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Rethinking Architectural Education: Why technical skills alone won't secure the future of the profession

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Abstract

The architecture profession demands graduates to be proficient in technical and soft skills. While graduates often demonstrate professionalism, employers report gaps in software use, regulatory knowledge, detailing, leadership, and communication. This paper examines UCSI University's internship program as a platform for experiential learning and industry engagement. The study identifies key strengths and deficiencies in graduate performance through analysis of internship reports and employer evaluations. It also includes competency-based models like TVET and EXCEL, advocating for enhanced integration of technical training and structured soft skills development to align the curriculum with industry expectations better.

Keywords: Experiential Learning; Architectural Education; Industry-driven curriculum; Future-ready Graduates

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1.0 Introduction

The evolving demands of the architecture industry necessitate a transformative approach to curriculum design—one that integrates technical proficiency and the soft skills essential for sustained career growth and professional adaptability. While mastery of technical tools and processes remains foundational, competencies such as communication, collaboration, critical thinking, adaptability, and leadership are increasingly recognized as indispensable in real-world practice. Traditionally, architectural education has prioritized technical instruction, but emerging evidence underscores that this alone does not prepare graduates for dynamic and complex work environments (Hajjaj & Mandysova, 2017). Employers frequently report gaps in communication, leadership, and problem-solving capabilities, significantly hindering graduates' ability to integrate into multidisciplinary teams and advance in their careers (Mazlan et al., 2024).

As globalization, technological advancement, and workforce diversification reshape the architectural profession, the demand for well-rounded graduates equipped with technical expertise and employability skills continues to grow (Madar & Buntat, 2011). Rasul et al. (2013) highlight the importance of combining critical thinking, domain-specific technical skills, and interpersonal competencies for

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effective professional engagement. The disconnect between academic preparation and industry expectations remains particularly evident in architecture, where traditional curriculums often underemphasize soft skill development.

In response, this study critically evaluates the internship program at UCSI University, which aims to bridge this gap by immersing students in real-world industry settings. Through internships, students gain firsthand exposure to workplace demands, cultivating technical and soft skills. A content analysis of internship reports and employer feedback identifies persistent strengths in technical execution but recurring weaknesses in communication and leadership. The study investigates competency-based learning frameworks such as TVET and IDEAL to address these shortcomings, proposing a revised curriculum model centred on experiential learning, industry engagement, and holistic skill development. The objective is to formulate an educational framework that more effectively prepares architecture graduates to meet contemporary industry standards and thrive in diverse professional contexts.

2.0 Literature Review

2.1 Education and Competency Requirement

Education plays a crucial role in shaping individuals, fostering discipline, and preparing them for professional success. While academia and industry have distinct goals, they maintain a symbiotic relationship. The modern job market increasingly favours graduates with diverse skill sets over narrow specializations, requiring academic training to adapt to evolving workforce demands. In architecture education, traditional curricula tend to focus heavily on technical skills, which may inadvertently limit the development of essential soft skills. To remain competitive, graduates must develop uniquely human skills that artificial intelligence cannot replace. However, academic curricula often fail to equip them with essential workplace competencies, leading employers to highlight deficiencies in communication, problem-solving, and teamwork (Malik & Venkatraman, 2017). To address this gap, universities incorporate research, industry collaborations, and internships, yet the misalignment between academic preparation and industry expectations persists (Larkin, 2014).

2.2 Experiential Learning

Experiential learning enables students to gain knowledge, skills, and values through direct engagement with real-world situations. Traditional teacher-centered instruction is increasingly supplemented by participatory learning environments that enhance active engagement and critical thinking (Che et al., 2021). In the context of architecture education, participatory learning may include studio-based learning, collaborative projects, and internships that combine theoretical concepts with real-world applications. This approach ensures students apply theoretical knowledge to practical challenges, improving their problem-solving abilities and professional readiness (Boggu & Sundarsingh, 2019; Huang & Jiang, 2020).

2.2.1 Experiential Learning in Architecture

Given the increasing demand for graduates who are not only technically proficient but also equipped with essential workplace competencies, it is imperative to re-examine the foundational goals of architectural education. Experiential learning, particularly through internships, plays a pivotal role in preparing students for professional practice. Historically, the architectural profession has relied on apprenticeship models to cultivate skilled practitioners, as seen in the careers of Le Corbusier, Ludwig Mies van der Rohe, and Frank Lloyd Wright, who trained under master architects (Szumlic, 2017).

Modern internships serve a similar function by bridging the gap between academia and industry, enabling students to apply theoretical knowledge in real-world contexts. These experiences enhance technical skills, communication, problem-solving, and teamwork while also offering valuable networking opportunities and insights into potential career pathways.

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2.2.2 Kolb's Experiential Learning Theory

Kolb's Experiential Learning Theory (ELT), illustrated in Figure 1, provides a valuable framework for understanding how architecture students develop professional competencies through real-world experience. The model consists of four cyclical stages: Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC), and Active Experimentation (AE).

In the CE stage, students engage directly with real-world projects, site visits, and studio or internship tasks, gaining hands-on exposure to the complexities of architectural practice. This is followed by RO, where they reflect on challenges and successes, often guided by feedback from supervisors and peers. This reflection helps them identify areas for improvement and refine their approach.

Next, AC allows students to connect practical experiences with theoretical knowledge and design principles. They begin to frame their work within broader architectural, historical, and environmental contexts. Finally, in AE, students test new ideas and strategies in future projects, building adaptability, creativity, and confidence.

In architecture education, especially internships, this cyclical process helps students move from conceptual design thinking to practical application. Kolb's model highlights the dynamic interplay between theory and practice, reinforcing the importance of experiential learning in producing technically skilled, reflective, and professionally prepared graduates.

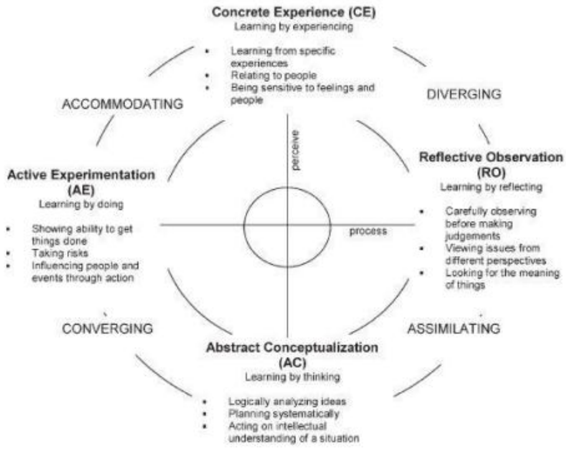

Fig. 1: Kolb's Experiential Learning Theory
(Source: Kolb, D.A., 1984)

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2.2.3 Competency-Based Education in Architecture

Competency-Based Education (CBE), shown in Figure 2, prioritizes an outcomes-focused approach, where time is seen as the variable, while performance is the constant (Stafford 2019). Malaysia's Technical and Vocational Education and Training (TVET) integrates formal, informal, and non-formal education, supporting SDG 4: Inclusive Education (Elfert, 2019). TVET's certificate, diploma, and modular training programs develop specialized skills like BIM and Sustainable Building Practices.

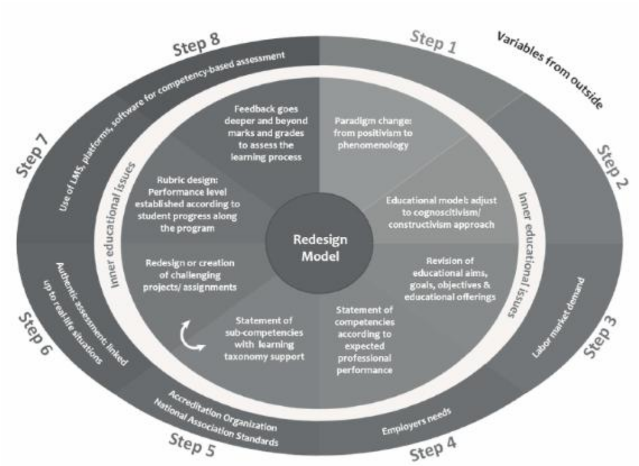

Fig. 2: Competency-based learning redesign model (CBL-RM)
(Source: : Rodriguez, I., & Gallardo, K.,2017)

CBE is central to Malaysia's Technical and Vocational Education and Training (TVET) system, which provides diverse learning pathways to develop a skilled workforce. TVET integrates formal, informal, and non-formal education to equip students with essential employment skills, supporting Sustainable Development Goal (SDG) 4 for inclusive education and lifelong learning (Elfert, 2019). It plays a key role in workforce development, ensuring a steady supply of skilled professionals to drive national economic growth (Hamid et al., 2023).TVET in the Malaysian Education System is shown in Figure 3.

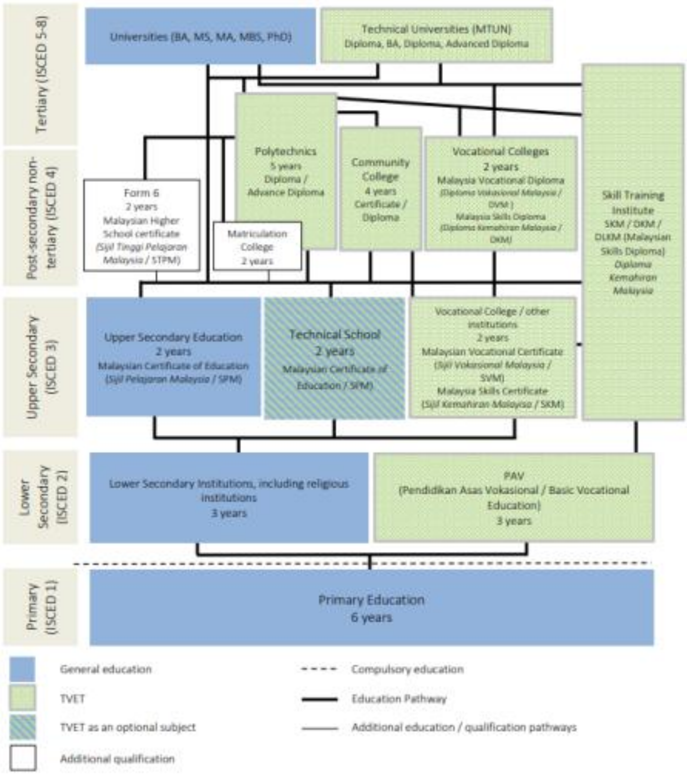

Fig. 3: TVET In the Malaysian Education System
(Source: : Hamid et al., 2023)

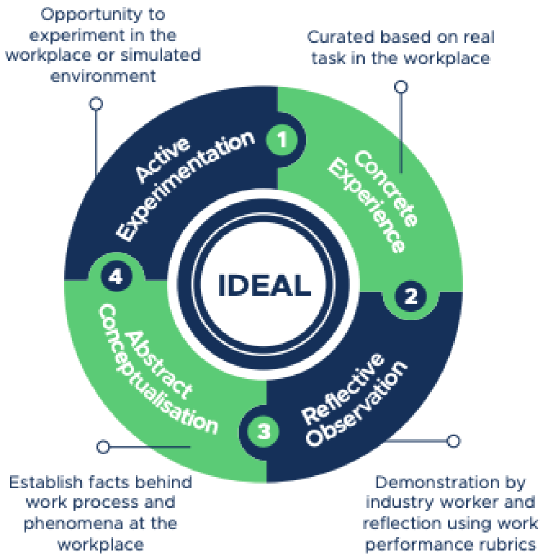

Fig. 4: IDEAL Framework for Industry-Driven Experiential Learning.
(Source: EXCEL Playbook by Ministry of Higher Education, 2021)

In architecture, TVET extends beyond certificates, including diplomas, advanced diplomas, and modular certifications. Certificate programs focus on fundamental skills and serve as a pathway to diploma studies. Modular skills certification targets specific expertise, such as Building Information Modeling (BIM) and Sustainable Building Practices, to support upskilling and reskilling. To align education with industry needs, this research also introduces the IDEAL (Industry-Driven Experiential Learning) framework (Fig.4). Unlike the EXCEL curriculum, which integrates experiential learning through Service-Learning (SULAM), Work-Based Learning (WBL), internships, leadership training, and sustainability projects, IDEAL prioritizes direct industry engagement. A major challenge in higher education is the mismatch between graduate competencies and industry expectations, often due to outdated curricula and limited collaboration. Embedding industry-driven competencies from the start can reduce skill gaps and better prepare graduates for employment.

With the growing demand for TVET, Malaysia must shift from a university-centric model to an education system that values academic and vocational pathways equally. The Shared Prosperity Vision 2030 recognizes TVET essential for inclusive, sustainable national development. By embedding experiential learning into competency-based programs, TVET can continue to provide industry-relevant training, support economic growth, and strengthen Malaysia's skilled workforce.

This literature review establishes the foundation for this study's proposed framework, which aims to realign architecture education with current industry demands through experiential and competency-based strategies.

3.0 Methodology

A mixed methods approach was adopted to systematically examine internship evaluation forms and employer feedback, aiming to assess the workplace competencies of architecture graduates. This design was selected to capture the quantitative measures of student capabilities and the qualitative contextual insights drawn from employer observations.

Seventy-three internship evaluation forms were collected from final-year architecture students who had completed their industrial training across various firms during the academic year 2023–2024. These forms provided structured and unstructured feedback on student performance throughout their internship. The evaluation forms consist of two primary components: Section 2 (Quantitative

Assessment), where employers rate specific soft skills using a 5-point Likert scale (1 = Poor, 5 = Excellent), and Section 8 (Open-Ended Comments), where qualitative feedback is provided regarding interns' performance, strengths, and areas needing improvement.

The study adopted a framework of 15 soft skills to identify the most relevant competencies, as shown in Table 1. Employers rated each skill on a Likert scale from 1 to 5, allowing for statistical comparison. A mean score (MS) analysis was applied to categorize the skills into three levels:

- Highly significant (MS ≥ 4.20)
- Moderately significant (3.50 ≤ MS < 4.20)
- Least significant (MS < 3.50)

Table 1. Evaluation form

No.	Assessment
1	After a reasonable training period, the student was able to carry out the responsibilities assigned.
2	The student appeared to handle most of the problems or conflicts that arose during the co-op/internship effectively.
3	The student demonstrated initiative in handling a problem or special project that occurred during the co-op/internship.
4	The student was reliable in coming to work on time and returning to work promptly from any scheduled breaks.
5	The student was more concerned about finishing a task or solving a problem before leaving for the day rather than if it was quitting time.
6	The student was able to find useful activities with which to occupy him or herself if they found a drop in work responsibilities.
7	The student demonstrated professional conduct throughout the internship experience.
8	The student maintained an enthusiastic demeanor throughout the co-op/internship experience.
9	The student was able to maintain a productive working relationship with fellow employees.
10	The student was receptive to constructive criticism
11	The student demonstrated leadership abilities.
12	The student was appropriately dressed and groomed for his or her position
13	The student interacted effectively with customers and/or clients
14	The student seemed to be adequately educated or prepared for the work required.
15	The student was responsive to the supervisor's feedback.

(Source: Author, 2024)

In addition to the structured assessment, Section 8 of the evaluation form includes open-ended feedback on the student's overall performance, particularly on workplace adaptability, professionalism, and technical skills. As the form does not directly assess hard skills such as architectural design proficiency, software usage, or detailing qualitative employer feedback, it was carefully examined to identify indirect references to these competencies. Content analysis was initially used to categorize the qualitative data. This was followed by thematic analysis to identify recurring patterns. The feedback was organized under three core themes:

1. Student strengths (competencies that align well with industry expectations)
2. Areas for improvement (skills that require further development)
3. Emerging industry expectations (new skill demands based on employer insight)

Triangulation was applied to enhance validity and reliability by cross-referencing the structured quantitative ratings in Section 2 with the qualitative insights from Section 8. This process enabled a comprehensive understanding of the skill gaps among architecture graduates and the extent to which their soft skills align with current industry needs. A key limitation of this study is its reliance on the available evaluation form, which does not directly assess hard skills.

4.0 Findings

The study's findings indicate that while students demonstrate strong technical skills and academic knowledge, significant gaps remain in key professional attributes such as leadership, client interaction, and problem-solving. This section delves deeper into these strengths and areas for improvement, informed by both quantitative ratings and qualitative employer feedback.

4.1 Student's Interpersonal and Professional Attributes

In Section 2 of the evaluation forms, 15 interpersonal and professional attributes were rated using a Likert scale. The results show that students generally display high professionalism, workplace adaptability, and responsiveness to feedback. Key strengths identified include responsiveness to supervisor feedback (Mean Score = 4.63), maintaining productive relationships (Mean Score = 4.45), and punctuality and reliability (Mean Score = 4.39). These strengths are supported by qualitative feedback, where employers praised students for their professionalism, collaboration, and positive attitude during internships.

However, weaknesses were also apparent. Client interaction received the lowest rating (Mean Score = 2.76), with multiple employer comments highlighting students' discomfort and lack of confidence in engaging with external stakeholders. Leadership (Mean Score = 3.50) and initiative during downtime (Mean Score = 3.92) were also identified as weak points, with employers noting that students were hesitant to take proactive roles or make decisions independently, underscoring a gap in self-directed behaviour and leadership readiness.

Problem-solving was rated moderately (Mean Score = 4.18), but employer feedback revealed that students struggled to apply problem-solving skills in complex, real-world scenarios. This suggests that students may perform well in controlled academic environments but face challenges when navigating dynamic professional contexts.

Table 2. Employer Feedback on Graduate Readiness

Value Attribute	Mean Scoring (MS)	Category	Rank
After a reasonable training period, the student was able to carry out the responsibilities assigned.	4.39	Highly Significant Attributes	5
The student appeared to handle most of the problems or conflicts that arose during the co-op/internship effectively.	4.00	Moderately Significant Attributes	12
The student demonstrated initiative in handling a problem or special project that occurred during the co-op/internship.	4.18	Moderately Significant Attributes	10
The student was reliable in coming to work on time and returning to work promptly from any scheduled breaks.	4.39	Moderately Significant Attributes	4
The student was more concerned about finishing a task or solving a problem before leaving for the day rather than if it was quitting	4.24	Moderately Significant Attributes	8
The student was able to find useful activities with which to occupy him or herself if they found a drop in work responsibilities.	3.92	Less Significant Attributes	13
The student demonstrated professional conduct throughout the internship experience.	4.26	Moderately Significant Attributes	7
The student maintained an enthusiastic demeanor throughout the co-op/internship experience.	4.32	Highly Significant Attributes	6
The student was able to maintain a productive working relationship with fellow employees.	4.45	Highly Significant Attributes	3
The student was receptive to constructive criticism	4.21	Moderately Significant Attributes	9
The student demonstrated leadership abilities.	3.50	Less Significant Attributes	14
The student was appropriately dressed and groomed for his or her position	4.53	Highly Significant Attributes	2
The student interacted effectively with customers and/or clients	2.76	Low Significance.	15
The student seemed to be adequately educated or prepared for the work required.	4.13	Moderately Significant Attributes	11
The student was responsive to the supervisor's feedback.	4.63	Highly Significant Attributes	1

(Source: Author,2025)

4.2 Employer's Feedback

The open-ended employer feedback was thematically analyzed into three categories: student strengths, areas for improvement, and future industry expectations. This qualitative insight complements the quantitative scores and provides a deeper understanding of workplace readiness, particularly the growing realization that technical proficiency alone is insufficient.

Employers consistently praised students for their punctuality, eagerness to learn, and reliability in handling assigned tasks, in line with attributes with high quantitative scores. However, as shown in Table 3, recurring concerns highlight critical gaps in non-technical areas such as leadership, communication, and situational awareness. These competencies are essential for navigating the realities of professional architectural practice.

Table 3. Employer Feedback on Graduate Readiness

Key Employer Feedback	Common Issue Identified
Situational Awareness	Difficulty in understanding real-world project workflows
Leadership and Communication	Lack confidence in decision-making and public speaking
Technical Knowledge	Limited understanding on building codes, authority approvals and regulations
Software Proficiency	Struggles with BIM and architectural software
Problem Solving & Initiative	Hesitation in proactively finding tasks during downtime
Internship Duration	3-month period too short for effective learning and contribution

(Source: Author, 2025)

Employers noted that the three-month internship period is often insufficient for meaningful growth, as students spend much time adjusting to workflows rather than applying or expanding their skills. While soft skills such as punctuality and enthusiasm are appreciated, they are not substitutes for critical workplace competencies like leadership, adaptability, and confident client interaction.

This feedback underscores a crucial challenge in architectural education: the overemphasis on technical training at the expense of interpersonal, decision-making, and contextual skills. To ensure graduates are future-ready, curriculum reform must move beyond technical mastery and embed leadership development, real-world scenario engagement, and longer-term industry exposure. Only then can architectural education produce professionals who are equipped not just to draw, but to lead, communicate, and innovate in a rapidly evolving industry.

5.0 Discussion

The findings of this study reveal strengths and gaps in students' workplace performance, particularly in relation to their proficiency and adaptability in professional settings. While students demonstrate certain competencies, critical deficiencies persist in areas that directly impact their workplace effectiveness. These findings align with existing literature on graduate readiness in architectural education.

5.1 Technical Proficiency and Industry Readiness

Employers consistently highlight deficiencies in graduates' technical proficiency, software skills, regulatory understanding, and construction detailing, limiting their ability to contribute effectively to project documentation and design development. These concerns align with Mazlan et al. (2024), who found that many graduates require extensive on-the-job training despite employer expectations for industry-ready skills. Similarly, Karimi and Farivarsadri (2024) emphasize the importance of collaboration and software proficiency, noting that gaps in these areas hinder graduates' professional performance.

Survey results indicate that employers rate graduates lower in critical areas like Building Information Modeling (BIM), authority regulations, technical detailing, and construction knowledge. These weaknesses reflect the inadequate integration of industry tools and real-world workflows within architectural education. Graduates' insufficient understanding of statutory compliance, submission standards, and technical drawing conventions further supports the argument that the curriculum overly focuses on conceptual development at the expense of execution and delivery.

The literature suggests that hands-on learning can bridge these gaps. Brown and Smith (2021) and Håkansson Lindqvist, Mozelius, and Jaldemark (2024) argue that hybrid models and industry collaborations would enhance students' technical capabilities. However, without a strong technical foundation before internships, students' learning opportunities in professional settings become limited. Shanthi Priya, Shabitha, and Radhakrishnan (2020) advocate for participatory design studios to strengthen technical execution while maintaining creativity.

Data highlights the need to integrate core technical competencies within design studios rather than isolating them in separate modules. Embedding software training, authority compliance, and construction documentation in studio projects would allow students to apply these tools contextually. Additionally, early exposure to real-world project workflows through industry collaboration or mentorships would help students develop technical fluency in a more applied and reflective manner.

5.2 Internship Duration and Workplace Integration

Employers express concerns about the short duration of internships, arguing that students often do not have enough time to acclimate to office procedures before their internships end. This aligns with Gomez et al. (2023), who suggest that longer internships or structured apprenticeships would provide students with a deeper understanding of professional responsibilities.

Comparative studies highlight alternative internship models. Mabungela and Mtiki (2024) report that work-integrated learning programs offer progressive exposure to workplace environments, refining both technical and soft skills. Similarly, the design-build model integrates internships with ongoing academic work to ensure continuous professional development. Adopting such models in Malaysian architectural education could offer a smoother transition between academia and industry, enhancing workplace readiness.

5.3 Alignment with Architectural Education Models

The study's findings suggest a misalignment between academic training and employer expectations, a challenge prevalent in architectural education globally. The current curriculum prioritizes conceptual design and theory but inadequately prepares students for technical execution and real-world constraints. The gap between the supply and demand for competent graduates is becoming a central issue for employer performance (Husain et al., 2020). To address this gap, improvements should include stronger integration of technical training within design studios, extended internships, and enhanced academia-industry collaboration, ensuring employer feedback informs curriculum development.

Strengthening the alignment between academia and industry is crucial for improving graduate employability. Integrating technical training within design studios, extending internship durations, and fostering closer industry collaboration are key steps toward addressing the gaps in students' technical proficiency and professional readiness.

6.0 Conclusion and Recommendation

Enhancing collaboration between academia and industry is essential to improving graduate employability in architecture. Bridging the gap between theoretical instruction and professional expectations requires ongoing dialogue and knowledge exchange. While technical training remains foundational, employer feedback consistently highlights deficiencies in students' situational awareness, leadership, communication, and problem-solving skills, all of which are critical for success in the profession.

Periodic syllabus review is necessary to ensure alignment with evolving industry needs. Graduates must be proficient not only in tools like BIM and construction detailing but also in understanding regulatory frameworks and workflows. However, technical expertise alone is insufficient. The profession demands adaptability, confidence in decision-making, and the ability to collaborate and communicate across disciplines.

Experiential learning approaches, such as project-based studios, real-world design challenges, and client-facing engagements, cultivate the interpersonal and cognitive skills required in practice. Adopting industry-driven models like TVET and IDEAL can enhance this process by integrating competency-based learning and reducing post-graduation skill gaps.

Current three-month internships are often too brief for students to gain meaningful industry exposure. Structured, longer-term placements or embedded workplace learning modules are needed to improve readiness. Entrepreneurship education can also empower graduates to create opportunities rather than rely solely on employment.

To truly prepare future architects, universities must rethink education through stronger industry collaboration, curricular integration of real-world experiences, and the deliberate cultivation of leadership and innovation skills. These reforms support Sustainable Development Goal 4: Quality Education and are key to producing future-ready graduates who can lead, adapt, and thrive rather than simply execute technical tasks.

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Paper Contribution to Related Field of Study

This study highlights the gap between architecture education and industry expectations, emphasizing the need for stronger alignment to enhance graduate skills and readiness. By integrating experiential learning, competency based training, and industry collaboration, the research supports Sustainable Development Goal 4: Quality Education in preparing students for professional practice. The findings advocate for comprehensive curriculum revisions, offering a foundation for future reforms that can better equip architecture graduates for the evolving demands of the profession.

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