

CHAPTER 1

INSIGHTS INTO BIBLIOMETRIC AND SCIENTOMETRIC MAPPING OF DIGITAL DESIGN METHODS IN SPATIAL DESIGN PEDAGOGY

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INTRODUCTION

The integration of digital technologies into education within spatial disciplines has emerged as a significant research domain in academic literature over the past two decades. This process represents not merely a consequence of technological advancement, but rather serves as an indicator of a paradigmatic transformation in which the epistemological foundations of design education are fundamentally reconsidered (Oxman, 2006). Digital transformation, according to Vial's (2019) definition, constitutes a process aimed at improving institutions "by triggering significant changes in their properties through combinations of information, computing, communication, and connection technologies." The adaptation of this definition to design education necessitates a fundamental restructuring of pedagogical approaches, learning processes, and studio culture (Vial, 2019). It is emphasized that the digital pedagogy framework for sustainable education must be student-centered, with Huang et al. (2024) demonstrating the importance of structuring digital pedagogical approaches from a student-centered perspective. This framework indicates that the integration of digital tools in spatial disciplines should be designed to create personalized learning experiences (Huang et al., 2024).

Digital architecture poses a significant challenge in terms of design pedagogy, requiring the development of new approaches regarding theory, knowledge, mod-

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such as the USA, Germany, and China play a decisive role in the development of the discipline, while emerging research actors such as Turkey generally remain confined to peripheral clusters. This situation makes it inevitable to develop strategies aimed at increasing international collaborations to ensure the discipline develops in a more balanced and inclusive manner. Particularly, the establishment of sustainable collaborations by developing countries such as Turkey with global centers will increase the visibility of local knowledge production while contributing to the diversification of global literature.

The lack of collaboration observed at institutional and individual levels restricts knowledge circulation and poses an obstacle to methodological diversity. Therefore, the formation of international multi-centered consortia and the widespread adoption of common databases and open-access platforms are of importance. Moreover, supporting funding mechanisms that encourage interdisciplinary collaborations and joint curriculum projects will enhance the quality of pedagogical practices while also strengthening epistemological diversity. Thus, the integration of digital tools into spatial disciplines education will deepen not only in technical but also in theoretical and pedagogical dimensions, ensuring balanced development at a global level.

In conclusion, it is evident that digital tools are transforming both technical production processes and pedagogical approaches in architecture and interior architecture education. Advanced modeling, generative design, 3D/VR/AR-based visualization, and digital pedagogical methods are restructuring learning environments in design studios. It is of great importance that future research should aim to deepen the integration of digital pedagogy into architecture and interior architecture programs and encourage interdisciplinary collaborations. Thus, the potential that digital technologies offer both in creative design processes and in the development of educational policies can be evaluated more comprehensively. This study has provided both a descriptive and a theoretical and methodological perspective on the role of digital tools in education, and is of guiding nature for updating educational strategies and improving curriculum design.

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