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Architectural Curriculum as an Information Structure: An AI-Informed Framework for Knowledge Development in Design Education

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Abstract

Architectural education is primarily driven by studio-based pedagogy and reflective practice where knowledge is often tacit, non-linear, and implicit, creating a significant challenge for curriculum analysis and the understanding of how design expertise is developed. This research employs a multi-disciplinary theoretical framework that bridges information science and architectural pedagogy by utilizing information modeling and curriculum theory to treat the curriculum not as a static list of courses but as a dynamic, integrated information structure. Central to this methodology is the positioning of artificial intelligence as an analytic lens whereby computational techniques such as knowledge graphs, dependency modeling, and curriculum mapping are applied to visualize and interpret the dense network of information dependencies inherent in creative practice. The study discloses that architectural knowledge develops through network of simultaneous conceptual, technical, and representational dimensions rather than linear sequences, and by applying AI-informed research tools, the researcher establish that inherent knowledge relationships can be made observable without recommending or systematizing pedagogy. This process highlights the information openness of design education by identifying both the structural logic of the curriculum and the specific dimensions of design decisions that resist codification. Which as a finding, ultimately providing a pathway for educators to analyze curriculum coherence and progression with greater clarity while preserving the human-centric nature of studio learning which offers broader implications for other creative fields that must account for the tacit, non-linear, and discourse nature of expertise.

Keywords: Architectural Education, Artificial Intelligence, Curriculum Theory, Information Development, Knowledge Representation