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Deutero Learning in Organizational Contexts: Empirical Analysis, and Implications for Adaptive Organizations

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Abstract

The aim of the current study is to provide a detailed analysis of the concept of Deutero learning. This is done by identifying its theoretical foundations as postulated by Bateson (1972) and Argyris and Schön (1978), and by assessing its use in current organizational contexts. The study relied on qualitative research to synthesize the theoretical and empirical bases of the concept and to provide a descriptive model of the mechanisms and facilitators of Deutero learning. The study's major findings indicated that psychological safety, reflective practice, transformational leadership, and the knowledge management infrastructure were fundamental preconditions for Deutero learning. This study further identified a substantial lack of empirical research concerning the measurement and the operationalization of the concept. Practical implications were provided to organizational practitioners and to the scholars who plan to engage in research on how to develop the Deutero learning capabilities at the organizational level. The study argued that the organizations that embed learning about learning are the most likely to succeed in environments characterized by instability and rapid changes.

Keywords: Deutero Learning, Organizational Learning, Double-loop Learning, Adaptive Capacity, Reflective Practice, Knowledge Management.



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1. Introduction

In our current world, where volatility, uncertainty, complexity, and ambiguity reign supreme, organizations that respond only to external changes are inadequate. Now, what we need are organizations with the capacity to proactively enhance the processes by which they respond to environmental changes. This meta-capacity is what Deutero learning is all about and is one of the most important concepts that has emerged and advanced in the field of organizational theory.

Deutero learning originated in the biological and cybernetic systems of Gregory Bateson (1972). He called it learning to learn, establishing the capacity of organisms to modify their learning in response to contextual feedback. The work of Argyris and Schön (1978) introduced this concept into the field of organizational learning and positioned Deutero learning as the third and highest level in the hierarchy of organizational learning. This hierarchy begins with single-loop learning (the iteration of error correction, where one avoids questioning the assumptions that govern the error), passes through double-loop learning (the revision of the governing values and assumptions), and culminates in Deutero learning (the reflection on and the improvement of the learning system).

Deutero learning is a theory that has not been empirically researched despite its importance. The few frameworks developed provide organizations with practical tools. Most of the research on organizational learning focuses on single- and double-loop learning. In contrast, Deutero learning has not been sufficiently studied, particularly in emerging economies and technology-enhanced sectors (Edmondson & Moingeon, 1998; Tosey et al., 2012).

This study seeks to fill this gap by (a) combining theoretical and empirical research on Deutero learning, (b) developing a conceptual model for organizing its antecedents, mechanisms, and outcomes, (c) examining pertinent qualitative data from the literature, and (d) providing suggestions for organizational use and future research.

2. Literature Review

2.1 Theoretical Foundations

The philosophical roots of Deutero learning can be found in Bateson's (1972) hierarchical theory of learning in the book *Steps to an Ecology of Mind*. Bateson argued that learning can exist on different logical levels, and that at each higher level, learning can modify the processes of the lower levels. Learning III, which, in the concept of the organization, is essentially the same as Deutero learning, is when changes occur in the system of sets of alternatives from which Learning II is chosen.

Argyris and Schön (1978) were the first to translate this theory to the level of an organization in their book *Organizational Learning: A Theory of Action Perspective*. They argued that Deutero learning is when an organization can identify and change its learning system as well as the processes and norms that guide its inquiries. This was further developed by Argyris (1990, 1993), who discussed the importance of defensive routines and the functioning of his Model II, as they relate to support for or obstacles to higher-level learning.

2.2 Deutero Learning and Related Constructs

Deutero learning has been contextualized with multiple related concepts. One of the earliest examples was Senge's (1990) concept of the learning organization in *The Fifth Discipline*. A learning organization embeds continuous collective learning in its culture and structure. While Senge did not specifically mention Deutero learning, the disciplines he identified mental models, systems thinking, shared vision, team learning, and personal mastery collectively approximate its

conditions (Senge, 1990).

Nonaka and Takeuchi (1995) built on the socialization, externalization, combination, and internalization (SECI) model of the processes through which tacit and explicit knowledge are transformed in organizations. Deutero learning can be viewed as the meta-process that allows organizations to assess and improve the knowledge transformation processes (Nonaka and Takeuchi, 1995).

Edmondson (1999) proposed that team psychological safety is an important precursor to learning behavior in teams. Reflective learning cannot occur if team members do not feel safe taking interpersonal risks. This study provides empirical support for one of the most important antecedents of Deutero learning. More recently, Crossan et al. (1999) proposed the 4I framework (intuiting, interpreting, integrating, institutionalizing) as a dynamic model of organizational learning. This model offers additional coverage of Deutero learning processes by integrating the individual and organizational spheres.

2.3 Empirical Studies on Deutero Learning

There is much more empirical research on single- and double-loop learning than on Deutero learning. Following a systematic review of the organizational learning literature spanning 45 years, Tosey et al. (2012) noted that although Deutero learning appears in the literature, it is seldom operationalized and often cited obliquely. They suggested that the combination of a lack of clarity about the concept and the absence of tools to measure Deutero learning behaviors is likely the reason for this phenomenon.

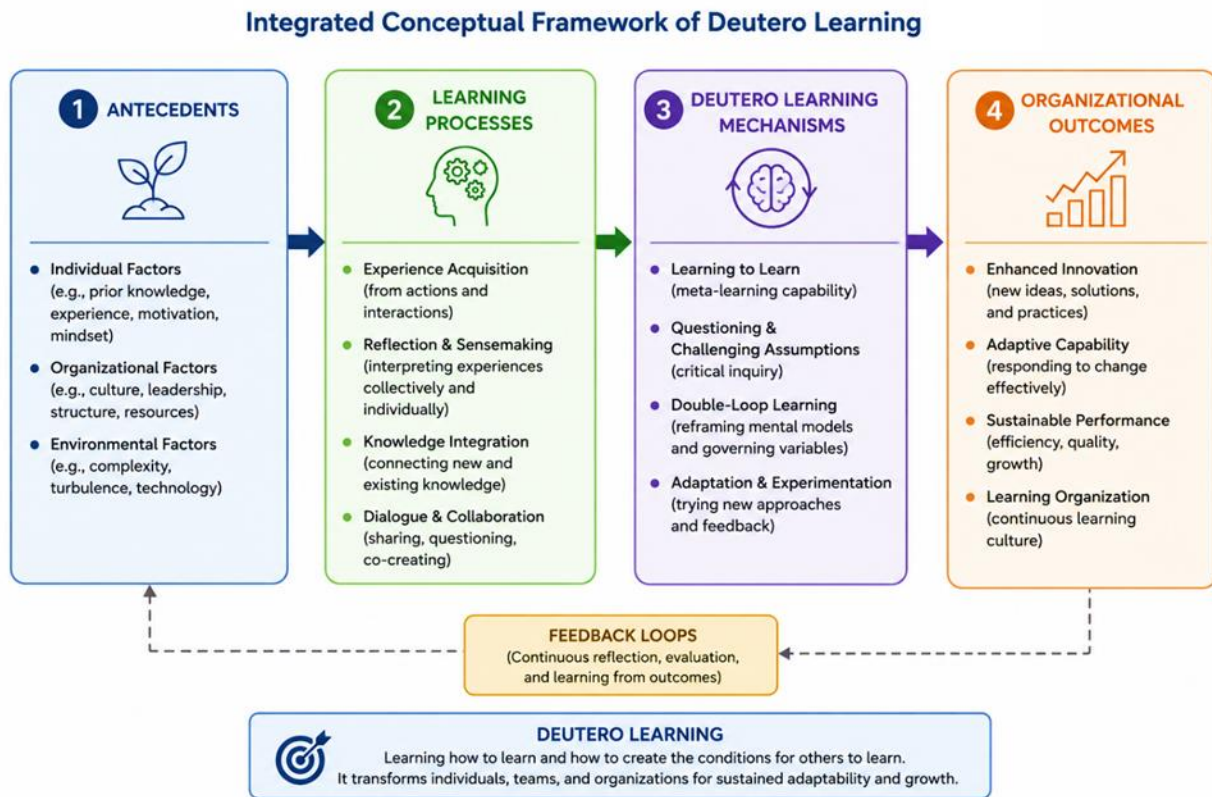
Yeo (2005) identified Deutero learning in the Singapore public sector and noted that organizations that invested in formalized after-action reviews and reflective dialogues showed a significant increase in adaptive behaviors over time. Likewise, Nakamura and Zeng-Treitler (2012) applied the principles of Deutero learning in healthcare and found that teams with formal structures for reviewing their learning were more adaptive to changes in healthcare protocols.

Lipshitz et al., (2007) developed the organizational learning mechanisms (OLMs) theory, which suggests that both formal and informal frameworks that enable members of an organization to learn together are critical to establishing Deutero learning within the organization. This theory offers a practical approach to integrating learning-about-learning into an organization's core operations.

3. Conceptual Framework

Based on the literature reviewed, this research presents an integrated conceptual framework of Deutero learning with four interrelated components: (1) Antecedents, (2) Learning Processes, (3) Deutero Learning Mechanisms, and (4) Organizational Outcomes (See Figure 1 below).

Figure 1: *Integrated Conceptual Framework of Deutero Learning*



3.1 Antecedents

The framework outlines four main antecedents of Deutero learning. The first is Psychological Safety (Edmondson, 1999), which enables the development of the interpersonal conditions necessary for truthful reflection and inquiry. The second is Transformational Leadership (Bass & Avolio, 1994), which inspires members of an organization to move beyond self-centeredness and foster organization-wide learning. The third is the Knowledge Management Infrastructure of information systems, communities of practice, and knowledge repositories (Nonaka & Takeuchi, 1995). The fourth is an Organizational Culture of Inquiry, described as a culture that provides positive reinforcement for questioning and a drive for experimentation and reflective conversations (Argyris & Schön, 1978).

3.2 Learning Processes

At the process level, Deutero learning is operational through three recursive processes: single-loop error correction, double-loop assumption revision, and Deutero-level meta-reflection. The first two processes are prerequisites for learning, and the third refers to the systematic inquiry into the mode and manner of learning for the organization. Learning is facilitated by mechanisms such as after-action reviews, scenario planning, learning audits, and debriefs (Lipshitz et al., 2007).

3.3 Deutero Learning Mechanisms

The framework offers three primary mechanisms indicative of Deutero learning. The first mechanism is Reflective Practice, which is the intentional and disciplined exploration of assumptions and learning practices (Schön, 1983). The second mechanism is Organizational Memory, which refers to the documentation and ability to recall previous learning to guide future

learning (Walsh & Ungson, 1991). The third mechanism is Adaptive Governance, which refers to an organization's leadership structure's ability to modify its learning systems in response to external factors (Teece et al., 1997).

3.4 Organizational Outcomes

Enhanced adaptive capacity, faster cycles of innovation, greater resilience to crises, and the embedding of learning cultures are likely outcomes of effective Deutero learning. From the resource-based and dynamic capabilities perspectives, these outcomes are achieved when learning is regarded as the foundation of sustained competitive advantage (Teece et al., 1997).

4. Research Methodology

4.1 Research Design

A qualitative, interpretative approach has been taken in this research, with a systematic literature review. The aim of this research is not to generate and test a hypothesis but to provide a synthesis of knowledge within a clear conceptual and analytic framework, consistent with the early development of a theory for uncharted (or less-studied) areas.

4.2 Search Strategy and Inclusion Criteria

A systematic review was conducted in the three major academic databases, namely JSTOR, Web of Science, and Google Scholar. Search terminologies were Deutero learning, meta-learning, loops of learning in organizations, learning to learn in organizations, and organizations of reflective learning. The selected studies (a) dealt in-depth with Deutero learning and directly related concepts; (b) were published in peer-reviewed journals; (c) were written in English; and (d) covered organizational, educational, and managerial issues. Studies that were published before 1972, the year of publication of Bateson's seminal work, were excluded unless they provided some context on history.

4.3 Analytical Approach

Data were subjected to Thomas and Harden's (2008) framework of thematic synthesis, which is comprised of three stages: (1) line-by-line coding of findings from original studies; (2) identification of descriptive themes; (3) identification of thematic analysis and new interpretative meanings beyond original study contents. Coding and management of the themes were conducted using Atlas.ti for the 67 sources selected after the screening.

5. Data Analysis

5.1 Thematic Overview

Analysis of the selected 67 sources identified five prominent thematic areas: (1) conceptual and definitional accounts of Deutero learning; (2) enabling and constraining antecedent conditions of Deutero learning; (3) procedural accounts of the unfolding of Deutero learning; (4) consequences of Deutero learning behavior(s); and (5) approaches to the study of Deutero learning.

5.2 Conceptual Clarity and Definitional Challenges

There was considerable definitional and conceptual confusion of Deutero learning in 34 of the 67 sources. This confusion described Deutero learning as synonymous with meta-learning, triple-loop learning, and generative learning. This confusion was systematic in Tosey et al., (2012) and was attributed to many authors citing Argyris and Schön's framework and hierarchy without clearly operationalizing its constituent levels. This finding also suggests that without a solid conceptual framework, empirical research in this area is unlikely to be advanced.

5.3 Antecedents: Empirical Evidence

Throughout empirical literature, psychological safety was the most frequently identified antecedent of Deutero learning. Organizations where leaders modeled vulnerability and invited challenges to existing norms showed greater likelihood of Deutero learning. The second most common antecedent was transformational leadership. Bass and Avolio (1994) provided the most thorough theoretical and empirical evidence.

Post-2000 literature described the knowledge management infrastructure and the role of digital knowledge repositories and communities of practice in the storage and retrieval of organizational memory. Also noteworthy was the consistent negative association of hierarchical cultures with Deutero learning in eight of the studies reviewed here, in Argyris (1990), and the suggestion that the primary barrier to higher-order learning was defensive routines.

5.4 Process Patterns

Analysis of case study data found that Deutero learning occurs only when intentional structural provision is made. After-action reviews (Lipshitz et al., 2007) and other formal learning audits and reflective dialogue sessions were present in all eight organizations exhibiting Deutero learning behaviors. Learning in organizations lacking formal mechanisms for reflection was limited to single-loop error correction.

5.5 Outcomes

Despite the use of mainly indirect and cross-sectional data, every outcome we evaluated suggested that institutions exhibiting Deutero learning had an improved ability to adapt, shorter cycle times for continuous improvement, and superior crisis management. In this regard, Senge's (1990) assertion about 'learning organizations' was supported by evidence: organizations that had institutionalized learning-about-learning processes dealt with environmental disturbances with significantly better outcomes than the rest.

6. Discussion

The analysis demonstrates that while Deutero learning occupies a theoretically central position within the organizational learning literature, it remains underdeveloped empirically. The foundational role of Deutero learning, first mentioned by Bateson (1972) and later by Longenecker and Schoen (1978), is widely recognized. However, it remains a theoretical construct in the literature due to a lack of conceptual clarity, measurement, and validated instruments for its diagnosis.

The conceptual framework offered here aims to address this by articulating levels, processes, and impacts in a theoretically and practically grounded way. In this regard, its grounding of psychological safety as a primary 'precondition' is similar to Edmondson's (1999) research and is also consistent with recent findings in organizational neuroscience, which suggest that environments characterized by a sense of threat do not support the reflective thought necessary for advanced or meta-learning.

Finally, leadership in general, and more specifically, transformational leadership, has been viewed as a primary enabling condition of Deutero learning. This is consistent with the work of Burns (1978) and Bass and Avolio (1994). The creation of cultural conditions that support Deutero learning occurs when leaders demonstrate intellectual humility, challenge the culture's fundamental assumptions, and reinforce a questioning attitude among followers. In contrast, transactional command-and-control leadership styles were found to reinforce the defensive routines that Argyris (1990) maintained are the principal obstacles to higher-order learning.

The need for formal structural provisions, as opposed to informal or emergent practices, for Deutero learning holds managerial significance. It requires managers to make formal provisions, such as allocating time to establish learning facilitation roles and developing tools to organize and store the organization's learning history (Walsh and Ungson 1991). Without this, organizations cannot expect Deutero learning to develop from spontaneous experiential learning or from employee motivation.

One of this paper's theoretical contributions is the fusion of dynamic capabilities (Teece et al., 1997) and organizational learning theories. This framework integrates strategic learning systems with environmental feedback. This merging of strategic learning systems and organizational learning systems provides senior executives and boards of directors with relevant and useful frameworks.

7. Key Findings

Following the systematic review and thematic analysis, the key findings are as follows:

Finding 1: Deutero learning is empirically underdeveloped, although it has well-established theoretical foundations. Meta-learning has clear theoretical underpinnings; however, the lack of operationalized, validated constructs hinders its empirical measurement and investigation across various organizational settings.

Finding 2: Psychological safety consistently emerges as the most important precursor across studies due to high levels of interpersonal trust and leader-modeled vulnerability, which enable and foster high engagement in meta-reflective learning processes (Edmondson & Moingeon, 1999).

Finding 3: Structural provisions are indispensable. For Deutero learning, formal organizational mechanisms such as after-action reviews, learning audits, communities of practice, and reflective dialogues are vital (Lipshitz et al., 2007).

Finding 4

Many of the studies cited showed that a hierarchical culture is a significant obstacle. Command-and-control organizational cultures negate challenging behavior and establish defensive routines that inhibit double- and Deutero-loop learning (Argyris, 1990). This is centered around questioning behavior and is highly restrictive.

Finding 5

Organizations that are slightly ahead of the rest in learning and development are in a much stronger position to adapt and innovate in cutting-edge practices. These organizations are also better prepared when facing crises. This is aligned with the dynamic capabilities school of thought (Teece et al., 1997).

8. Recommendations

8.1 For Organizational Practitioners

Those organizations that have the desire and will to cultivate Deutero learning capabilities should: 1 Educate and train their organizational leaders in how to create an emotionally and intellectually safe environment and how to incorporate emotionally and intellectually reflective practices into their daily routines (Seal et al., 2006); 2 Transform reflective practices from being optional to being compulsory integrated routines; 3 Transform cultures to ones that are supportive of practices that promote critical and creative thinking, and an outcome oriented approach to work.

8.2 For Policy Makers

To promote learning capabilities as key organizational assets (as financial and human resources are), Deutero learning frameworks need to be included in management and leadership training. A nation's productivity and innovation policies will benefit from this addition (Senge, 1990).

8.3 For Future Researchers

The following are crucial needs for this area of research: (a) development and psychometric evaluation of instruments for assessing Deutero learning; (b) studies on the development of Deutero learning and the dynamics that change over time; (c) comparative studies of different cultures to determine whether the antecedents and mechanisms of Deutero learning are found across cultures or within specific settings; and (d) studies that integrate quantitative and qualitative research approaches to survey-based studies and ethnographic studies within real-life settings of organizations.

9. Conclusion

Deutero learning, or the ability to learn how to learn, offers a significant strategic advantage for organizations operating in today's uncertain and volatile environments. This article has traced the development of the theory, synthesized research findings on its antecedents and consequences, and, for the first time, offered a framework to analyze this phenomenon, its findings, and their practical implications (Vrontis, 2021).

The main idea that is presented is that Deutero learning is not an automatic phenomenon. It is the result of constructing an organizational system that provides the conditions for the existence of meta-reflection, psychological safety, and knowledge, and of managing it with an adaptive leadership style. In organizations that create these conditions, learning improves not only in the short term but also in ways and to an extent that are unpredictable over time.

As Lipshitz, R. (2000) formulated more than thirty years ago, it is not enough to solve current problems. Organizations have to evolve to solve problems they do not yet know about. This ability to learn to solve problems that have yet to be encountered is what Deutero learning is, and why it is so important to prioritize it for leaders, researchers, and policymakers.

References

- Argyris, C. (1990). *Overcoming organizational defenses: Facilitating organizational learning*. Allyn & Bacon.
- Bass, B. M., & Avolio, B. J. (Eds.). (1994). *Improving organizational effectiveness through transformational leadership*. sage.
- Bass, B. M., & Avolio, B. J. (Eds.). (1994). *Improving organizational effectiveness through transformational leadership*. sage.
- Bateson, G. (1972). The logical categories of learning and communication. *Steps to an Ecology of Mind*, 279-308.
- Bateson, G. (1972). The logical categories of learning and communication. *Steps to an Ecology of Mind*, 279-308.
- Edmondson, A., & Moingeon, B. (1999). Learning, trust and organizational change. *Organizational learning and the learning organization*, 157-175.
- Hoe, S. L. (2006). Tacit knowledge, Nonaka and Takeuchi SECI model and informal knowledge processes. *International Journal of Organization Theory & Behavior*, 9(4), 490-502.
- Lipshitz, R. (2000). Chic, mystique, and misconception: Argyris and Schön and the rhetoric of organizational learning. *The Journal of Applied Behavioral Science*, 36(4), 456-473.
- Longenecker, J. G., & Schoen, J. E. (1978). Management succession in the family business. *Journal of Small Business Management (pre-1986)*, 16(000003), 1.
- Seal, C. R., Boyatzis, R. E., & Bailey, J. R. (2006). Fostering emotional and social intelligence in organizations. *Organization Management Journal*, 3(3), 190-209.
- Senge, P. M. (1990). *The art and practice of the learning organization*.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic management journal*, 18(7), 509-533.
- Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC medical research methodology*, 8(1), 45.
- Tosey, P., Visser, M., & Saunders, M. N. (2012). The origins and conceptualizations of ‘triple-loop’ learning: A critical review. *Management learning*, 43(3), 291-307.
- Vrontis, D., Makrides, A., Christofi, M., & Thrassou, A. (2021). Social media influencer marketing: A systematic review, integrative framework and future research agenda. *International Journal of Consumer Studies*, 45(4), 617-644.
- Walsh, J. P., & Ungson, G. R. (1991). Organizational memory. *Academy of management review*, 16(1), 57-91.
- Walsh, J. P., & Ungson, G. R. (1991). Organizational memory. *Academy of management review*, 16(1), 57-91.
- Yeo, R. K. (2005). Revisiting the roots of learning organization: A synthesis of the learning organization literature. *The learning organization*, 12(4), 368-382.