

Chapter 3

The Role of History in Architecture Design: An Analytical Research Study

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Introduction

“Cities actually grow gradually along with history. So, when we do things in the city in the contemporary era, we are actually doing things within the historical process. Therefore, when my works intervene in the city, I hope they can connect the past with the future.” (Liu Jiakun, Pritzker Prize Architecture 2025 Laureate)

We live in history. We are constantly reinterpreting the histories of our past and our historic surroundings. All design decisions are historically situated, influenced by cultural, political, and social forces. Bruno Zevi, a prominent Italian architectural theorist, emphasized that historic structures were deeply contemporary to the times in which they were created. He argued that architecture should be understood not merely as a static object but as a dynamic, evolving practice that reflects the social, cultural, and technological contexts of its era. Zevi’s approach sought to bridge the gap between the past and present, advocating for a historiography that recognizes the relevance of historical architecture in contemporary discourse. Zevi’s work encourages a re-evaluation of architectural history, urging scholars and practitioners to approach it not as a mere chronological record but as a living dialogue that informs and enriches current architectural endeavours. By acknowledging the contemporary relevance of historic structures, Zevi advocated for a more nuanced and interconnected understanding of architecture across time (Zevi, 1978).

History serves as a critical bridge between the past and the future, enabling individuals and societies to learn from previous experiences to shape informed decisions and sustainable innovations for the future (Carr, 1961). As Carr noted, “History is an unending dialogue between the present and the past”, highlighting its role in guiding future action through reflective understanding. In architectural education, history is not merely a record of past styles and structures—it acts as a critical tool for shaping future design ideologies. By studying historical contexts, architects gain insight into cultural, social, and environmental values that continue to influence contemporary and future design approaches. As Mallgrave (2005) argues, “architectural history provides the cultural and intellectual continuity that allows innovation to be rooted in meaning rather than disconnected form.”

Background and Context

“Learning is not simply a process of absorbing information, but one of actively constructing knowledge through interaction with the environment and with the others” (Bransford, Brown & Cocking, 2000)

Redefining history in architecture education through various educational theories and concepts can be termed an innovative and interdisciplinary approach that enriches how historical knowledge is taught and integrated within the architectural discourse. This method aligns with current pedagogical movements advocating for constructivist, experiential, and reflective learning in design education (Salama, 2015). The learning theories of Behaviorism, Cognitivism, Constructivism, Humanism, Experiential, Transformative, and Connectivism were critically analyzed for this study.

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Problem Statement and Research Gap

Connecting learning theories to the integration of history in design education is essential because it ensures that the teaching approach is intentional, effective, and learner-centered. This method:

- a. Informs how students learn best
- b. Deepens critical thinking and reflection
- c. Encourages application over rote learning
- d. Promotes interdisciplinary & connected thinking
- e. Supports diverse learner needs

Connecting learning theories to historical integration in architectural design helps to:

- a. Make history relevant and applied, not abstract or isolated.
- b. Foster deeper understanding and critical engagement.
- c. Equip students to design informed, meaningful, and context-sensitive solutions.

This approach doesn't just teach history, it uses history as a lens to shape thoughtful, responsible designers.

Objectives

The objective of the study is to:

- a. Understand the learning theories of Behaviorism, Cognitivism, Constructivism, Humanism, Experiential, Transformative, and Connectivism.
- b. Analyze the learning theories in the context of the five definitive questions informed by Schunk (1991).
- c. Analyze the learning theories in context to History integration in Architecture Design.

Structure of the Chapter

"Learning theories provide instructional designers with verified instructional strategies and techniques for facilitating learning as well as a foundation for intelligent strategy selection" (Ertmer & Newby, 2013). The research is based in the five definitive questions informed by Schunk (1991) that serve to distinguish each learning theory from the other:

1. How does learning occur?
2. Which factors influence learning?
3. What is the role of memory?
4. How does transfer occur?
5. What types of learning are best explained by the theory?

And the 2 questions adapted with modifications from the study of Ertmer & Newby (1993):

1. What basic assumptions/ principles of this theory are relevant to the instructional design of '*Architectural Design*'?
2. How should instruction be structured to facilitate '*History*' learning?

The learning theories of Behaviorism, Cognitivism, Constructivism, Humanism, Experiential, Transformative, and Connectivism were analyzed for the current research study. The theories were understood in their existing context and further understood in the context of their possible applications towards redefining the role of history in architecture education.

Materials and Methods

The study adopted a qualitative, literature-based analytical methodology to understand the context of existing learning theories. The method allowed for critical engagement with existing theoretical texts, peer-reviewed articles to develop a synthesized understanding of the subject. an analytical study focuses on interpreting and evaluating existing information to draw conclusions or understand patterns. It undertakes a narrower approach and focuses on interpretation & critical analysis.

Research Design

The research design is qualitative and analytical, involving a comparative evaluation of existing literature and theories relevant to architectural education and historical integration. A thematic analysis approach was used to identify recurring pedagogical principles and historical narratives within architectural discourse.

Sources & Data Collection

A keyword search on 'Google Scholar' with keywords 'learning theories in design' provided 93 research articles. 28 articles were rejected due to non-availability of full texts, 3 were rejected due to different language, and 4 were

rejected for duplicity. Title sorting led to rejection of 5, and Abstract sorting led to rejection of 12. A total of 41 research articles were reviewed for the current study. Sources were selected based on relevance to architectural pedagogy, historical analysis, and learning theories. Peer-reviewed journal articles, theoretical texts by key authors, and architectural education frameworks were prioritized. Cross-referencing was further used to reach relevant texts.

Analytical Framework

A thematic analysis approach was employed to extract and categorize recurring themes related to historical interpretation, teaching practices, and learning strategies. The analysis was guided by conceptual frameworks taken from Schunk & Ertmer & Newby's studies. These frameworks were used to map the alignment between existing learning theories, practices, and potential pedagogical innovations in the architecture education and history of architecture.

Justification of Method

This methodology is appropriate because it allows for the synthesis of interdisciplinary perspectives and provides a conceptual basis for rethinking the role of history in architectural education, grounded in established educational theories. It allows for identifying theoretical gaps and proposing more inclusive, reflective, and learner-centered strategies for teaching history in architectural contexts.

Results

Learning theories play a critical role in shaping architectural pedagogy, guiding how students conceptualize space, form, structure, and the socio-cultural impact of design. Since architecture is both a creative and technical discipline, theories such as constructivism, experiential learning, cognitivism, and others provide essential frameworks for integrating knowledge, skill, and critical thinking in design education. According to Salama (2015), architecture education must move beyond rote technical training to foster "critical inquiry, reflection, and experiential engagement," all of which are rooted in learning theory. Kolb's experiential learning model is particularly relevant, as it aligns with studio-based learning, where students learn through design iterations, critique, and reflection (Kolb, 1984). Constructivist theory, as described by Piaget and later by Vygotsky, emphasizes the importance of students constructing their own understanding through problem-solving and collaboration—a process central to architectural design studios (Vygotsky, 1978; Piaget, 1952).

Behaviorism began with a basic stimulus-response and evolved through the contributions and works of Pavlov, Watson, Thorndike, and Skinner. Previously, learners acted with specific goals in mind, responding predictably to given stimuli. While behaviorism offered significant advancements over earlier theories in its time, evolving learner needs and societal changes have highlighted the necessity for more contemporary approaches to learning. Learning evolved from rote memorization toward a more analytical form of literacy focused on extracting meaning. A knowledgeable individual came to be defined as a problem solver—someone who engages with their environment to explore hypotheses and draw broader conclusions. (Gredler, 2005). In the second half of the 20th century, a new branch of cognitivism emerged, highlighting the role of social, cultural, and personal factors in learning. The theories developed by Lev Vygotsky and Albert Bandura specifically addressed these dimensions. And later constructivism built upon these ideas, proposing that learners actively construct knowledge through interaction with their environment, experiences, and social context (Edgar, 2012).

Learning theories help educators adapt their teaching to meet varied learning styles (Schunk, 1991) and help develop structured yet flexible curricula that build toward creative synthesis and innovation (Salama, 2015). Effective instructional design requires understanding how knowledge is constructed and retained (Ormrod, 2020). The following theories were undertaken for the study:

1. Behaviorism
2. Cognitivism
3. Constructivism
4. Humanism
5. Experiential
6. Transformative
7. Connectivism

1. Behaviorism

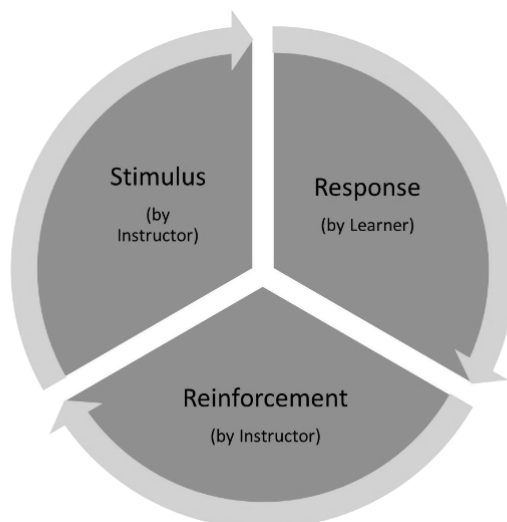


Figure 1. The Learning Theory of Behaviorism (source: Authors).

Behaviorism posits that learning occurs through associations formed between stimuli and responses, and is effectively strengthened by rewards and punishments (Watson, 1913; Skinner, 1953). John B. Watson introduced behaviorism in the early 20th century as a psychological approach focused on observable behavior rather than internal mental states. B.F. Skinner has been a major contributor to the Behaviourist Theory and expanded on Watson's ideas and introduced Operant Conditioning, emphasizing reinforcement and punishment as key mechanisms of learning.

2. Cognitivism

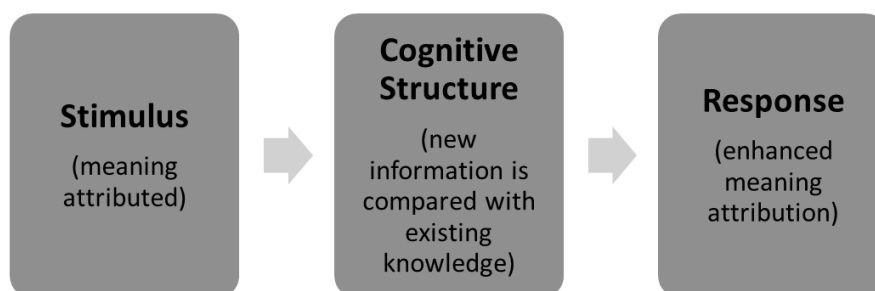


Figure 2. The Learning Theory of Cognitivism (Source: Authors).

Cognitivism views learning as an active mental process of acquiring, storing, and retrieving information, emphasizing understanding over rote memorization (Piaget, 1952; Bruner, 1960; Gagné, 1965; Bandura, 1977; Neisser, 1967; Miller, 1956 & Chomsky, 1956). Jean Piaget's Cognitive Development Theory focused on how children construct knowledge through stages of development, emphasizing schemas, assimilation, and accommodation. Jerome Bruner's Discovery Learning & Spiral Curriculum emphasized that learning is an active process in which learners build new ideas upon their existing knowledge. Robert Gagné's Conditions of Learning identified hierarchies of learning and how different types of learning require different instructional conditions. Albert Bandura's Social Cognitive Theory introduced the concept of observational learning, showing that people can learn through modeling and imitation.

"Learning is essentially a change in a learner's schemata, which are shaped by meaningful learning, organization, and elaboration" (Chomsky, 1956). In education, cognitivist principles can be applied through various strategies like, that of scaffolding (providing momentary assistance to help learners accomplish a task or understand a concept), metacognition (prompting learners to reflect upon how they think and learn) and interactive learning (engaging in discussions and group activities to enhance comprehension).

3. Constructivism

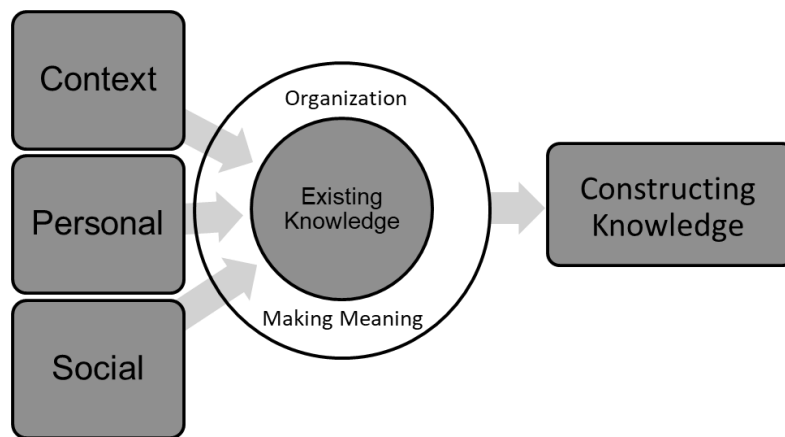


Figure 3. The Learning Theory of Constructivism (Source: Authors).

Constructivism holds that learners actively build their own understanding and knowledge through experiences and reflection, either individually (Piaget) or socially (Vygotsky) (Piaget, 1952; Vygotsky, 1978). Jean Piaget's Cognitive Constructivism emphasized that "learners actively construct knowledge through interaction with their environment". He identified stages of cognitive development, "sensorimotor, preoperational, concrete operational, formal operational". He emphasized that 'Knowledge is built individually through assimilation and accommodation'. Lev Vygotsky's theory of Social Constructivism emphasized the importance of social and cultural contexts in the learning process by introducing the concept of the Zone of Proximal Development (ZPD), which stressed that learning occurs through social interaction and scaffolding. He emphasized that 'Knowledge is co-constructed through dialogue and collaboration'.

4. Humanism

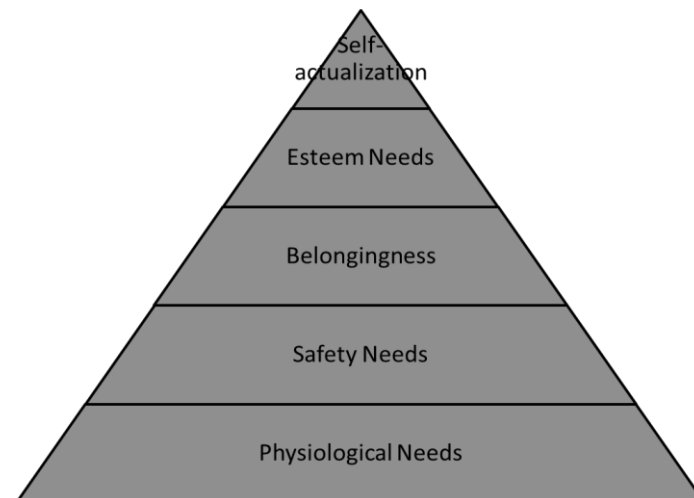


Figure 4. The Learning Theory of Humanism, adapted from Maslow (Source: Authors).

Humanism in education focuses on the development of the learner's full potential by addressing emotional well-being, personal goals, and self-motivation. It promotes holistic, student-centered learning where empathy, freedom, and respect are core (Maslow, 1943; Rogers, 1969). Abraham Maslow's Hierarchy of Needs proposed that learning occurs best when basic needs (e.g., safety, belonging, esteem) are met. He emphasized self-actualization as the highest goal of human development. Carl Rogers's Person-Centered Learning advocated for learner autonomy, self-directed learning, and a supportive educational environment. He believed that education should help individuals become fully functioning persons.

5. Experiential

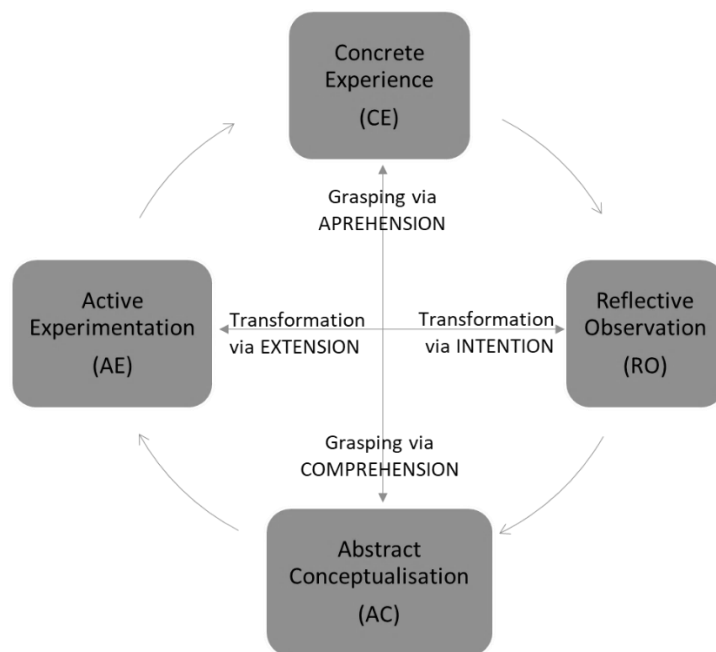


Figure 5. The Experiential Learning Theory, adapted from Kolb (Source: Authors).

In 1984, David Kolb developed the Experiential Learning Theory, defining “learning as a process in which knowledge is created through the transformation of experience, integrating perception, cognition, and behavior”. It synthesized ideas from earlier theorists (like Dewey, Lewin, and Piaget) into a formal Experiential Learning Theory. He proposed that “learning is a cyclical process involving four stages: Concrete Experience, Reflective Observation, Abstract Conceptualization and Active Experimentation”. This model emphasizes that learning occurs through reflection on doing.

John Dewey – Advocated for “learning by doing” and linked experience to education.

Kurt Lewin – Contributed to field theory and action research, influencing Kolb’s thinking.

Jean Piaget – His ideas on cognitive development and experiential interaction informed Kolb’s framework.

6. Transformative

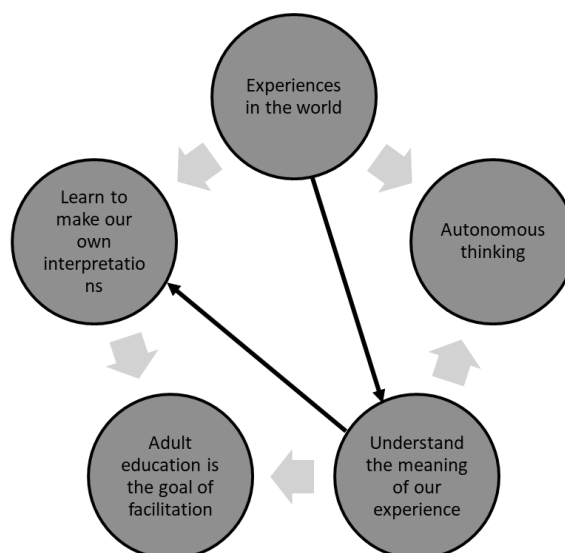


Figure 6. The Transformative Learning Theory, adapted from Mezirow (source: Authors).

Mezirow (1978, 1991) developed the Transformative Learning Theory, explaining how adults change their worldviews through critical self-reflection, often caused by challenging experiences, leading to personal and social transformation. Jack Mezirow introduced Transformative Learning Theory in the late 1970s, based on his research on how adult learners change their frames of reference through critical reflection. He defined transformative learning as the process by which individuals critically reflect on their beliefs, assumptions, and experiences,

resulting in a shift in perspective and development of more inclusive and discriminating worldviews. Later Contributors: Patricia Cranton – Expanded Mezirow's ideas to include identity and authenticity in teaching & Edward Taylor – Conducted meta-analyses and broadened the application of the theory.

7. *Connectivism*

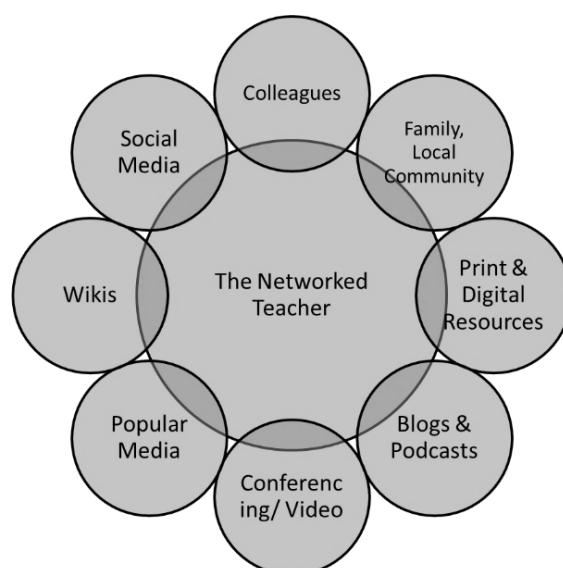


Figure 7. The Learning Theory of Connectivism, adapted from Siemens (source: Authors).

Connectivism, proposed by George Siemens (2005) and further developed with Stephen Downes, explains how learning happens in a digital world through connections with people, digital networks, and information systems. Siemens introduced Connectivism as a learning theory for the digital age, arguing that traditional theories (Behaviorism, Cognitivism, Constructivism) do not fully address how people learn in networked, technology-driven environments. He emphasized that learning is no longer an individual process but one that occurs across networks of information, people, and digital tools. Downes expanded on Siemens' ideas, especially in the context of personal learning environments and open online learning. He contributed significantly to the practical application of connectivist principles in online education.

Presentation of Key Findings

The learning theories were analysed on the five definitive questions informed by Schunk (1991) that serve to distinguish each learning theory from the other (Table 1):

1. How does learning occur?
2. Which factors influence learning?
3. What is the role of memory?
4. How does transfer occur?
5. What types of learning are best explained by the theory?

Table 1. Learning Theories in context to Schunk's 5 Definitive Questions (source: Authors).

S.No	Learning Theory	How does learning occur?	Factors influencing learning	Role of memory	How does transfer occur?	Types of learning best explained	References
1.	Behaviorism	Learning is a change in behaviour due to environmental stimuli and reinforcement	Reinforcement schedules, environmental stimuli and repetition.	Memory is a passive store for learned behaviours.	Transfer occurs when behaviours are applied in similar contexts.	Best explains rote memorization and skill acquisition.	Skinner (1953); Watson (1913); Biggs & Tang (2011)
2.	Cognitivism	Learning is an active process of internalizing and processing information	Cognitive structures, prior knowledge and mental models.	Memory is an active processor and organizer of information.	Transfer occurs when learners apply cognitive structures to new problems.	Best explains problem-solving and conceptual understanding.	Anderson (1980); Piaget (1952); Biggs & Tang (2011)

3.	Constructivism	Learning is a process of constructing new knowledge based on prior experiences	Social interaction, cultural context and active problem-solving.	Memory is a dynamic system that integrates new information with existing knowledge.	Transfer occurs through authentic tasks and real-world problem-solving.	Best explains design thinking and critical analysis.	Vygotsky (1978); Bruner (1960); Duffy & Cunningham (1996)
4.	Humanism	Learning is a self-directed process focused on personal growth and self-actualization.	Motivation, self-concept and emotional factors.	Memory serves as a repository for personal experiences and self-reflection.	Transfer occurs when learning aligns with personal goals and values.	Best explains self-directed learning and value-based decision-making.	Rogers (1969); Maslow (1943); Knowles (1984)
5.	Experiential Learning	Learning occurs through direct experience followed by reflection.	Concrete experiences, reflective observation, abstract conceptualization and active experimentation	Memory is engaged through reflection on experiences.	Transfer occurs when learners apply insights from experiences to new situations.	Best explains internships, studio projects and fieldwork.	Kolb (1984); Schon (1983)
6.	Transformative Learning	Learning is a process of critically examining and changing one's worldview.	Disorienting dilemmas, critical reflection and discourse.	Memory is involved in reconstructing meaning and perspectives.	Transfer occurs when new perspectives are applied to personal and professional contexts.	Best explains paradigm shifts and deep learning.	Mezirow (1991); Cranton (2006)
7.	Connectivism	Learning is a process of connecting specialized nodes or information sources	Network of connections, digital tools and collaborative environments.	Memory is distributed across networks and technologies.	Transfer occurs through the ability to navigate and utilize networks effectively.	Best explains learning in digital and networked environments.	Siemens (2005); Downes (2007)

Table 1 lists the 5 definitive questions as per the study of Schunk (1991) which are supportive to present the comparisons of the different learning theories. Learning is a continuous process and different scholars have tried to understand the process by navigating different paths, which has led to the formation of these several learning theories.

In behaviorist theory, learning is conceptualized as a measurable change in behavior that results from an individual's response to external stimuli. Cognitivist learning theory views learning as an active mental process involving the internalization, organization and interpretation of information. It involves active mental processing and organization of information. Constructivist learning theory suggests that learners build knowledge through experience and social context. Humanism learning theory says, learning to be a self-driven process rooted in personal growth and eventually leading to self-actualization. Experiential learning occurs through the cyclic process of experience, reflection, conceptualization and application. Transformative learning takes learning as a perspective- changing process and goes through reframing of past experiences in the light of new insights. Connectivism views learning as navigating and forming networks and connections through digital systems.

Learning in context to Behaviorism includes reinforcement schedules, environmental triggers and repetitive practice. Learning as per cognitivism encodes, stores and retrieves structured knowledge. Learning as per Constructivism integrates new information with prior knowledge. Learning as per Humanism acts as a repository of personal meanings shaped through reflection. Learning in context to Experiential supports reflection and meaning-making from experience. Learning as per Transformative reframes the past experiences in light of new insights. And learning in context to Connectivism is externalised and distributed across the digital systems.

Knowledge transfer as per Behaviorism occurs when conditioned behaviours are applied in similar contexts in which they were originally acquired, whereas, in Cognitivism, knowledge transfer occurs through applying the cognitive schemas to new contexts. In Constructivism, the knowledge transfer occurs through actual tasks that require real-world application, while in Humanism, knowledge transfer occurs when learning aligns with personal values and goals. In Experiential learning, applying insights from experience to new situations leads to knowledge

transfer while in Transformative learning, when learners apply new perspectives to transform behaviour, the learning occurs. And in Connectivism, learning happens when learners build and access connections across platforms.

Learning is best applied in rote memorization and skill development through consistent repetition in Behaviorism. Cognitivism is better applied in problem-solving, conceptual understanding and instructional design. Constructivism is best applied towards inquiry-based learning, project-based and interdisciplinary work. Humanism is best applied in counseling, adult education and value-centered pedagogy. Experiential learning is best applied in studio-based education, internships and fieldwork. Transformative learning is best applied in social justice education, leadership and personal transformation. Connectivism is best applied in online learning, digital literacy and knowledge work in networked environments.

Learning theories offer distinct yet complementary perspectives on how individuals acquire, process and apply knowledge. Behaviorism focuses on observable behaviours, which can be reinforced with repetition (Skinner, 1953). Cognitivism emphasizes internal mental processes and structured knowledge organization (Anderson, 2010), while constructivism highlights the active construction of understanding through experience and social interaction (Vygotsky, 1978; Piaget, 1952). Humanism learning theory centers on personal growth and intrinsic motivation, viewing learning as a pathway to self-actualization (Maslow, 1970; Rogers, 1969). Experiential learning focusses on the cyclical process of learning through direct experience and reflection (Kolb, 1984), whereas transformative learning involves deep shifts in perspective through critical self-examination (Mezirow, 1991). And connectivism addresses learning in the digital age, where knowledge is distributed across networks and accessed through technological and social connections (Siemens, 2005). Together, the learning theories provide a strong foundation for designing diverse and effective learning environments.

Discussion

The process of learning has long been a central focus for philosophers and educators and remains relevant today (Edgar, 2012). Socio-cultural learning theories emphasize that learning is inherently social and shaped by cultural contexts (Bowen et al., 2020). Understanding adult learning theories is key to developing effective educational strategies, informing instructional design, curriculum development and educational planning (Yanchar et al, 2010; Quratulain, 2021). Research supports that aligning curricula with appropriate learning theories improves program effectiveness and help achieve desired learning outcomes (Khalil et al., 2016; Budiningsih et al., 2019; Shrivastava & Shrivastava, 2017).

“The interest in learning theories for creative problem-solving in design education is increasing yet the existing literature remains fragmented, encompassing a wide range of theoretical perspectives, research methods and educational settings” (Berberoğlu & Unal, 2024). Reflection plays a vital role in design education, fostering intentional, rigorous and inclusive creativity and needs further studies to develop detailed academic processes to use learning theories as better tools to integrate history and other aspects into design.

However, a paradox exists between contemporary architectural education, which often emphasizes fragmentation and architectural practice, which demands integration. This raises practical questions about whether the design studio truly provides accessible, comprehensive knowledge central to architectural practice (Berberoğlu & Unal, 2024).

Integrating the development of a personal design philosophy into undergraduate design education encourages continuous reflection and self-awareness. This process can be both visual & textual. A constructivist learning approach, combining studio-based learning with technology, can enhance this process by enabling students to actively construct knowledge. Understanding the historical evolution of educational theories further enriches this learning, offering insight into both past practices and future directions (Dalton, 2017; Keane 2014; Budd, 2011; Edgar, 2012).

After a comprehensive study of the various learning theories prevalent in today's times, it is quite evident that all the theories address particular aspects of a very complex process called 'learning'. And these theories also seem to be having an impact on specialised subjects and their learning, or various parts of the subjects. In light of the information, it can be easily said that no theory in isolation can address the complexity of modern learning needs. Each theory could be interpreted as a specialized tool with its help learning can be better understood, designed and facilitated.

Interpretation of Key Findings

“Learners must be engaged in the process of learning through understanding the relevance of information” (Edgar, 2012). Learning theories can serve as a foundation for integrating the key areas of expertise that teachers need to develop to support the success of the students (Darling-Hammond & Bransford, 2005). “Understanding the learning process is a complex undertaking. We must understand that not one theory or belief is the cure in education today. All learners are different, and that individualized instruction and education facilitate learning” (Edgar, 2012).

The learning theories provide us with complementary perspectives that can help support to formulation of strong pedagogical foundations. Architecture education combines multiple disciplines and relies on hands-on learning. To be effective, it must go beyond the technical training to nurture conceptual thinking, ethical responsibility and creative problem solving. Such a holistic approach works to prepare students towards handling building design alongside thinking critically, innovating responsibly and engaging meaningfully with the real world challenges. Keeping in view such a variety of aspects of learning involved a comprehensive mix of various learning theories bound primarily by constructivism, could produce better results.

Table 2. Comparative Analysis of Learning Theories in Architecture Education (source: Authors).

S.No.	Theory	Basic Assumptions/ Principles	Application to Architectural Design Instruction
1.	Behaviorism	-Learning is a change in observable behaviour -Reinforcement strengthens learning	-Use design drills, repetition, and practice -Implement feedback loops (peer critiques, quizzes) to reinforce positive behaviour
2.	Cognitivism	-Learning involves mental processes -Prior knowledge impacts new learning	-Scaffold design concepts using prior knowledge -Assign design problems to cognitive engagement
3.	Constructivism	-Learners build knowledge from experiences Learning is contextual and active	-Project-based and studio learning -Encourage collaborative design and critique sessions
4.	Humanism	-Learning is student-centered -Focus on self-actualization and personal growth	-Allow for self-directed design projects -Promote personal reflection and expression in design
5.	Experiential	-Learning occurs through experience and reflection -Doing+Reflecting= Knowledge	-Organize site visits, real-world design problems -Encourage reflective journals, design reviews
6.	Transformative	-Learning changes one's worldview -Critical reflection leads to information	-Use critical debates on design ethics and social impacts -Facilitate re-evaluation of traditional design paradigms
7.	Connectivism	-Learning is network-based -Knowing where to find information is the key	-Encourage digital collaboration tools -Foster global design communities and industry connections

Behaviorism sees learning as a change in observable behaviour and supports learning through repetition, practice and reinforcing positive behaviour (Skinner, 1953). For eg, reinforcing the climate responsiveness of built forms through positive feedback. Cognitivism shifts the focus to internal mental processes, aiding in the development of conceptual understanding and problem-solving strategies essential for analytical design thinking (Anderson, 2010). Constructivism, through the works of Piaget and Vygotsky, underscores active knowledge construction through experience and social interaction, aligning well with the iterative and collaborative nature of design studio pedagogy (Piaget, 1952; Vygotsky, 1978). Humanistic learning theory adds a personal and ethical dimension, encouraging self-directed learning, empathy, and value-driven design approaches (Rogers, 1969; Maslow, 1970). Kolb's experiential learning model reinforces the centrality of real-world engagement through site visits, internships, and project-based studios, as a cyclical process involving experience, reflection, conceptualization, and experimentation (Kolb, 1984). Transformative learning theory works through critical reflection and change in one's worldview by facilitating re-evaluation of traditional design paradigms and use of critical reflection towards design ethics and social impact (Mezirow, 1991). Connectivism works on the principle of learning being network-based and encouraging digital collaboration tools and fostering global design communities (Siemens, 2005).

Table 3. Application of Learning Theories towards History integration in Design (source: Authors).

S.No.	Learning Theory	Application for History Integration	Instructional examples
1.	Behaviorism	Repetition and reinforcement helps students to memorize historical elements, terminology and chronological information.	Using quizzes, flashcards, drawings, models, and exercises to reinforce different elements and scales & proportion.
2.	Cognitivism	Helps students organize historical knowledge in mental schemas of typology, periods, etc.	Concept mapping of historical typologies in context to contemporary design tasks, analysis of precedent studies.
3.	Constructivism	Students construct understanding of history by engaging with it in the context of their own design processes.	Reinterpreting historical building typologies and spatial planning, reinterpreting the old into contemporary spaces.

4.	Humanism	Encourages students to connect emotionally and ethically with historical narratives.	Design projects responding to local heritage and/ or marginalized historical narratives.
5.	Experiential Learning	Allows learning through direct interaction with historical environments and culture.	Site visits to heritage sites, preparing measured drawings of historic places, reconstructing spatial configurations through models.
6.	Transformative	Critical reflection on architectural history fosters shift in worldview (colonialism, gendered histories)	Addressing projects with postcolonial narratives, reinterpreting suppressed historical voices.
7.	Connectivism	Digital tools link students to global archives, digital reconstructions and historic databases.	Use of online platforms (Google arts & culture, Artstor, museum websites, history recreators, GIS for historic cities, etc) for understanding & reinterpreting history.

Behaviorism supports foundational knowledge acquisition through repetition and reinforcement, making it effective for memorizing key historical facts, styles, and architectural movements (Skinner, 1953). Cognitivism enables learners to structure and internalize complex historical narratives, encouraging the analysis of spatial, cultural, and chronological patterns in architectural development (Anderson, 2010). Through constructivism, students engage in the active construction of meaning by relating historical knowledge to current design contexts, thereby fostering interpretive and contextual thinking in studio projects (Vygotsky, 1978; Piaget, 1952). Humanistic approaches promote an empathetic and values-based engagement with history, helping learners connect emotionally and ethically with past societies and ideologies, which is particularly important when designing in heritage-sensitive environments (Maslow, 1970; Rogers, 1969). Experiential learning is supported through the site visits to heritage sites, observing, measuring and preparing measured drawings of the historic places. Alongside reconstructing spatial configurations through making models provides hands-on learning experiences, which can be further integrated in design through reflection and learning of structure, space, materials, among others (Kolb, 1984). Transformative learning theory supports critical reflection on architectural history and helps foster a shift in worldview, for eg, post-colonial constructs, gendered histories, etc., by addressing the projects through the reinterpreting of the suppressed historical voices (Mezirow, 1991). Connectivism promulgates the use of digital tools to connect students to global archives, historic databases and digital reconstruction platforms through the use of online platforms for understanding & reinterpreting history (Siemens, 2005).

The relevance of Constructivism

Constructivist learning theory is highly relevant to architecture education as it emphasizes active, experiential learning, which aligns with the hands-on nature of architectural practice. By engaging the students in real-world design challenges, constructivism fosters deeper understanding and critical thinking (Vygotsky, 1978). Powers (2019) discusses how constructivist pedagogy in the design studio encourages active student participation, fostering a deeper engagement with architectural concepts. Andjomshoaa et al. (2011) highlight that the constructivist methods, such as 3D modelling and collaborative learning, facilitate the acquisition of tacit knowledge and improve pedagogical efficacy in architectural design education. The existing studies underscore the effectiveness of constructivist approaches in cultivating the skills necessary for future architects.

Research supports the application of constructivism in architecture education, demonstrating that constructivist approaches enhance creativity, collaboration and problem-solving skills among students. The focus on context-rich and active learning experiences, in the theory of Constructivism, makes it a valuable framework for architecture education, preparing students to navigate the complexities of the built environment.

How does Constructivism aid the Integration of History in Architecture Education?

Constructivism has significantly transformed architectural education by shifting from traditional, teacher-centered methods to more interactive and student-centered approaches. This shift also emphasizes active learning, where students engage in constructing their own understanding through experiences and reflection. In architecture design studios, this approach helps foster creativity and critical thinking by encouraging students to actively participate in every stage of the learning process (Ceylan et al., 2010). Research indicates that constructivist pedagogies lead to improved design performance by promoting tacit knowledge acquisition, which is crucial for architectural practice. Students exposed to constructivist methods showed significant improvements in their design processes compared to those taught through the traditional approaches (Andjomshoaa et al., 2011). The constructivist approach emphasizes critical thinking and contextual learning, encouraging students to move beyond fixed solutions towards actively engaging with the spatial, cultural and functional complexities of architecture (Salama, 2015).

The integration of constructivist theory into architecture education would foster a more dynamic and effective learning environment, enhancing students' creative thinking skills and better preparing them for the complexities of the real-world architectural practice. Constructivism is a learning theory that bridges theory and practice, emphasizing that knowledge is not fixed but rather evolving, socially and culturally influenced, and inherently

subjective. It views the learner as an active thinker, creator, and builder of understanding (Brooks and Brooks, 1993). Research supports the effectiveness of constructivist methods in the architectural design and history integration. Gatt (2003) underscores that constructivist approaches such as, scaffolding and inquiry-based learning, enhance student's historical thinking skills and promote a more comprehensive understanding of architectural heritage.

Conclusion

Constructivist classroom environments prioritize active, inquiry-based learning where students investigate issues directly rather than relying solely on textbooks. The design studio setting encourages collaboration, discussion and critical thinking, valuing students for their reasoning and problem-solving abilities. A key component is understanding learners' preconceptions and how they incorporate new experiences into their existing knowledge frameworks (Resnick, 1995; Adams, 1996).

"Responsibility in the learning process should be shared and negotiated amongst teachers and learners" (Powers, 2019). A rich studio environment, with diverse informational sources and representations, supports reflection on prior knowledge. The studio is a natural setting for constructivist learning, given the unpredictable and exploratory nature of design. Incorporating constructivist principles in the studio-based education is bound to enhance the credibility of current teaching methods and to deepen the learning & knowledge construction.

Even though all the learning theories play some or the other positive role towards learning in architecture design, Constructivism is highly relevant to integrating architectural history in architecture design education, as it emphasizes active learning, students get to immerse in thinking and discussing historical examples and their relevance. Constructivism also supports experience sharing and collaborative learning that aligns with the nature of architectural practice. By engaging students in hands-on activities, group projects and critical reflection, constructivist approaches deepen the understanding of design principles in historical contexts. Integrating constructivist methods in design studios helps students to build both theoretical understanding and practical skills, making it a highly effective educational approach in architecture education. The research supports the importance of constructivism in creating dynamic, engaging, and innovative learning environments in architecture education in the context of the integration of history with architectural design.

Limitations of the Study

While the study provides a comprehensive review, it is limited by its reliance on primarily secondary sources and English-language sources, highlighting the impact of valuable global or Western perspectives in the context of architectural history and pedagogy. Also, the subjective character of theoretical analyses has certain limitations.

Recommendations for Future Research

- Further studies in the context of the human learning process can further enhance the application of learning theories in the integration of various subjects with their historical relevance, especially focusing on academia in architecture education.
- An in-depth discussion about the extent to which learning theories could and should be manifested in the design paradigm is required, which may lead to better instruction strategies, making learning more effective & enriched.
- The role of learning theories in guiding curriculum design and educational planning could be further delved into.
- Incorporating the 'Theories of Change' as suggested by John Mayne could help delve deeper into the approach of 'learning theories in architecture education', especially in the context of history integration in the design studio.
- Practical experience is invaluable, but lacks an overarching framework to help organize knowledge, or systematically understand and improve the teaching and learning process. Theory and practice help reform each other to enhance learning. Delving deeper into the nuances of academics & practice in the context of learning theories & learning from history would be insightful.
- Another avenue for further research lies in instructor training. Although existing studies emphasize the crucial role educators play in fostering reflective learning environments, there is limited exploration of how teachers acquire the skills, knowledge and attitude required to effectively guide the learning processes.

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Conflict of Interests

The author(s) declare(s) no conflict of interest.

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