Fitting in architectural education: rethinking pedagogy through construction strategies

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As digital technologies become increasingly integrated into architectural education, understanding how they influence students' design thinking and construction strategies has become an important pedagogical question. Rooted in longstanding construction logics of stacking, repetition, and modular aggregation, this research investigates the relationship between prior learning experiences, specifically inherited construction logics and digital 3D modeling proficiency, and students' construction strategies.
The experiment involved 110 participants, including undergraduate and graduate students. To examine design behavior within a controlled and measurable environment, the study employed an XS-scale assembly task where participants constructed a 3D spatial configuration using twenty pieces from four standardized module types within three minutes. Data collection was dual-layered: a structured survey documented software proficiency, while the resulting physical artifacts were systematically analyzed. This methodology enabled a comparative analysis of how learned habits interact with exploratory thinking.
Configurations were evaluated through a coding process and a Deviation Index, a metric developed to measure the departure from linear assembly toward complex axis variations. The findings reveal a significant correlation between advanced 3D modeling skills and higher Deviation Index scores. While lower-year students frequently reproduced more familiar and repetitive patterns, senior and graduate students were more likely to reorganize the internal logic of the system.
Rather than evaluating design quality, the study quantifies immediate construction behaviors under time constraints, focusing on the capacity for differentiation. The findings demonstrate that higher levels of digital modeling proficiency are associated with a greater tendency to depart from repetitive patterns and explore alternative spatial configurations. These results contribute to the 'IN-Forms' dialogue by demonstrating how digital competencies may influence the organization of formal relationships in physical making. Ultimately, the study suggests that digital competencies may support students in reinterpreting and transforming inherited construction patterns into more diverse spatial and formal strategies.