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| RESEARCH ARTICLE

The Contextual Mindset of Worlds 1, 2 and 3 as Constructs in Scientific Knowledge Processing during Research Activities

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| ABSTRACT

Real and imaginary boundaries of reality affect the contexts pertaining to the processing of knowledge. This study review examines how the integration of Worlds 1, 2, and 3 as constructs serves as a framework for analyzing the advancement of knowledge through research initiatives. In this regard, the empirical context and the physical environment where data is collected represent World 1, while the scientific and epistemic advancement of knowledge is World 2. Critical thought and metascience combined make World 3. This study review focused on how Worlds 1, 2, and 3 inspire a growth mindset toward constructive synergy, and an interdisciplinary approach to understanding the interplay between global and local levels of research. Each world holds significance, but only through their possible integration can a coherent and systematic approach to scientific research be achieved. The study review conducted analyzed literature on the constructs of Worlds 1, 2, and 3 from various disciplines that include social sciences, healthcare, and education. The focus was on the functions of collecting empirical data (World 1); analyzing data and developing conceptual frameworks, and theories (World 2); and meta-reflective and scientific self-evaluation (World 3). It also analyzed how adopting a growth versus a fixed mindset, the blending of global and local contexts, and the role of teamwork from different professions in dealing with advanced multifaceted research problems and projects influenced innovation in research. The findings of the study were noteworthy. The first finding was that World 1 focuses on activities that allow for empirical data collection in areas such as healthcare and education. The second finding was that World 2 incorporates empirical evidence into developing and analyzing scientific theories within a framework of systematic construction and analysis. The third finding was that World 3 encourages critical reflection that underpins the validity and usefulness of the research. The fourth finding was that a developed mindset fostered creativity, perseverance, and interdisciplinary collaboration, while a fixed mindset inhibited innovation and creativity. The last finding was essential in that the connection formed between global and local contexts enhanced the purpose of the research, while interprofessional approaches enabled holistic solutions to the problems. The study review demonstrates that fixed-mindset researchers do not necessarily embrace change, and are possibly averse to failure in examination. This review recommends employing an empirical, methodological, and self-reflective framework for conducting thorough research and in-depth intellectual inquiry. Further research is required on the application of the integrated constructs from Worlds 1, 2, and 3 in other fields, particularly in virtual and digital research contexts. This review promotes the use of thoughtful approaches to context-focused reasoning to enhance science rigorously, and address pressing contemporary issues within ecosystems in a critically reflective manner.

| KEYWORDS

Scientific Knowledge Processing, Constructs World 1, World 2, World 3, Growth Mindset, Interdisciplinary Research, Global-local Context, Critical Reflection

| ARTICLE INFORMATION

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Introduction

Scientific knowledge processing in research entails the interplay of reality and virtual contexts and mindsets that can be bewildering, especially as the stakeholders in healthcare exist and interact within complex adaptive settings. Pype et al. (2018) and Hoogeboom and Wilderom (2020) point out that interaction dynamics comprising of heterogeneous patterns of engagement between team members within interdisciplinary teams contribute as major factors in complex adaptive systems. The futurist and trendwatcher, Van Hooijdonk (2021) reveals the context of blurring between the physical and virtual realities pertaining to dynamics emerging from the world of artifacts, situations, living beings, sensations, abilities, capabilities, and unknown influences that constitute the future of existence. Jordan (2009) and Dakers (2011) have separately asserted that blurring boundaries present human beings with a composite blend of challenges when attempting to comprehend what is real versus virtual, particularly in postmodern thinking when discourse proliferates and erases boundaries in the political, economic, social, technical, cultural, linguistic, ecological, and legal domains of living and interactions. These considerations from the healthcare perspective potentially make the research process a trepidation somewhat like an avalanche that can be terrifying to novice and experienced health researchers alike. Mindful of these future determinants, the cognitive device of thinking through research activities within the research process using Worlds 1, 2, and 3 is presented.

Scientific Justification and Background for Conceptualization of Worlds 1, 2, and 3

The conceptualization of three worlds is noted by Pletsch (1981) to have been used to organize thinking processes in the social sciences from 1950 to 1975 when there were strong competitive approaches between countries that embraced capitalism and communism. However, Ditton et al. (1992) confirm that in recreational specialization, three worlds were used as a device in conceptualization in social worlds when hypothesis testing occurred, while interestingly, mathematicians introduced three worlds (Tall, 2004) in dealing with conceptualizations involving empirical abstractions that included the study of objects, counting as actions, symbolized concepts, and properties related to deductions. Thereafter, as the digital era arrived, the conceptualization of virtual worlds emerged specifically as three-dimensional definitions of reality being portrayed in a virtual world became a trend (Spence, 2008). Thereafter, a proliferation is apparent as three-dimensional worlds representing digital platforms for virtual team interactions (Alahuhta et al., 2014) occurred. This was followed by virtual worlds as digital spaces in organizational psychology were used in conceptual models for comprehending social and professional spheres in organizations (Koles & Nagy, 2014), while media embraced narrative worlds as cognitive and ontological concepts in theory and fiction when conveying stories that were virtual (Ryan, 2016). In the service sector, Anttila and Jussila (2017) indicate that three worlds were used for conceptualization, with World 1 being reality, World 2 taken as interactions between persons, and World 3 being conceptual and linguistic definitions and descriptions, respectively.

Conceptualization of Worlds 1, 2, and 3 applied to the Research Process

Worlds 1, 2, and 3 applied to the research process becomes a pragmatic cognitive device that represents a continuum of scientific activities and distinctive clarity of the research steps that are not mutually exclusive, yet require a degree of independent attention or separate follow-up. Furthermore, it permits novice and experienced researchers the opportunity to pace themselves in support of contemplation when conceptualizing between reality and virtual elements. Often when experienced researchers are mentoring developing researchers, the distinctiveness of Worlds 1, 2, and 3 promotes clarity of thought and consequential scientific actions, as well as reflection on the ethical considerations and mental paradigms that underpin the research process.

Therefore, researchers would need to navigate the conceptualization of three distinct worlds, namely World 1 that is the physical and pragmatic environment, World 2 that entails research methodology focused on scientific inquiry, development of knowledge and its validation, and World 3 that is reflexive on reflections of metascience and critical appraisal. Markedly, mindsets that are growth-focused versus fixed-in ideas significantly influence research conceptualization and progress. The current literature review explores the contextual aspects of scientific knowledge processing, the role of mindsets in improving research quality, the applicability of global and local contexts, and the integration of context and mindset in various research designs. The focus is also on examining the significance of interprofessional and transdisciplinary methods across education, health, and social sciences.

Scientific Knowledge Context

The context of scientific knowledge processing, by embracing the conceptualization of Worlds 1, 2, and 3, is essential in the research process for understanding and incorporating these three interconnected worlds, offering researchers a wide-ranging framework for conducting rigorous and effective research. In World 1, which characterizes everyday life and the practical use of knowledge, researchers acknowledge that their work is rooted in the physical world and related interactions and societal influences (Mouton, 1996; Bodrick, 2011). This understanding assists the researcher in collecting empirical data in real-world settings, for instance, healthcare environments, the education classroom, community settings, and laboratory services to study phenomena and gain insights into human actions, responses, events, experiences, and situations (Bodrick, 2011). At the next level, World 2 represents the world of science and the epistemic production of knowledge, that is relating to knowledge development, and/or to the degree of knowledge validation, whereby the research process moves from the field of data collection that occurred in World 1 to analysis and interpretation in World 2 (Mouton, 1996; Bodrick, 2011). Researchers apply systematic methodologies and rigorous models to investigate the nature of related phenomena that exist in World 1. The research investigator formulates research questions, hypotheses, and theories, employing existing knowledge and theories from the literature in World 2 to guide their inquiry in World 1 (Mouton, 1996; Bodrick, 2011). The goal is to generate models or theories that explain the actions observed in World 1. According to Luft et al. (2022), theory and conceptual development, which occur in World 2, assist researchers in making sense of the data, creating conceptual frameworks, and generating hypotheses or research questions for guiding investigation. Theoretical and conceptual frameworks guide research paths and provide the foundation for establishing credibility of the research investigation (Adom et al., 2018).

World 3 embodies the world of metascience and critical inquiry on knowledge where researchers engage in reflective and critical thinking (Mouton, 1996; Bodrick, 2011). The researchers critically assess the interrelationships between the empirical evidence from World 1 and the scientific knowledge produced in World 2 (Bodrick, 2011), and through critical inquiry aim to enhance the practice of science regarding conceptual and relational clarity of concepts, data, and/or findings.

Perspectives and Mindsets within Scientific Knowledge Context

Philosophical, historical, and ethical perspectives inform research methodology and guide the logical use of methods and techniques. By embracing the conceptual and knowledge generative activities of Worlds 1, 2, and 3 as described above, researchers can work to ensure that their work is grounded in the real world, scientifically rigorous, and critically reflective (Bodrick, 2011). The approach fortifies the validity and strength of research outcomes and endorses the relevance and impact of findings. Shvarev (2018) contends that every researcher aims to obtain valid results. Further, the conceptual and knowledge generative activities of Worlds 1, 2, and 3 strengthen the interdisciplinary relationship and holistic understanding, enabling researchers to address complex issues comprehensively. In essence, the context of scientific knowledge processing, which incorporates the conceptualization of Worlds 1, 2, and 3, is critical in the research process in that it enables researchers to navigate between empirical data collection, rigorous analysis, and critical reflection, leading to high-quality, impactful research outcomes.

Researchers' mindsets in the context of research conceptualization directly affect innovation and creativity. The contrasting perspectives of growth and fixed mindsets shape research outcomes and progress. Markedly, embracing a growth mindset allows researchers in all spheres and organizations to foster innovation and achieve excellence (Foster, 2022). Conversely, a fixed mindset poses challenges and limitations. Various strategies cultivate a growth mindset in research endeavors, leading to enhanced outcomes and greater contributions to scientific knowledge. Notably, embracing innovation and creativity is paramount in research conceptualization, which is crucial in all fields (Brem et al., 2016). Researchers with a growth mindset perceive challenges as opportunities for growth and development. They eagerly embrace new ideas, explore unconventional approaches, and welcome intellectual curiosity. By encouraging diverse perspectives and intellectual risk-taking, researchers can push the boundaries of knowledge and make breakthrough discoveries.

The implications of a growth mindset in research excellence are far-reaching. The mentality enhances resilience, perseverance, willingness to learn from failures, and motivation (Chapman, 2021; Ng, 2018). Researchers with a growth mindset view setbacks as valuable learning experiences rather than personal or logistical shortcomings. Actively seeking feedback, revising methods, and refining theories contributes to higher-quality research outcomes. Besides, improving and adapting to new information allows researchers to excel in their respective fields.

In contrast, a fixed mindset can lead to challenges and limitations in research progress. Researchers with a fixed mindset tend to avoid risks, fear failure, and adhere only to established or entrenched methods (Noskeau et al., 2021). These researchers may be less inclined to explore alternative perspectives or challenge existing theories. Consequently, innovation can be impeded, limiting the potential for better performance (Madeira et al., 2017). A fixed mindset may hinder collaboration and interdisciplinary approaches as researchers resist leaving their comfort zones. By nurturing a growth mindset, researchers maximize their potential and drive transformative research outcomes.

Global and Local Research Applicability

The global context's applicability to local research inquiry is essential for conducting significant research. Understanding the global context endows researchers with a broader perspective, while recognizing the role of the local context ensures the relevance and applicability of findings. Bridging the global and local contexts enables researchers to make meaningful contributions to global and local communities by ensuring a comprehensive literature review (Snyder, 2019). Strategies such as collaborative partnerships, incorporating local perspectives, and tailoring interventions to specific community needs facilitate integration. According to Kivunja and Kuyini (2017), the global context in research entails acknowledging the broader societal, cultural, and political factors at play. By examining global trends, challenges, and advancements, researchers gain insights into the larger context in which their work exists under the reflexivity concept (Olmos-Vega et al., 2022). However, researchers should also identify the significance of the local context. The local context encompasses specific cultural, social, and geographical factors influencing the research topic within a particular community or region. Therefore, bridging the global and local contexts requires considering the interconnections and interactions between global and local factors. Further, collaborative partnerships with local stakeholders, such as community members and policymakers, enhance the integration of global and local perspectives. Incorporating local knowledge systems and engaging with local communities ensure that research questions and methodologies align with local needs and priorities. Overall, integrating the global context into local research ensures quality research outcomes.

The applicability of contextual mindset considerations extends to qualitative, quantitative, and mixed methods research designs, enhancing the validity and strength of research findings. Integrating contextual factors ensures alignment with the specific research context, while mindset considerations, such as growth versus fixed mindsets, help explore researcher biases and perspectives. In qualitative research, contextual and mindset considerations are crucial in understanding the research topic. Researchers explore the socio-political context and adopt a growth mindset to engage with participants' perspectives to enhance commitment (Canfield et al., 2022). The approach allows for a deep exploration of individuals' experiences within their unique contexts, providing rich qualitative data through diverse participants, as supported by Kaiser et al. (2017). Conversely, a quantitative study entails quantifying and analyzing variables to obtain results (Apuke, 2017). Regnault et al. (2018) and Hafsa (2019) explain that mixed methods research designs combine qualitative and quantitative approaches, necessitating that the two methodologies integrate contextual and mindset considerations. The incorporation ensures meaningful integration of data and a comprehensive understanding of the research topic. Contextual and mindset considerations are essential in qualitative, quantitative, and mixed-methods research.

Interprofessional and Transdisciplinary Approaches

Interprofessional and transdisciplinary approaches are acknowledged as valued frameworks in education, health, and social sciences. The interprofessional approaches emphasize collaboration and integration of expertise across disciplines, leading to enhanced research outcomes and a more comprehensive understanding of complex issues. Interprofessional collaboration involves professionals from different disciplines working together to achieve common goals. In education, health, and social sciences, interprofessional collaboration brings educators, healthcare professionals, social workers, psychologists, and other experts together. By combining their diverse perspectives, knowledge, and skills, professionals can develop comprehensive solutions to complex issues that affect individuals and communities, such as difficult healthcare situations (Geese & Schmitt, 2023; Busari et al., 2017). The benefits of interprofessional and transdisciplinary approaches are manifold. First, they enhance a holistic understanding of problems by integrating multiple viewpoints, leading to more robust research findings and innovative interventions. Second, interprofessional collaboration enhances the effectiveness of interventions and services by drawing on a range of expertise. By working together, professionals can comprehensively address the diverse needs of individuals and communities. Lastly, interprofessional collaboration promotes shared learning and professional growth, as individuals learn from one another's perspectives and develop a deeper understanding of different disciplines. Overall, interprofessional and transdisciplinary approaches offer significant enrichment when collaborating in education, health, and social sciences.

Conclusion

The context and mindsets of scientific knowledge processing are important in the research process. Understanding the connection between the three worlds, that is, World 1, World 2, and World 3, offers a key basis for the research process. Further, embracing a growth mindset nurtures innovation and creativity, leading to research excellence while overcoming the limitations of a fixed mindset. Considering the global context in local research inquiry also ensures the relevance and impact of findings, while integrating contextual and mindset considerations strengthens the validity and strength of research outcomes across qualitative, quantitative, and mixed methods research designs. Moreover, the interprofessional and transdisciplinary models enhance collaboration among professionals from diverse disciplines, enabling holistic understanding and comprehensive solutions to complex issues. Applying these concepts and approaches in the research process improves the quality, impact, and relevance of scientific knowledge.

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