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Original Research Article

Identifying the Factors Influencing the Development of Critical Thinking and Studio Culture in the Architectural Design Education of Iranian Universities*

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Abstract

Problem statement: Design, which is an innovative inquiry into the creation of novel artifacts, challenges, and harnesses the mind, personality, and creative capacities of the designer. In the realm of architecture, this inquiry encounters complexities, contradictions, and thought-provoking questions that demand recourse to a rich body of knowledge and the application of both critical and creative modes of thinking. Within the field of design education, however, there is no consensus regarding the most effective pedagogical methodologies. Such a gap underscores the urgent need to investigate educational approaches that can stimulate and nurture students' creativity.

Research objective: The aim of this study is to empower architecture students to cultivate independent and critical thinking an intellectual stance that fosters an innovative studio culture without relying on instructors' direct guidance or the imitation of past experiences.

Research method: This research employed a qualitative approach, drawing upon semi-structured interviews and directed qualitative content analysis as the primary tools of inquiry. In the first phase, purposive and snowball sampling techniques were used to select expert participants. Sixteen individuals contributed to the study, and the interview data were analyzed through open and axial coding. In the second phase, a questionnaire was distributed across three groups, encompassing a statistical sample of 105 architecture students from both public and private universities in Tehran and Karaj.

Conclusion: The findings revealed that the architectural design education process in Iranian universities places limited emphasis on fostering critical thinking skills among students. Yet, the integration of diverse modes of thought, including visual, flexible, metaphorical, strategic, creative, and critical thinking, was found to be essential for addressing the multifaceted challenges of this field. Moreover, the results highlighted that instructors attach particular importance to the role of the studio environment in enhancing students' creativity.

Keywords: *Architectural design education; Studio culture; Critical thinking; Architecture students.*

Introduction and Problem Statement

In the contemporary post-structuralist era, coinciding with the emergence of multidimensional global crises, the process of architectural education has transcended the mere transmission of technical skills, evolving instead into a conceptual enterprise with multiple layers of meaning (Crotty, 1998; Fricker, 2007). Within this context, future architects are confronted not only with issues of form and function but are increasingly engaged with questions of meaning, theoretical

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discourses, and related social responsibilities (Mokhtari et al., 2023; Brookfield, 2017). Critical thinking, therefore, can no longer be understood simply as a tool for logical evaluation or rhetorical critique. Rather, it emerges as a fundamental cognitive–cultural structure that transforms the architecture student into an active agent of knowledge production and an epistemic actor (Sharif, 2014; Mohammadi, 2024). Such epistemic agency, in turn, possesses the capacity to challenge prevailing design norms, reveal underlying assumptions, and reconfigure the dominant discourses of architectural design (Brookfield, 2011; Fricker, 2008). Parallel to these shifts, the concept of studio culture has attracted attention as an "ecology of situated learning." In this perspective, learning does not occur through the one-way transmission of data and information, but through active participation in a "community of practice" where intellectual, embodied, and social dimensions of knowledge are simultaneously experienced (Schön, 2017; Lave & Wenger, 1999). Within such a setting, reciprocal interactions between instructors and students, peer critiques, the ambiguities and uncertainties inherent in the design process, and even the silences within the studio environment all function as mechanisms for producing and shaping disciplinary knowledge in architecture (Ghaempanaha et al., 2024). Nevertheless, the architecture education system in Iran faces a paradoxical condition. On the one hand, it benefits from a rich architectural and cultural heritage with the potential to cultivate independent and innovative design identities. On the other hand, it is constrained by hierarchical educational structures, authoritarian pedagogical approaches, and learning spaces that lack the flexibility required to accommodate constructive critique (Hosseini et al., 2008; Sadaqati & Hojjat, 2022). Within this framework, critical thinking often remains peripheral to the design education process: architectural design is treated less as a "continuous inquiry" and more as a fixed and unquestionable form (Fadavi & Hosseini, 2018; Zeraati et al., 2023). Similarly, studio culture in many cases is reduced to a mere site for producing visual artifacts, rather than a dynamic arena for intellectual experimentation, grappling with design uncertainties, and learning from mistakes and failures (Alizadeh Miandoab et al., 2022). This state of affairs has produced a rupture between accumulated theoretical knowledge and tacit, situated understanding. Students learn what concepts to articulate, yet they do not necessarily acquire a deep capacity to comprehend and critically analyze problems (Asgari et al., 2023). The lack of systematic mechanisms for cultivating critical thinking, combined with the weakness in institutionalizing a studio culture grounded in active dialogue and exchange, has resulted in design studio outputs that often emphasize aesthetic surfaces while lacking critical depth that is, forms that are unsupported by strong architectural reasoning or by a recognizable position within the contemporary and global discourse of architecture (Nazari et al., 2024). Against this backdrop, the present study adopts a sequential exploratory mixed-methods approach to uncover the latent layers within the process of architectural design education in Iran. It approaches studio culture not as a passive instructional environment but as a dynamic and interactive structure of intersubjective practices, and it treats critical thinking not merely as an acquired skill but as a fundamental component in shaping the professional identity of future architects. The guiding research question is thus formulated as follows:

What elements and interactions within Iran's architectural design education contribute to the emergence and flourishing of critical thinking and an effective studio culture, and how can these factors serve as catalysts for transformative shifts in pedagogical approaches?

Theoretical Foundations

For a long time, the structural framework of architectural education has rested upon established traditions that draw distinctions between theory and practice, critique and design, and processes of learning and reflection. In recent years, however, profound theoretical shifts and mounting global socio-cultural

pressures have prompted scholars to reconceptualize the design studio—not merely as a space for skill acquisition, but as a dynamic and generative site of knowledge production. It is within this setting that critical thinking and studio culture, conceived as interwoven and inseparable, come to embody the cognitive and ethical core of architectural education. A review of the literature suggests that educating informed and capable architects in the present era is achievable only through the strengthening of students' cognitive agency and the cultivation of a reflective, inclusive studio ecology. Rather than providing a superficial summary of prior studies, this systematic review seeks to establish the theoretical groundwork for a case-based investigation of architectural education in Iran.

- **Redefining critical thinking: from skill to cognitive agency**

Contemporary scholarship in education no longer treats critical thinking merely as an evaluative skill or a set of prescribed procedures. Instead, it is increasingly understood as a fundamental epistemological orientation, a process through which the production, legitimacy, and application of architectural knowledge are interrogated and scrutinized (Tarasova, 2018). From this perspective, critical thinking is nurtured not as a discrete and isolated skill, but within dialogical interactions, reflective feedback, and active engagement with the inherent ambiguities of the studio environment (Oberfrancová et al., 2019). Studies such as AbdelLatif et al. (2020) stress that architectural critique must be approached as a cognitive and participatory event rather than as a one-way, top-down evaluation. Despite such perspectives, many architecture schools still adhere to what Lanz and Volker (2008) describe as the "jury-based culture of assessment," wherein critique sessions tend to reproduce existing structures rather than challenge them. This issue is particularly pronounced in hierarchical and authoritarian educational contexts such as Iran, where rigid evaluations, an overemphasis on aesthetic norms, and the absence of dialogical frameworks hinder the authentic development of critical thinking (Sharif, 2014). Findings by Alizadeh Miandoab et al. (2022) further demonstrate that in such settings, critical thinking often emerges as a superficial imitation rather than as a deeply cultivated capacity. Consequently, while students may provide justifications for their design decisions, they cannot often critique or assess the epistemological foundations underlying those decisions. Advocates of "critical pedagogy" maintain that the authentic development of critical thinking requires creating conditions for what McEwan (2023) terms "epistemic disobedience." This transformation cannot be achieved merely through curricular reform; it requires reconfiguring power relations in the studio and fostering polyvocal, inclusive discourses. As Zamberlan and Wilson (2015) argue, the architecture classroom must shift from the traditional model of "design presentation" toward one of "negotiating knowledge," thereby enabling students to become critically aware architects with a sense of social responsibility.

- **Studio culture as situated epistemology**

Studio culture is not a neutral or passive learning environment; rather, it is an ideological mechanism that plays a central role in shaping students' professional identities, creativity patterns, and intellectual habits (Hoy, 2005; Özener & Meterelliyöz, 2020). Early models, such as Schön's (1983) concept of the "reflective practitioner," envisioned the studio as a dynamic, interactive learning space. Yet contemporary research reveals that in practice, studio culture often fosters exclusionary norms, exploits students' time, and diminishes the conceptual depth of projects—particularly when design processes are detached from their social and political contexts (Anthony, 2002). Empirical evidence indicates that hierarchical structures in design studios, combined with assessments focused exclusively on final products, jeopardize students' intellectual independence and constrain the development of their critical faculties (Crinson, 2023). In the Iranian context, studio culture is frequently characterized by ineffective dialogues, prescriptive feedback, and the

erasure of students' tacit or experiential knowledge (Mokhtari et al., 2023). As a result, the studio often functions as a vehicle for reproducing existing architectural traditions without creating opportunities to critique or re-evaluate them. In response, scholars have called for reorganizing the studio as a polyvocal, participatory ecology of learning. For example, Aly and Lotfi (2023) propose the "pluralist studio" model, wherein knowledge production is dialogical, interdisciplinary, and enriched by diverse perspectives and identities. Similarly, Saghafi et al. (2015) emphasize the importance of integrating lived experience and informal narratives into studio learning, since the student should be seen not only as a trainee in design but also as a cultural producer and ethical agent.

• Bridging theory and practice: overcoming the educational divide

One of the most persistent critiques within architectural education is the divide between theoretical knowledge and the practical domain of design. Numerous studies indicate that students often regard theory as abstract, unnecessary, or disconnected from their design activities (Cameron & Eiman, 2025). This disconnect reflects not only an educational deficiency but also an epistemic model in which theory is viewed as a supplementary add-on rather than as a constitutive element of the design process. In response, innovative approaches have been proposed to integrate theory and design. For instance, Gharibpour & Mir Mohammad Sadegi (2021) draw on Deleuze and Guattari's notion of the "rhizome" to underscore the significance of non-linear, adaptive, and dialogical structures in producing architectural knowledge through education. Likewise, Shannon and Radford (2010) introduce the concept of "iterative theorizing," wherein theory is mobilized not to justify architectural designs but to probe deeply into their assumptions and challenge their foundations.

The present review reveals that the challenges facing architectural education, particularly within Iran, are not merely programmatic or structural but fundamentally epistemological in nature. Transforming the studio from a judgment-oriented space into a site of active participation, elevating critical thinking from an acquired skill to a foundational ontological stance, and integrating theory with design practice through rhizomatic and iterative approaches all constitute necessary and unavoidable pathways for reforming architectural education. These theoretical foundations form the conceptual scaffolding of this research and guide the analysis of how critical thinking and studio culture interact, conflict, or align within the context of architectural education in Iran.

In Table 1, the relevant body of research was identified and extracted, most of which consists of theses and dissertations conducted in Iran in recent years. These studies, from diverse perspectives, have examined architectural design education and the cultivation of critical thinking.

A systematic analysis of the existing research highlights that architectural education has undergone profound transformations in recent decades, driven by three main factors: (1) the widespread adoption of digital technologies and new design tools; (2) shifts in pedagogical paradigms toward interactive learning methods; and (3) external pressures from crises such as the COVID- 19 pandemic. International studies underscore that digital technologies are no longer auxiliary tools but have become central to studio pedagogy, elevating learning from a traditional mode to an advanced, multidimensional experience (Ibrahim & Utaberta, 2012). Yet, a significant gap persists between theory-oriented and practice-oriented educational systems, underscoring the urgency of rethinking course structures and content. Equally, innovative pedagogical approaches have shown that active, student–faculty interactive methods not only enhance creativity but also substantially strengthen students' problem-solving and critical thinking capacities (Salama, 2015). This pedagogical shift moves architectural education beyond the reproduction of existing knowledge, positioning it instead as a domain of meaning-making, experimentation, and innovation. The global experience of online learning during COVID- 19

Table 1. Review of Previous Research. Source: Authors.

Title	Objective	Methodology	Findings
Integration of Digital Technologies in Architectural Design Studio Education (Ibrahim & Utaberta, 2012)	To examine approaches to incorporating emerging digital technologies (such as BIM and virtual reality) into architectural design education and to compare diverse pedagogical models in international universities.	A comparative case study based on documentary analysis of curricula and instructional frameworks in several schools of architecture (Europe and Australia), focusing on syllabi, teaching strategies, and the presence of technology in design studios	Results revealed two dominant tendencies: some approaches emphasized theoretical underpinnings of architecture, while others integrated digital technologies into practical projects, thereby enhancing experiential learning and fostering realistic simulation in design education.
Active Learning Strategies and Their Impact on Creativity in Architectural Education (Salama, 2015)	To assess the effectiveness of active learning strategies in fostering creative and critical thinking among architecture students	Quasi-experimental study with control and experimental groups; pre- and post-tests measuring dimensions of creativity and critical thinking; inferential statistical analysis	Findings indicated that active learning strategies significantly improved problem-solving capacity, critical thinking, and creativity, while also enhancing the quality of student engagement with design projects.
Challenges of Online Architectural Education during the COVID-19 Pandemic (Gamage et al., 2020)	To identify and analyze the obstacles faced by architecture students in the abrupt transition from face-to-face to online learning	Online survey among architecture students across several countries (Iran, Turkey, and India); data analyzed using statistical and factor analysis methods	Results highlighted major challenges: weakened group interaction and synchronous participation, limited access to digital tools and stable internet, reduced quality of experiential learning, and dissatisfaction with feedback in virtual settings.
Innovative Approaches in Teaching Architectural Design Foundations: A Comparative Study (Asgari et al., 2023)	To examine and compare teaching methods in architectural design foundation courses in Iranian universities and to identify factors shaping learning outcomes.	Qualitative research using grounded theory across three leading universities; data collected via classroom observations, faculty and student interviews, and questionnaires; analyzed through grounded theory coding	Success factors: (1) active teaching via group discussions and practical projects; (2) linking theory and practice; (3) mentorship and guidance by experienced faculty; (4) timely, constructive feedback. Challenges: (1) lack of student preparedness for active participation; (2) shortage of appropriate learning resources; (3) spatial and temporal limitations
The Role of Landscape in Architectural Design Education: A Study of Tehran Students' Perceptions (Taghvaei & Samiyari, 2021)	To investigate architecture students' depth of understanding of landscape and environmental issues in design processes, and identify curricular gaps in Tehran schools of architecture.	Mixed-methods study combining surveys, interviews, and content analysis of student design projects; data analyzed with statistical methods, including log-linear analysis	Students demonstrated limited awareness of the relationship between buildings and their surrounding environment. Causes: neglect of landscape in curricula, emphasis on form and function, and insufficient practical training. Consequences: designs poorly integrated with their context, leading to diminished environmental quality. Students tended to perceive landscape as a secondary element rather than as integral to design.

further exposed structural weaknesses in architecture education, notably in group interaction, access to digital infrastructure, and the quality of feedback mechanisms (Gamage et al., 2020). At the national level, recent studies on design foundations (Asgari et al., 2023) and the role of landscape in architectural education (Taghvaei & Semiari, 2022)confirm that neglecting the theory–practice nexus, inadequate resources, and the marginalization of landscape within curricula have led to reductive conceptions of the architecture–environment relationship. Taken together, the literature underscores that genuine reform in architectural education requires three fundamental elements: (1) the deep integration of emerging technologies, (2) a serious reconsideration of pedagogical methods, and (3) a redefinition of curricular content. Only through adopting an interdisciplinary lens and cultivating a critical perspective on existing structures can meaningfully progress in architectural education be achieved (Fig. 1).

Research Method

This study was designed based on a sequential exploratory mixed-methods approach. The underlying premise of such a design is the necessity of integrating in-depth qualitative insights with broader quantitative analyses to achieve a comprehensive understanding of the contextual dynamics of critical thinking and studio culture in architectural education. Within

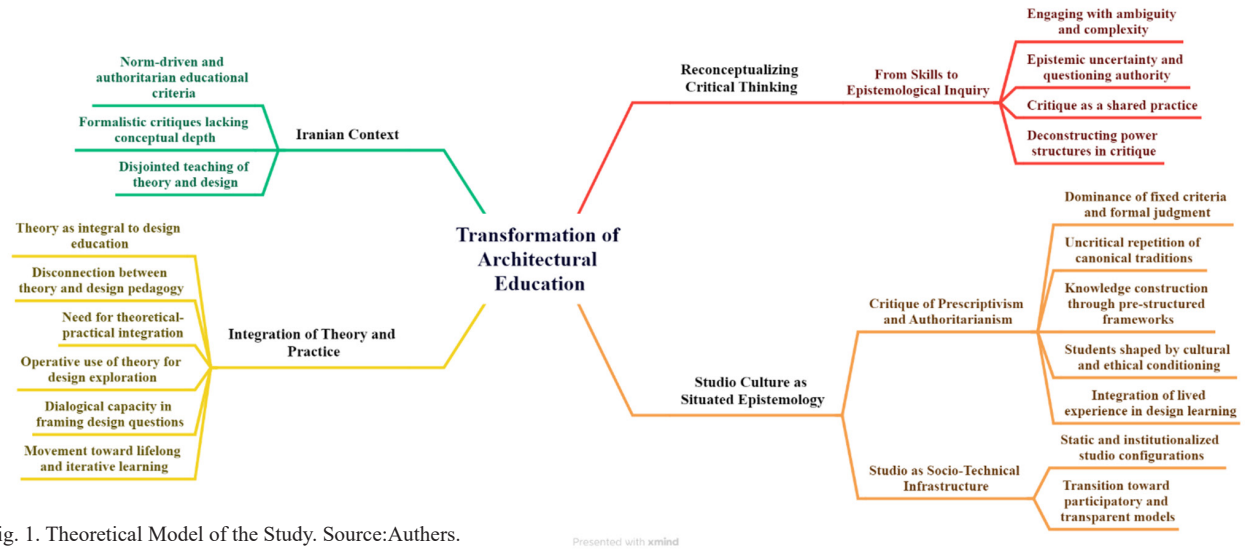

Fig. 1. Theoretical Model of the Study. Source:Authers.

this framework, the qualitative phase served as the preliminary stage, laying the foundation for the development of the quantitative instrument, a strategy that significantly enhanced both the methodological coherence and the interpretive validity of the findings. In the qualitative phase, data were collected through 16 semi-structured interviews with faculty members, experts, and students of architecture. These interviews were conducted across five Iranian universities (University of Tehran, Iran University of Science and Technology, University of Art, Shahid Rajaee University, and Islamic Azad University) together with two international institutions in Turkey (Istanbul Technical University and Doğuş University). Participant selection was carried out via purposeful sampling with a maximum variation strategy, considering criteria such as academic position, diversity of pedagogical traditions, and urban context. The interviews, each lasting between 50 and 70 minutes, were conducted either in person or online, and were recorded, transcribed, and anonymized with informed consent. Data analysis followed the directed content analysis approach (Hsieh & Shannon, 2005), employing the constant comparative method across five key steps: (1) extraction of meaning units; (2) combined deductive–inductive coding; (3) development of sub-themes; (4) abstraction into thematic categories; and (5) evaluation of conceptual saturation. The credibility of the qualitative findings was ensured through three main strategies: (a) independent coding by two researchers, achieving a Cohen's kappa coefficient of 0.84; (b) thematic structure review by a panel of experts; and (c) member-checking with four interviewees. As a result, five intersubjective themes were identified and consolidated as the conceptual framework for the quantitative phase. In the quantitative phase, the identified themes were operationalized into a 20-item questionnaire designed to assess their influence on the development of critical thinking and engagement with studio culture. The instrument was validated through expert review by three specialists in architecture, education, and psychometrics, and subsequently refined in a pilot study with 25 students. The final version demonstrated satisfactory reliability, with an overall Cronbach's alpha coefficient of 0.86, and sub-dimension alphas ranging from 0.[78] to 0.88. The finalized questionnaire was distributed (either in person or online) among 105 participants, comprising 61 students, 26 faculty members, and 18 graduates from the aforementioned universities. The deliberate overlap of samples between the qualitative and quantitative phases strengthened analytical consistency and enabled cross-validation of perspectives. Sampling in this stage also followed a purposeful strategy, considering variables such as gender, level of study, and institutional affiliation. All participants voluntarily provided informed consent, and no financial incentives were offered. Prior to

completing the survey, key concepts, such as critical thinking, studio culture, and design empowerment, were thoroughly explained to participants. Quantitative data were analyzed using SPSS version 26. While the sample size may appear modest, it was deemed sufficient for exploratory studies and for conducting regression and MANOVA analyses. Nevertheless, the authors emphasize that future research should employ larger random samples to enable replication and further validation of the proposed conceptual model.

Findings

The interpretive dimensions of this discourse, grounded in directed content analysis and firmly informed by the epistemological premises of constructivism and critical pedagogy, were explored through in-depth interviews with instructors and graduates of architectural design. The aim was not merely to collect viewpoints but to investigate how participants engaged with the structures of architectural education and how their lived experiences were contextually reflected. Data analysis followed a rigorous hermeneutic approach, involving open coding, axial clustering, and theoretical sensitivity. The coding process was conducted by the principal researcher alongside two trained assistants, ensuring careful interpretation of concepts such as studio culture, institutional agency, and creative autonomy. The validity of the extracted themes was reinforced through iterative re-contextualization of the data, participant validation, and theoretical consultation with senior experts. The focus of this analysis extended beyond surface-level classifications toward an explanation of underlying power structures, dominant pedagogical ideologies, and cultural constraints within design education. Ultimately, five interwoven conceptual themes were identified: dialogical creativity, individuality within cultural norms, empowerment and critical reflexivity, redefinition of the studio, and student agency within the pedagogical context of architecture (Table 2).

Within the framework of the present study, creativity in architectural design education is not conceived as an innate or individual trait, but rather as a product of dialogic interactions, epistemic risk-taking, and engagement with critical tensions. This perspective is fully aligned with Bakhtin's (1992) and Sawyer's (2007) theories on the emergence of creativity within collective and interactive contexts. The notion of "creative unease," introduced by one of the instructors, aptly illustrates the role of cognitive tensions in the formation of novel ideas. In this paradigm, critique is understood as a catalyst for learning rather than as an instrument of authority, which has traditionally dominated design studios (Anthony, 2002). The findings indicate that re-conceptualizing critique as a reciprocal process can pave the way for moving beyond stereotypical design outcomes and an approach consistent with emancipatory and constructivist pedagogies (Freire, 2020; Wilson & Zamberlan, 2015). Nevertheless, a clear disjunction emerges between this theoretical aspiration and the prevailing reality of architectural design studios in Iran, where critiques are often formalistic and hierarchical. Rather than fostering creativity, such practices tend to constrain it. Domestic evidence similarly stresses that the dominance of teacher-centered pedagogies leads to superficial learning and student passivity (Akhgar, 2025; Javid, 2024). Participants underscored the importance of mutual trust, constructive feedback, and a liberating environment that frames error as an integral part of the learning process and alleviates evaluative pressures (Boud & Molloy, 2013; Lymer, 2010). Such an environment, in Biesta's (2017) view, constitutes the ground for the development of a conscious and ethically oriented individuality. Yet, institutional obstacles such as overcrowded classes, rigid structures, and the dominance of quantitative assessments render the realization of this model highly challenging. Younger faculty, despite their efforts to promote more dialogic practices, encounter systemic resistance, pointing to stagnation in architectural education and persistent barriers to fostering creativity (Mahmoodi, 2002). In this context, individuality, unlike global discourses that view it as the cornerstone of professional identity, is experienced within Iranian architectural education as fragile, negotiable, and constrained by institutional limitations. Codes of self-restraint and fear of misinterpretation vividly expose the tension between individual expression and

Table 2. Major Themes and Categories Derived from Interview Data. Source:Authers.

No.	Themes	Subthemes	Illustrative Quotations from Interviews
1	Creativity	Emergence of creativity through tension and divergent viewpoints	When students disagree, the best ideas emerge in that very moment; when I was forced to defend my idea, I realized for the first time how much potential it had.
		The decisive role of constructive critique	Feedback that helps me grow gives me confidence, rather than merely pointing out flaws; most critique sessions are about receiving approval, not generating new ideas.
		Cultivating creativity in architectural design education	The instructor must create space for mistakes; without that, no innovation happens. When I feel I can fail and still be supported, I become more creative.
		The role of critique in opening new design horizons	Sometimes critiques open my mind more than the design process itself; conversations with classmates give me more ideas than the professor's lectures.
2	Individuality	Self-awareness and personal depth in design	I am learning to express myself rather than just follow the rules; when I bring my personal perspective into design and defend it, I learn better.
		Differentiating individuality from individualism	Here, individuality is often mistaken for rebelliousness; being different is not always easy, and some professors do not accept it.
		Cultural and institutional constraints in Iran	To be accepted, we have to fit into a predetermined mold; there is no space for individuality. Sometimes I hide my real ideas to avoid conflict.
		Encouragement to defend ideas with confidence	They tell us to be creative, but in practice, it means designing only within fixed boundaries. When I attempted a personal design, I was told it was too abstract.
3	Empowerment and Self-Realization	Continuous reflection and improvement in teaching approaches	The best professors are those who help us discover our potential; growth happens when we are pushed to rethink our work.
		The importance of questioning in developing critical thinking	When I ask "why," I learn how to think, not just what to do; asking questions is not a weakness—it is a sign of deeper learning.
		Experiential learning in the studio	Studio work made me believe I could create something meaningful; hands-on design taught me more than years of theory. Learning by doing builds confidence.
4	Studio Environment and Skill Acquisition	Stimulating curiosity and active participation	We need studios that encourage questioning, not silence; a collaborative atmosphere makes everyone bring out their best.
		Effective tools, techniques, and collaborative strategies	Peer learning happens when there is space for open exchange; a professor who circulates among students and engages with them enlivens the studio.
		Shifting from teacher-centered to student-centered learning	We learn more from each other than from one-way lectures; repetition and monotony kill creativity—we need fresh challenges.
5	Student Responsibility and Autonomy	Self-directed learning and intellectual independence	I want to choose my own learning path; we do not have enough freedom in deciding what and how to learn.
		Ownership of educational and research pathways	When a project feels like my own, I invest more effort in it; freedom to explore strengthens my commitment.
		Transforming the professor's role from autocratic authority to supportive mentor	Autonomy is built on trust—from both sides. When we are entrusted with responsibility, my motivation multiplies; peer critiques also help me re-examine my ideas.

homogenizing pressures. Studios, despite their apparent neutrality, are deeply ideological arenas where students constantly negotiate between personal distinction, professional legitimacy, and institutional acceptance (Appelbaum, 2024; Biesta, 2017). Participants noted that expressions of difference are often met with resistance. One student emphasized that instructors do not always welcome deviation, while another described resorting to self-censorship, concealing innovative ideas to avoid conflict. These observations resonate with studies that identify authority-driven academic structures in Iran as significant barriers to embracing difference (Sardashti et al., 2019; Ghaempanaha et al., 2024). Consequently, the formation of design identity shifts from a creative process to a conservative practice, suggesting that reforms cannot be limited to students' individual attitudes alone. For some, individuality is misinterpreted as arrogance or nonconformity, a perception that directly contrasts with Western discourses emphasizing individual ownership of design work. A simplistic call for "self-expression," detached from its social and political context, risks becoming counterproductive. Nonetheless, traces of individuality expressed through reasoned argument and deliberate deviation from norms were observed. One student remarked that constructing a well-argued defense of a personal viewpoint had offered the deepest form of learning—what may be termed an "epistemic defense." This aligns with Vygotskian theories of knowledge internalization (Hardman, 2021). Yet, the lack of supportive structures, the persistence of authoritarian pedagogies, and the absence of safe intellectual spaces continue to obstruct the flourishing of such individuality among all students.

In this study, empowerment in architectural education was explored not as a passive mental state, but as a cognitive, affective, and behavioral transformation moving from passive acceptance toward conscious agency and ownership of learning. Participants described empowerment as emerging through active engagement, foundational questioning, and the challenging of entrenched practices. As one student explicitly stated, asking "why?" compelled deeper thinking rather than mere task completion, a view that resonates with critical pedagogy (Freire, 2020; Brookfield, 2017) and Biesta's (2017) notion of subjectification. However, this process was not equally realized across all students and often clashed with rigid educational structures. Restricted design freedoms, inflexible curricula, and the lack of dialogic feedback were reported as major impediments. Experiential learning, particularly when intertwined with critical pedagogies, proved highly effective in strengthening students' sense of agency. One student observed that sustained engagement in studio practice cultivated a belief in the capacity to produce meaningful work—an experience consistent with Kolb's experiential learning theory (Grant, 2025). Feedback also emerged as crucial: when professors seriously engaged with students' responses and used them as a springboard for discussion, students reported heightened feelings of self-worth and confidence. This process reflects Yeatman and Howitt's (2021) emphasis on constructive and humanizing feedback. Yet, the entrenched transmission model of Iranian architectural education, which treats knowledge as a one-way transfer (Hosseini et al., 2008; Kalami & Falahat, 2018), remains a major barrier to realizing such empowerment. Achieving this ideal requires institutional transformation that simultaneously acknowledges both individual agency and the social embeddedness of learning.

According to participants, the architecture studio is not merely a physical space for design exercises, but a cultural, epistemic, and socializing environment where design knowledge is produced, critiqued, and imbued with meaning through lived experience and interpersonal relations. Students emphasized the pivotal role of the studio's spatial, interactive, and pedagogical dimensions in shaping the quality of learning, creativity, and collective collaboration. One participant noted that they learned more from interacting with peers than from one-way lectures—an approach aligned with Lave and Wenger's theory of situated learning (Bloch, 1994). In studios with effective facilitation, active participation, open idea exchange, and peer critique fostered metacognitive awareness and mastery of design discourse (Nicol & Macfarlane-Dick, 2006). However, such instances remained exceptions; most students

criticized the hierarchical and restrictive structures that suppressed creativity. As one student observed, predetermined design pathways hindered experimentation and innovation. Realizing the potential of studios as dynamic learning environments thus requires a cultural shift at the institutional level (Fadavi & Hosseini, 2018; Zeraati et al., 2023). The affective atmosphere of the studio also plays a central role. A climate built on trust and dialogic interaction enables students to perform more effectively (Khalili, 2023; McKenzie, 2017). Some instructors, by creating egalitarian and facilitative spaces, allowed students to articulate ideas more freely. From the participants' perspective, these spatial-pedagogical practices held intrinsic educational value. In this sense, the studio is not a neutral container but a locus for distributed cognition and collective design intelligence (Clark, 1998). This understanding underscores the need for a fundamental rethinking of the structure and function of design studios in Iranian architectural education.

In this study, student responsibility and autonomy emerged as a key theme, analyzed with attention to its inherent complexities and challenges. Despite the theoretical emphasis within architectural education on learner-centered approaches, the findings suggest that autonomy often remains an abstract ideal, with its practical realization constrained by rigid curricular structures, institutional resistance, and prevailing cultural expectations. Participants defined autonomy not as the absence of supervision, but as grounded in a sense of ownership, freedom of thought, and mutual trust. As one student remarked, "When I feel a project truly belongs to me, I put in much more effort," a perspective aligned with self-determination theory (Ryan & Deci, 2000) and the notion of educational agency (Biesta, 2017). However, some students reported feelings of confusion or lack of motivation when confronted with open-ended projects, underscoring the need for gradual cultivation of responsibility (Sharifian, 2015). Instructors who were more successful in this regard adopted a mentorship-based approach, characterized by continuous feedback and involving students in decision-making, an approach consistent with Vygotsky's scaffolding theory (Hardman, 2021). Moreover, peer critique and group activities within the studio were found to strengthen both individual responsibility and collective agency (Nicol & Macfarlane-Dick, 2006; Wilson & Zamberlan & Wilson, 2015). Nevertheless, structural barriers such as overcrowded classes, inflexible curricula, and standardized assessment systems continue to hinder the cultivation of autonomy in practice. Participants highlighted the need for institutional support, including comparative courses, formative evaluation, and more dynamic studio design (Asgari et al., 2023; Gharibpour et al., 2021). Without such systemic changes, responsibility risks being reduced to an unsupported slogan rather than a lived pedagogical reality (Fig. 2).

- **Sub-Study II**

Following the qualitative phase and to generalize the previously identified conceptual dimensions, a structured quantitative study was conducted. This phase, employing a valid and reliable questionnaire, examined the role of five core constructs: creativity, individuality, empowerment, studio environment, and student responsibility/autonomy in predicting critical thinking and studio culture within architectural education. The research population consisted of 105 participants, including students, faculty members, and graduates from selected

Fig. 2. Word cloud of key concepts in the interaction between critical thinking and studio culture in architectural education. Source: Authers.

higher education institutions. Analysis of instrument reliability demonstrated a high level of internal consistency, with Cronbach's alpha coefficients for the subscales ranging from 0. 78 to 0.88. Notably, the studio environment dimension achieved the highest reliability coefficient ($\alpha = 0.88$), confirming its empirical robustness among the study variables (Table 4).

To evaluate the predictive power of the independent variables for developing critical thinking and studio culture, multiple regression analysis was performed. The results revealed that all five variables exerted a significant effect on the dependent variable ($p < 0.05$). Among them, the studio environment emerged as the strongest predictor ($\beta = 0.48$, $p < 0.001$), highlighting the crucial role of spatial, interactive, and pedagogical elements in deepening students' cognitive engagement. Creativity followed as the second strongest predictor ($\beta = 0.42$), underlining the necessity of environments conducive to ideation and constructive critique. Individuality ($\beta = 0.35$), empowerment ($\beta = 0.30$), and responsibility/autonomy ($\beta = 0.28$) also demonstrated significant associations with the outcome variables (Table 5). Although the current model offers substantial explanatory power, it is important to note that other intervening variables—such as educational background, institutional culture, psychological safety, assessment systems, and socio-economic conditions—may also influence the development of critical thinking. Accordingly, future studies are recommended to employ advanced statistical approaches such as structural equation modeling.

Table 4. Cronbach's Alpha Coefficients. Source: Authers.

Construct	Number of Items	Cronbach's Alpha
Creativity	4	0.85
Individuality	5	0.81
Empowerment	3	0.78
Studio Environment	4	0.88
Student Responsibility and Autonomy	4	0.83

Table 5. Results of Multiple Regression Analysis. Source: Authers.

Independent Variable	Beta Coefficient (β)	Significance Level (p-value)
Creativity	0.42	0.001
Individuality	0.35	0.005
Empowerment	0.30	0.002
Studio Environment	0.48	0.000
Student Responsibility and Autonomy	0.28	0.010

To compare the perspectives of students, faculty, and graduates on four of the main constructs (creativity, individuality, empowerment, and studio environment), multivariate analysis of variance (MANOVA) was applied. The findings demonstrated statistically significant differences across the three groups for all variables under study. Faculty members placed greater emphasis on creativity ($M = 4.1$) and empowerment ($M = 4.2$) compared to the other groups, reflecting their theoretical endorsement of innovative pedagogical values. Graduates, with the highest mean score in individuality ($M = 3.9$), underscored the significance of personal distinction in professional architectural practice. Conversely, students, with a mean of 4.0, emphasized the role of the studio environment in learning, a reflection of their lived experiences and practical awareness of the quality of learning spaces (Table 6).

The quantitative results strongly corroborate the conceptual structure extracted during the qualitative phase, thereby reinforcing the empirical validity of the multidimensional model for advancing critical thinking in architectural education. The findings highlight that cultivating a dynamic and interactive studio environment, consistently fostering creativity and innovation, validating and valuing student individuality, enabling empowerment, and strengthening responsibility and autonomy in the learning process are all critical determinants in establishing a questioning culture and nurturing critical thinking within architectural education systems.

Discussion

The central question of this study was to identify the elements and interactions within Iran's

Table 6. Results of Multivariate Analysis of Variance (MANOVA). Source: Authers.

Variable	Students (Mean)	Faculty (Mean)	Graduates (Mean)	p-value
Creativity	3.9	4.1	3.7	0.032
Individuality	3.8	3.6	3.9	0.048
Empowerment	3.7	4.2	3.8	0.015
Studio Environment	4.0	4.3	4.1	0.021

architectural design education system that contribute to the advancement of critical thinking and the strengthening of studio culture. To address this question, a parallel mixed-methods design was adopted, combining qualitative and quantitative phases. The findings, while confirming key components highlighted in the global literature on architectural education, also reveal deep epistemic, cultural, and structural gaps within the Iranian context. Among the five constructs under investigation, the studio environment emerged as the most influential factor in fostering critical thinking (β = 0.48). Yet, comparison with successful international cases (Ibrahim & Utaberta, 2012) indicates that Iranian architectural studios remain largely governed by hierarchical critique cultures and static pedagogical structures, limiting their role as dynamic learning ecosystems. This disparity is also evident in the evaluation data: while faculty rated the studio environment relatively highly (M = 4.3), students pointed to a significant gap between physical presence and genuine pedagogical engagement, an observation corroborated by Asgari et al. (2023). Creativity, although highly valued at a theoretical level, is fraught with contradictions in practice. Faculty underscored its importance (M = 4.1), yet students often perceived design critiques as formal judgments rather than generative dialogues. While strategic active teaching models are shown to enhance creativity, the present study indicates that such approaches remain limited in scope. Regression analysis further suggests that creativity connects with critical thinking (β = 0.42) only when it arises from engagement with uncertainty, openness to critique, and intellectual risk-taking rather than from the mere production of performance-oriented outputs.

Individuality was revealed as a contested domain, reflecting the tension between educational ideals and institutional structures. Graduates attributed greater value to individuality (M = 3.9) compared to faculty (M = 3.6). The findings emphasize that, despite cultural challenges, individuality plays a meaningful role in cultivating critical thinking (β = 0.35), and legitimizing intellectual autonomy can enhance students' analytical capacity. In the case of empowerment, faculty assigned the highest mean score (M = 4.2); however, students' experiences suggest that a sense of agency only materializes when practical engagement in design is coupled with critical reflection. Student autonomy, although registering the lowest statistical effect size (β = 0.28), emerged as a hidden but structurally significant dimension of the learning process. The data indicate that autonomy must be gradually internalized through scaffolding and guided educational practices. Unlike Western models that assume autonomy as a given (Ryan & Deci, 2000), in the Iranian context, students require sustained pedagogical support to adopt it. This observation is echoed in the studies of Asgari et al. (2023) and Taghvai & Semiari (2021), which found that in the absence of agency, students struggled to grasp interdisciplinary perspectives and engage in multi-perspectival critique.

Conclusion

This study has generated significant contributions both in terms of empirical evidence and the expansion of theoretical frameworks in the field of architectural education. Quantitative analyses clearly demonstrated that the studio environment (β = 0.48) functions as the most powerful predictor of critical thinking development among

architecture students. At the same time, qualitative findings underscored that this environment is profoundly shaped by unequal power relations, feedback practices, and institutional norms. Concepts such as creativity, individuality, and empowerment were shown to operate not merely as individual competencies, but as socially situated and conditional processes, whose realization depends on purposeful institutional support and the cultivation of deliberate pedagogical interactions. Taken together, the findings support a movement toward an ecological model of critical architectural education—one in which thinking, designing, and learning emerge collectively within a complex interplay of spatial, cognitive, and affective relations. Nonetheless, interpretation of these results must take into account several limitations. The study's sample was institutionally and geographically restricted, which may affect the generalizability of findings. Moreover, while the regression model demonstrated considerable explanatory strength, it did not incorporate variables such as assessment regimes, digital literacy levels, institutional financial resources, or cultural attitudes toward authority. It is also possible that voluntary participants in the study were predisposed toward reform-oriented perspectives. In light of these findings, a set of strategic and actionable recommendations is proposed:

1.Reconfigure the studio environment as an interactive space through structured peer critique mechanisms, flexible learning zones, and safe areas for trial and error. The experience of Queensland University of Technology offers inspiration for modular studio formats.

2.Reform feedback practices by shifting from one-directional critiques to dialogic models, grounded in faculty professional development in formative and reflective assessment.

3.Strengthen student autonomy by embedding project-based modules and optional research clusters within pedagogical scaffolding adapted to cognitive levels.

4.Reframe individuality as an independent intellectual stance in design through institutional dialogue, emphasizing epistemic tolerance and pedagogical diversity.

5.Critically integrate digital technologies into design education by embedding digital literacy and landscape-oriented content as integral curricular components, echoing critiques advanced by Taghvai and Semiari (2022).

These proposals are neither definitive nor universal, but should be seen as strategic entry points for rethinking architectural education in Iran. Their realization requires institutional will, pedagogical patience, and purposeful cultural engagement. To further strengthen the theoretical and empirical foundations of this research, three directions for future inquiry are identified. First, longitudinal studies are needed to trace the impacts of structural interventions in the studio environment on the cultivation of critical thinking throughout the academic trajectory. Second, comparative research across Iranian universities would help elucidate the role of local cultural contexts in shaping pedagogical models. Third, expanding this study's comparative framework to the international scale, with a focus on architecture education in post-authoritarian and postcolonial settings, would provide deeper insight. Until such comprehensive examinations are undertaken, any claims regarding superior models must be advanced with caution. What this study ultimately offers is not a prescriptive formula but a diagnostic model and a set of theory-driven strategies and resources for reflection, professional dialogue, and purposeful transformation within architectural education in Iran and beyond.

References List

- AbdelLatif, M. A., Al-Hagla, K. S., & Hasan, A. (2020). Overview on the criticism process in archilecture pedagogy. *Alexandria Engineering Journal, 59*(2), 753-762. https://doi.org/10.1016/j.aej.2020.01.019
- Akhgar, P. (2025). *The Politics of Architectural Pedagogy in Iran: From Pedagogical Revolution to Revolutionary Pedagogy (1960–1990) (Routledge Research in Architecture)*. Routledge.

- Alizadeh Miandouab, A., Akrami, G., & Nejati, P. (2022). A Review of Critical Training in Architectural Design. *Bagh-e Nazar, 19*(111), 37-50. https://doi.org/10.22034/bagh.2022.310531.5020
- Aly, T. F., & Lotfi, Y. A. (2023). Sustainable Architectural Pluralism Through Contemporary Architectural Design. *MSA Engineering Journal, 2*(2), 193-217. https://doi.org/10.21608/msaeng.2023.291870
- Anthony, K. H. (2002). *Designing for Diversity: Gender, Race, and Ethnicity in the Architectural Profession*. University of Illinois Press.
- Appelbaum, P. (2024). *Post-Anthropocene Civic and Global Education Studies: Beyond Posthuman Perspectives*. Springer Nature.
- Asgari, N., hashemi, A., & Chayerli, M. (2023). Transformations in Contemporary Architectural Education in Iran; Integrated Flexible Education. *Interdisciplinary Studies of Iranian Architecture, 2*(4), 17-29. https://doi.org/10.22133/isia.2024.423680.1063
- Bakhtin, M. M. (1992). *The dialogic imagination: Four essays* (M. Holquist, Ed.; C. Emerson & M. Holquist, Trans.). University of Texas Press.
- Biesta, G. (2017). *The rediscovery of teaching*. Routledge.
- Bloch, M. (1994). Situated Learning: Legitimate Peripheral Participation. *American Ethnologist, 29*(2), 487-489. https://doi.org/10.1525/ae.1994.21.4.02a00340
- Boud, D., & Molloy, E. (2013). *Feedback in higher and professional education. Understanding it and doing it well.* Routledge.
- Brookfield, S. D. (2011). *Teaching for critical thinking: Tools and techniques to help students question their assumptions*. John Wiley & Sons.
- Brookfield, S. D. (2017). *Becoming a critically reflective teacher*. Jossey-Bass.
- Cameron, L., & Eiman, M. (2025). Embodied experiences: Integrating indigenous sensory knowledge in architectural education. *Architectural Science Review, 68*(3), 245–260. https://doi.org/10.1080/00038628.2025.2523265
- Clark, A. (1998). *Being there: Putting brain, body, and world together again*. MIT press.
- Crinson, M. (2023). *What Is Modern Architecture?. In D. Lu (Ed.), The Routledge Companion to Contemporary Architectural History* (pp. 86-99). Routledge.
- Crotty, M. J. (1998). *The foundations of social research: Meaning and perspective in the research process*. Routledge. https://doi.org/10.4324/9781003115700
- Freire, P. (2020). *Pedagogy of the oppressed*. In J. Beck; C, Jenks; N, Keddie, & M. F. D, Young, (Eds.), Toward a sociology of education (pp. 374-386). Routledge.
- Fricker, M. (2007). *Epistemic injustice: Power and the ethics of knowing*. Oxford university press.
- Fricker, M. (2008). *Forum on Miranda Fricker's" Epistemic Injustice: Power and the Ethics of Knowing"*. Theoria, 23(1), 69-71. https://doi.org/10.1387/theoria.7
- Fadavi, S., & Hosseini, A. (2018, May). T*eaching critical thinking and problem-solving skills in architecture: A study of students at Ferdowsi University.* Proceedings of the International Congress on Contemporary Architecture and Urbanism in Islamic Countries. https://profdoc.um.ac.ir/paper-abstract-1080974.html
- Gamage, K. A. A., Dehideniya, D. M. S. D., Ekanayake, S. Y., Ramesh, S., & Prasad, S. (2020). Online delivery of teaching and laboratory practices: Continuity of university programmes during COVID-19 pandemic. *Education Sciences, 10*(9), 291. https://doi.org/10.3390/educsci10090291
- Ghaempanaha, M., Memariyan, G., & Mohammad Mohammadmoradi, A. (2024). Explaining social injustices in Iranian architectural education based on critical pedagogy. *Armanshahr Architecture & Urban Development, 16*(45), 147-160. https://doi.org/10.22034/aaud.2023.320221.2595
- Gharibpour, A., & Mir Mohammad Sadeghi, R. (2021). A Comparison between Undergraduate Architecture Programme in Iran and Six Top Universities around the World. *Soffeh, 31*(2), 39-60. https://doi.org/10.52547/sofeh.31.2.39
- Grant, K. A. (2025). Practical Applications of Experiential and Community-Engaged Learning Methods in Business. *High-Impact Teaching Practices in Business Education, 1*, 91. Edward Elgar Publishing.
- Hardman, J. (2021). Vygotsky's decolonial pedagogical legacy in the 21st century: back to the future. *Mind, Culture, and Activity, 28*(3), 219-233. https://doi.org/10.1080/10749039.2021.1941116
- Hosseini, S. B., Mofidi Shemirani, S. M., & Maddi. (2008). Education of Sustainable Arcitecture in Iran,Barries and Trends. *Technology of Education Journal, 2*(2), 127-135. https://doi.org/10.22061/tej.2008.1294
- Hosseini, S., Mofidi Shemirani, S., & Maddi, H. (2008). Education of Sustainable Arcitecture in Iran,Barries and Trends. *Technology of Education Journal (TEJ), 2*(2), 127-135. https://doi.org/10.22061/tej.2008.1294
- Hoy, D. C. (2005). *Critical resistance: From poststructuralism to post-critique*. MIT press.
- Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative health research, 15*(9), 1277-1288. https://doi.org/10.1177/1049732305276687
- Ibrahim, R., & Utaberta, N. (2012). Learning in architecture

design studio. *Procedia - Social and Behavioral Sciences, 60,* 30–35. https://doi.org/10.1016/j.sbspro.2012.09.345

- Javid, A. (2024). *The Politics of Architectural Pedagogy in Iran: From Pedagogical Revolution to Revolutionary Pedagogy* (1960-1990). Taylor & Francis. https://doi.org/10.4324/9781003468660
- Kalami, M., & Falahat, M. S. (2018). Strategies for Making Qualitative the System of Education of Architecture in Iran. *Architectural and Environmental Research, 1*(1), 41-54. https://doi.org/10.30470/jaer.2018.32727
- Khalili, H. A. (2023). *A design studio experiment: Pedagogy, digital storytelling, and atmosphere in architectural education. International Journal of Design Education, 17*(1), 213-232. https://doi.org/10.18848/2325-128X/CGP/v17i01/213-232
- Lans, W., & Volker, L. (2008). Exploring the assessment of a jury panel in architectural design education and practice. In *ICERI 2008 International Conference of Education*, Research and Innovation. https://short-url.org/1bD8h
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* Cambridge university press.
- Lymer, G. (2010). *The work of critique in architectural education* [Doctoral dissertation, Utbildningsvetenskapliga fakultetenUniversity of Gothenburg]. http://hdl.handle.net/2077/22775.
- Mahmoodi, A. S. (2002). Challenges of architectural design education in Iran. *Honar-ha-ye Ziba, 12*(12), 70-79. https://jhz.ut.ac.ir/article_10651.html?lang=en
- McEwan, C. (2023). Architectural pedagogy for the Anthropocene: theory, critique and typological urbanism. *Archnet-IJAR: International Journal of Architectural Research, 17*(3), 478-495. https://doi.org/10.1108/ARCH-10-2022-0232
- McKenzie, J. (2017). Performance and democratizing digitality.In M. Leeker (Ed.), *Performing the Digital: Performativity and Performance Studies in Digital Cultures (Digital Society)* (pp. 279-296). transcript publishing.
- Mokhtari, B., Pourzargar, M., & Tahaei, S. (2023). Methodology of Studio Culture in Architecture Department of Iran. *Culture in Islamic University, 13*(46), 61-88. https://doi.org/10.22034/ciu.2023.46.61
- Mohammadi, M. (2024). Critical thinking and its impact on architecture. *Journal of Research in Art and Humanities, 81*(9), 43–52. http://rahs.ir/post.aspx?id=883
- Nazari, M., Karvan, F., & Hosseini, S. B. (2024). Design and validation of Cognitive Education model based on Thinking Cycle in architectural design process. *Teaching and Learning Research, 21*(2), 141-154. https://doi,org/10.22070/tlr.2024.19062.1586
- Nicol, D. J., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in higher education, 31*(2), 199-218. https://doi.org/10.1080/03075070600572090
- Oberfrancová, L., Legény, J., & Špaček, R. (2019). Critical thinking in teaching sustainable architecture. *World Trans. on Engng. and Technol. Educ, 17*(2), 127-133. https://www.wiete.com.au/journals/WTE&TE/Pages/Vol.17,%20No.2%20(2019)/01-Spacek-R.pdf
- Özener, O. Ö., & Meterelliyöz, M. Ü. (2020). Towards a New Studio Culture: Changing Minds, Transforming Education. *Thresholds in Architectural Education, 7*, 45-55. https://doi.org/10.1002/9781119751427.ch5
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist, 55*(1), 68. https://doi.org/10.1037/0003-066X.55.1.68
- Saghafi, M. R., Mozaffar, F., Moosavi, S. M., & Fathi, N. (2015). Teaching Methods in Architectural Design Basics. *Ciência E Natura, 37*, 379–387. https://doi.org/10.5902/2179460X20868
- Sardashti, S., Shafaie, M. I. N. O. O., & Mozaffar, F. (2019). Critical pedagogy in architectural design course (case study: postgraduate design course (1) of Islamic Azad university of Gorgan). *Technology of Education Journal (TEJ), 13*(3), 550-564. https://doi.org/10.22061/jte.2018.886
- Sawyer, K. (2017). *Group genius: The creative power of collaboration.* Basic books.
- Schön, D. A. (2017). *The reflective practitioner: How professionals think in action.* Routledge.
- Sedaghati, A., & Hojjat, E. (2022). The Instructional Content of the Architecture Education in Iran and the Success Rate of the Bachelorsâ Degree Course in the Transfer of this Content. *Journal of Iranian Architecture Studies, 8*(15), 91-112. https://doi.org/10.22052/1.15.91
- Sharifian, S. S. (2015). Explaining the model of “education to practice” in the Iranian architectural education system. *Haft Hesar Environmental Studies, 3*(12), 27–36. https://doi.org/20.1001.1.23225602.1394.3.12.5.7
- Shannon, S., & Radford, A. (2010). Iteration as a strategy for teaching architectural technologies in an architecture studio. *Architectural Science Review, 53*(2), 238-250. https://doi.org/10.3763/asre.2009.0058
- Sharif, H. R. (2014). Student-teacher interaction in architectural design studio: teacher’s critical thinking & students’ creative thinking. *Iran Journal of Engineering Education, 16*(64), 23-38. https://doi.org/10.22047/ijee.2015.7951
- Taghvaei, S. H., & Semiari, A. (2022). Causal Study of Design Studios in the Landscape Architecture Program of Iran:

Educational Contents of Landscape Design Studio I. *Journal of Iranian Architecture Studies, 4*(8), 119-135. https://jias.kashanu.ac.ir/article_111754.html

- Tarasova, I. V. (2018). Critical thinking for architects. *IOP Conference Series: Materials Science and Engineering, 463*(4), 042046. https://doi.org/10.1088/1757-899X/463/4/042046
- Yeatman, L., & Hewitt, L. (2021). Feedback: a reflection on the use of Nicol and Macfarlane-Dick's feedback principles to engage learners. *The Law Teacher, 55*(2), 227-240. https://doi.org/10.1080/03069400.2020.1780843
- Yeatman, L., & Hewitt, L. (2021). Feedback: a reflection on the use of Nicol and Macfarlane-Dick's feedback principles to engage learners. *The Law Teacher, 55*(2), 227-240. https://doi.org/10.1080/03069400.2020.1780843
- Zamberlan, L., & Wilson, S. (2015). Developing an Embedded Peer Tutor Program in Design Studio to Support First Year Design Students. *Journal of Peer Learning, 8*(3), 5-17. https://files.eric.ed.gov/fulltext/EJ1076439.pdf
- Zeraati, H., Ghasemi, M., & Nikpour, M. (2023). Identifying the Challenges and Obstacles of Architectural Students' Cognitive Perceptions in the Architectural Design Process. *Bagh-e Nazar, 20*(125), 79-92. https://doi.org/10.22034/bagh.2023.367654.5287

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