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Research Article

Bridging The Gap Between Architectural Education and Professional Practice In Egypt: Analytical Perspectives And Framework Development

Noha Gamal Elmenawy[1], Lamis Saad Eldin Elgizawy[2], Marwa Atef Abd Elhady[3]

[1]*Master's Student, Architectural Engineering Department, Mansoura University* *nohagamal1312@gmail.com*
[2]*Ph.D. Professor, Architectural Engineering Department, Faculty of Engineering, Mansoura University* *lamiselgizawi@mans.edu.eg*
[3]*Ph.D.*Associated Professor, *Architectural Engineering Department, Faculty of Engineering, Mansoura University* *marwahade@mans.edu.eg*

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ABSTRACT

Architectural education has historically grappled with a disconnect between academic curricula and the realities of professional practice. This gap is particularly evident in Egypt, where graduates often lack the competencies and experiential foundations necessary to transition smoothly into the professional environment. This paper aims to analyze this educational-practice gap by assessing the current architectural education frameworks in Egypt, evaluating them against internationally recognized standards such as NAAB and RIBA, and proposing a strategic foundation for developing a methodology that aligns academic output with real-world demands. The research adopts a two-phase analytical approach. The first phase presents a theoretical overview of educational quality in architecture, focusing on definitions, accreditation standards, and global models. The second phase critically examines selected Egyptian architectural programs, highlighting structural and curricular deficiencies in meeting professional requirements. The study identifies key gaps, particularly in practical training, interdisciplinary integration, technological fluency, and responsiveness to market needs. Based on these findings, the paper proposes a preliminary framework to enhance architectural education quality in Egypt, emphasizing competence-based design, collaboration with professional bodies, and curriculum reform. The proposed framework serves as a foundation for future empirical validation and adaptation across different academic institutions. This research contributes to the broader discourse on reforming architectural education to ensure it responds more effectively to contemporary challenges and aligns with the evolving needs of the profession and society.

Keywords: Architectural education, professional practice, education quality, NAAB, RIBA, curriculum reform, accreditation standards.

1. INTRODUCTION

In recent decades, architectural education has come under increasing scrutiny for its ability to prepare graduates for professional realities. Although architecture is inherently interdisciplinary – blending design, technology, and social understanding – many curricula remain largely theoretical and disconnected from practice [1].

This disconnect is especially pronounced in developing contexts such as Egypt, where rigid curricula, limited industry engagement, and institutional constraints hinder alignment with global standards and market demands [2].

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Despite reform efforts, Egyptian programs still lack in key competencies such as interdisciplinary collaboration, project management, and digital proficiency [3].

Globally, accreditation systems like NAAB (USA) and RIBA (UK) set benchmarks for professional preparedness through structured educational criteria [4] [5]. Yet, their adoption in local institutions remains uneven and context - dependent.

To address these concerns, this study adopts a comparative analytical approach by examining three architectural education models across different geographic and institutional contexts:

- **MIT Department of Architecture**, United States (global)
- **CAAD (College of Architecture, Art and Design)** at the American University of Sharjah, UAE (regional)
- **AET (Architectural Engineering and Technology)** at Cairo University, Egypt (local)

The goal is to assess their alignment with professional competencies and propose a framework to enhance architectural education in Egypt, drawing from global models while accounting for local challenges and opportunities.

2. LITERATURE REVIEW

Architectural education is inherently multifaceted, integrating design theory, technical knowledge, cultural awareness, and creative practice. Educators and policymakers continue to debate the optimal balance between theoretical instruction and hands-on training in architecture curricula. In regions such as the Middle East and North Africa (MENA), academic programs frequently fail to reflect professional practice realities, leading to misalignment between graduate skills and industry expectations. Furthermore, comparative studies in Egypt highlight persistent gaps in practical competencies despite theoretical depth, underscoring challenges in preparing profession-ready architects [6].

2.1 Defining Quality in Architectural Education

Quality in higher education is a multidimensional concept that reflects how effectively institutions fulfill their academic, professional, and societal responsibilities. Scholars have offered several interpretations to define quality within this context. According to **Harvey (1993)** [7], quality can be understood through five key perspectives: *Exceptional Quality*, which refers to achieving standards that exceed expectations; *Fitness for Purpose*, which ensures that educational outcomes correspond with institutional goals; *Value for Money*, referring to the delivery of education efficiently and effectively; *Transforming Process*, which facilitates personal and professional development in students; and *Stakeholder Satisfaction*, which involves fulfilling the requirements and plans of students, employers, and society.
These perspectives provide a foundational understanding of quality as a dynamic interaction between institutional intent, delivery processes, and stakeholder expectations.
Building on this, **Hoyle (2007)** [8] conceptualizes quality as the relationship between predefined needs whether explicit, implicit, or obligatory and actual performance, measured by achievement levels over time.
The gap that institutions seek to close in order to meet quality standards is highlighted in Figure 1 which shows the relationship between the performance levels attained and the expected outcomes (quality standards).

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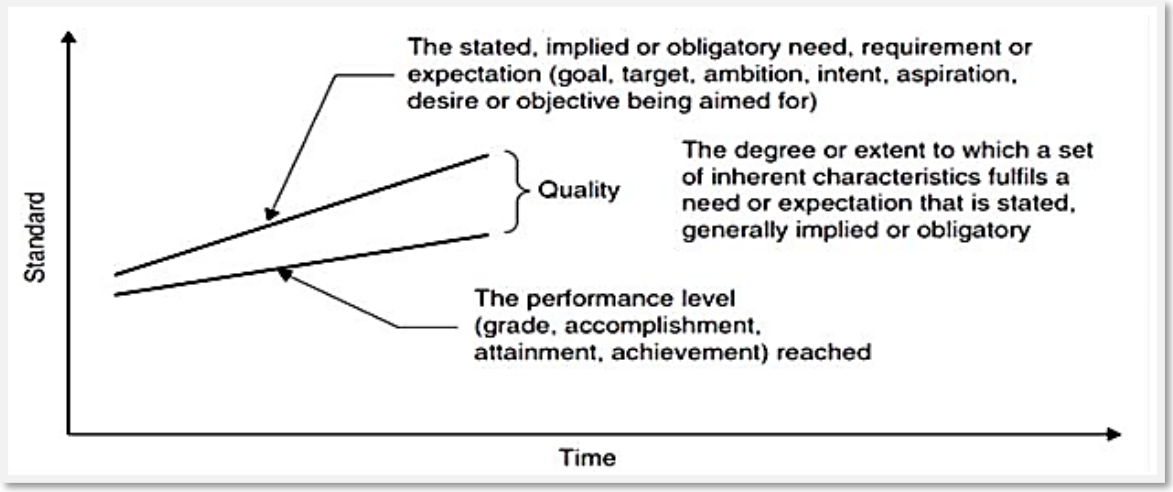

Figure 1 The Concept of Quality as the Alignment Expectations of and Performance

Expanding further, **Stracke (2019)** [9] argues that educational quality stems from the interplay of three fundamental sources: *innovation*, which involves the adoption of modern teaching methodologies and technologies; *history*, which ensures pedagogical continuity through established practices; and *standards*, which provide a common framework for institutions and stakeholders to align their expectations and evaluate outcomes. Together, these perspectives reinforce the idea that quality in education is not a fixed attribute but an evolving process influenced by internal intentions and external demands.

Figure 2 The Three Sources for Learning Quality

2.2 Accreditation and Benchmarking Systems (NAAB & RIBA)

International accreditation bodies offer structured frameworks that define educational standards and ensure alignment with professional requirements. The NAAB 2020 Conditions for Accreditation classify learning outcomes into "Student Criteria" (SC) such as design thinking, technical documentation, environmental stewardship, and professional ethics [4]. Similarly, RIBA's 2021 Education Framework stresses the importance of critical inquiry, climate literacy, digital skills, and practice-based learning [5].

Comparative studies demonstrate that schools accredited by NAAB or RIBA typically exhibit clearer pedagogical strategies, stronger integration across design studios and technical coursework, and deeper engagement with the profession through live projects or internships [10]. Despite the robustness of these frameworks, their adaptation in the MENA context faces challenges arising from localized market demands, institutional autonomy constraints, faculty readiness, and socio-cultural dynamics. Therefore, localization – not mere replication – of international models is essential for effective educational reform, as demonstrated by recent local evidence highlighting substantial gaps between academic curricula and professional practice in Egypt [11].

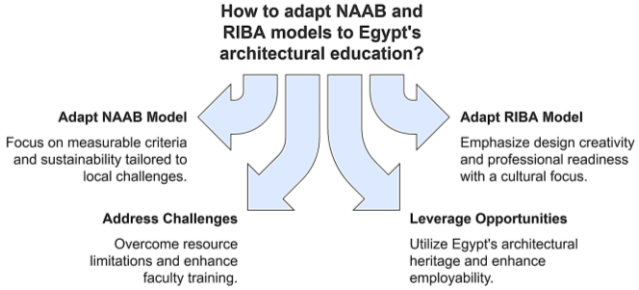

Figure 3 Proposed adaptation pathways for NAAB and RIBA models in the Egyptian architectural education

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2.3 The Practice-Education Gap

The disconnect between architectural education and professional practice commonly referred to as the "theory-practice gap" has long been recognized in academic literature. Schön (1983) described it as a divergence between the abstract, codified knowledge taught in universities and the dynamic, context-based "knowing-in-action" observed in real-world design environments [12]. While foundational studio models remain central to education, scholars argue that they do not fully reflect the realities of practice, which involve collaboration, deadlines, client interactions, and technological integration [10]. In Egypt, this gap is further widened by rigid curricula, limited exposure to industry practices, and minimal integration of digital and interdisciplinary tools. Recent evaluations of local architectural programs reveal that many graduates face challenges in adapting to professional environments, particularly in communication, project management, and applied problem-solving [11]. This underscores the need for more practice-aligned learning experiences and stronger academia-industry partnerships.
A study finds that both academics and practitioners agree that architecture graduates usually join the workforce unprepared for reality, with 50% of those surveyed citing the lack of practical experience as a major obstacle to entering professional practice. This understanding shown in Figure 4 supports the ongoing gap between academic preparation and professional requirements [13]

	All	Practicing Professional	Faculty
Compensation	80%	79%	86%***
Culture of profession	66%	65%	70%*
Interest in arch. field	16%	16%	16%
Interest in different field	30%	30%	28%
Job opps. in arch. field	54%	56%	48%***
Practice experience	50%	51%	44%**
Peers in field	20%	22%	15%***
Mentor in Field	20%	21%	14%***
Preparation in arch education	30%	33%	15%***
Obtaining License	48%	52%	34%***
Personal Circumstances	49%	50%	47%
Observations	*2504*	*2050*	*454*

Figure 4 Barriers to entering professional practice

2.4 Case Studies and Best Practices

Institutions such as the Massachusetts Institute of Technology (MIT) exemplify an integrated, research-driven approach to architectural education. At MIT, design studios are infused with technological experimentation, policy analysis, and real-world engagement, fostering a high degree of professional readiness [14].
Regionally, the College of Architecture, Art and Design (CAAD) at the American University of Sharjah (AUS) presents a distinctive model that balances global academic rigor with regional cultural relevance. The program is accredited by the National Architectural Accrediting Board (NAAB) in the United States, ensuring alignment with internationally recognized standards of architectural education. Its pedagogical structure emphasizes design excellence, interdisciplinary thinking, and community engagement [15].
Meanwhile, the Architectural Engineering and Technology (AET) program at Cairo University follows a more conventional educational framework rooted in national standards. While grounded in strong theoretical foundations, the program has increasingly recognized the need to reform its curricula and integrate practical competencies that better align with professional practice demands [16].
These three case studies local, regional, and international offer comparative insights into how architectural education can evolve to meet global challenges while remaining contextually grounded.

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3. METHODOLOGY

This study adopts a comparative analytical methodology aimed at evaluating the alignment between architectural education and professional practice across three institutions operating at different geographic, cultural, and accreditation contexts. The objective is to assess the degree to which each institution addresses key competencies required by the profession and to extract applicable insights for enhancing architectural education quality in Egypt.

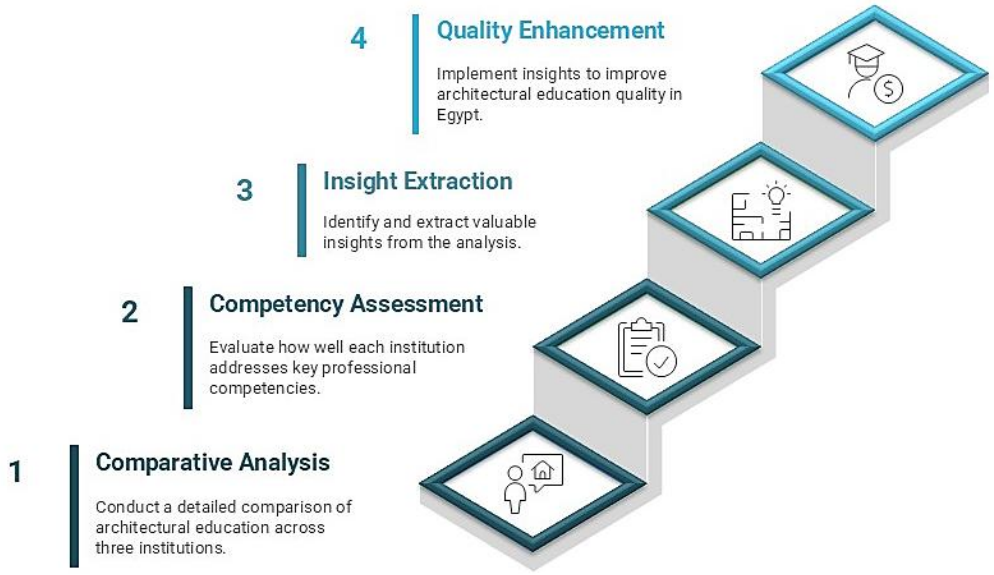

Figure 5 Four-step Comparative Methodology

3.1 Research Approach

The research employs a qualitative comparative case study approach. This method is particularly suitable for exploring differences and similarities across educational systems and for identifying patterns that may inform the development of an improved pedagogical model. The comparison is based on a set of criteria derived from internationally recognized accreditation standards (primarily NAAB and RIBA), as well as core themes extracted from literature on architectural education quality and practice alignment.

3.2 Case Selection

Three institutions were purposefully selected for this study, representing local, regional, and global perspectives:

- Global: Department of Architecture, Massachusetts Institute of Technology (MIT), USA – globally recognized for its innovative, research-driven, and practice-integrated educational model.
- Regional: College of Architecture, Art and Design (CAAD), American University of Sharjah – a NAAB accredited institution offering a Middle Eastern perspective with international academic standards.
- Local: Architectural Engineering and Technology (AET) Program, Faculty of Engineering, Cairo University – one of Egypt's oldest and most established architectural programs, reflecting the conventional national model.

These cases were selected based on their diversity in accreditation status, curricular structure, pedagogical strategies, and integration with professional practice.

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Figure 6 Selected case studies across three levels

3.3 Comparative Framework

To structure the comparative analysis, the study employed a custom analytical framework developed from a synthesis of international accreditation standards (primarily NAAB and RIBA), combined with insights drawn from the literature and contextualized to regional and local realities.
The analysis was guided by seven core criteria, which together reflect the multifaceted competencies required for professional readiness in architecture. These criteria are:

1. **Technical Competencies:**
   Proficiency in architectural design tools, construction systems, environmental performance, and digital technologies.
2. **Business & Professional Skills:**
   Understanding of project management, legal frameworks, budgeting, contracts, and ethical practice.
3. **Soft Skills & Collaboration:**
   Teamwork, communication, problem-solving, leadership, and the ability to work across disciplines.
4. **Industry Engagement**:
   Extent of collaboration with practicing professionals, firms, real-life projects, and internship opportunities.
5. **Accreditation & Licensing Alignment**:
   Degree of alignment with national or international accreditation systems and preparation for licensure.
6. **Practical Preparedness:**
   Readiness of students to transition into practice, measured by hands-on experience and exposure to real-world design challenges.
7. **Curriculum Innovation:**
   Responsiveness to emerging trends in architecture, including sustainability, digital transformation, and new modes of learning.

Figure 7 Core evaluation criteria for comparative analysis

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3.4 Study Limitations

While the study offers a structured comparison, it is limited by the availability of detailed curricular data for each case, especially where full course-level information was not publicly disclosed. In addition, the proposed analytical framework, while rooted in recognized standards, does not claim to be exhaustive and is open to refinement through future empirical application.

4. FINDING AND COMPARATIVE ANALYSIS

This section analyzes the seven core educational components across the three case studies, highlighting areas of convergence and divergence. Rather than ranking the programs, the focus is on extracting insights into how different models address professional readiness, revealing transferable practices and context-specific challenges.

4.1 Technical Competencies

- All three programs emphasize a strong technical foundation through studio-based design and construction knowledge.
- MIT leads in embedding advanced computational tools and fabrication technologies throughout the curriculum.
- AUS balances traditional technical instruction with exposure to BIM, environmental design tools, and construction detailing, supported by its affiliation with the Faculty of Engineering. However, the implementation of digital platforms across studios remains uneven.
- Cairo University benefits from its engineering integration, offering detailed instruction in building systems, though digital integration remains partial.

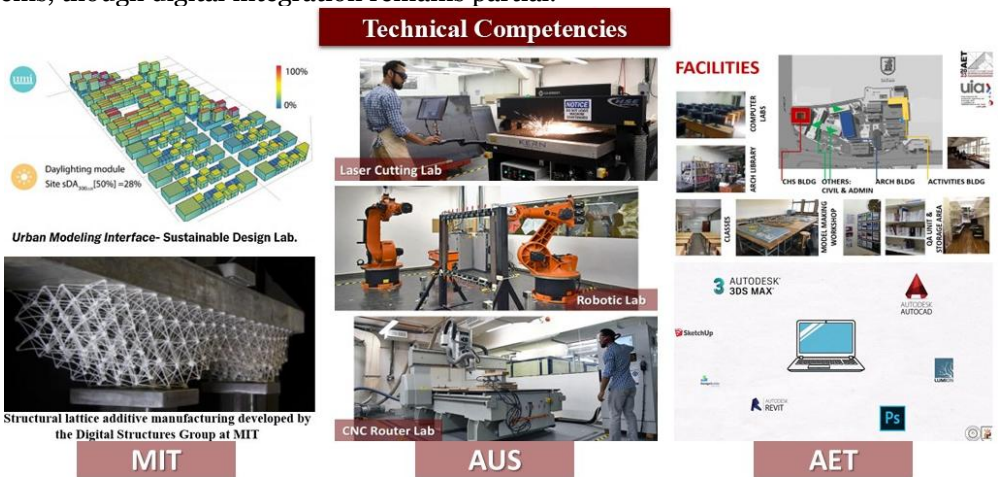

Figure 8 Technical Competencies

4.2 Business and Professional Skills

- MIT introduces legal, ethical, and management frameworks within structured seminars, though budgeting and real-estate economics are underrepresented.
- AUS includes professional practice components, legal education, and limited exposure to business topics via design-build initiatives and showcases, though financial management remains a developmental area.
- Cairo University offers coursework on ethics and regulatory codes but lacks depth in entrepreneurial and financial training.

4.3 Soft Skills and Collaboration

- MIT emphasizes interdisciplinary teamwork through projects with engineering and media departments, nurturing strong communication and leadership.
- AUS integrates soft skills via studio culture, peer interaction, and community engagement initiatives. Collaborative learning is embedded but varies across levels and lacks formal cross-departmental integration.

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- Cairo University fosters communication through studio reviews and team critiques, yet structured interdisciplinary learning is minimal.

Figure 9 Soft Skills and Collaboration

4.4 Industry Engagement

- MIT integrates internships and professional reviews within labs and project-based learning, fostering direct firm engagement.
- AUS bridges academia and practice through mandatory internships, guest critiques, and design exhibitions. While interaction with firms is active, stronger integration with academic output could enhance learning outcomes.
- Cairo University mandates internships, though real-world exposure is often disconnected from academic deliverables.

Figure 10 Industry Engagement

4.5 Accreditation and Licensing Alignment

- MIT benefits from NAAB accreditation and alignment with NCARB, facilitating global licensure.
- AUS holds NAAB accreditation and has signed a memorandum with RIBA, reflecting strong global positioning while maintaining regional regulatory compliance.
- Cairo University meets national accreditation standards and seeks international validation via UNESCO and UIA.

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Figure 11 Accreditation and Licensing Alignment

4.6 Practical Preparedness

- MIT students build portfolios through research studios and advanced labs, enhancing real-world readiness.
- AUS balances portfolio work, model-making, site exposure, and fabrication lab usage, offering solid hands-on experience with room for deeper integration between academic and practical components.
- Cairo University emphasizes practical training through site visits and final-year projects, though lab integration is limited.

Figure 12 Practical Preparedness

4.7 Curriculum Innovation

- MIT exhibits high responsiveness to global trends by incorporating AI, sustainability analytics, and innovation-driven content.
- AUS is positioned between the two – implementing digital and sustainability tools with flexibility, though challenges in consistency and diffusion across studio levels remain.

- Cairo University shows gradual innovation via updated electives and sustainability themes, but curricular change is slow and structurally constrained.

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Figure 13 Curriculum Innovation

To synthesize the findings of the comparative analysis, the seven selected criteria were applied to evaluate the architecture programs at MIT, CAAD (AUS), and Cairo University (AET). The results are presented in the table below, highlighting programmatic strengths, gaps, and levels of alignment with professional practice. This structured comparison draws directly from curriculum analysis, institutional documentation, and program outcomes.

Main Criteria	MIT Architecture Program	AUS Architecture Program	Cairo University (AET Program)
1. Technical Competencies	Advanced integration of BIM, parametric tools, and fabrication labs	Solid technical foundation, exposure to BIM and environmental tools, uneven digital integration	Strong engineering base, partial integration of BIM and digital tools
2. Business & Professional Skills	Ethics and legal aspects well-covered; budgeting underrepresented	Includes legal and practice elements; limited exposure to business models and financial skills	Basic coverage of ethics and contracts; limited business/management focus
3. Soft Skills & Collaboration	Strong collaborative and interdisciplinary culture	Studio-based collaboration present, informal peer learning encouraged, formal interdisciplinarity limited	Studio teamwork encouraged, interdisciplinary links are weak

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4. Industry Engagement	Embedded internships, strong firm partnerships and reviews	Structured internships and firm interaction, better feedback integration needed	Mandatory internships, weak integration with academic output
5. Accreditation & Licensing Alignment	NAAB-accredited, meets ARE standards, globally recognized	NAAB-accredited, RIBA MoU signed, compliant with local licensure	National accreditation, UIA/UNESCO validation sought
6. Practical Preparedness	Advanced labs, research integration, and external exposure	Portfolios, model-making, and labs available, moderate practical depth	Portfolios, site visits, and final project required
7. Curriculum Innovation	Continuously updated, focus on AI, analytics, and innovation	Innovative elements in electives and showcases, lacks curricular consistency	Incremental updates, slow tech integration

5. PROPOSED FRAMEWORK

Drawing on the comparative analysis across local, regional, and global architectural education programs, this study proposes a strategic framework aimed at bridging the gap between academic preparation and professional practice in Egypt. The framework responds to the seven core criteria used in the evaluation and is tailored to the structural, institutional, and cultural context of Egyptian architectural education.

5.1 Framework Objectives

The proposed framework aims to:

- Enhance graduates' readiness for professional environments.
- Integrate technical and practical competencies into the academic structure.
- Align educational outcomes with accreditation and licensing standards.
- Promote curriculum innovation and responsiveness to global trends.
- Strengthen collaboration between academia and the architecture industry.

5.2 Core Pillars of the Framework

The framework is structured around four strategic pillars:

- **Pillar 1: Competency-Based Curriculum Design**
  - Shift from purely theoretical instruction to competency-based learning outcomes.
  - Embed technical, environmental, and digital design skills across all studio levels.
  - Emphasize integrated studio learning to connect design thinking with technical systems.
- **Pillar 2: Industry-Academic Integration**
  - Formalize partnerships with architectural firms, consultancies, and NGOs.
  - Introduce structured internship programs linked to academic credit.
  - Incorporate design-build projects and real-world briefs into studios and electives.
- **Pillar 3: Professional Skills Development**
  - Introduce modules on project management, construction law, contracts, and budgeting.
  - Develop interdisciplinary courses involving business, urban policy, and sustainability.

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- Use simulated professional environments for critique,teamwork, and presentations.

► **Pillar 4: Innovation & Accreditation Alignment**

- Establish internal quality assurance units aligned with NAAB/UNESCO/UIA standards.
- Create flexible curriculum modules that can adapt to emerging technologies (e.g. AI, parametric design, climate-responsive architecture).
- Encourage continuous faculty development through exposure to global pedagogical practices.

5.3 Implementation Phases

The framework can be implemented in **three progressive phases**:

Phase	Focus	Time Frame
Phase I: Diagnostic &Alignment	Evaluate current curriculum, map existing gaps, and align with competency criteria.	Year 1
Phase II: Pilot Integration	Implement changes in selected courses or studios, initiate partnerships and faculty training.	Years 2–3
Phase III: Institutionalization	Expand framework across full program, establish feedback loops, and seek national/international recognition.	Year 4 onward

5.4 Flexibility and Localization

The framework is designed to be modular and adaptive, allowing for integration into different institutions depending on their capacity and readiness for reform. While informed by global models, it maintains sensitivity to local regulatory structures, cultural norms, and institutional constraints.

6. RESULTS AND DISCUSSION

The findings of this study reveal significant disparities in how architectural education programs address the competencies required for successful professional practice. These disparities are shaped not only by institutional resources and accreditation status but also by broader educational philosophies and regulatory frameworks.

- The MIT program stands out for its comprehensive integration of technical, professional, and soft skills within a flexible, innovation-driven curriculum. Its strong engagement with the industry and emphasis on research-oriented design provides students with high levels of preparedness and adaptability.

- The CAAD program at AUS, though operating in a different regional and regulatory context, successfully balances international accreditation (NAAB) with regional relevance. While some limitations exist - such as uneven digital integration and modest interdisciplinary exposure - CAAD's model represents a functional adaptation of global standards to a Middle Eastern context.

- In contrast, the AET program at Cairo University reflects the characteristics of many architecture schools in developing countries: strong theoretical foundations but limited innovation, constrained industry engagement, and underdeveloped professional training. This pattern underscores the need for structured reform to ensure graduates are equipped to contribute effectively in contemporary architectural practice

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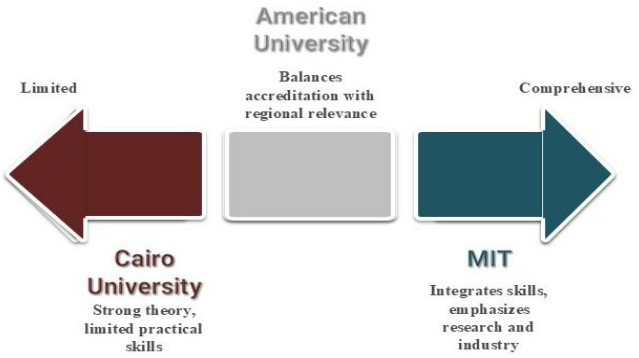

Figure 14 Results and Discussion

6.1 Implications for Egyptian Architectural Education

The comparative insights highlight the urgency of moving beyond incremental curricular updates toward more systemic, competency-based educational models. Specifically:

- **Technical and digital competencies** must be embedded throughout all levels of studio instruction—not isolated in standalone courses.
- **Professional readiness** should be fostered through real-life projects, structured internships, and interdisciplinary exposure.
- **Soft skills**, including teamwork, leadership, and communication, must be treated as formal learning outcomes with measurable indicators.
- **Curriculum innovation** must be driven by data, feedback from practice, and continuous benchmarking against international standards.

The proposed framework in this study addresses these gaps by offering a strategic, phased model that can be adapted by Egyptian institutions according to their needs and constraints.

6.2 Anticipated Challenges

Implementing the proposed framework is not without obstacles. These include:

- **Institutional resistance** to pedagogical change due to bureaucratic rigidity or academic conservatism.
- **Resource limitations**, particularly in underfunded public universities, which may hinder investment in labs, staff development, and external collaborations.
- **Faculty preparedness**, as transitioning to competency-based learning requires training and mindset shifts among educators.
- **Policy alignment**, since accreditation bodies and ministries of higher education may lack the mechanisms or incentives to support flexible reforms.

Despite these challenges, the framework is designed to be modular, allowing for gradual integration and piloting without requiring full institutional overhaul.

6.3 Contribution to the Field

This study contributes to the broader discourse on architectural education reform by:

- Introducing a **multi-scalar comparison** across local, regional, and global contexts.
- Grounding the analysis in **practice-oriented competencies** rather than abstract curricular components.
- Proposing a **context-sensitive framework** that addresses both internal (institutional) and external (professional) quality drivers.

While previous studies have emphasized the gap between education and practice, few have translated this gap into an actionable model rooted in real institutional cases.

CONCLUSIONS

Architectural education in Egypt continues to face a well-recognized gap between academic instruction and professional practice. This study tackled that issue through a comparative analysis of three architecture programs: Cairo University (local), AUS–CAAD (regional), and MIT (international). Using a framework of seven core competencies, the analysis revealed that while MIT and CAAD effectively integrate technical, professional, and collaborative skills, Cairo University's AET program still adheres to a traditional academic model with limited emphasis on industry engagement, practical training, and

innovation. Accordingly, the study proposed a context-sensitive framework based on four strategic pillars - competency-based curriculum design, industry-academic integration, professional skills development, and innovation aligned with accreditation – to enhance the quality and relevance of architectural education in Egypt through a phased and adaptable reform approach.

RECOMMENDATIONS

Based on the findings and proposed framework, the following recommendations are offered:

1. **For Architecture Faculties in Egypt:**
   - Conduct internal curriculum audits to map current gaps against the seven competency areas.
   - Establish partnerships with architectural firms to create structured internship pathways.
   - Introduce interdisciplinary electives and practice-oriented modules in upper- year studios.
2. **For Academic Leadership and Policymakers:**
   - Incentivize curriculum reform through policy frameworks aligned with international standards (e.g., NAAB, UNESCO-UIA).
   - Support continuous professional development for faculty in competency- based education and industry trends.
   - Facilitate flexible accreditation schemes that allow for innovation within national regulatory systems.
3. **For Future Research:**
   - Apply the proposed framework empirically across other Egyptian universities to test its adaptability and effectiveness.
   - Investigate the role of digital transformation (e.g., AI, parametric tools) in reshaping architectural pedagogy.
   - Explore student and employer feedback mechanisms to evaluate graduate readiness.

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