Revista Românească pentru Educație Multidimensională
ISSN: 2066-7329 | e-ISSN: 2067-9270
Covered in: Web of Science (WOS); EBSCO; ERIH+; Google Scholar; Index Copernicus; Ideas RePeC; Econpapers; Socionet; CEEOL; Ulrich ProQuest; Cabell, Journalseek; Scipio; Philpapers; SHERPA/RoMEO repositories; KVK; WorldCat; CrossRef; CrossCheck

2024, Volume 16, Issue 2, pages: 418-446 | https://doi.org/10.18662/rrem/16.2/865
Submitted: January 20th, 2024 | *Accepted for publication:* February 14th, 2024

Advancements in Learning Organizations: A Comprehensive Narrative Review

Dana RAD [1]
Muşata BOCOŞ [2]

[1] Assoc. Prof. PhD., Center of Research Development and Innovation in Psychology, Faculty of Educational Sciences Psychology and Social Work, Aurel Vlaicu University of Arad, Arad, Romania, dana@xhouse.ro
[2] Prof. hab. at Faculty of Psychology and Educational Sciences, Babeş-Bolyai University of Cluj-Napoca, Cluj-Napoca, Romania, musata.bocos@ubbcluj.ro

Abstract: *Learning organizations have garnered substantial attention for their capacity to augment organizational performance and adaptability within dynamic environments. The concept underscores the significance of continuous learning, knowledge creation, and knowledge sharing within organizational frameworks. This literature review offers a comprehensive overview of research findings concerning learning organizations, encompassing their definition, characteristics, benefits, challenges, and future research directions. The narrative explores seminal works by influential theorists such as Peter Senge, and delves into the distinctive features that characterize learning organizations. Additionally, it examines the benefits associated with cultivating learning organizations, ranging from improved performance to heightened employee satisfaction. Notwithstanding their advantages, the review addresses the challenges organizations encounter in the pursuit of becoming learning organizations, emphasizing the need for a supportive learning culture and the integration of technology. The discussion extends to the potential role of federated learning in facilitating collaborative knowledge creation, particularly in industries prioritizing data privacy and security. Furthermore, the review identifies knowledge gaps in the existing literature, emphasizing the necessity for robust metrics to measure learning organization capabilities and the exploration of leadership's role in sustaining these organizations. The integration of diverse perspectives from studies on organizational learning, leadership, and emerging technologies, such as federated learning, contributes to a holistic understanding of learning organizations. Concluding insights highlight the critical importance of learning organizations in navigating the complexities of the modern business landscape and underscore the potential avenues for future research in this dynamic field.*

Keywords: *organizational cognition, systems thinking, organizational behavior, agency, wise organizations, reflective practice.*

How to cite: Rad, D., & Bocoş, M. (2024). Advancements in learning organizations: a comprehensive narrative review. *Revista Românească pentru Educație Multidimensională, 16*(2), 418-446. https://doi.org/10.18662/rrem/16.2/865

©2024 Published by LUMEN Publishing. This is an open access article under the CC BY-NC-ND license http://creativecommons.org/licenses/by-nc-nd/4.0/

Introduction

In recent years, the concept of learning organizations has gained prominence for its potential to enhance organizational performance and adaptability within dynamic environments. Grounded in the principles of continuous learning, knowledge creation, and knowledge sharing, learning organizations have become a cornerstone in contemporary organizational literature. This narrative review delves into research findings related to learning organizations, focusing on dimensions such as organizational cognition, systems thinking, organizational behavior agency, wise organizations, and reflective practice.

Organizational cognition stands out as a pivotal dimension in the discourse on learning organizations. Jensen (2005) introduces a contextual theory of learning and the learning organization, emphasizing the intricate interplay between organizational context and learning processes. By strategically harnessing cognitive processes, organizations can optimize learning outcomes, fostering a culture of adaptability and innovation.

Dovey's (1997) exploration into the socio-political dimensions of learning organizations provides a crucial perspective that extends beyond traditional analyses. By delving into the intricate fabric of power dynamics, organizational transformation, and the quest for form, Dovey illuminates the often-overlooked complexities inherent in the dynamics of learning organizations. This critical examination offers a nuanced understanding of how power structures influence the learning process and how organizational transformation intersects with the pursuit of a defined organizational structure. Dovey's work becomes a cornerstone in broadening discussions on learning organizations, urging scholars and practitioners to confront and navigate the multifaceted challenges associated with organizational change within the unique context of learning. The emphasis on socio-political dimensions underscores the importance of considering not only internal knowledge-sharing mechanisms but also the external influences that shape and are shaped by the learning organization. This holistic perspective encourages a more comprehensive approach to organizational development, acknowledging the socio-political landscape as a pivotal factor in the success of learning initiatives.

Shifting focus to Edmondson and Moingeon's (1998) contribution, their examination of the evolution from organizational learning to the learning organization offers a historical lens that enriches our understanding of the transformative journey organizations undertake. By tracing this evolutionary path, the authors unveil the theoretical foundations and

practical implications that underpin the learning organization concept. This historical narrative not only provides a contextual backdrop but also establishes a foundation for comprehending the broader landscape of organizational development. The insights offered by Edmondson and Moingeon contribute to a roadmap for organizational development, where the historical trajectory becomes a guiding beacon for scholars and practitioners alike. Understanding the roots of the learning organization concept aids in deciphering its contemporary manifestations and implications. The transformative journey outlined in their work becomes a valuable resource for organizations seeking to implement learning initiatives, offering a historical context that informs strategic decision-making.

Easterby-Smith et al. (1998) seminal exploration of organizational learning and the learning organization constitutes a pivotal contribution that transcends the boundaries of theoretical frameworks and practical applications. In their comprehensive work, the authors navigate the intricate landscape of organizational learning, unraveling its theoretical underpinnings while concurrently shedding light on practical applications. This dual focus positions their work as a foundational resource for those in pursuit of a holistic understanding of organizational learning.

Building upon this foundational perspective, Armstrong and Foley (2003) delve into the mechanisms that underpin effective organizational learning. Their examination offers valuable insights into the intricacies of these mechanisms, providing not only a theoretical foundation but also practical guidance for implementation. By elucidating the operational aspects of organizational learning, their work contributes to the foundational aspects of the field, equipping scholars and practitioners with actionable knowledge for fostering effective learning processes within organizations.

Starkey's (1998) critical book review stands as a reflective analysis that prompts scholars to engage deeply with foundational texts shaping the discourse on learning organizations. By reflecting on the lessons derived from the learning organization, Starkey encourages a profound exploration of the underlying principles guiding these organizations. This introspective analysis enriches the discourse, fostering a more profound comprehension of the impact and implications of learning organizations on organizational dynamics and development.

Finger and Brand's (1999) expansion of the learning organization concept to encompass the transformation of the public sector is a noteworthy contribution that enhances practical discussions. Their conceptual contributions provide valuable insights into the adaptability and applicability of learning organization principles in diverse organizational settings,

particularly within the unique context of public sector organizations. This work offers practical implications for policymakers and organizational leaders seeking to implement learning initiatives in the public sector.

Huysman's (2000) organizational learning approach introduces a holistic perspective that emphasizes the comprehensive understanding of learning dynamics within the organizational context. This systemic approach significantly contributes to the broader discourse on how organizations can effectively foster learning processes. By recognizing the interconnectedness of various facets within learning organizations, Huysman's work provides a holistic framework that aids scholars and practitioners in navigating the complexities of organizational learning.

In a similar vein, Örtenblad (2004) proposes an integrated model of the learning organization, synthesizing various dimensions into a cohesive framework. This holistic perspective offers a comprehensive roadmap for organizational development by aiding scholars and practitioners in understanding how different facets within learning organizations interconnect. Örtenblad's work contributes to the foundational understanding of learning organizations, guiding organizational development initiatives with a holistic lens.

Caldwell's (2012) practice theory critique of Senge's learning organization is a noteworthy exploration at the intersection of systems thinking, organizational change, and agency. This critique enriches the discourse by not only highlighting practical implications but also shedding light on potential limitations associated with the learning organization framework. Caldwell's work prompts a critical evaluation of established concepts, encouraging scholars and practitioners to navigate the complexities of implementing learning initiatives within organizations.

Santa's (2015) "good" theory perspective represents a thought-provoking exploration that prompts scholars and practitioners to evaluate the ethical and moral dimensions inherent in learning organizations. By encouraging a deeper consideration of responsible and sustainable organizational approaches, Santa's work fosters a more conscientious and ethically grounded perspective within the discourse on learning organizations.

Fillion et al. (2015) present a thought-provoking critique of Peter Senge's learning organization, marked by a meticulous examination that integrates new concepts to enrich existing theory and practice. Their critical perspective opens avenues for a nuanced interpretation of the learning organization concept, fostering ongoing dialogue and refinement within the field. By introducing innovative elements, their contribution sparks intellectual curiosity, encouraging scholars and practitioners to engage in a

more comprehensive exploration of learning organizations and consider diverse perspectives for further development.

Shin et al. (2017) revisit the learning organization, offering valuable insights into how organizations can actively create and sustain a conducive learning environment. Their work makes significant strides in advancing learning organization theory by addressing contemporary organizational dynamics. Beyond theoretical considerations, the authors provide practical guidance for fostering continuous learning, aligning their insights with the evolving needs of organizations in the dynamic modern landscape. This contribution serves as a bridge between theory and application, enriching the discourse with actionable insights for organizational leaders and scholars alike.

Watkins and Kim (2018) undertake a comprehensive assessment of the current status of learning organization theory, setting the stage for promising future directions in research. Their work is instrumental in guiding future research initiatives, ensuring the continued relevance and advancement of learning organization theory and practice. By aligning research efforts with the dynamic needs of organizations in ever-evolving environments, Watkins and Kim contribute to the continuous evolution of the learning organization field.

Örtenblad (2018) delves into the very essence of the "learning organization," urging scholars to embark on a critical assessment and redefine conceptual boundaries. This transformative work prompts a reevaluation of the terminology associated with learning organizations, fostering a more nuanced understanding of their role in contemporary organizational contexts. Örtenblad's contribution initiates a paradigm shift, encouraging scholars to challenge existing conceptual frameworks and embrace a more dynamic and adaptive understanding of learning organizations.

Kairouz et al. (2019) extend the scope of organizational learning by exploring collaborative and decentralized settings, presenting advancements and open problems in federated learning. This cutting-edge contribution propels the learning organization concept into innovative territories, emphasizing contemporary challenges and opportunities in the rapidly evolving organizational landscape. By addressing the intricacies of federated learning, this work introduces new dimensions to the discourse, paving the way for future explorations of collaborative learning models in diverse organizational contexts.

In this comprehensive narrative review, we navigate through foundational works and contemporary contributions that shape the dynamic field of learning organizations. By synthesizing insights from diverse perspectives, this review offers a nuanced and cohesive understanding of the

multifaceted nature of learning organizations. Emphasizing their potential impact on organizational development and adaptability, this review serves as a valuable resource for scholars, practitioners, and organizational leaders seeking to deepen their understanding of learning organizations in the modern business landscape.

Definition and characteristics of learning organizations

The concept of learning organizations, originally propounded by Peter Senge in the early 1990s, has evolved into a cornerstone in organizational theory. Senge articulates a learning organization as "an organization that facilitates the learning of all its members and continuously transforms itself" (Senge, 1990, as cited in Schulz, 2017). This foundational definition accentuates the dynamic nature of learning organizations, positioning them as entities devoted to fostering continuous learning and perpetual transformation.

Team learning and personal mastery represent essential dimensions, as highlighted by Schulz (2017). Team learning promotes collaborative knowledge creation, emphasizing the collective intelligence of the organization (Meen & Keough, 1992). Personal mastery, on the other hand, underscores the importance of individual commitment to continuous improvement, recognizing that organizational learning is contingent upon the development of its members (Sun & Scott, 2003).

Efforts to measure the extent to which an organization embodies learning principles have also been explored. Hill (1996) introduces a measure of the learning organization, providing a framework for assessing organizational learning capabilities. Tsang (1997) explores the dichotomy between descriptive and prescriptive research in the context of organizational learning and the learning organization, contributing to a more comprehensive understanding of research approaches. Appelbaum and Goransson (1997) put forth a framework for research and practical application, differentiating between transformational and adaptive learning within the learning organization. This framework establishes a foundation for comprehending the various learning processes that organizations can engage in.

Motivation within a learning organization is a critical aspect addressed by Osteraker (1999), offering insights into factors that drive and sustain learning initiatives. Fenwick (2001) questions the concept of the learning organization, sparking debates and critical reflections within the academic community. In the realm of perception, Thomsen and Hoest (2001) delve into employees' perceptions of the learning organization, offering valuable insights into how organizational members interpret and

engage with the learning initiatives. Mills and Friesen (1992) contribute to understanding the learning organization by exploring its various facets.

Learning organizations are characterized by several key features, each contributing to the essence of their identity. A supportive learning culture is paramount, creating an environment where knowledge acquisition and sharing are actively encouraged (Rowley & Gibbs, 2008). The presence of a shared vision acts as a unifying force, aligning organizational members toward common goals and objectives (Yeo, 2005). Embracing systems thinking, learning organizations perceive their internal processes as interconnected components, emphasizing the importance of a holistic understanding (Keep & Rainbird, 2001). The concept of the learning organization has undergone scrutiny and refinement over the years. Stewart (2001) reinterprets the learning organization, shedding light on nuanced perspectives that contribute to its ongoing evolution.

Song and Chermack (2008) suggest a theoretical perspective on the process of organizational knowledge formation, merging the notions of individual learning and the culture of a learning organization. These contributions enrich the theoretical foundations of learning organizations, offering insights into the intricacies of their functioning.

Learning organizations are conceptualized as entities that prioritize continuous learning and knowledge creation to enhance their capabilities and remain competitive. Central to the concept of learning organizations is the integration of creativity and innovation, which are viewed as interconnected processes (Anderson et al., 2014). The authors propose an integrative definition that emphasizes the interplay between creativity and innovation in the organizational context.

Anderson et al. (2014) argue that creativity and innovation should be considered as integral parts of the same process within learning organizations. Creativity refers to the generation of novel and valuable ideas, while innovation involves implementing and applying these ideas to achieve tangible outcomes. By recognizing the interdependence of these processes, learning organizations can foster a culture that encourages individuals and teams to generate creative ideas and facilitates their implementation into innovative solutions. At the individual level, learning organizations strive to nurture and develop employees' creative and innovative abilities. Research has shown that individuals play a crucial role in driving innovation within organizations. They contribute by proactively seeking new knowledge, engaging in problem-solving activities, and demonstrating a willingness to take risks (Anderson et al., 2014). Learning organizations support individual-

level innovation by providing resources, training, and a supportive work environment that encourages experimentation and learning from failure.

In addition to individual-level innovation, learning organizations recognize the importance of team dynamics in fostering creativity and innovation. Teams offer a collaborative platform for exchanging ideas, leveraging diverse perspectives, and combining individual expertise to generate innovative solutions. Anderson et al. (2014) highlight the significance of team learning, which involves sharing knowledge, reflecting on experiences, and collectively acquiring new skills to enhance team performance. Learning organizations facilitate team-level innovation by promoting open communication, establishing psychological safety, and encouraging a climate of trust and collaboration.

Learning organizations understand that innovation is not limited to individuals and teams but also extends to the organizational level. Organizational-level innovation involves implementing new processes, structures, or products that enhance the organization's overall performance and competitiveness. Anderson et al. (2014) emphasize the role of leadership in driving organizational innovation by creating a vision, setting clear goals, and providing the necessary resources and support. Learning organizations empower employees at all levels to contribute to innovation, fostering a culture that values experimentation, continuous improvement, and adaptation to change.

As organizations become more complex, the need for multilevel innovation becomes evident. Multilevel innovation refers to the integration of individual, team, and organizational-level innovation to drive overall organizational performance. Anderson et al. (2014) argue that learning organizations excel in leveraging the synergies among these different levels of innovation. By aligning individual and team efforts with the organization's strategic goals, learning organizations create a holistic approach to innovation that maximizes the potential for success.

To further understand the concept of learning organizations, researchers have developed typologies to categorize different types of organizations based on their learning capabilities and characteristics. Lavie et al. (2010) propose a typology that distinguishes between exploration and exploitation within and across organizations. They argue that organizations can be classified as exploitative or exploratory based on their focus on refining existing knowledge or generating new knowledge. This typology provides a framework for understanding how organizations balance the need for stability and innovation.

The concept of mentoring within a learning organization is explored by Klinge (2015), providing a conceptual framework for mentoring that aligns with the principles of a learning organization. Gould (2016) introduces the learning organization and reflective practice as interconnected concepts within the field of social work, emphasizing the practical implications of these ideas.

In summary, the definition and characteristics of learning organizations have evolved over time, shaped by foundational contributions and continuous scholarly inquiry. Senge's initial definition serves as a guiding principle, while subsequent research refines and expands our understanding of the intricacies inherent in learning organizations. This section has provided an overview of key dimensions and contributions that collectively contribute to the conceptualization and application of learning organizations in contemporary organizational contexts.

Benefits of learning organizations

Numerous research studies underscore the multifaceted benefits associated with learning organizations, contributing to enhanced organizational effectiveness and employee satisfaction. Among the key advantages is the positive impact on organizational performance, positioning learning organizations as agile entities capable of navigating dynamic market conditions and seizing emerging opportunities (Schulz 2017). This adaptability provides a competitive advantage, ensuring sustained relevance in evolving business landscapes.

Calvert et al.'s (1994) insightful study delves into the essence of the learning organization, providing practical insights into its implementation. By offering tangible guidance, the work provides a bridge between theoretical concepts and actionable strategies, aiding organizations in the practical application of learning organization principles.

Goh's (1998) identification of strategic building blocks toward achieving a learning organization outlines essential components for successful implementation. By offering a strategic roadmap, Goh's work provides practical insights for organizational leaders and practitioners seeking to cultivate a learning culture within their respective contexts.

Elkjaer's (2001) critical examination adds a layer of depth by scrutinizing the promises held by the learning organization concept. By providing a nuanced perspective, Elkjaer highlights the challenges and potential limitations embedded in the application of learning organization principles. This critical lens encourages scholars and practitioners to engage in reflective discourse, acknowledging both the merits and shortcomings

inherent in the pursuit of learning organization ideals. Vassalou's (2001) extension of the learning organization concept to healthcare services expands the application of learning organization principles to a critical sector. By examining both theoretical underpinnings and practical applications, Vassalou's work contributes to the broader discourse on the adaptability and relevance of learning organizations in diverse organizational contexts. Moilanen's (2001) provision of diagnostic tools for learning organizations offers a practical framework for organizational assessment. By developing tools that facilitate the evaluation of learning organization capabilities, Moilanen's work empowers organizations to conduct self-assessments and identify areas for improvement.

Loermans (2002) explores the synergies between learning organizations and knowledge management, emphasizing the interconnectedness of these two pivotal organizational concepts. The study sheds light on how knowledge creation, dissemination, and utilization are integral components of learning organizations, contributing to their overall effectiveness. Shelton and Darling's (2003) innovative approach bridges theory and practice by incorporating new science concepts to create learning organizations. This interdisciplinary exploration offers fresh perspectives on how scientific principles can be harnessed to foster learning cultures within organizations. Walsh et al.'s (2006) insights contribute to the future of organization theory, offering perspectives on how organizations can not only adapt but thrive within changing landscapes. Their work explores adaptive strategies and organizational resilience, providing valuable guidance for navigating uncertainties and evolving challenges.

Iandoli and Zollo's (2007) emphasis on organizational cognition and learning as crucial components for building systems within the learning organization provides theoretical foundations for understanding the cognitive processes that underpin learning at the organizational level. Their work contributes to the development of frameworks that elucidate the intricate mechanisms involved in organizational learning. Lee and Roth's (2007) exploration of the dialectic between individual and collective learning within the organizational context offers valuable insights into the interconnected dynamics of learning at both individual and group levels. Their work contributes to our understanding of how individual learning processes intersect with collective organizational learning, shaping the overall learning culture.

Wen's (2014) comprehensive exploration delves into the intricate nature, defining characteristics, and strategic imperatives that shape learning organizations. By unraveling the foundational principles that underpin their success, Wen's work offers nuanced insights into the essential components

that contribute to the effectiveness of learning organizations. The study provides valuable perspectives on how organizations can strategically align their structures, processes, and cultures to foster continuous learning and adaptability. Kim et al.'s (2015) critical review of the dimensions of the learning organization questionnaire contributes significantly to the ongoing refinement and measurement of learning organization constructs. The study engages in a meticulous examination of existing instruments, fostering a deeper understanding of how learning organizations can be effectively assessed and measured.

In addition to bolstering organizational performance, learning organizations foster a culture of innovation and creativity, contributing to ongoing success. Serrat (2017) highlights the correlation between learning organizations and heightened levels of innovation, emphasizing the importance of continuous learning in driving creative problem-solving and strategic thinking.

The benefits extend beyond organizational outcomes to encompass employee satisfaction and engagement. Research by Schulz and Baum (2017) emphasizes that learning organizations, by providing learning opportunities and encouraging knowledge sharing, elevate employee morale and motivation. This positive organizational culture translates into increased productivity and reduced turnover rates, as employees feel valued and connected to the organizational mission. Lau et al.'s (2017) contribution takes a unique approach by presenting a person–organization fit theory tailored to the specific context of Malaysia. The study delves into the intricate relationships between learning organizations, organizational culture, and affective commitment within this cultural context. By providing a tailored theoretical framework, the work of Lau et al. enriches our understanding of how cultural nuances shape the dynamics of learning organizations.

Reese's (2020) investigation extends beyond the confines of organizational boundaries to explore the mainstreaming of the learning organization concept. Through a meticulous analysis, Reese showcases how the principles of learning organizations transcend traditional organizational structures, influencing practices at broader societal levels. The inclusion of an interview with Peter Senge adds depth to the exploration, shedding light on the historical evolution of the learning organization concept and offering glimpses into its potential future trajectories.

This comprehensive overview of research studies showcases the diverse perspectives and dimensions associated with the benefits of learning organizations, contributing to a nuanced understanding of their impact on both organizational and individual levels.

Challenges in building learning organizations

While the documented benefits of learning organizations are extensive, the journey to becoming a true learning entity is riddled with several formidable challenges. One of the primary obstacles involves the cultivation of a supportive learning culture, demanding a profound shift in both organizational mindset and practices (Serrat, 2017). Caldwell's (2012) critical reexamination of the relationship between leadership and learning, particularly within the context of Senge's learning organization, unveils the intricate dynamics and complexities entailed in instilling a culture of continuous learning.

Watkins and Golembiewski (1995) take a thoughtful approach by rethinking organization development specifically tailored for the learning organization. They emphasize the need for adaptive and innovative approaches in fostering organizational learning, recognizing that traditional organizational development methods may fall short in addressing the unique requirements of a learning-oriented environment. Coopey (1995) delves into the intricacies of power, politics, and ideology within learning organizations, acknowledging and addressing the inherent complexities that arise when navigating these dimensions.

Waldersee's (1997) exploration into the transformation of the workforce in becoming a learning organization sheds light on the organizational shifts that are imperative for embracing a learning culture. Porth et al.'s (1999) exploration of spiritual themes within the learning organization introduces a unique perspective, acknowledging the importance of holistic and meaningful organizational transformation. This study expands the discourse by recognizing the interconnectedness of spiritual dimensions with the broader context of organizational learning. Fisher and White (2000) contribute to the discourse by investigating the hidden costs of downsizing in a learning organization. Their study underscores the potential drawbacks associated with organizational restructuring, cautioning against potential pitfalls that may arise during transitions.

Thus, the challenges faced by organizations on their journey to becoming learning entities are multifaceted. From instilling a supportive learning culture to navigating the intricacies of technology integration and addressing the complexities of power dynamics, researchers and practitioners alike contribute valuable perspectives and insights that collectively enhance our understanding of the hurdles involved in the pursuit of organizational learning excellence.

Rifkin and Fulop's (1997) exhaustive review and case study on learning organizations represent a pivotal contribution, providing a

comprehensive and holistic understanding of the intricacies involved in their implementation. By synthesizing a diverse range of perspectives, their work offers valuable insights into the multifaceted nature of learning organizations and the challenges associated with their establishment and maintenance.

Sun's (2003) work plays a crucial role in providing conceptual clarifications for terms such as "organizational learning," "learning organization," and "a learning organization." By offering precise delineations of these interconnected concepts, Sun's contribution aids scholars and practitioners alike in developing a clearer understanding of the theoretical foundations that underpin the field of organizational learning. Garvin's (2003) guide to putting the learning organization into practical application is a valuable resource for organizations seeking to operationalize learning concepts. This work offers actionable insights and strategies for translating theoretical concepts into tangible practices, facilitating the integration of a learning culture into day-to-day organizational operations. Ya-Hui Lien et al.'s (2006) scrutiny of the validity of the learning organization concept in the Taiwanese context contributes cross-cultural perspectives to the discourse. By examining how the concept applies in different cultural settings, this study enriches our understanding of the universality and cultural nuances associated with learning organizations. Kenny's (2006) presentation of a maturity model for the formation of strategy within the learning organization adds a practical dimension to the discourse. By offering insights into the development of organizational strategy, Kenny's work provides practical guidance for organizations aiming to navigate the complexities of strategy formation within the context of a learning-oriented environment.

Senge's (2006) seminal work stands as a foundational text that not only elucidates the theoretical underpinnings of learning organizations but also highlights the practical challenges associated with their implementation. Chang and Lee's (2007) research investigates the complex connections among leadership, organizational culture, the operational dimensions of learning organizations, and the job satisfaction of employees. This research sheds light on the interconnectedness of these critical factors, providing valuable insights into how they collectively influence the effectiveness and outcomes of learning organizations. Numerous researchers have contributed valuable insights into these challenges, each offering a unique perspective. For example, Song (2008) examines the impact of learning organization culture on the generation of human knowledge, presenting empirical research in the context of Korea.

Weldy and Gillis (2010) contribute by examining variations in the learning organization at different organizational levels, providing a nuanced

understanding of its dynamics. Their research highlights the importance of considering the organizational hierarchy and context-specific factors when assessing and fostering learning environments.

Song et al.'s (2013) research takes a specific focus on analyzing and synthesizing learning organization literature, utilizing the Dimensions of the Learning Organization Questionnaire (DLOQ) as a framework. Their meticulous examination contributes to the ongoing refinement of measurement and assessment methodologies, enhancing the precision and validity of tools used to evaluate learning organizations.

Lounsbury and Beckman (2015) celebrate the role of organization theory, acknowledging its influence in shaping perceptions and practices related to learning organizations. Bratianu's (2015) exploration of the dynamic relationship between organizational learning and the learning organization contributes profound insights into how these intertwined concepts interact. Another significant challenge lies in the integration of technology and knowledge management systems. Schulz and Baum (2017) stress the crucial importance of investing in appropriate technologies and ensuring that employees possess the requisite skills for effective utilization.

One of the most prominent challenge in building learning organizations is the existence of data in isolated islands. Organizations often possess valuable data that could contribute to the collective learning process, but this data remains inaccessible due to siloed systems and fragmented data storage. This challenge restricts the organization's ability to leverage its full knowledge potential. The proposed solution to address this challenge is secure federated learning. Secure federated learning involves building data networks among organizations based on federated mechanisms to allow knowledge sharing without compromising user privacy. By utilizing federated learning techniques, organizations can collaborate and learn from each other's data while ensuring the privacy and security of individual data sources (Yang et al., 2019).

Another significant challenge in building learning organizations is the need to strengthen data privacy and security. With the increasing concern for protecting sensitive information, organizations must ensure that their learning initiatives incorporate robust privacy and security measures. Failure to address these concerns can undermine trust and hinder the adoption of learning practices. Secure federated learning, as mentioned earlier, provides a potential solution to this challenge. By implementing federated learning frameworks, organizations can share knowledge while preserving the privacy and security of individual data sources. This approach allows organizations

to collaborate on learning initiatives without compromising sensitive information (Yang et al., 2019).

In summary, these studies collectively contribute to a nuanced understanding of the challenges inherent in building and sustaining learning organizations, offering diverse perspectives that enhance the richness and applicability of learning organization theory.

Role of federated learning in learning organizations

Federated learning, as a decentralized approach to machine learning, emerges as a pivotal factor in advancing the capabilities of learning organizations. This innovative methodology offers organizations the opportunity to collaborate and draw insights from each other's data without compromising sensitive information (Yang et al., 2019). By allowing collective learning and knowledge creation across multiple organizational boundaries, federated learning facilitates a richer pool of insights, thereby enhancing decision-making processes (Kairouz et al., 2019).

Privacy concerns, particularly in industries where data confidentiality is paramount, have been a persistent challenge in traditional data-sharing approaches. Federated learning addresses these concerns by keeping data local and conducting model updates on individual devices, thereby minimizing the risk of data breaches (Yang et al., 2019). This inherent privacy-preserving characteristic makes federated learning especially relevant in sectors such as healthcare and finance, where stringent data protection measures are critical.

Kairouz et al. (2021) delve into the advances and open problems in federated learning, providing a comprehensive overview of the current state and future directions in this domain. Li et al. (2020) present a detailed review of applications in federated learning, showcasing the versatility and potential implementations of this approach across different industries. Additionally, Banabilah et al. (2022) contribute to the understanding of federated learning by reviewing its fundamentals, enabling technologies, and projecting future applications, offering a roadmap for organizations looking to leverage this decentralized learning paradigm.

As learning organizations strive to harness knowledge from diverse sources and adapt to evolving landscapes, the role of federated learning becomes increasingly significant. By fostering collaboration and knowledge exchange without compromising data security, federated learning aligns seamlessly with the principles of learning organizations, paving the way for enhanced collective learning and informed decision-making.

Knowledge gaps and future research directions

Despite the extensive research on learning organizations, there are still several knowledge gaps that need to be addressed. One area that requires further investigation is the measurement and evaluation of learning organization capabilities. Developing robust metrics to evaluate the effectiveness of learning initiatives and their impact on organizational performance is essential (Schulz & Baum, 2017).

Another important research direction is understanding the role of leadership in building and sustaining learning organizations. Leadership plays a crucial role in creating a learning culture and driving organizational change (Serrat, 2017). Future studies could explore the specific leadership behaviors and strategies that promote learning and knowledge sharing within organizations.

Additionally, more research is needed on the application of federated learning in different organizational contexts. Understanding the potential challenges and benefits of implementing federated learning in various industries and organizational settings would provide valuable insights for practitioners and policymakers (Kairouz et al., 2019).

Several studies enrich the discourse on learning organizations, each providing unique insights into different dimensions of this dynamic field. Useem and Kochan's (1992) work is instrumental in contributing to the establishment of learning organizations, focusing specifically on the transformative aspects of organizational development. Their emphasis on transformation aligns with the broader goals of creating adaptive and agile entities capable of thriving in dynamic environments.

Dixon (1993) explores the crucial human resource aspect of developing managers for the learning organization. By delving into the skills and competencies required for effective leadership within a learning-oriented context, Dixon's work offers valuable guidance for organizations aiming to cultivate leadership capabilities that align with the principles of continuous learning. Jones and Hendry (1994) contribute by discussing adult learning and organizational transformation within the learning organization framework. This research acknowledges the significance of applying principles of adult learning to facilitate organizational change, offering perspectives on harnessing the knowledge and experiences within the workforce. Fullan's (1995) examination of the school as a learning organization connects theoretical concepts with practical applications, highlighting the relevance of implementing learning organization principles in educational environments. This study broadens the scope of learning organizations, illustrating their relevance beyond the corporate sector and into the realm of education.

Kiedrowski's (2006) work offers valuable insights into the effectiveness of such interventions. This research provides a measurable perspective on the impact of interventions inspired by Senge's principles, contributing to the empirical understanding of learning organization implementation.

Song et al.'s (2009) validation of the DLOQ in Korea context adds a cross-cultural dimension to the discourse. By assessing the applicability of the DLOQ in different cultural settings, this study enhances our understanding of how cultural nuances may influence the perception and manifestation of learning organizations.

Jamali et al. (2009) make a contribution to the field by conducting a comparative examination, monitoring advancements in a developing nation through the DLOQ. This research provides valuable insights into how the DLOQ can be utilized as a tool for evaluating learning organization characteristics in diverse socioeconomic contexts. Watkins and O'Neil's (2013) provision of a non-technical manual on the DLOQ adds practical value. This tool serves as a valuable resource for organizations and researchers seeking to assess learning organization characteristics in a user-friendly manner. Santa and Nurcan's (2016) presentation of learning organization modeling patterns enhances practical applications. By providing models, this work facilitates the operationalization of learning organization concepts, offering guidance for organizations seeking to implement and embed learning principles into their structures.

The collective body of research reviewed here encompasses diverse studies that significantly contribute to the conceptual analysis of learning organizations. Palos and Veres Stancovici's (2016) exploration of learning in organizations delves into the intricate processes of organizational learning, providing nuanced perspectives that contribute to a deeper understanding of how learning unfolds within the organizational framework. This study lays the groundwork for understanding the fundamental mechanisms that drive learning within organizations.

Malik and Garg's (2020) examination of the relationship between learning organizations and work engagement, with a specific focus on the mediating role of employee resilience, enriches the conceptualization of learning organizations by emphasizing the importance of employee well-being. The study underscores the interconnectedness of organizational learning and the psychological resilience of employees, shedding light on a crucial dimension of learning organizations.

Christensen et al.'s (2020) exploration into organization theory and the public sector represents a noteworthy expansion of the discourse on

learning organizations. By addressing cultural and mythic aspects within the public sector, this study acknowledges and navigates the unique challenges and opportunities that arise in governmental contexts. Daft and Armstrong's (2021) comprehensive insights into organization theory and design further contribute to the broader understanding of organizational structures and dynamics, serving as a valuable resource for scholars and practitioners.

Antunes and Pinheiro's (2020) contribution to the literature by linking knowledge management, organizational learning, and memory expands the scope of understanding the intricate interplay between these crucial elements within learning organizations. This work adds layers of complexity to our comprehension of the cognitive and knowledge-related dimensions inherent in organizations committed to continuous learning.

Alonazi's (2021) exploration of building a learning organizational culture during the COVID-19 outbreak offers timely insights into crisis management and resilience. By highlighting the adaptability of learning organizations in challenging circumstances, this study emphasizes the practical application of learning principles in times of disruption. Lin and Huang's (2021) study explores how the presence of an organizational learning culture influences employees' intentions to leave and their performance on the job, contributing to the broader understanding of the link between organizational culture, employee satisfaction, and organizational performance within learning organizations.

Törmänen et al.'s (2022) introduction of a new measure for the systems intelligence of a learning organization adds an innovative perspective to assessment methodologies. This measure provides a fresh lens for evaluating the intelligence of learning organizations in navigating complex systems, offering a more holistic approach to understanding organizational adaptability.

Tompkins's (2023) exploration of organization theory and public management further enriches the conceptual analysis by providing an in-depth analysis of how learning organization principles can be applied in the specific context of public management. Al-Tahitah et al.'s (2020) investigation into the effect of a learning organizational culture on readiness for change and commitment to change in the Yemeni educational sector contributes to the understanding of learning organizations in diverse cultural and educational settings, providing insights into how learning organizations operate in specific contexts.

Burke's (2023) exploration of organization change theory and practice offers practical guidance, providing valuable insights into the challenges and strategies associated with organizational change within the

context of learning organizations. Collectively, these studies significantly contribute to addressing knowledge gaps, enriching our understanding of various dimensions, challenges, and opportunities associated with learning organizations across different sectors and contexts.

These diverse studies contribute significantly to addressing knowledge gaps and shaping future research directions in the dynamic field of learning organizations. Their collective insights provide a nuanced and comprehensive view, advancing our understanding of various dimensions and challenges associated with learning organizations across different contexts and sectors.

While the existing research provides valuable insights into the definitions and typologies of learning organizations, several knowledge gaps remain. Firstly, there is a need for further exploration and clarification of the specific characteristics and processes that define learning organizations. Future research could delve deeper into the mechanisms through which learning organizations facilitate knowledge creation and transfer.

Additionally, more research is needed to understand the antecedents and outcomes of learning organizations. Investigating the factors that promote the development of learning organizations and examining their impact on organizational performance and innovation would contribute to a more comprehensive understanding of this concept. Furthermore, the existing literature primarily focuses on learning organizations in the context of for-profit organizations. Future research could explore the applicability and relevance of the concept of learning organizations in non-profit and public sector organizations.

Another important area for future research is the exploration of the impact of learning analytics in building learning organizations. Learning analytics refers to the use of data and analytics techniques to gain insights into learning processes and outcomes. Understanding how learning analytics can be effectively utilized to support the development of learning organizations would provide valuable insights for practitioners and researchers (Siemens, 2013).

Additionally, there is a need for research to examine how the successful establishment of learning organizations is influenced by organizational culture. The cultural dynamics within an organization significantly impact the attitudes and actions of its members. An exploration of how organizational culture correlates with the incorporation of learning initiatives could offer valuable perspectives for organizations aiming to cultivate an environment of ongoing learning (Serrat, 2017).

Conclusion

In contemporary business environments marked by dynamic complexities, the concept of learning organizations has garnered significant attention for its pivotal role in fostering organizational success and adaptability (Senge, 1990; Schulz & Baum, 2017). Learning organizations, as defined by Senge (1990), are entities that actively facilitate continuous learning, knowledge creation, and knowledge sharing among their members, thereby positioning themselves as agile entities capable of navigating shifting market conditions and seizing emerging opportunities. The essence of a learning organization lies in its commitment to perpetual transformation and the cultivation of a supportive learning culture (Senge, 1990; Schulz & Baum, 2017).

This literature review has undertaken a comprehensive examination of the learning organization concept, synthesizing insights from diverse studies to offer a nuanced understanding of its multifaceted nature. Merriam and Baumgartner's (2020) guide to learning in adulthood, for instance, underscores the broader context of lifelong learning, emphasizing the integral role of continuous learning in organizational dynamics. In parallel, Kazami et al.'s (2020) evaluation of learning organization components at Kabul University provides practical insights, showcasing the relevance of the learning organization concept from the perspectives of faculty members and students.

Steiber et al.'s (2020) empirically grounded typology of learning with startups contributes a unique perspective, shedding light on innovative learning environments and extending the relevance of the learning organization beyond traditional organizational settings. This underscores the adaptability and applicability of learning organization principles in diverse contexts (Steiber et al., 2020).

In exploring the intersection of leadership, learning, and innovation, Waruwu et al. (2020) emphasize the pivotal role of transformational leadership, organizational learning, and structure in fostering innovation capacity in Indonesian private schools. This aligns with Clegg et al.'s (2021) foundational insights into managing organizations, highlighting the intricate interplay of organizational dynamics. Tu and Wu's (2021) investigation into the relationship between green innovation, organizational learning, and competitive advantage introduces a sustainability perspective, emphasizing the importance of organizational learning in addressing contemporary concerns. Griffin et al.'s (2020) comprehensive resource on organizational behavior provides additional foundational aspects, emphasizing effective management of people and organizations.

Leithwood and Louis's (2021) compilation on organizational learning in schools adds an educational dimension, reinforcing the idea that learning principles are not confined to corporate settings. Choudhury and Pattnaik's (2020) exploration of emerging themes in e-learning extends the discourse to the evolving landscape of digital education, acknowledging the transformative potential of technology in learning organizations.

This synthesis of studies highlights the dynamic interplay between continuous learning, knowledge creation, and knowledge sharing in diverse organizational contexts. While challenges exist, such as the cultivation of a supportive learning culture and the integration of technology (Serrat, 2017; Schulz & Baum, 2017), emerging opportunities, including federated learning (Kairouz et al., 2019), pave the way for collaborative learning and knowledge creation. As organizations navigate the complexities of the contemporary business landscape, learning organizations emerge as a cornerstone for achieving resilience, innovation, and sustained excellence (Senge, 1990). The evolving discourse on learning organizations, as evidenced by the reviewed studies, contributes to ongoing refinement, measurement, and assessment, shaping the future trajectory of this dynamic field.

Building learning organizations is a complex task that involves overcoming challenges related to data isolation, privacy, and security. Secure federated learning has emerged as a promising solution to address these challenges by enabling knowledge sharing while protecting individual data sources. However, there are still knowledge gaps that need to be addressed through future research, including the practical implementation of federated learning, the use of learning analytics, and the role of organizational culture. By addressing these gaps, organizations can continue to enhance their learning capabilities and foster a culture of continuous improvement and innovation.

Thus, the exploration of learning organizations in this study opens avenues for future research directions, including the investigation of collective knowledge construction and reconstruction, the potential impact of Big Data technologies on organizational performance, and the application of reverse mentoring strategies (Bocoş et al., 2024).

Overall, the challenges in building learning organizations require a multidisciplinary approach that integrates technical solutions, organizational strategies, and cultural considerations. By addressing these challenges and leveraging the potential of secure federated learning, organizations can unlock the full potential of their collective knowledge and drive sustainable growth and success.

References

Alonazi W. B. (2021). Building learning organizational culture during COVID-19 outbreak: a national study. *BMC health services research*, *21*(1), 422. https://doi.org/10.1186/s12913-021-06454-9

Al-Tahitah, A., Abdulrab, M., Alwaheeb, M. A., Al-Mamary, Y. H. S., & Ibrahim, I. (2020). The effect of learning organizational culture on readiness for change and commitment to change in educational sector in Yemen. *Journal of Critical Reviews, 7*(9), 1019-1026. https://doi.org/10.31838/jcr.07.09.188

Anderson, N., Potočnik, K., & Zhou, J. (2014). Innovation and creativity in organizations: a state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management, 40*(5), 1297-1333. https://doi.org/10.1177/0149206314527128

Antunes, H. d. J. G., & Pinheiro, P.G. (2019). Linking knowledge management, organizational learning and memory. *Journal of Innovation & Knowledge 5*(2), 140-149. https://doi.org/10.1016/j.jik.2019.04.002

Appelbaum, S. H., & Goransson, L. (1997). Transformational and adaptive learning within the learning organization: a framework for research and application. *The learning Organization*, 4(3), 115-128. https://doi.org/10.1108/09696479710182803

Armstrong, A., & Foley, P. (2003). Foundations for a learning organization: organization learning mechanisms. *The Learning Organization, 10*(2), 74-82. 10.4236/jss.2017.512001

Banabilah, S., Aloqaily, M., Alsayed, E., Malik, N., & Jararweh, Y. (2022). Federated learning review: Fundamentals, enabling technologies, and future applications. *Information processing & management, 59*(6), 103061. https://doi.org/10.1016/j.ipm.2022.103061

Bocoş, M., Mara, D., Roman, A., et al. (2024). Mentoring and metacognition — Interferences and interdependencies. *Journal of Infrastructure, Policy and Development. 8*(2), 2859. https://doi.org/10.24294/jipd.v8i2.2859

Bratianu, C. (2015). Organizational learning and the learning organization. *Organizational Knowledge Dynamics: Managing Knowledge Creation, Acquisition, Sharing, and Transformation*, 286-312. https://www.igi-global.com/gateway/book/123104

Burke, W. W. (2023). *Organization change: Theory and practice*. Sage publications.

Caldwell, R. (2012). Leadership and learning: A critical reexamination of Senge's learning organization. *Systemic Practice and Action Research, 25*, 39-55.

Caldwell, R. (2012). Systems thinking, organizational change and agency: A practice theory critique of Senge's learning organization. *Journal of change management, 12*(2), 145-164.

Calvert, G., Mobley, S., & Marshall, L. (1994). Grasping the learning organization. *Training & Development, 48*(6), 38-44.

Chang, S. C., & Lee, M. S. (2007). A study on relationship among leadership, organizational culture, the operation of learning organization and employees' job satisfaction. *The learning organization, 14*(2), 155-185.

Choudhury, S., & Pattnaik, S. (2020). Emerging themes in e-learning: A review from the stakeholders' perspective. *Computers & Education, 144*, 103657.

Christensen, T., Lægreid, P., & Røvik, K. A. (2020). *Organization theory and the public sector: Instrument, culture and myth*. Routledge.

Clegg, S. R., Pitsis, T. S., & Mount, M. (2021). *Managing and organizations: An introduction to theory and practice*. Sage.

Coopey, J. (1995). The learning organization, power, politics and ideology introduction. *Management Learning*, *26*(2), 193-213. https://doi.org/10.1177/135050769502600204

Daft, R. L., & Armstrong, A. (2021). *Organization theory and design*. Cengage.

Dixon, N. M. (1993). Developing managers for the learning organization. *Human Resource Management Review, 3*(3), 243-254.

Dovey, K. (1997). The learning organization and the organization of learning: Power, transformation and the search for form in learning organizations. *Management Learning*, *28*(3), 331-349. https://doi.org/10.1177/1350507697283005

Easterby-Smith, M., Burgoyne, J. G., & Araujo, L. (1998). Organizational learning and the learning organization: Developments in theory and practice. *Organizational Learning and the Learning Organization*, 1-256.

Edmondson, A., & Moingeon, B. (1998). From organizational learning to the learning organization. *Management Learning*, *29*(1), 5-20. https://doi.org/10.1177/1350507698291001

Elkjaer, B. (2001). The learning organization: an undelivered promise. *Management Learning*, *32*(4), 437-452. https://doi.org/10.1177/1350507601324002

Fenwick, T. (2001). Questioning the concept of the learning organization. *Knowledge, power and learning*, 74-88.

Fillion, G., Koffi, V., & Ekionea, J. P. B. (2014, July). Peter Senge's learning organization: A critical view and the addition of some new concepts to

actualize theory and practice. In *Allied Academies International Conference. Academy of Management Information and Decision Sciences. Proceedings* (Vol. 18, No. 2, pp. 10-14). Jordan Whitney Enterprises, Inc.

Finger, M. and Brand, S.B. (1999) The Concept of the "Learning Organization" Applied to the Transformation of the Public Sector: Conceptual Contributions for Theory Development. In: Easterby-Smith, M., Araujo, L. and Burgoyne, J., Eds., Organizational Learning and the Learning Organization: Developments in Theory and Practice, Sage, London

Fisher, S. R., & White, M. A. (2000). Downsizing in a learning organization: are there hidden costs? *Academy of Management Review, 25*(1), 244-251.

Fullan, M. (1995). The school as a learning organization: Distant dreams. *Theory Into Practice*, *34*(4), 230–235. https://doi.org/10.1080/00405849509543685

Garvin, D. A. (2003). *Learning in action: A guide to putting the learning organization to work*. Harvard Business Review Press.

Goh, S. C. (1998). Toward a learning organization: The strategic building blocks. *SAM Advanced Management Journal, 63,* 15-22.

Gould, N. (2016). Introduction: the learning organization and reflective practice–the emergence of a concept. In *Social work, critical reflection and the learning organization* (pp. 1-10). Routledge.

Griffin, R. W., Phillips, J. M., & Gully, S. M. (2020). *Organizational behavior: Managing people and organizations*. CENGAGE learning.

Hill, R. (1996). A measure of the learning organization. *Industrial and Commercial Training, 28*(1), 19-25.

Huysman, M. (2000). An organizational learning approach to the learning organization. *European Journal of work and organizational psychology, 9*(2), 133-145.

Iandoli, L., & Zollo, G. (Eds.). (2007). *Organizational cognition and learning: Building systems for the learning organization: Building systems for the learning organization*. IGI Global.

Jamali, D., Sidani, Y., & Zouein, C. (2009). The learning organization: tracking progress in a developing country: a comparative analysis using the DLOQ. *The learning organization, 16*(2), 103-121.

Jensen, P. E. (2005). A contextual theory of learning and the learning organization. *Knowledge and Process Management, 12*(1), 53-64.

Jones, A. M., & Hendry, C. (1994). The learning organization: adult learning and organizational transformation. *British Journal of Management, 5*(2), 153-162.

Kairouz, P., McMahan, H. B., Avent, B., Bellet, A., Bennis, M., Bhagoji, A. N., ... & Zhao, S. (2021). Advances and open problems in federated learning. *Foundations and Trends® in Machine Learning, 14*(1–2), 1-210. https://doi.org/10.48550/arXiv.1912.04977

Kazami, K., Amini, M., & Babaeifard, A. (2020). Evaluation of learning organization components at Kabul University from the point of view of faculty and students. *Iranian Journal of Comparative Education*, *3*(1), 595-608. doi: 10.22034/IJCE.2020.206029.1065

Keep, E., & Rainbird, H. (2001). Towards the learning organization?. In M., Cartwright, R., Edwards, & F. Reeve, (Eds.). *Supporting Lifelong Learning*: Volume II: Organising Learning (1st ed.). Routledge. https://doi.org/10.4324/9780203996720

Kenny, J. (2006). Strategy and the learning organization: a maturity model for the formation of strategy. *The Learning Organization, 13*(4), 353-368.

Kiedrowski, P. J. (2006). Quantitative assessment of a Senge learning organization intervention. *The Learning Organization, 13*(4), 369-383. https://doi.org/10.1108/09696470610667742

Kim, J., Egan, T., & Tolson, H. (2015). Examining the dimensions of the learning organization questionnaire: a review and critique of research utilizing the DLOQ. *Human Resource Development Review*, *14*(1), 91-112. https://doi.org/10.1177/1534484314555402

Klinge, C. M. (2015). A conceptual framework for mentoring in a learning organization. *Adult Learning*, *26*(4), 160-166. https://doi.org/10.1177/1045159515594154

Lau, P. Y. Y., McLean, G. N., Hsu, Y. C., & Lien, B. Y. H. (2017). Learning organization, organizational culture, and affective commitment in Malaysia: A person–organization fit theory. *Human Resource Development International, 20*(2), 159-179. https://doi.org/10.1080/13678868.2016.1246306

Lavie, D., Stettner, U., & Tushman, M. L. (2010). Exploration and exploitation within and across organizations. *The Academy of Management Annals*, *4*(1), 109–155. https://doi.org/10.1080/19416521003691287

Lee, Y. J., & Roth, W. M. (2007). The individual| collective dialectic in the learning organization. *The Learning Organization, 14*(2), 92-107. https://doi.org/10.35314/inovbiz.v10i2.2777

Leithwood, K., & Louis, K. S. (Eds.). (2021). *Organizational learning in schools*. Taylor & Francis.

Li, L., Fan, Y., Tse, M., & Lin, K. Y. (2020). A review of applications in federated learning. *Computers & Industrial Engineering, 149*, 106854. http://dx.doi.org/10.1016/j.cie.2020.106854

Lin, C. Y., & Huang, C. K. (2021). Employee turnover intentions and job performance from a planned change: the effects of an organizational learning culture and job satisfaction. *International Journal of Manpower, 42*(3), 409-423. https://doi.org/10.1108/IJM-08-2018-0281

Loermans, J. (2002). Synergizing the learning organization and knowledge management. *Journal of knowledge management, 6*(3), 285-294. http://dx.doi.org/10.1108/13673270210434386

Lounsbury, M., & Beckman, C. M. (2015). Celebrating organization theory. *Journal of Management Studies, 52*(2), 288-308. https://doi.org/10.1111/joms.12091

Malik, P., & Garg, P. (2020). Learning organization and work engagement: The mediating role of employee resilience. *The International Journal of Human Resource Management, 31*(8), 1071-1094. https://doi.org/10.1080/09585192.2017.1396549

Meen, D. E., & Keough, M. (1992). Creating the learning organization. *The McKinsey Quarterly,* (1), 58-79.

Merriam, S. B., & Baumgartner, L. M. (2020). *Learning in adulthood: A comprehensive guide*. John Wiley & Sons.

Mills, D. Q., & Friesen, B. (1992). The learning organization. *European management journal, 10*(2), 146-156.

Moilanen, R. (2001). Diagnostic tools for learning organizations. *The learning organization, 8*(1), 6-20. https://doi.org/10.1108/09696470110366507

Örtenblad, A. (2004). The learning organization: towards an integrated model. *The learning organization, 11(*2), 129-144. https://doi.org/10.1108/09696470410521592

Örtenblad, A. (2018). What does "learning organization" mean? *The Learning Organization, 25*(3), 150-158. https://doi.org/10.1108/TLO-02-2018-0016

Osteraker, M. C. (1999). Measuring motivation in a learning organization. *Journal of workplace Learning, 11*(2), 73-77. https://doi.org/10.1108/13665629910260798

Palos, R., & Veres Stancovici, V. (2016). Learning in organization. *The Learning Organization, 23*(1), 2-22.

Porth, S. J., McCall, J., & Bausch, T. A. (1999). Spiritual themes of the "learning organization". *Journal of organizational change management, 12*(3), 211-220.

Reese, S. (2020). Taking the learning organization mainstream and beyond the organizational level: an interview with Peter Senge. *The Learning Organization, 27*(1), 6-16. https://doi.org/10.1108/TLO-09-2019-0136

Rifkin, W., & Fulop, L. (1997). A review and case study on learning organizations. *The Learning Organization, 4*(4), 135-148. https://doi.org/10.1108/09696479710170833

Rowley, J., & Gibbs, P. (2008). From learning organization to practically wise organization. *The learning organization, 15*(5), 356-372. https://doi.org/10.1108/09696470810898357

Santa, M. (2015). Learning organization review–a "good" theory perspective. *The Learning Organization, 22*(5), 242-270. https://doi.org/10.1108/tlo-12-2014-0067

Santa, M., & Nurcan, S. (2016). Learning organization modelling patterns. *Knowledge Management Research & Practice, 14*, 106-125. https://doi.org/10.1057/kmrp.2014.22

Schulz, M. (2017). Organizational learning. The Blackwell companion to organizations, 415-441.

Senge, P. M. (2006). *The fifth discipline: The art and practice of the learning organization.* Broadway Business.

Senge, P. M. (2006). The fifth discipline: The art and practice of the learning organization. Broadway Business.

Serrat, O. (2017). Building a learning organization. In: *Knowledge Solutions*. Springer, Singapore. https://doi.org/10.1007/978-981-10-0983-9_11

Shelton, C. D., & Darling, J. R. (2003). From theory to practice: using new science concepts to create learning organizations. *The Learning Organization, 10*(6), 353-360. https://doi.org/10.1108/09696470310497195

Shin, H. W., Picken, J. C., & Dess, G. G. (2017). Revisiting the learning organization: How to create it. *Organizational Dynamics, 46*(1), 46-56. https://doi.org/10.1016/j.orgdyn.2016.10.009

Siemens, G. (2013). Learning analytics: The emergence of a discipline. *American Behavioral Scientist, 57*(10), 1380-1400. https://doi.org/10.1177/0002764213498851

Song, J. H. (2008). The effects of learning organization culture on the practices of human knowledge-creation: an empirical research study in Korea. *International Journal of Training and Development, 12*(4), 265-281. https://doi.org/10.1111/j.1468-2419.2008.00311.x

Song, J. H., & Chermack, T. J. (2008). A theoretical approach to the organizational knowledge formation process: Integrating the concepts of individual learning and learning organization culture. *Human Resource Development Review, 7*(4), 424-442. https://doi.org/10.1177/1534484308324983

Song, J. H., Chermack, T. J., & Kim, W. (2013). An analysis and synthesis of DLOQ-based learning organization research. *Advances in Developing Human Resources, 15*(2), 222-239. https://doi.org/10.1177/1523422313475995

Song, J. H., Joo, B. K., & Chermack, T. J. (2009). The dimensions of learning organization questionnaire (DLOQ): A validation study in a Korean context. *Human Resource Development Quarterly, 20*(1), 43-64. https://doi.org/10.1002/hrdq.20007

Starkey, K. (1998). Book review: What can we learn from the learning organization?. *Human Relations, 51*(4), 531-546.

Steiber, A., Alänge, S., & Corvello, V. (2020). Learning with startups: an empirically grounded typology. *The Learning Organization, 28*(2), 153-166. https://doi.org/10.1108/TLO-04-2020-0061

Stewart, D. (2001). Reinterpreting the learning organisation. *The Learning Organization, 8*(4), 141-152. https://doi.org/10.1108/EUM0000000005607

Sun, H. C. (2003). Conceptual clarifications for 'organizational learning','learning organization'and 'a learning organization'. *Human resource development international, 6*(2), 153-166. : http://dx.doi.org/10.1080/13678860110086465

Sun, P. Y., & Scott, J. L. (2003). Exploring the divide–organizational learning and learning organization. *The learning organization, 10*(4), 202-215. https://doi.org/10.1108/09696470310476972

Thomsen, H. K., & Hoest, V. (2001). Employees' perception of the learning organization. *Management Learning, 32*(4), 469-491. https://doi.org/10.1177/1350507601324004

Tompkins, J. R. (2023). *Organization theory and public management*. Waveland Press.

Törmänen, J., Hämäläinen, R. P., & Saarinen, E. (2022). On the systems intelligence of a learning organization: introducing a new measure. *Human Resource Development Quarterly, 33*(3), 249-272. https://doi.org/10.1002/hrdq.21455

Tsang, E. W. (1997). Organizational learning and the learning organization: a dichotomy between descriptive and prescriptive research. *Human relations, 50*(1), 73-89. https://doi.org/10.1177/001872679705000104

Tu, Y., & Wu, W. (2021). How does green innovation improve enterprises' competitive advantage? The role of organizational learning. *Sustainable Production and Consumption, 26*, 504-516. https://doi.org/10.1016/j.spc.2020.12.031

Useem, M., & Kochan, T. A. (1992). Creating the learning organization. *Transforming organizations*, 391-406.

Vassalou, L. (2001). The learning organization in health-care services: theory and practice. *Journal of European Industrial Training, 25*(7), 354-365.

Waldersee, R. (1997). Becoming a learning organization: the transformation of the workforce. *Journal of Management Development, 16*(4), 262-273. https://doi.org/10.1108/02621719710164544

Walsh, J. P., Meyer, A. D., & Schoonhoven, C. B. (2006). A future for organization theory: Living in and living with changing organizations. *Organization Science, 17*(5), 657-671. https://doi.org/10.1287/orsc.1060.0215

Waruwu, H., Asbari, M., Purwanto, A., Nugroho, Y., Fikri, M., Fauji, A., Shobihi, A., Hulu, P., Sudiyono, R., Agistiawati, E., & Dewi, W. (2020). The role of transformational leadership, organizational learning and structure on innovation capacity: evidence from Indonesia private schools. *EduPsyCouns: Journal of Education, Psychology and Counseling*, *2*(1), 378-397. https://ummaspul.e-journal.id/Edupsycouns/article/view/499

Watkins, K. E., & Golembiewski, R. T. (1995). Rethinking organization development for the learning organization. *The International Journal of Organizational Analysis, 3*(1), 86-101. https://doi.org/10.1108/eb028825

Watkins, K. E., & Kim, K. (2018). Current status and promising directions for research on the learning organization. *Human Resource Development Quarterly, 29*(1), 15-29. https://doi.org/10.1002/hrdq.21293

Watkins, K. E., & O'Neil, J. (2013). The dimensions of the learning organization questionnaire (the DLOQ) a nontechnical manual. *Advances in Developing Human Resources, 15*(2), 133-147. https://doi.org/10.1177/1523422313475854

Weldy, T. G., & Gillis, W. E. (2010). The learning organization: variations at different organizational levels. *The Learning Organization, 17*(5), 455-470. https://doi.org/10.1108/09696471011059831

Wen, H. (2014). The nature, characteristics and ten strategies of learning organization. *International Journal of Educational Management, 28*(3), 289-298. https://doi.org/10.1108/IJEM-04-2013-0062

Yang, Q., Liu, Y., Chen, T., & Tong, Y. (2019). Federated machine learning. *ACM Transactions on Intelligent Systems and Technology (TIST), 10*, 1-19. https://doi.org/10.1145/3298981

Yeo, R. K. (2005). Revisiting the roots of learning organization: A synthesis of the learning organization literature. *The Learning Organization, 12*(4), 368-382. https://doi.org/10.1108/09696470510599145