

Innovative Approaches to Enhance Teaching and Learning Techniques for Interior Architecture Modules

Dr. Mina Morkos

Lecturer the British University in Egypt

mina.nade@hotmail.com

ABSTRACT

Recent advancements in teaching have highlighted the limitations of traditional methods in interior architecture, which often fail to engage students or prepare them for real-world challenges. This paper presents innovative teaching strategies rooted in constructivist and experiential learning, focusing on the integration of digital tools, reflective practice, and interdisciplinary collaboration. These methods humanize the learning experience by addressing the emotional and creative facets of design education. By aligning curriculum with authentic, community-driven tasks and real-life case studies, we enhance critical thinking and professional readiness. Situated Learning Theory underpins this approach, emphasizing the importance of socially rich, context-specific environments. Through problem-based learning and blended assessments, both in-person and virtual, students are empowered to connect theory with practice, particularly by analyzing the implementation of interior design standards in Egyptian enterprises. This transformative approach fosters deeper engagement and prepares students for the complexities of the design field.

KEYWORDS

Interior architecture education, innovative pedagogy, active learning, experiential design, blended learning, student engagement, curriculum development

ملخص:

في السنوات الأخيرة، أصبح التعليم أكثر عمقاً، مما يبرز أهمية المعرفة والمهارات في تصميم المناهج. يركز هذا البحث على ضرورة التنسيق بين احتياجات المتعلمين ونتائج التعلم، ومعالجة الفجوات في تصميم البرامج. يجب أن تهدف المناهج إلى ربط الطلاب بالمجتمع والصناعة من خلال التنمية الفكرية والعملية والإبداعية. تسلط التطورات الحديثة في التعليم الضوء على القيود التي تواجه الطرق التقليدية في تصميم الديكورات الداخلية، والتي غالباً ما تقتصر على القدرة على جذب الطلاب أو إعدادهم لمواجهة تحديات الحياة العملية. تقدم هذه الورقة استراتيجيات تدريس مبتكرة تستند إلى التعلم البنائي والتجريبي، مع التركيز على دمج الأدوات الرقمية والممارسة التأملية والتعاون بين التخصصات المختلفة. تؤدي العناوين غير الواضحة للمقررات إلى إرباك الأكاديميين والطلاب. تشير نظرية التعلم في السياق إلى أن التعلم هو عملية اجتماعية، حيث يتعلم الطلاب بشكل أفضل من خلال المشاركة في مهام حقيقية. لذلك، يُفضل استخدام دراسات حالة حقيقية وتقييمات متنوعة، مثل المناقشات المباشرة ومنصات التعلم الافتراضية. تساعد طريقة التعلم القائم على المشاكل في تقليص الفجوة بين التعليم الجامعي وسوق العمل، مما يمكن الطلاب من تطبيق مهارات جديدة من خلال دراسة اعتماد المؤسسات المصرية لمعايير التصميم الداخلي. تساهم هذه الأساليب في جعل تجربة التعلم أكثر إنسانية من خلال تناول الجوانب العاطفية والإبداعية في تعليم التصميم. من خلال تنسيق المناهج الدراسية مع مهام حقيقية تدعمها المجتمع ودراسات الحالة الواقعية، نعزز التفكير النقدي والاستعداد المهني للطلاب. تدعم نظرية التعلم القائم على الموقع هذا الاتجاه، مشددة على أهمية البيانات الاجتماعية المرتبطة بالسياقات المختلفة.

من خلال التعلم القائم على حل المشكلات والتقييمات المتكاملة، سواء كانت حضورية أو افتراضية، يتمكن الطلاب من ربط النظريات بالتطبيق العملي، خاصة من خلال تحليل معايير التصميم الداخلي في المؤسسات المصرية. يعزز هذا النهج التفاعلي مشاركة أعمق، ويعد الطلاب لمواجهة تعقيدات مجال التصميم.

الكلمات المفتاحية

تعليم العمارة الداخلية، التربية الابتكارية، التعلم النشط، التصميم التجريبي، التعلم المدمج، مشاركة الطلاب، تطوير المناهج

1. INTRODUCTION

Interior architecture goes beyond simply designing interior spaces; it's an artful blend of aesthetics, functionality, and a profound understanding of how people interact with their surroundings. As our world grows more intricate and interconnected, graduates need more than just technical skills and a polished design sense. They must also possess critical thinking abilities, creative adaptability, and effective collaboration skills. Yet, many educational programs still rely heavily on traditional approaches like lectures or isolated studio work. While these methods have value, they often fall short of capturing the dynamic, hands-on nature of real-world design. Today's students need learning experiences that reflect the complexity of their future roles—ones that connect theory with practice, foster creativity, and build confidence in problem-solving within diverse teams.

Key Aspects of Deep Learning

- Emphasis on intellectual, practical, creative, and personal development.
- Connecting students with the community and industry.
- Strengthening the relevance of curriculum content.
- Bridge the gap between academia and industry, making education a top priority.

2. PROBLEM STATEMENT:

Traditional teaching methods may not fully support creative thinking, critical analysis, or technological fluency.

Interior architecture education is a vibrant field, but it often faces challenges like rigid curricula, outdated teaching methods, and limited technology use. These issues can stifle student creativity, reduce engagement, and create a gap between theory and practice. To truly prepare students for the real-world challenges of spatial design, we need a more holistic and innovative approach to teaching that fosters creativity and practical application.

3. THE OBJECTIVE:

This research aims to:

- Identify and evaluate innovative teaching and learning strategies in interior architecture education.
- Assess the impact of these methods on student learning outcomes and engagement.
- Provide practical recommendations for integrating innovative approaches into curriculum design.

4. SIGNIFICANCE OF THE STUDY:

Bridges the gap between academia and industry while promoting a more human-centered, adaptive learning environment.

This study contributes to the growing body of literature advocating for pedagogical innovation in design education. By focusing on interior architecture, it offers discipline-specific insights that can inform educators, curriculum planners, and institutional leaders on how to create more engaging, relevant, and future-ready learning environments. (Fig. 1).

Challenges in Curriculum Design:

- Unclear module titles creating confusion for staff and students.
- Gaps in covering all aspects of interior architecture.
- The need for a well-structured and comprehensive curriculum.



Fig. 1: Curriculum development trends diagram.

5. DESIGNING AND PLANNING ACITIVITIES AND PROGRAM

When designing a curriculum, it's beneficial to use a comprehensive approach that focuses on Constructive Alignment. This means ensuring that learning outcomes, objectives, teaching methods, and assessment strategies are all interconnected (Biggs & Tang, 2011). By linking module specifications to learning outcomes and assessment criteria, and by embedding practical life skills into classroom activities, we create a cohesive learning experience. This coherence enhances the relevance and meaningfulness of the curriculum, fostering an effective learning environment that emphasizes key competencies.

Additionally, integrating employability skills and industry trends into assignments keeps the curriculum current and transforms academic activities into real-world applications. As an educator, this connection helps clarify how the modules align with professional expectations in fields like interior design. Collaborating with industry leaders and gathering feedback has highlighted the importance of project management skills alongside design expertise. By incorporating project management into the curriculum, I ensure that students are equipped with essential skills that meet industry standards.

My student-centered approach promotes deep learning by building on prior knowledge and strategically introducing core theories. By setting clear learning objectives, I enhance student performance and critical thinking, all while making the most of teaching time.

5.1. Theoretical Frameworks in Design Education

Innovative pedagogy in interior architecture is underpinned by well-established learning theories. Among these, constructivist learning theory emphasizes that learners actively construct knowledge through experience and reflection rather than passively receiving information (Piaget, 1972; Vygotsky, 1978). In the context of design education, this approach supports project-based, exploratory learning where

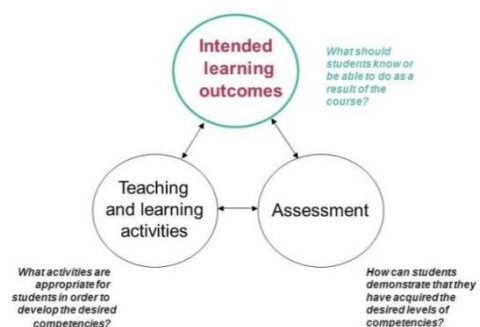


Fig. 2: constructivist learning theory diagram.

students develop ideas through engagement with materials, space, and context. which helps in (Fig. 2):

- Ensuring that learning outcomes, objectives, teaching, and assessment strategies are connected.
- Helps students to assess the information from authoritative sources to solve problems in familiar contexts and develop practical skills.

Example:

Making survey among the industry stakeholders, which revealed the importance of project management skills alongside design proficiency. I integrated project management into the curriculum, which helps (Fig. 3):

- Enhancing its relevance and sustaining the project.
- Equipping students with essential skills to meet industry standards.

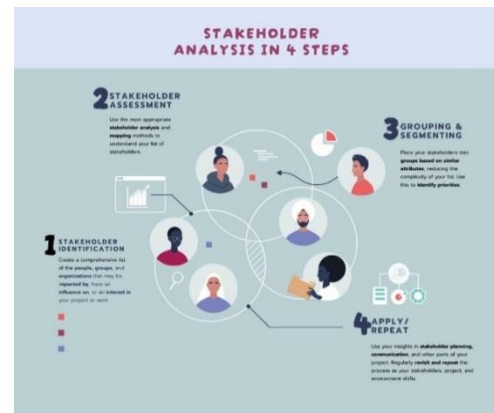


Fig. 3: survey among the industry stakeholder's diagram.

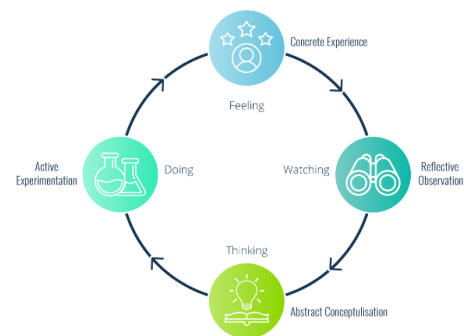


Fig. 4: Experiential Learning Theory (ELT) diagram.

5.1.2. Experiential Learning Theory (ELT)

Proposed by Kolb (1984), further aligns with design-based disciplines. According to this model, learning is a cyclical process involving concrete experience, reflective observation, abstract conceptualization, and active experimentation. Interior architecture modules that incorporate studio projects, site visits, and hands-on workshops naturally mirror this cycle, making experiential learning a fitting foundation. This has already proven since Gropius founded the Bauhaus School, 1967, where its philosophy, "learning by doing", the student was learning by experiencing problems. (Fig. 4).

5.1.3. Bloom's Taxonomy

Offers a framework for scaffolding cognitive processes in learning. By progressing from lower-order thinking skills (remembering, understanding) to higher-order skills (analyzing, evaluating, creating), interior architecture curricula can better support the depth and complexity of design thinking. (Fig. 5). To develop educational objectives, emphasize creativity and analysis rather than memorization, which enhances students' mental skills (Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001).

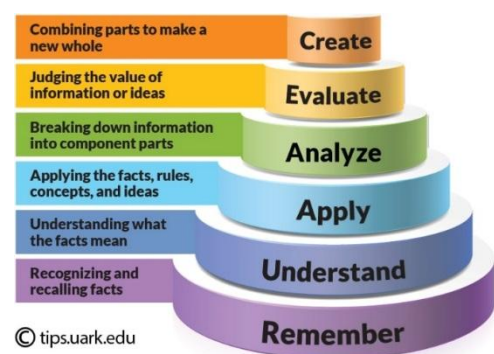


Fig. 5: Bloom's Taxonomy diagram.

Example:

In Prep. Year, the Orthographic projection module the Spatial Reasoning which is the ability to mentally manipulate 2D and 3D shapes, which is an important skill in fields like architecture, where orthographic projections (2D representations of 3D objects) are used. I supported the students who are not able to grasp the geometrical dimensions to make a physical shapes moqab

to be able to visualize and imagine how to draw the orthographic projection for the geometrical composition, as a step to draw a living room and convert these geometrical shapes into plan and section for a living room, and get the dimensions by applying the experimental teaching and learning theory, by measuring their own real living room furniture at their home.

1st Example:

Student name:

Kathrein Essam¹

Student ID: 245297

Prep. year

The Project title:

Geometrical composition. (Fig. 6).

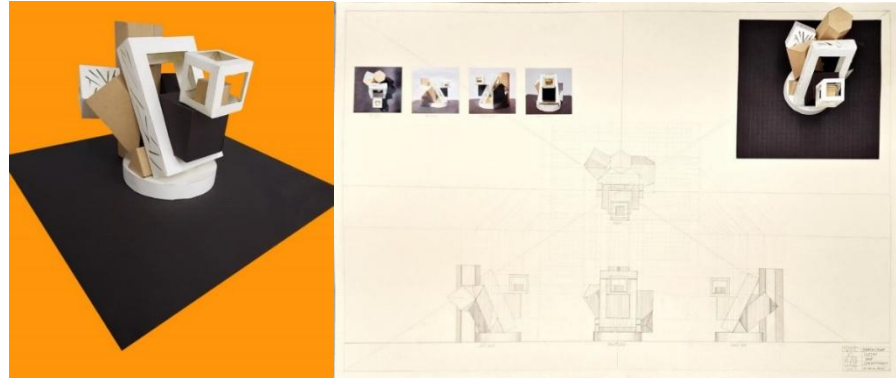


Fig. 6: Geometrical composition project, physical shapes moqab to be able to visualize and imagine how to draw the orthographic projection for the geometrical composition.

2nd Example:

Student name: Ali

Bahnasawy²

Student ID: 241112

Prep. Year, Faculty of Art and Design, The British University in Egypt.

The Project title: Living room design. (Fig. 7).



Fig. 7: Living room design project, applying the experimental teaching and learning theory, by measuring their own real living room furniture at their home, to design plan and section for living room.

5.1.4. SMART

Employing SMART verbs while writing the Intended Learning Outcomes (ILOs) that are: Specific, Measurable, Achievable, Relevant, Time-bound, to ensuring clarity and alignment with assessments and teaching strategies. (Moon, J. (2002)). according to NARS assurance. (Fig. 8).

Example:

I guide students using AI as inspirational tool, helping them manage AI effectively while enhancing their design skills.

This aligns with the university's policy of AI usage.

Which helps me target and cover specific content, also students clearly understand the objectives need to achieve. The students' results were very impressive and here are two examples:

1st Example:

Student name: Shahd Mohamed³

Student ID: 234277

Foundation year, Faculty of Art and Design, The British University in Egypt.

The Project title: Interactive Energetic Dental Clinic. (Fig. 9).



Fig. 8: SMART verbs diagram.

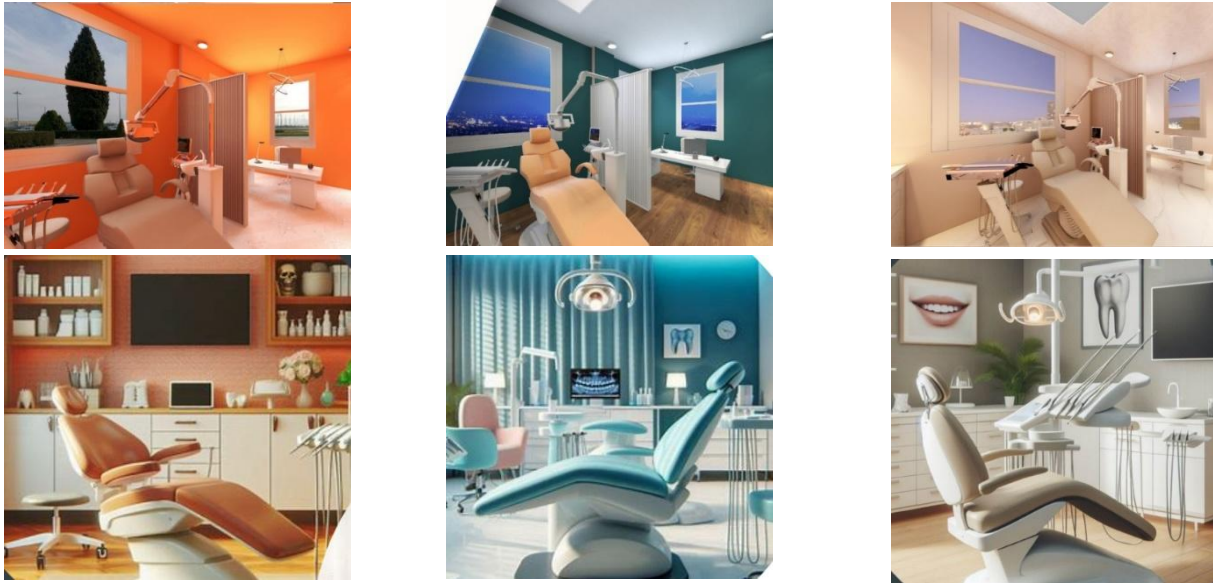


Fig. 9: Interactive Energetic Dental Clinic project, using AI as inspirational tool, helping them manage AI effectively while enhancing their design skills by comparing their results with the AI results and criticizing AI., to teach the students how to control AI. This aligns with the university's policy of AI usage.

2nd Example:

Student name: Maryam Magdy Soliman⁴

Student ID: 229739

Foundation year, Faculty of Art and Design, The British University in Egypt.

The Project title: Interactive Energetic Swarovski Retail Store. (Fig. 10).

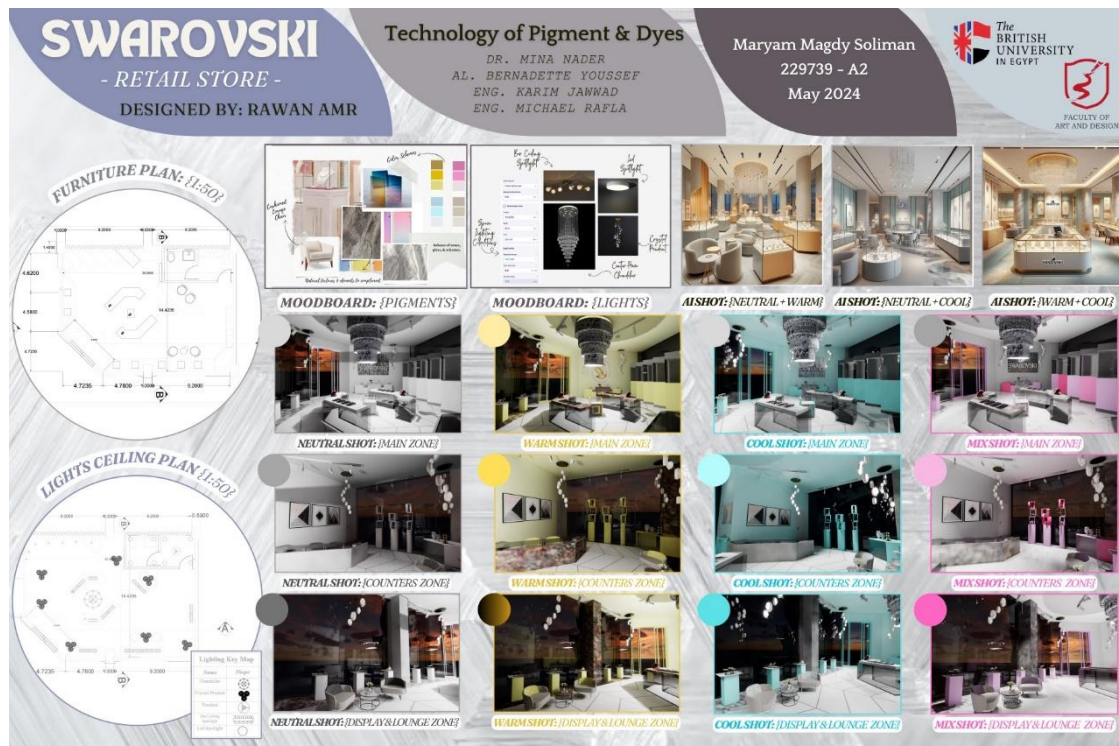


Fig. 10: Interactive Energetic Swarovski Retail Store project, using AI as inspirational tool, helping them manage AI effectively while enhancing their design skills by comparing their results with the AI results and criticizing AI., to teach the students how to control AI. This aligns with the university's policy of AI usage.

5.2 Pedagogical Innovations in Interior Architecture

Situated Learning Theory in Higher Education

- Learning as a social and context-dependent process.
- Students benefit from authentic tasks within a community of practice.
- Enhancing engagement through real-life applications.

5.2.1 Studio-Based and Problem-Based Learning (PBL)

emphasize a project-based learning (PBL) approach in my teaching, allowing students to engage with real-world problems alongside local agencies and businesses. This encourages them to choose topics of interest that align with the curriculum (Barron & Darling-Hammond, 2008). I set clear objectives, provide necessary resources, and assess students through a villa project that involves interacting with real clients. (Fig. 11). Students develop questionnaires to gauge client needs, conduct site visits, and connect with industry stakeholders, enriching their practical learning experience. We hold open discussions during tutorials to assess their understanding as they analyze sites, create mood boards, and develop design processes.

This community-engaged approach enhances my awareness of various professions while considering students' cultural backgrounds. (Fig. 12). I foster a collaborative environment that encourages peer discussions. In class, we use brainstorming and team tasks to deepen their knowledge application. This method boosts their higher-order thinking and problem-solving skills, preparing them for the workforce while enhancing teamwork abilities. By analyzing and presenting case studies, students build confidence in addressing real-world challenges and cultivate a lifelong learning mindset that extends beyond the classroom.

Problem-Based Learning (PBL) Approach

- Bridging the gap between undergraduate education and career development.
- Enabling students to apply skills and knowledge through analysis.
- Examining Egyptian enterprises' adoption of interior design standards. The students' results were very impressive and here are two examples:

1st Example:

Student name: Sima Choeb⁵

Student ID: 231649

Level 4 year 2, Faculty of Art and Design, The British University in Egypt.

The Project title: Residential Villa in Belle Vie Compound. (Fig. 13).



Fig. 11: Villa design for Ashraf Abdelnaki.



Fig. 12: Villa design for Yamani student's family.



Fig. 13: Residential Villa in Belle Vie Compound project, villa project that involves interacting with Architect clients, with modern bohemian style, the student designed the villa according to his needs and family number after several meetings with the client and conducting questionnaire, also solving the architectural and cultural problems.

5.2.2. Inquiry-Based Learning

In my other modules, I implement Inquiry-Based Learning, encouraging students to ask questions, conduct research, and draw conclusions from their findings. This method promotes both group and individual research projects based on topics that interest the students (Zion & Mendelovici, 2012). For their assessments, I let each group select a heritage building for adaptive reuse. This process includes site visits, studying architectural and cultural issues, and conducting site analyses, which allows students to engage with real stakeholders. This hands-on approach also helps them navigate the necessary permits and architectural drawings. As a result, I gain valuable insights into my students' skills, which enhances my teaching methods while providing them with knowledge about heritage buildings in line with NARS assurance. This project not only improves their problem-solving abilities but also increases their cultural and historical awareness and promotes teamwork. I assessed each group by allowing them to choose a building with heritage values for adaptive reuse, promoting site visits, study architectural, cultural problems of the building, site analysis and all studies related to the new function for the old building, this experience connect students with stakeholders and facilitates access to necessary permits and architectural drawings.

The students' results were very impressive and here are two examples:

1st Example:

Student name: Mennatallah Medhat⁶

Student ID: 207689

Level 5 year 3, Faculty of Art and Design, The British University in Egypt.

The Project title: Abou Rehab palace which is located in Al-Menial. (Fig. 14, 15).



Fig. 14: Adaptive reuse for Abou Rehab palace, to be Rehabi space hub buildings with heritage values for adaptive reuse, promoting site visits, study architectural, cultural problems of the building, site analysis and all studies related to the new function for the old building.



Concept Development
Examples of fractal modular furniture



ENTRANCE HALL - BEFORE



ENTRANCE HALL - AFTER



COURTYARD - BEFORE



COURTYARD - AFTER



Fig. 15: Adaptive reuse for Abou Rehab palace, concepts and 3D shots designs before and after designing.

5.2.3 Blended and Technology-Enhanced Learning

Technological integration has transformed the educational landscape across disciplines. In design education, blended learning—the combination of face-to-face instruction with digital tools—has shown potential in enhancing access to resources, flexibility in learning, and diversity in content delivery (Garrison & Kanuka, 2004). Tools such as Building Information Modeling (BIM), virtual and augmented reality (VR/AR), and collaborative platforms like Miro or Mural support spatial visualization, interdisciplinary collaboration, and remote design critique.

Teaching Strategies for Deep Learning

- Use of real-life case studies and site visits.
- Combining face-to-face and virtual learning environments.
- Encouraging peer-to-peer discussions and collaborative learning. (Fig. 16).



Fig. 16: Peer-to-peer discussions.

5.2.4. Gamification and Interactive Learning

Gamification, or the application of game mechanics to non-game contexts, has emerged as a strategy to increase motivation and participation in learning activities. Elements such as point systems, timed challenges, or narrative scenarios can simulate real-world design constraints while fostering creativity and engagement (Deterding et al., 2011). In interior architecture modules, interactive simulations or escape-room-style challenges can be employed to teach spatial planning, human ergonomics, and problem-solving.

5.3. Assess and give feedback for learning

5.3.1. Teach and support learning through appropriate approaches and environments

Virtual Learning Environment:

I incorporate various learning styles to keep students engaged, utilizing a Virtual Learning Environment (VLE) to enhance accessibility. I upload lectures, assessment briefs, module specifications, and marking criteria, making it easier for students to access materials and retain information in formats that suit them best.

Students submit their weekly work through the VLE, which allows me to assess their understanding and provide constructive feedback, creating an interactive learning environment that supports diverse needs. I also offer office hours for extra support and provide additional resources when needed, ensuring all students have fair opportunities to succeed.

The VLE generates reports that identify at-risk students and highlight challenging learning objectives, helping me adjust future lessons and encourage greater participation. This variety of approaches ensures that I meet the needs of all my students effectively.

Benefits of using Virtual Learning Environment (VLE):

- Virtual Learning Environment (VLE), enhancing accessibility.
- Assess students' understanding and providing constructive feedback.
- Interactive learning environment, supporting diverse learning needs.
- Ensuring fair opportunities.
- VLE generates reports highlighting at-risk students and challenging learning objectives, helping me adjust future lessons and encourage participation.

5.3.2. Individual feedback forms:

Following submission, students receive immediate feedback through the VLE. According to (Li et al. (2016)), immediate feedback is more beneficial when addressing specific problems (e.g., dimensions). Students reported that the face-to-face discussions, motivated their knowledge and prepare thoroughly for final submissions, also, each student receive individual feedback form (Fig. 17). with comments about his performance and the points that he achieved and the points that need to be enhanced according to the Intended Learning out comes (ILOS) of the module.

Faculty: Art and Design		Programme: Interior Design		Assignment Number/Title:		Grade	
Module Number:	Year: one	Module credit: 40 credits	Module Leader: Mina Morkos	Design Project 1 & Research Report (80%)	Design Project 2 & Research Report (40%)		
Semester: one	Level: Level 4	Date Submitted for Design project 1: Thursday 9 th Oct 2024	Date Submitted for Design project 2: Tuesday 4 th Jan 2025				
Module Code/Title: Design 1: Fundamentals of Interior Design	Letter: N						
Module leader: Mina Morkos							

Module Learning Outcomes		Assessment Criteria		100		90		80		70		60		50		40		30		20		10		0	
L.O1 To define concepts and principles associated to interior design	Concepts																								
L.O2 Collect information from historical, represented and contemporary sources to create design projects	Sketches																								
L.O3 Develop ideas from a number of sources (perception, research, analysis and synthesis)	Design process starting from analysis, problem, solution, inspiration, concept, process, drawing, etc.																								
L.O4 To select a variety of representational drawing techniques such as orthographic projection, perspective, technical drawing and rendering skills in the design project	Technical Drawing (plan, section and elevation) and perspectives																								
L.O5 To develop design ideas related to design function and value	Creating design related to the function and value																								
L.O6 To communicate visual design proposals using verbal and presentational skills	Presentation skills and presentation discussion																								
L.O7 To create design for interior environment (social, cultural, historical and urban factors)	Design techniques and materials																								
L.O8 To plan and a team member to collect and analyse information and respond associated with architectural design	Working in a team to collect and analyse information and respond associated with architectural design																								

Comments	
Assignment 1: Furniture design for residential client (80%)	Conceptual Development: Good evidence of originality and creativity as appropriate to the subject. An in-depth evaluation of ideas, needs, materials and processes for project development. Evidence of conceptual risk taking, using own in-depth analysis to inform inquiry. Technical Competence: Skills facilitate good communication of ideas. Evidence of a command of techniques and application of processes, used consistently and appropriately. Design: Assembly: Skills facilitate good communication of ideas. Evidence of a command of techniques and application of processes, used consistently and appropriately. Presentation: The presentation style & approach is correct for the type of assignment. Decisions show some awareness of audience/context. Analysis, Studies & Research: Good grasp of theoretical, conceptual, analytical, and studio-based elements. Some issues lack clarity, or theoretical models expressed in simplistic terms. Conclusions are fairly clear and logical.
Assignment 2: Design Project 2 (Interior design for retail store) (40%)	Conceptual Development: Some of the relevant information, skills, theoretical, conceptual and/or studio-based elements are deployed accurately. Generally addresses the project brief and delivers , but sometimes addresses them in a narrow way. Technical Competence: Skills support development in practice and the communication of ideas. Two good command of techniques and processes is evident. Design: Assembly: Skills facilitate good communication of ideas. Evidence of a command of techniques and application of processes, used consistently and appropriately. Presentation: The presentation style & approach is correct for the type of assignment. Decisions show some awareness of audience/context. Analysis, Studies & Research: Good grasp of theoretical, conceptual, analytical, and studio-based elements. Some issues lack clarity, or theoretical models expressed in simplistic terms. Conclusions are fairly clear and logical. Informed judgments of a range of sources, information is accurate and categorised appropriately. Good referencing in the correct style.

1st Marker's Grade		2nd Marker's Grade		Final Grade		Turnitin checked	
1	2	3	4	5	6	7	8

Learning Outcomes		Assessment Criteria		100		90		80		70		60		50		40		30		20		10		0	
L.O1 To define concepts and principles associated to interior design	Concepts																								
L.O2 Collect information from historical, represented and contemporary sources to create design projects	Sketches																								
L.O3 Develop ideas from a number of sources (perception, research, analysis and synthesis)	Design process starting from analysis, problem, solution, inspiration, concept, process, drawing, etc.																								
L.O4 To select a variety of representational drawing techniques such as orthographic projection, perspective, technical drawing and rendering skills in the design project	Technical Drawing (plan, section and elevation) and perspectives																								
L.O5 To develop design ideas related to design function and value	Creating design related to the function and value																								
L.O6 To communicate visual design proposals using verbal and presentational skills	Presentation skills and presentation discussion																								
L.O7 To create design for interior environment (social, cultural, historical and urban factors)	Design techniques and materials																								
L.O8 To plan and a team member to collect and analyse information and respond associated with architectural design	Working in a team to collect and analyse information and respond associated with architectural design																								

Fig. 17: Sample for the feedback form, faculty of Art and Design, the British University in Egypt.

5.3.3 Reflective Practice and Peer Feedback

Reflective practice, as advocated by Schön (1983), is essential in design education. Journals, process books, and post-project critiques allow students to internalize feedback and develop metacognitive awareness. Furthermore, **peer assessment** has proven to be effective in deepening understanding, as it encourages students to articulate criteria, critique work constructively, and benchmark their performance against that of others (Topping, 2009).

5.3.4. Gaps in Existing Pedagogy

Despite the availability of innovative tools and strategies, many institutions still rely heavily on conventional lectures or isolated studio projects, often neglecting digital fluency, cross-disciplinary collaboration, and socio-emotional learning. Moreover, assessments may fail to capture the iterative and subjective nature of design processes, discouraging risk-taking and reflection. These limitations call for a reimagined pedagogical model that is flexible, student-centered, and aligned with both professional standards and diverse learner needs.

6. METHODOLOGY

6.1. Research Design

This study adopts a **mixed-methods research design**, integrating both qualitative and quantitative data to comprehensively examine the impact of innovative teaching approaches in interior architecture modules. This design allows for triangulation of data, strengthening the validity of findings by capturing both statistical trends and in-depth, contextual experiences of participants.

6.2. Research Context and Participants

The research was conducted in the Department of Interior Architecture at [Name of Institution], involving second- and third-year undergraduate students enrolled in core design studio modules. A total of **60 students** and **5 instructors** participated in the study over the course of one academic semester.

6.3. Data Collection Methods

To address the research objectives, multiple data sources were used:

- **Classroom Observations:**

Weekly observations were conducted to document instructional strategies, student interactions, and use of digital tools. Field notes captured observable patterns of engagement, collaboration, and design iteration.

- **Surveys and Questionnaires:**

pre-and post-semester surveys assessed students' perceptions of engagement, confidence, and learning outcomes. Likert-scale items measured satisfaction with teaching methods, perceived creativity, and usefulness of specific tools and activities.

- **Semi-Structured Interviews:**

Individual interviews with instructors and focus groups with students provided deeper insight into experiences with new pedagogical methods, including challenges and perceived benefits.

- **Academic Performance Data:**

Students' project grades, submission timelines, and participation records were analyzed to identify shifts in performance and productivity before and after implementing innovative techniques.

6.4. Data Analysis

- **Quantitative Analysis:**

Descriptive statistics (means, standard deviations) were calculated to compare student engagement and performance before and after the intervention. Correlation analysis was used to identify relationships between instructional strategies and academic outcomes.

- **Qualitative Analysis:**

Interview transcripts and observation notes were coded thematically using NVivo software. Emerging themes were categorized under topics such as collaboration, digital engagement, reflective learning, and spatial problem-solving.

6.5. Ethical Considerations

All participants provided informed consent prior to data collection. Anonymity and confidentiality were maintained throughout the study. The research protocol was approved by the institutional ethics review board to ensure adherence to ethical standards in educational research.

7. FINDINGS AND DISCUSSION

This section presents key findings from the study, organized around three major themes that emerged from data analysis: Integration of technology in the learning process, student feedback on pedagogical innovations, and the role of collaboration in enhancing design outcomes.

7.1. Integration of Technology Enhances Spatial Understanding and Engagement

The use of digital tools such as SketchUp, AutoCAD, Rhino, and virtual reality (VR) significantly improved students' spatial awareness and design communication skills. In-class demonstrations, followed by independent exploration, allowed students to visualize complex spatial relationships and iterate designs more rapidly.

Quantitative results showed that 78% of students reported improved confidence in their ability to test and visualize ideas using digital platforms. Additionally, students who used VR walkthroughs as part of their design reviews scored on average 12% higher in spatial planning assessments compared to those who relied solely on 2D representations.

Observational data supported this: Students engaged in tech-enhanced activities were more active during critique sessions, asked more questions, and iterated their work more frequently. The use of collaborative platforms such as Miro enabled real-time feedback, even in remote or hybrid settings.

"VR helped me understand how my space would feel, not just look. It changed the way I think about user experience," noted one third-year student.

These findings align with prior research on the benefits of digital augmentation in design education (Oxman, 2008; Dorta et al., 2016), underscoring the importance of digital fluency in preparing students for contemporary practice.

The objectives and the conclusions are connected clearly, as the conclusions provide evidence supporting the objectives by highlighting the effectiveness of innovative strategies in enhancing the learning experience. This reinforces the importance of evaluating and applying these methods in educational programs.

7.2. Student Feedback Highlights Motivation and Ownership

Post-intervention survey data indicated a substantial increase in student motivation and ownership of the learning process. Specifically, 84% of respondents expressed greater satisfaction with classes that incorporated active, student-centered approaches such as gamification, design charrettes, and scenario-based challenges. Students also appreciated the opportunity to reflect on their progress through process journals and portfolio reviews. The act of documenting iterative changes and receiving scaffolded feedback was reported to deepen understanding and increase creative confidence (Figs. 18, 19, 20). "I felt like the class was designed for us, not just for the instructor to lecture. We had a say in our projects, and that made a big difference," shared one focus group participant. This student-centered sentiment echoes the principles of constructivist learning theory and reinforces the idea that engagement increases when learners are active participants in shaping their educational journey.

No	Organisation and management	Students Response						Section Summary			Programme Summary By Level			
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD	
1	The module was well organized and prepared.	63	27	8				2	49	4.56	0.4	84	4.55	0.6
2	I received clear instructions from module staff about the organisation of this module.	65	22	8	2			2	49	4.54	0.53	84	4.41	0.83
Average									4.55			4.48		

No	Module content and structure	Students Response						Section Summary			Programme Summary By Level		
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD
1	The module specifications were helpful, easy to understand, and outlined learning outcomes in a way that was clear.	67	31	2				49	4.65	0.27	84	4.4	0.64
2	The academic content of the module was interesting.	73	16	10				49	4.63	0.44	84	4.41	0.92
3	The module helped develop my intellectual skills (e.g., critical analysis, written/oral communication skills, and research skills, etc.).	53	33	10	2	2		49	4.33	0.79	84	4.14	1.16
Average								4.54			4.31		

No	Module delivery & teaching	Students Response						Section Summary			Programme Summary By Level			
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD	
1	Staff effectively explained academic concepts throughout the module.	65	33	2				49	4.63	0.27	84	4.46	0.67	
2	Module content was delivered in a way that was engaging.	73	14	10	2			49	4.59	0.57	84	4.37	1.04	
3	Online components of the module were helpful to my learning.	67	20	10		2		49	4.51	0.7	84	4.34	0.89	
4	Module content was delivered in English.	67	27	6				49	4.61	0.36	84	4.64	0.49	
Average								4.59				4.45		

No	Module learning support and resources	Students Response						Section Summary			Programme Summary By Level		
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD
1	Teaching materials (i.e. lecture slides, handouts, study guides, etc) supported my learning well.	71	18	8	2			49	4.59	0.53	84	4.47	0.72
2	Learning materials (assigned readings, core textbooks, video resources, etc.) have supported my learning well.	65	18	12	2	2		49	4.43	0.86	84	4.36	0.97
Average								4.51			4.42		

No	Module assessment and feedback	Students Response						Section Summary			Programme Summary By Level		
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD
1	I received useful information on assessments prior to them being set (assignment requirements, weighting, marks criteria, etc.).	63	22	14				49	4.49	0.54	84	4.27	0.98
2	Assessments were varied and helped me assess my progress towards the learning outcomes of the module.	63	27	6	4			49	4.49	0.62	84	4.3	0.95
3	Feedback from assessments helped me to improve my understanding of course material.	71	18	10				49	4.61	0.44	84	4.35	0.89
4	I received timely feedback on my assessments.	67	22	8	2			49	4.55	0.53	84	4.34	0.96
Average								4.54			4.31		

No	Module support and community	Students Response						Section Summary			Programme Summary By Level			
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD	
1	I have been able to find academic support for this module when needed.	78	16	4	2			49	4.69	0.42	84	4.43	0.89	
2	Staff value students' views and opinions about the module.	71	18	8		2		49	4.57	0.65	84	4.28	1.15	
Average									4.63			4.36		

No	Bernadette Youssef (Module Leader)	Students Response						Section Summary			Programme Summary By Level			
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD	
1	Used each teaching session to cover a well-defined topic.	73	15	5	2		5	41	4.67	0.46	225	4.57	0.69	
2	Was helpful in answering questions.	71	17	5	2		5	41	4.64	0.46	225	4.52	0.75	
3	Provided useful & relevant material whenever required.	71	17	5	2		5	41	4.64	0.46	225	4.51	0.72	
4	Provided enough feedback on the assessment of my coursework.	66	20	5	5		5	41	4.54	0.63	225	4.45	0.82	
5	Could be contacted for advice if needed.	68	15	10	2		5	41	4.56	0.58	225	4.43	0.96	
6	Was clear and easy to understand.	71	17	2	5		5	41	4.62	0.57	225	4.44	0.98	
7	Delivered the module in English.	71	17	5	2		5	41	4.64	0.46	225	4.53	0.76	
8	Made me want to attend classes.	71	17	5	2		5	41	4.64	0.46	225	4.37	1.14	
Average									4.62			4.48		

No	Mina Nader (Module Leader)	Students Response						Section Summary			Programme Summary By Level		
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD
17	Used each teaching session to cover a well-defined topic.	91	9					47	4.91	0.08	225	4.57	0.69
18	Was helpful in answering questions.	89	11					47	4.89	0.1	225	4.52	0.75
19	Provided useful & relevant material whenever required.	89	11					47	4.89	0.1	225	4.51	0.72
20	Provided enough feedback on the assessment of my coursework.	85	13	2				47	4.83	0.18	225	4.45	0.82
21	Could be contacted for advice if needed.	89	9	2				47	4.87	0.15	225	4.43	0.96
22	Was clear and easy to understand.	89	11					47	4.89	0.1	225	4.44	0.98
23	Delivered the module in English.	85	15					47	4.85	0.13	225	4.53	0.76
24	Made me want to attend classes.	87	13					47	4.87	0.11	225	4.37	1.14
Average								4.88			4.48		

Fig. 18: Students' evaluation, 2024-25.

Ibn Al-Haitham Students Information System, 28/2/2024 - 13:20

No	Organisation and management	Students Response						Section Summary			Programme Summary By Level		
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD
1	The module was well organized and prepared.	45	29	13	13			31	4.06	1.09	149	3.85	1.58
2	I received clear instructions from module staff about the organisation of this module.	58	13	23	6			31	4.23	1.01	149	3.97	1.4
Average									4.15			3.91	

No	Module content and structure	Students Response						Section Summary			Programme Summary By Level		
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD
1	The module specifications were helpful, easy to understand, and outlined learning outcomes in a way that was clear.	61	29	6		3		31	4.45	0.76	149	4.1	1.39
2	The academic content of the module was interesting.	68	26	6				31	4.61	0.37	149	4.16	1.17
3	The module helped develop my intellectual skills (e.g., critical analysis, written/oral communication skills, and research skills, etc.).	52	32	6	3	6		31	4.19	1.25	149	4.01	1.38
Average									4.42			4.09	

No	Module delivery & teaching	Students Response						Section Summary			Programme Summary By Level		
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD
1	Staff effectively explained academic concepts throughout the module.	61	16	13	6	3		31	4.26	1.22	149	4.13	1.17
2	Module content was delivered in a way that was engaging.	48	35	13		3		31	4.26	0.84	149	4.03	1.33
3	Online components of the module were helpful to my learning.	45	39	6		6	3	31	4.2	1.06	149	4.11	1.13
4	Module content was delivered in English.	52	16	26	3		3	31	4.2	0.86	149	4.48	0.64
Average									4.23			4.19	

No	Module learning support and resources	Students Response						Section Summary			Programme Summary By Level		
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD
1	Teaching materials (i.e. lecture slides, handouts, study guides, etc) supported my learning well.	58	19	19			3	31	4.4	0.62	149	4.3	0.94
2	Learning materials (assigned readings, core textbooks, video resources, etc.) have supported my learning well.	48	26	19	3		3	31	4.23	0.75	149	3.97	1.28
Average									4.32			4.14	

No	Module assessment and feedback	Students Response						Section Summary			Programme Summary By Level		
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD
1	I received useful information on assessments prior to them being set (assignment requirements, weighting, marks criteria, etc.).	52	26	16	6			31	4.23	0.88	149	4.02	1.21
2	Assessments were varied and helped me assess my progress towards the learning outcomes of the module.	52	29	13	6			31	4.26	0.84	149	4.04	1.11
3	Feedback from assessments helped me to improve my understanding of course material.	61	16	16	3	3		31	4.29	1.11	149	4.18	1.07
4	I received timely feedback on my assessments.	58	23	19				31	4.39	0.62	149	4.21	0.94
Average									4.29			4.11	

No	Module support and community	Students Response						Section Summary			Programme Summary By Level		
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD
1	I have been able to find academic support for this module when needed.	55	26	10	6	3		31	4.23	1.14	149	4.15	1.21
2	Staff value students' views and opinions about the module.	74	13	10	3			31	4.58	0.63	149	4.25	1.11
Average									4.4			4.2	

No	Mina Nader (Module Leader)	Students Response						Section Summary			Programme Summary By Level		
		5 (%)	4 (%)	3 (%)	2 (%)	1 (%)	0 (%)	Count	Mean	SD	Count	Mean	SD
9	Used each teaching session to cover a well-defined topic.	77	16	3	3			31	4.68	0.48	406	4.55	0.67
10	Was helpful in answering questions.	68	19	10	3			31	4.52	0.64	406	4.46	0.9
11	Provided useful & relevant material whenever required.	74	19	6				31	4.68	0.35	406	4.46	0.87
12	Provided enough feedback on the assessment of my coursework.	61	16	16	3	3		31	4.29	1.11	406	4.34	1.09
13	Could be contacted for advice if needed.	77	3	16	3			31	4.55	0.76	406	4.42	1.02
14	Was clear and easy to understand.	81	10	10				31	4.71	0.4	406	4.43	0.91
15	Delivered the module in English.	71	16	10	3			31	4.55	0.63	406	4.52	0.72
16	Made me want to attend classes.	71	19	6	3			31	4.58	0.57	406	4.39	0.95
Average									4.57			4.45	

Fig. 19: Students' evaluation, 2023-24.

Here's a bar chart showing the improvement in students' evaluation of the module from the academic year 2023–2024 to 2024–2025. It highlights a noticeable increase in all key areas:

- Organization & Management improved from 4.15 to 4.55
- Module Content & Structure improved from 4.42 to 4.54
- Module Delivery & Teaching improved from 4.26 to 4.45
- Learning Support & Resources remained high at 4.59

The most significant improvement is seen in Organization & Management, indicating that students felt clearer about the module's preparation and instruction.

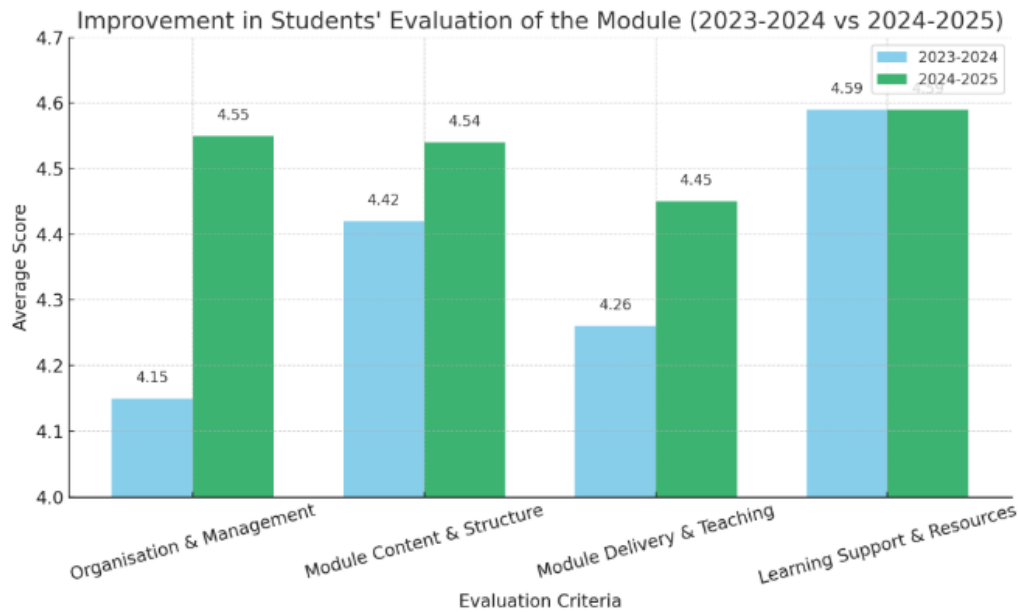


Fig. 20: Bar chart showing the improvement in students' evaluation of the module from the academic year 2023–2024 to 2024–2025.

7.3. Collaborative Learning Cultivates Peer Dialogue and Design Iteration

Collaboration was a consistent theme across all data sources. Group-based design sprints, peer critique circles, and interdisciplinary exercises fostered a dynamic studio culture where students learned from one another.

Observational notes recorded richer in-studio dialogue, with students often referencing peer feedback during presentations. Instructors noted improvements in students' ability to critique constructively and respond to feedback iteratively—key professional competencies in design practice.

Qualitative interviews revealed that students valued the diversity of perspectives offered in group projects. However, some challenges were reported in group dynamics, particularly in unequal contribution levels, suggesting the need for clearer role assignment and peer assessment rubrics.

Despite these issues, collaboration was seen as essential to creative growth.

"Sometimes my groupmates saw things in my design I didn't. That helped me improve and think outside the box," one student remarked.

These findings are consistent with existing literature on the value of social learning and collaborative studio environments in architecture education (Boyer & Mitgang, 1996; Salama, 2015).

7.4. Summary of Key Findings

Theme	Key Outcome
Technology Integration	Improved spatial understanding, visual communication, and iteration frequency.
Student Feedback	Increased motivation, agency, and satisfaction with learning.
Collaboration	Enhanced peer learning, critique quality, and creative development.

8. The methods described are innovative because they:

1. **Integrate Technology:** Utilizing digital tools and a Virtual Learning Environment (VLE) enhances accessibility and engagement, allowing students to learn in ways that suit their preferences.
2. **Focus on Real-World Application:** By connecting curriculum content to authentic, community-linked tasks and real-life case studies, students gain practical experience that directly relates to their future careers.
3. **Encourage Interdisciplinary Collaboration:** These approaches promote collaboration across different fields, enriching the learning experience and exposing students to diverse perspectives.
4. **Emphasize Reflective Practice:** Encouraging students to reflect on their learning process helps them develop critical thinking skills and a deeper understanding of their work.
5. **Support Diverse Learning Needs:** By accommodating various learning styles and offering additional resources, these methods create an inclusive environment that supports all students.
6. **Use of Situated Learning Theory:** This theory emphasizes learning in context, which enhances student engagement and retention by situating knowledge within real-world scenarios.

Overall, these innovations create a more engaging, relevant, and effective learning environment for interior architecture students.

9. CONCLUSIONS AND RECOMMENDATIONS:

9.1. CONCLUSIONS:

This study investigated the impact of innovative pedagogical strategies on teaching and learning in interior architecture modules. By adopting a mixed-methods approach, the research provided both measurable data and rich narrative insights into how blended learning, digital tools, reflective practices, and collaborative models enhance student engagement and performance.

The findings demonstrate that integrating technology into studio learning significantly deepens spatial awareness and iteration, while student-centered strategies such as gamification and reflective journaling foster motivation and ownership of learning. Collaborative structures

were also found to nurture critical feedback loops and encourage creative risk-taking—hallmarks of professional design practice.

Collectively, these innovations humanize the learning experience by acknowledging the emotional, social, and cognitive dimensions of interior architecture education. As the discipline continues to evolve, educators must embrace flexible, experiential, and inclusive pedagogies to equip graduates for a rapidly changing design landscape.

9.2 RECOMMENDATIONS:

9.2.1 Curriculum Design Strategies:

1. Embed Technology Across Modules:

Integrate tools such as CAD, VR, and AR into foundational and advanced modules, not just electives. Provide students with early exposure and continuous opportunities to use digital platforms for design exploration and critique.

2. Incorporate Gamified and Scenario-Based Learning:

Design projects that mimic real-world constraints using time limits, roles, and dynamic user requirements. These methods enhance creativity, adaptability, and engagement.

3. Scaffold Reflective Practice:

Make reflective journaling and process documentation a graded component across all levels. Encourage students to articulate their decision-making, design evolution, and responses to critique.

4. Diversify Assessment Methods:

Move beyond final presentations by including formative assessments, peer evaluations, and process portfolios. This more holistic approach captures the iterative and exploratory nature of design.

5. Foster Cross-Disciplinary Collaboration:

Encourage joint projects with departments such as architecture, engineering, and psychology. These experiences simulate professional contexts and enrich student perspectives.

9.2.2. Faculty Development Initiatives:

- Ongoing Digital Training:

Offer workshops and certifications for faculty in emerging design technologies and pedagogical tools. This ensures instructors remain current and confident in integrating tech into teaching.

- Pedagogical Innovation Labs:

Establish institutional spaces where faculty can experiment with new teaching strategies, share resources, and receive feedback from peers and students alike.

- Mentorship and Reflective Teaching Communities:

Pair early-career educators with experienced design instructors to co-develop lesson plans, observe each other's classes, and engage in structured reflection.

- Inclusive and Adaptive Teaching Practices:

Train faculty in universal design for learning (UDL) principles to better accommodate diverse learning styles, cultural backgrounds, and neurodivergent students.

10. REFERENCES

1. Biggs, J., & Tang, C. (2011). "Teaching for quality learning at university: What the student does (4th ed.)." McGraw-Hill/Society for Research into Higher Education & Open University Press.
2. Anderson, L. W., & Krathwohl, D. R. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. Longman.
3. Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals*. Handbook I: Cognitive domain.
4. Barron, B., & Darling-Hammond, L. (2008). "Teaching for Meaningful Learning: A Review of Research on Inquiry-Based and Cooperative Learning." Edutopia/George Lucas Educational Foundation.
5. Zion, M., & Mendelovici, R. (2012). "Moving from Structured to Open Inquiry: Challenges and Limits." *Science Education International*, 23(4), 383-399.
6. Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). *From game design elements to gamefulness: Defining "gamification"*. Proceedings of the 15th international academic MindTrek conference.
7. Zhu, M., van Winkel, L., Zierer, K., & Steenbeek, H. (2021). "The impact of feedback on students' learning achievement: A meta-analysis". *Educational Research Review*, 33, 100389.
8. Bond, M., Bedenlier, S., Marín, V. I., & Händel, M. (2021). "Emergency remote teaching in higher education: Mapping the first global online semester". *International Journal of Educational Technology in Higher Education*, 18, 50.
9. Li, L., Chen, Y., & Yang, Q. (2016). "The Effects of Feedback Timing on Learning Performance: A Meta-Analysis." *Educational Psychology Review*, 28(4), 541-568.
10. Garrison, D. R., & Kanuka, H. (2004). *Blended learning: Uncovering its transformative potential in higher education*. *Internet and Higher Education*, 7(2), 95-105.
11. Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.
12. Piaget, J. (1972). *The psychology of the child*. Basic Books.
13. Salama, A. M. (2015). *Spatial design education: New directions for pedagogy in architecture and beyond*. Ashgate.
14. Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.
15. Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

1 Kathrein Essam (Student ID: 245297) is a preparatory year student who participated in the "Geometrical Composition" project within the Orthographic Projection module. The project aimed to develop spatial reasoning skills—specifically the ability to mentally manipulate 2D and 3D shapes, a fundamental competency in architecture. Kathrein was supported through experimental teaching methods, including hands-on model-making (moqabs), to help visualize and accurately interpret orthographic projections. As part of the learning process, Kathrein applied these concepts by measuring furniture in her own living room to convert geometric forms into architectural plans and sections.

2 Ali Bahnasawy (Student ID: 241112) is a preparatory year student at the Faculty of Art and Design, The British University in Egypt. He worked on the "Living Room Design" project (Fig. 7) as part of the Orthographic Projection module. The project emphasized spatial reasoning through experimental teaching approaches. Ali

translated geometric compositions into architectural drawings by constructing physical models and measuring actual furniture from his home. This hands-on method helped reinforce his understanding of plan and section drawings within an interior space.

³ Shahd Mohamed, Student ID: 234277, is a passionate foundation year student in the Faculty of Art and Design at The British University in Egypt, specializing in Interior Architecture. Currently working on her project, "Interactive Energetic Dental Clinic," Shahd seeks to blend functionality with creativity to improve user experiences in healthcare environments. With a keen interest in sustainability, she actively participates in design workshops and exhibitions, continuously refining her skills and exploring innovative solutions in contemporary interior design. Through her work, Shahd aims to make a meaningful impact on the field of interior architecture.

⁴ Maryam Magdy Soliman is a dedicated student in her foundation year at the Faculty of Art and Design at The British University in Egypt, specializing in Interior Architecture. She is currently working on an innovative project titled "Interactive Energetic Swarovski Retail Store," which explores the intersection of retail design and interactive technology, aiming to enhance customer engagement through dynamic visual experiences.

Sima Choeb (ID: 231649), a Level 4, Year 2 Interior Architecture student at the Faculty of Art and Design, The British University in Egypt, excelled in a Problem-Based Learning (PBL) project titled "Residential Villa in Belle Vie Compound." Her work showcased strong analytical and design skills, effectively applying interior design standards within the Egyptian context.

⁶ Mennatallh Medhat (ID: 207689), a Level 5, Year 3 Interior Architecture student at the Faculty of Art and Design, The British University in Egypt, participated in an Inquiry-Based Learning project focused on adaptive reuse of heritage buildings. Her project, titled "*Abou Rehab Palace in Al-Menial*," involved extensive site research, cultural and architectural analysis, and engagement with real stakeholders. Through this hands-on experience, Mennatallh demonstrated strong problem-solving, research, and teamwork skills while deepening her understanding of heritage preservation within the Egyptian context.