international frameworks, the UNESCO frameworks, and industry-based models provide detailed frameworks. The following core competencies are highlighted in these structures:

- **Systems Thinking**

The concept of systems thinking will help the employees realize how the environmental, economic, and social systems are interrelated. It enables them to find cause-effects, feedback loops as well as unintended consequences.

- **Futures Thinking (Anticipatory Competence)**

Futures thinking is a feature that prepares employees to predict long term trends, risks, and opportunities. It entails scenario planning, future forecasting and critically appraising the plausible future possibilities. This skill is critical in the fields of innovation, strategic planning, and resilience-building and particularly in sectors that are susceptible to climate hazards or resource volatility.

- **Strategic Competence**

Strategic competence is the competence to formulate, execute and measure sustainability initiatives. Such employees can create a series of action plans, and bring

sustainability to operational procedures and streamline initiatives to organizational objectives.

- **Team-working, Interactional Competence.**

Sustainability needs cross functional teamwork, stakeholders' interaction, and communication. This skill fosters conflict management, negotiation, and solution creation with various communities such as customers, regulators, and communities.

- **Values-Based Competence and Ethics.**

This ability is in response to the ethical aspect of sustainability. It allows the employees to take responsibility, embrace fairness, and support the long-term benefit rather than the immediate reward.

HR is a powerful element of enhancing workforce development and sustainability in logistics through investment in talent development, instilling sustainability values, and upholding diversity and inclusion [13].

2.4 Importance of Behavioural and Mindset Change

Sustainability is not a technical phenomenon at all; it is a cultural and behavioural change. Organizational employees will need to learn new thinking styles, behavioural patterns, and ways employees interact with each other to realize significant sustainability results. Sustainability mindset implies the understanding of the notion of interconnectedness of human activities and impact on the environment, importance of long-term impacts, and a personal desire to contribute to positive change [14].

2.5 Theoretical Foundations for Reconceptualizing T&D

To redefine training and development (T&D) to be more sustainable, it must be based on the shift of the traditional paradigm of instructions to the learning processes that will initiate the states of critical thinking, alignment of values, and behavioural change within. In this way, a theoretical approach reinforces the power and influence of sustainability-oriented T&D.

- **Adult Learning Theory**

Adult Learning Theory or andragogy is based on the premise that adult learning is best done when training is relevant and self-directed and problem-centered. In contrast to the traditional models of pedagogical, adult learners come with their past experiences, values and even motivations, which influence their interaction with the new knowledge. This theory in the context of sustainability implies the development of learning that links sustainability concerns with the actual work problems and organizational realities of workers [15].

- **Transformative Learning Theory**

Transformative Learning Theory aims at transforming the assumptions, beliefs, and visions of learners. Transformative learning happens when one involves critically looking at the frames of reference that they are currently using, an experience that is challenging and the dialogue that happens between them to awaken new understandings. In sustainability training, this can be in facing environmental reality, ethical dilemmas or carrying out a long impact analysis of the organization [16].

- **Experiential Learning and Social Learning Perspectives**

Experience, Interaction and Collaboration Experiential and Social Learning theories emphasize that a person learns by experience, interaction, and collaboration. These enrich and facilitate useful competence [17]. Social Learning Theory is a complement to this since it focuses on the fact that individuals learn through observation of others, knowledge sharing, and communal practices in communities [18]. The process of sustainability transformation involves collective actions; therefore, social learning promotes cross-functional, peer and shared responsibility.

3 Research Gap

Even though sustainability has now been considered as a strategic priority by organizations, current studies show that there is a big gap in knowledge on how training and development can play a role in the formation of sustainability competency. A large proportion of sustainability content is centered around organizational policy, reporting and leadership approaches and the human resource development literature remains focused on the performance based and skill out-come of training. This segregation has created theoretical isolation between the training and development. Therefore; studies have not successfully conceptualized training and development as a transformative and a continuous process and the key component of long-term sustainability capability development in organizations.

4 Research Methodology

This conceptual study aims to place training and development back as a conceptualized and transformative process that makes competencies of sustainability in organizations. The paper will attempt to combine the knowledge in the human resource development articles, organizational learning articles, and sustainability articles to formulate the holistic framework that describes how knowledge, skills, values, and mindsets that are sustainability oriented can be developed through learning processes. In addition, the paper will seek to present a theoretical basis that can guide future empirical studies to inform the sustainability-oriented training and development practices. This research has the objectives to conceptualize sustainability competencies applicable in the current organizational contexts, and analyzing how training and development can be used to nurture sustainability competencies. This research paper assumes a qualitative and conceptual research paradigm which aims at evolving a

conceptual knowledge of training and development to form sustainability competency. The methodology focuses on theoretical integration as opposed to empirical testing which presents a platform on which future empirical research and practical implementation can take place in developing sustainability-oriented workforce.

5 Research Findings

Since the paper is a conceptual paper, the findings more analytically lucid, they are displayed in conceptual figures which are used to summarize prominent pat-terns like relationships and interpretations which arise during review:

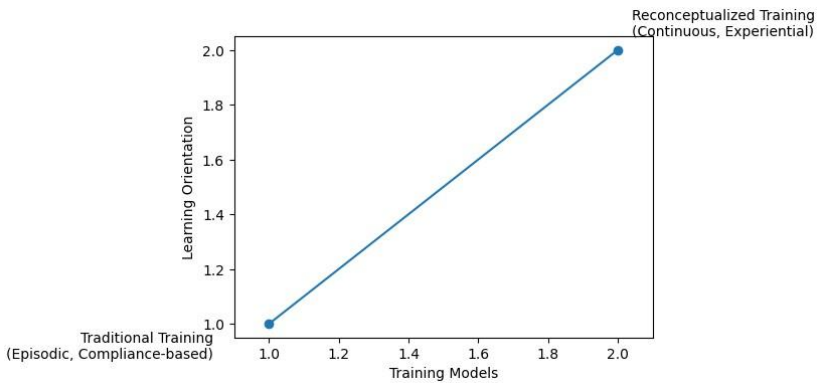


Fig 1: Evolution of Training and Development Approaches

This figure illustrates the shift from traditional, episodic, compliance-based training models toward reconceptualized training approaches that emphasize continuous and experiential learning. The upward trajectory reflects increasing learning depth and adaptability required for sustainability competency formation.

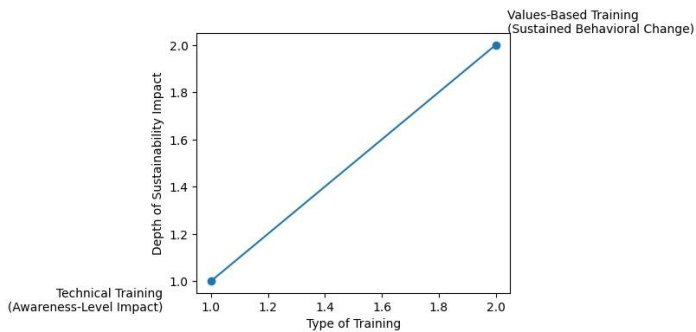


Fig 2: Training Content and Sustainability Outcomes

Figure 2 demonstrates that technical training primarily produces awareness-level outcomes, whereas values-based training leads to deeper internalization and sustained sustainable behaviour. This supports the argument that sustainability competencies require ethical and reflective learning dimensions.

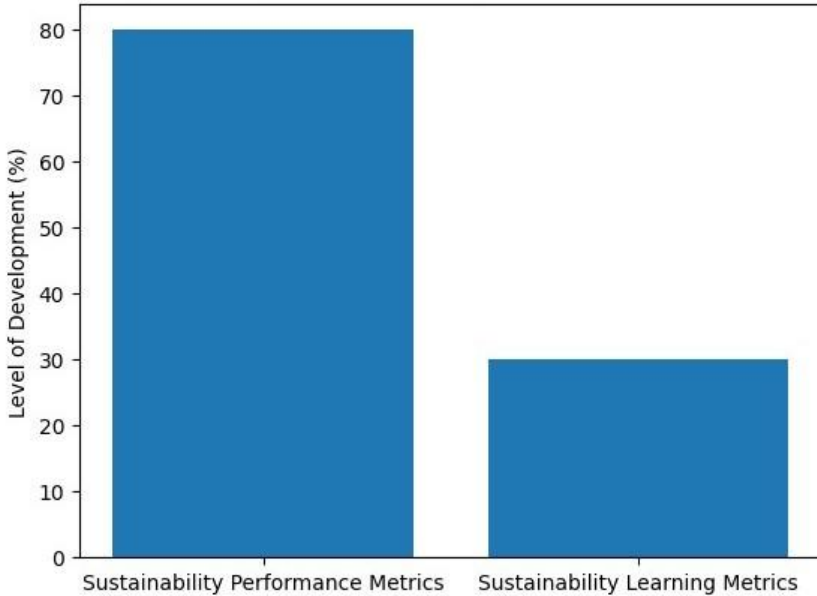


Fig 3: Gap in Sustainability Measurement Practices

This value underlines the fact that there is more sustainability per performance metrics as compared to underdeveloped sustainability learning and competency metrics. The gap shows that there is a critical need that organizations should take learning outcomes in full systematic assessment in terms of sustainability competencies. According to the reviewed materials, the sustainability competency of formation processes should be built on a reconceptualized training and development based on the solid learning theory. The main points of influence are that the complexity of the sustainability issues cannot be addressed only with the help of traditional training based on instructions. Rather, more appropriate theories root-ed in theory like Adult Learning Theory, Transformative Learning Theory, and Experiential and Social Learning are a better guide towards the kind of deep understanding, reflecting ability of a learner and collaborative practice needed to-towards integrating sustainability. Adult Learning Theory focuses on relevance and problem-based learning implying that sustainability training needs to be ground-ed in actual organizational realities to increase interest. The Transformative Learning Theory emphasizes the necessity of changes in attitude to make employees absorb the sustainability values at the level of mindset transformation by means of critical reflection and dialogue. The Social Learning ap-

proach and Experiential emphasis emphasize practical engagement and multi-departmental learning and promote behavioral transformation and interdepartmental cooperation. Altogether this evidence shows that the sustainability-oriented T&D should be based on the learner-centered approaches, reflection experiences, and collaboration. It was discussed that the application of these theories can help in the creation of the fundamental sustainability competencies, including systems thinking, the ethical judgment, and anticipatory skills. When these theoretical foundations are significantly implemented in the T&D strategies by the organizations, these organizations have higher chances of developing a workforce that can establish significant transformations in sustainability. This complex form of understanding further theory by linking human resource development and sustainability scholarship as well as providing practical applications to organizations who would desire a long-term resilience of their organizations and sustainable value creation.

6 Recommendations and Futuristic Scope

6.1 A New Paradigm for Training and Development

A new training and development (T&D) paradigm are being formed as organizations are being confronted with more complex issues of sustainability. The T&D models of tradition have centred much on imparting knowledge or enhancing task-specific skills, however, neither these will suffice in fostering the overall competencies that are demanded to make changes sustainable. The new paradigm puts much focus on learning that is lifelong, practical, value-based and built into the daily work processes. It promotes critical thinking among employees, multi-function teamwork, and interaction with long-term strategic objectives. This paradigm has created skilled employees but also those that can spearhead significant sustainability efforts.

6.2 Shifting from Skill Acquisition to Capability Building

Such is skill acquisition, which concentrates toward performing tasks, and the concept of capability building, which elaborates larger capacities that would enable the employees to adapt, innovate, and make sound decisions. It is also an effective way of building self-awareness and flexibility so that workers are always able to adopt the changes that are occurring in their environment and social movements. Through placing capability, instead of the uncoupled skills in the first place, organizations develop a flexible workforce with the potential to bring sustainability into day-to-day practices as well as add to the long-term organizational change.

6.3 Integrating Values, Ethics, and Purpose

Sustainability cannot exist lacking values, ethics, and purpose but rather having strong base of knowledge and technical competence. Employees will switch their perception of sustainability as a requirement toward sustainability as something that matters in

their workplace identities when values and purpose are incorporated into learning. Training employees in ethics encourages them to think about the consequences that their behavior holds in the social and environmental context, make responsible decisions, and embrace integrity-based leadership. This integration is also the one that enhances culture of ethical consideration and collective responsibility, enabling employees to be traditional as custodians of sustainability. Finally, incorporation of values and purpose into T&D aids in regime change as it aligns personal and organizational goals of sustainable development.

6.4 Embedding Sustainability in Organizational Learning Systems

Making sustainability inherent in the organizational learning systems implies considering sustainability principles in all the dimensions of learning on-boarding, leadership development, performance management, and perpetual learning platforms. The learning systems are modelled in such a way that it can encourage continuous reflection, teamwork, and experimentation so that employees take an active part in dealing with sustainability issues. The sustainability of embedment also necessitates the alignment of HR processes, including their training paths, reward mechanisms, and criteria in promotion with their sustainability objectives.

6.5 Future Directions in Sustainability Learning

Sustainability learning directions also aim in designing approaches to sustainability learning that are more flexible, participatory and technology based to equip employees with changing global challenges. Special emphasis will be laid on interdisciplinary learning, cross sector alliances, and community involvement in ensuring systems thinking.

7 Implications and Conclusion

A reconceptualized training and development (T&D) structure in creating a sustainable approach entails setting up learning streams of knowledge, rigorous testing of the competencies, and organizational obstacles to efficient implementation. Learning pathways should be deliberately developed with the aim of helping the employees to achieve the fundamental level of awareness, through to sustainability capability to the high end through combination of formal training, projects, mentoring, and cross-functioning between the employees. Self-assessment, performance appraisals, project results, and behavioral observations are the tools that organizations can apply in measuring competency development. Some of the ways in which these can be addressed include the creation of a robust leadership support system, loading HR policies with sustainability aspirations, inculcating a learning culture, and integrating sustainability in strategic decision-making. Through integrating the ability of training and development to create a highly dynamic and productive training and development

system, organizations can design a system that enables the employees to become prepared to bring about a sustainable change.

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