

Bridging the Gap: Aligning Academic Programs with Labor Market Demands in Saudi Arabia a Case Study of Dar Al-Uloom University and Lessons from Global Benchmarks

Mohammad Hamdan* and Mustapha Benkharafa

Department of English, University Preparatory Program Dar Al Uloom University, Saudi Arabia

*Corresponding Author

Mohammad Hamdan, Department of English, University Preparatory Program Dar Al Uloom University, Saudi Arabia.

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Abstract

This study examines the alignment between university curricula and labor market needs in Saudi Arabia, focusing on Dar Al-Uloom University (DAU). Using a mixed-methods approach that combines national labor statistics, modeled graduate outcomes, a structured employer survey, and a systematic curriculum audit, the research identifies a persistent skills mismatch affecting non-STEM programs. Employers reported deficiencies in applied problem-solving, digital competencies, and workplace readiness despite graduates' theoretical knowledge. Benchmarking DAU against leading national institutions highlights process-level differences, especially the institutionalization of work-integrated learning and outcomes-focused quality assurance. The paper proposes a pragmatic strategic framework for curriculum modularization, mandatory work-integrated learning, enhanced industry co-creation, and an outcomes-oriented QA dashboard. These recommendations aim to provide a replicable pathway for Saudi higher education institutions to accelerate alignment with Vision 2030 priorities. The study contributes both empirically and methodologically by demonstrating how international benchmarking tools can be adapted to produce actionable, context-sensitive reforms in a Gulf higher education setting.

Keywords: Academic Alignment, Saudi Labor Market, Vision 2030, Graduate Employability, Skills Mismatch, Benchmarking, Higher Education Policy

1. Introduction

Higher education systems worldwide are under increasing pressure to demonstrate their contribution to national economic objectives by producing graduates who are not only knowledgeable but also employable. In Saudi Arabia, this pressure has been formalized within Vision 2030, which explicitly links human capital development to the nation's economic diversification strategy. The demand for graduates with practical skills, digital fluency, and adaptability has increased, resulting in a critical policy question: how well do existing university programs align with contemporary labor market needs? Dar Al-Uloom University (DAU) provides a pertinent case study. As a private university operating within

a rapidly transforming national economy, DAU faces both the opportunities and challenges associated with aligning curricula to employer demand. Anecdotal reports and limited institutional tracking suggest that while DAU performs well in certain technical disciplines, several humanities and social science programs record disproportionately high rates of underemployment. This raises concerns about curricular design, pedagogical approaches, and the depth of industry integration.

This paper situates DAU's experience within broader international debates about employability and curriculum relevance. The literature identifies a persistent tension between the traditional

'transmission' model of higher education—focused on disciplinary knowledge—and emerging expectations for applied, interdisciplinary, and transferable skills. Drawing on benchmarking theory and recent studies in employability, this study adopts a mixed-methods approach to diagnose misalignment, identify institutional practices associated with stronger graduate outcomes, and propose a phased strategy for reform tailored to the Saudi context. The study addresses four research questions:

- (1) To what extent do DAU graduate outcomes align with labor market demands shaped by Vision 2030?
- (2) What institutional processes explain differences between DAU and benchmark Saudi universities?
- (3) How do DAU's experiences relate to international evidence on employability?
- (4) What evidence-based policy and curricular interventions can improve alignment?

By answering these questions, the paper aims to offer both practical guidance for DAU and lessons relevant to similar institutions across the Gulf region.

1.1. Literature Review

The employability challenge is a global phenomenon. Scholars have long noted that higher education institutions must balance the pursuit of disciplinary knowledge with the need to prepare students for work. characterized this tension as persistent and multifaceted, pointing out that the slow rate of curricular change often lags behind rapid labor market transformations. Similarly, argued that the Fourth Industrial Revolution places new premiums on digital literacy, complex problem-solving, and social intelligence, which traditional curricula may not adequately address [1,2]. Recent employability scholarship emphasizes pedagogies that develop graduate attributes through authentic experiences. Promote 'pedagogies for employability' that integrate career development, experiential learning, and reflective practice into program design [3]. similarly highlights the limitation of classroom instruction in fostering workplace readiness, underscoring the need for work-integrated and project-based approaches [4].

Work-Integrated Learning (WIL) has been widely recognized as an effective mechanism to bridge the theory-practice divide. Synthesizes evidence from multiple national contexts showing that sustained internships, co-operative education, and industry-linked project work improve employment outcomes and employer satisfaction [5]. Further argues that strategic industry relationships where partners co-design curricula and participate in teaching produce programs that are agile and closely aligned with evolving occupational requirements [6]. Benchmarking is a strategic tool that offers actionable insights beyond descriptive comparisons. Describes effective benchmarking as the systematic transfer of best practices, emphasizing process analysis rather than superficial metric matching [7]. International initiatives like the OECD's AHELO feasibility study demonstrate the complexity of cross-national benchmarking but also the value of focusing on demonstrable learning outcomes [8]. The Saudi context intensifies these global pressures. Vision 2030 has created an urgent national

imperative to localize knowledge-intensive industries and foster a workforce capable of driving economic diversification.

National studies indicate persistent skill gaps: employers prioritize practical, digital, and interpersonal competencies often perceived as lacking among graduates (Alqahtani, 2019). Governmental QA agencies, such as ETEC, have strengthened accreditation frameworks but critics argue that input-based compliance alone cannot guarantee meaningful graduate outcomes [10]. Taken together, the international and national literatures point to three interrelated levers for reform:

- (1) embedding WIL and authentic assessment across curricula.
- (2) establishing long-term, co-creative partnerships with industry.
- (3) shifting QA towards outcomes-focused metrics that value employment and employer feedback.

These levers provide the conceptual scaffold for the empirical analysis that follows. Of course. Based on the provided study abstract, introduction, literature review, and methodology, here is a synthesized Problem Statement, Study Significance, and a refined set of Research Questions.

1.2. Problem Statement

Dar Al-Uloom University operates within a competitive national landscape where its ability to attract students and secure funding is increasingly tied to its graduates' success in the labor market. Despite this, evidence suggests a significant skills mismatch, where the knowledge and competencies imparted by several of its academic programs, particularly in non-STEM fields, are not fully aligned with the requirements of employers in the Vision 2030 economy. This misalignment manifests in the suboptimal outcomes of graduate underemployment and prolonged transition-to-work periods. The root causes, which may include curricular rigidity, pedagogical traditions, and superficial industry links, require systematic investigation.

1.3. Significance of the Study

This study is critically significant as it directly addresses the urgent national priority of aligning higher education with economic diversification goals under Vision 2030. It moves beyond identifying a well-known problem to providing an actionable, evidence-based framework for reform, offering value across educational, economic, and academic domains. **For Dar Al-Uloom University and analogous Saudi institutions**, this research delivers a vital diagnostic tool and a clear strategic pathway. It moves past anecdotal evidence to provide a rigorous, data-driven analysis of specific curricular misalignments and skills gaps. The proposed framework, which includes curriculum modularization, mandatory work-integrated learning, and enhanced industry co-creation, offers university leadership and administrators a practical blueprint for transformation. This empowers them to make targeted reforms that will directly enhance graduate employability, improve institutional performance metrics, and strengthen their reputation in a competitive educational landscape.

At the national policy level, the study provides invaluable insights for government bodies, including the Education and Training Evaluation Commission (ETEC). By benchmarking a Saudi university against both leading national and global institutions, the analysis shifts the conversation from simple descriptive statistics to a nuanced, process-oriented understanding of what drives successful graduate outcomes. The findings can directly inform the National Transformation Program and guide agencies like ETEC in refining accreditation standards to be more outcomes-focused, ensuring that quality assurance mechanisms effectively support the human capital development objectives central to Vision 2030. The significance extends decisively to *the Saudi economy and private sector employers*.

By providing a replicable model for closing the skills gap, this research contributes to cultivating a more job-ready national workforce. Employers stand to benefit from a pool of graduates equipped with the applied problem-solving, digital competencies, and workplace readiness they require. This alignment is a fundamental prerequisite for increasing productivity, fostering innovation, and achieving the sustainable private sector growth essential for the kingdom's long-term economic diversification and stability. Finally, the study makes substantive methodological and theoretical contributions. It demonstrates the practical application of international benchmarking tools and a mixed-methods approach, providing a replicable model for institutional audits across the Gulf region. Theoretically, it enriches global literature on employability by testing established concepts like Work-Integrated Learning within Saudi Arabia's unique socio-economic context, thereby identifying context-specific facilitators and barriers to meaningful educational reform.

1.4. Research Questions

In alignment with Saudi Arabia's Vision 2030, which underscores the strategic imperative of bridging the gap between higher education outcomes and labor market demands, this study critically examines the alignment between Dar Al-Uloom University's (DAU) graduate competencies and the evolving needs of the national economy. By addressing the persistent concern of skills mismatch particularly in applied problem-solving, digital literacy, and workplace readiness the research seeks to provide an evidence-based understanding of the specific areas where discrepancies exist. Furthermore, it explores institutional processes such as curriculum design, work-integrated learning (WIL), and industry partnership models to uncover the systemic factors contributing to these gaps. Through comparative benchmarking with leading Saudi universities and the integration of international best practices, the study aims to formulate contextually appropriate strategies for enhancing graduate employability. Finally, it proposes the development of an outcomes-oriented quality assurance dashboard to ensure continuous monitoring and sustainable improvement.

Accordingly, the study is guided by the following research questions, which collectively aim to identify, explain, and address the underlying causes of skills mismatch while offering sustainable, evidence-based solutions for institutional reform.

1. To what extent and in what specific areas (e.g., applied problem-solving, digital competencies, workplace readiness) does a skills mismatch exist between the outcomes of Dar Al-Uloom University's graduates and the demands of the Saudi labor market as shaped by Vision 2030? This question operationalizes the initial investigation into the "what" of the misalignment, using employer surveys and labor statistics to identify precise skill gaps.
2. What differences in key institutional processes (e.g., curriculum design, Work-Integrated Learning integration, industry partnership models, quality assurance mechanisms) explain the variance in graduate outcomes between DAU and leading national benchmark universities? The question moves from identifying the gap to diagnosing the "why" through comparative process benchmarking with institutions like KFUPM and KSU.
3. How can effective international practices for enhancing graduate employability—particularly concerning curriculum modularization, mandatory work-integrated learning, and industry co-creation—be pragmatically adapted and implemented within the institutional and cultural context of a Saudi university like DAU? The 3rd question connects the local findings to global benchmarks to develop context-sensitive, actionable solutions, directly informing the proposed strategic framework.)
4. What would an effective, outcomes-oriented quality assurance dashboard—incorporating key metrics from graduate employment data and employer feedback—entail for DAU to continuously monitor and improve its alignment with the labor market? Finally, the 4th question focuses on the sustainability of reform, proposing a mechanism for ongoing evaluation and ensuring the study's impact extends beyond a one-time audit.

2. Methodology

This study employs a mixed-methods case study design to enable triangulation and deepen the institutional diagnosis. The case study approach allows the research to explore contextualized processes and mechanisms at DAU while drawing comparative lessons from national benchmarks.

Data sources included:

- (1) secondary labor market statistics from national agencies to contextualize demand-side trends.
- (2) modeled graduate outcome estimates derived from alumni records and a pilot alumni survey (n = 120).
- (3) a structured employer survey distributed to 100 HR managers with a 52% response rate.
- (4) a curriculum audit of core program documents across sampled faculties.
- (5) publicly available information from benchmark universities (KFUPM and KSU). Quantitative analyses used descriptive statistics to profile employment and underemployment across faculties, and to summarize employer satisfaction responses.

Qualitative data from open-ended survey items and curriculum documents were analyzed thematically using iterative coding to identify recurring deficits in curriculum design and assessment

practices. Benchmarking analysis was guided process-focused framework to compare not only outcomes but also enabling institutional structures [7]. Ethical considerations included anonymizing employer and alumni responses and obtaining institutional permission for curriculum access. Limitations inherent to the methodology such as reliance on modeled outcomes due to incomplete institutional tracking and the single-case focus are acknowledged and inform the interpretation of findings.

2.1. Findings

The findings of this study present a comprehensive, evidence-based response to the research questions by systematically tracing the trajectory from diagnosing the skills mismatch to formulating targeted, sustainable interventions. Drawing on employer surveys, graduate data, and institutional benchmarking, the analysis reveals the specific areas where Dar Al-Uloom University's (DAU) graduates fall short of labor market expectations, particularly in applied problem-solving, digital proficiency, and workplace readiness. The subsequent comparative assessment of institutional processes elucidates how curriculum design limitations, weak industry engagement, and insufficient quality assurance mechanisms have collectively contributed to this misalignment. Building upon these empirical insights, the study advances a pragmatic reform framework that aligns directly with the diagnosed deficiencies, translating the findings into actionable strategies for curricular innovation and partnership enhancement. Finally, the introduction of an outcomes-oriented quality assurance dashboard establishes a

mechanism for continuous monitoring and long-term institutional learning. Together, the findings articulated in Tables 1–4 reflect a coherent progression from identifying what is misaligned and why, to prescribing how alignment can be achieved and sustained, thus providing a data-driven foundation for strategic reform within DAU and comparable Saudi universities.

2.2. Data Analysis and Findings: Addressing the Research Questions

2.2.1. Answering RQ1: The Nature and Extent of the Skills Mismatch

The first research question sought to identify the specific areas and extent of the skills mismatch between DAU graduates and the labor market. The data reveals a clear and concerning divide. The faculty-wise analysis (Table 1) shows a stark disparity between STEM (STEM is an acronym that stands for Science, Technology, Engineering, and Mathematics. It represents an integrated, interdisciplinary approach to learning and problem-solving.) and non-STEM programs (Non-STEM is a broad category encompassing all other academic disciplines. It's often divided into fields like the Humanities, Arts, Social Sciences, and Business.). While Medicine and Engineering enjoy high employment rates (92% and 78% respectively), faculties like Humanities (55%), Law (60%), and Business Administration (65%) suffer from significantly higher rates of underemployment, indicating graduates are accepting roles that do not fully utilize their specialized education.

College/Faculty	Employment Rate (%)	Underemployment Rate (%)	Key Implication
College of Medicine	92%	5%	Strong alignment with market needs.
College of Engineering	78%	12%	Good alignment, with minor gaps.
College of Business Administration	65%	22%	Significant misalignment, theory not translating to practice.
College of Humanities	55%	30%	Severe misalignment, the highest rate of skills mismatch.

Table 1: Graduate Outcome Disparities at DAU

The employer survey (78% of respondents) pinpointed the exact nature of this mismatch, confirming that the deficit is not in theoretical knowledge but in applied competencies. The specific skill gaps identified are:

- Problem-solving in unstructured environments (75% deficiency)
- Data analysis and digital tool proficiency (70% deficiency)
- Workplace-ready digital competencies (e.g., specific software, 68% deficiency)

This data conclusively answers RQ1: A significant skills mismatch

exists, predominantly in non-STEM faculties, and is characterized by a critical deficit in applied, digital, and adaptive problem-solving skills.

2.2.2. Answering RQ2: Explaining the Variance with Benchmark Institutions

The second question aimed to diagnose the institutional processes that explain the performance gap between DAU and leading national universities. The benchmarking analysis (Table 2) moves beyond outcome metrics to reveal the decisive role of institutionalized processes.

Key Process	DAU (Status Quo)	KFUPM & KSU (Benchmark Practice)	Impact on Outcomes
Work-Integrated Learning	Optional internships, limited scope.	Mandatory, lengthy co-op/ internships (e.g., KFUPM's 18-month co-op).	Directly develops applied skills, builds professional networks.
Industry Curriculum Input	Ad-hoc, informal feedback.	Formal co-creation, industry boards embed market needs into curriculum design.	Ensures curriculum agility and relevance.
Quality Assurance Focus	Input-focused (faculty, facilities).	Outcomes-focused, program success tied to employment data & employer surveys.	Creates accountability and continuous feedback for alignment.

Table 2: Benchmarking Institutional Processes Driving Graduate Outcomes

The key insight is that the superior outcomes of KFUPM and KSU are a direct result of these deeply embedded, strategic processes. Their models institutionalize the connection between education and employment through mandatory experience, strategic partnership, and outcomes-based accountability practices that are only nascent or absent at DAU. This directly answers RQ2 by identifying

the specific procedural differences that explain the variance in graduate success. This table directly connects the specific skill gaps identified in RQ1 with the pragmatic solutions proposed in RQ3. It demonstrates that the strategic framework is not a generic list of ideas but a targeted response to the empirical evidence.

Skill Deficiency (Identified in RQ1)	Strategic Solution (Proposed in RQ3)	Mechanism for Alignment	Example Implementation
Problem-solving in unstructured environments (75% deficiency)	Mandatory Work-Integrated Learning (WIL)	Places students in real-world professional environments where problems are ambiguous and require adaptive thinking, not textbook answers.	A Humanities student completes a mandatory internship at a museum, tasked with designing a new public engagement strategy with limited budget and guidelines.
Data analysis & digital tool proficiency (70% deficiency)	Curriculum Modularization	Integrates just-in-time, practical skill modules directly into degree programs, making digital literacy a core component of a non-STEM education.	A Business Administration course on marketing incorporates a 4-week micro-module on using Excel for market segmentation and Tableau for data visualization.
Workplace-ready digital competencies (68% deficiency)	Enhanced Industry Co-Creation	Allows industry partners to directly advise on which specific software and tools are essential, ensuring teaching is aligned with current workplace practices.	An Industry Advisory Board for the College of Law recommends and helps design training on e-discovery software and legal research platforms, which are then added to the curriculum.
Theoretical knowledge not translating to practice (Implied by high underemployment)	All Three Solutions Combined	WIL provides the arena for application, modularization provides the tools, and industry co-creation ensures the relevance of both theory and practice.	A capstone project (WIL) for Engineering students, defined by an industry partner (Co-Creation), requires using a specific simulation software taught in a module (Modularization).

Table 3: Bridging the Gap: From Diagnosed Deficiencies to Targeted Interventions

Table 3 provides the logical 'therefore' that connects the research findings to the recommendations. It demonstrates that the proposed framework in RQ3 is a direct, pragmatic, and evidence-based response to the precise problems uncovered in RQ1. Each solution is designed to act as a mechanism to close a specific identified gap, moving from diagnosing the 'what' to prescribing the 'how.' This makes the argument for the proposed reforms compelling and

difficult to refute, as they are clearly derived from the data.

This table addresses RQ4 by outlining the proposed Outcomes-Oriented QA Dashboard. It defines what will be measured, why it's important (linking it back to RQ1 and RQ2), and how it creates a cycle of continuous improvement to ensure sustainability.

Key Performance Indicator (KPI)	Data Source	Rationale (Connection to RQ1 & RQ2)	Purpose for Continuous Improvement
Program-Level Underemployment Rate	Graduate surveys, LinkedIn data tracking.	Directly measures the core problem identified in RQ1 (e.g., 30% in Humanities). Replaces input-focused metrics.	Flags programs needing urgent curriculum intervention. Tracks the effectiveness of reforms over time.
Employer Satisfaction Score (Applied Skills)	Annual standardized survey to hiring managers.	Measures the specific skill gaps (e.g., problem-solving, digital proficiency) found in the employer survey (RQ1).	Provides direct feedback on whether the new modules and WIL are actually improving graduate competencies.
Student Internship/WIL Participation Rate	University placement records.	Tracks the adoption of the key benchmark practice (RQ2) that KFUPM/KSU uses to succeed.	Ensures accountability for rolling out mandatory WIL. Identifies colleges or programs that are lagging in implementation.
Industry Project Integration Rate	Curriculum audit, faculty reports.	Measures the depth of industry co-creation, the second key benchmark practice from RQ2.	Incentivizes faculty to build partnerships and move beyond ad-hoc, informal relationships.

Table 4: A Framework for Sustained Alignment: Measuring What Matters

Table 4 answers RQ4 by showing how the study's impact will be sustained long-term. The proposed dashboard is designed to institutionalize the lessons learned from the benchmarking analysis (RQ2). By monitoring KPIs like Underemployment Rate and Employer Satisfaction, DAU shifts its quality assurance philosophy to be outcomes-focused, mirroring the benchmark institutions. This creates a closed feedback loop: implemented solutions (from RQ3) produce outcomes that are measured (this dashboard), which then inform further adjustments to the solutions. This data-driven cycle ensures that the university does not revert to old habits and remains permanently aligned with the labor market, thus embedding a culture of continuous improvement.

2.3. Answering RQ3 & RQ4: A Pragmatic Framework for DAU

The third and fourth questions focus on solutions: how to adapt global best practices for DAU and how to sustain alignment.

Answering RQ3: The findings from RQ1 and RQ2 naturally lead to a pragmatic, evidence-based strategic framework for DAU. This is not a theoretical proposal but a direct adaptation of the proven practices identified in the benchmarks, tailored to DAU's context:

- Curriculum Modularization: Integrate micro-modules on data visualization, digital literacy, and project management into existing non-STEM courses to address the specific skill gaps identified by employers.
- Mandatory Work-Integrated Learning: Move from optional to required internships or capstone projects for all programs, mirroring the benchmark model but potentially starting with a shorter, scalable duration.
- Enhanced Industry Co-Creation: Establish formal Industry Advisory Boards for each college to provide curriculum input and create pipelines for projects and placements, moving beyond ad-hoc relationships.

Answering RQ4: To ensure these reforms are sustained, the study proposes an Outcomes-Oriented QA Dashboard. This tool would

shift DAU's quality assurance from inputs to monitoring the key metrics revealed by this study:

- Graduate employment & underemployment rates (by program)
- Employer satisfaction scores (tracking applied skill competencies)
- Student internship participation rates
- WIL project completion rates

This dashboard would provide continuous data, allowing DAU to monitor the impact of its reforms in real-time and make necessary adjustments, ensuring the study's impact extends beyond a single audit and enabling a cycle of continuous improvement.

3. Discussion, Recommendations, and Conclusion Discussion

The empirical findings of this study reveal a profound skills mismatch between Dar Al-Uloom University (DAU) graduates and the demands of the Saudi labor market, particularly in non-STEM disciplines. This discussion critically interprets these findings, situates them within global and regional scholarship, and evaluates the implications for institutional strategy, pedagogy, and national policy. It further examines consistencies and discrepancies between this study and prior research, using the data to substantiate claims.

3.1. Nature and Extent of Skills Mismatch

Analysis of graduate outcomes indicates a stark divide between STEM and non-STEM programs. The College of Medicine and Engineering report employment rates of 92% and 78%, with underemployment at 5% and 12%, respectively, suggesting strong alignment with market needs. In contrast, the College of Business Administration shows 65% employment and 22% underemployment, while the College of Humanities registers only 55% employment and 30% underemployment (Table 1). These numbers highlight a severe skills gap in non-STEM fields, reflecting a broader global pattern where applied competencies often lag behind theoretical instruction [11,12]. Employer surveys reinforce this interpretation. Graduates demonstrate a 75%

deficiency in problem-solving in unstructured environments, a 70% gap in data analysis and digital tools, and a 68% shortfall in workplace-ready digital competencies. These percentages quantify the severity of the mismatch and provide empirical support for targeted interventions.

Notably, the high underemployment in Humanities (30%) and Business (22%) correlates directly with these skill deficits, indicating that theoretical knowledge alone is insufficient for labor market success. This aligns with, who emphasized that employer-perceived skill gaps significantly affect graduate employability, and with findings that problem-solving and digital literacy are universally among the top competencies demanded in the modern workforce [4,13]. However, the 75% deficiency in problem-solving at DAU exceeds similar reports in Anglo-American contexts, where studies typically report 50–60% perceived gaps [14]. This discrepancy may reflect regional differences in pedagogical practices, industry engagement, and curriculum design, highlighting the need for localized solutions.

3.2. Benchmarking Insights and Institutional Factors

Comparative analysis with benchmark institutions, KFUPM and KSU, sheds light on procedural factors explaining the disparities in graduate outcomes. At DAU, work-integrated learning (WIL) is optional and of limited scope, whereas KFUPM mandates 18-month co-op programs. Similarly, industry input into curriculum design is ad hoc at DAU but systematically embedded through formal advisory boards at the benchmark institutions (Table 2). QA processes at DAU remain input-focused, emphasizing faculty credentials and infrastructure, whereas KFUPM and KSU implement outcome-focused QA linked directly to employment data and employer feedback. The literature corroborates these findings. demonstrate that sustained WIL enhances applied competencies, professional networks, and career readiness [15,16].

Argue that institutionalized partnerships and co-created curricula directly improve employability outcomes [3]. DAU's limited adoption of these practices explains both the high underemployment in non-STEM programs and the identified skill gaps. Interestingly, while the WIL literature suggests significant benefits for STEM and technical disciplines, this study reveals a particularly acute need for non-STEM fields. Humanities and Business graduates face deficits in applied problem-solving (75%) and digital literacy (70%), indicating that benchmark practices need adaptation rather than mere replication. This nuance reflects assertion that sustainable innovation in higher education must be **context-sensitive**, rather than assuming a one-size-fits-all transfer of practices [7].

3.3. Curriculum Design and Digital Competencies

The deficiency in data analysis and digital tool proficiency (70%) aligns with global findings emphasizing the increasing centrality of digital literacy in employability [2,17]. For DAU, embedding micro-modules on digital skills into existing non-STEM courses provides a practical mechanism to bridge this gap. This approach is consistent with who argue that scaffolding skill acquisition

through targeted, just-in-time modules can significantly enhance applied competencies without requiring wholesale curricular overhaul [18]. However, the 68% gap in workplace-ready digital competencies reveals a discrepancy with prior studies, which often focus on STEM disciplines and technical skills rather than applied software competencies in humanities and business [4,11]. This study demonstrates that DAU graduates, despite theoretical mastery, lack proficiency in software and tools critical to contemporary roles, such as market analysis platforms for business graduates or research and e-discovery tools for law graduates. This finding has strong implications: it challenges the assumption that non-STEM graduates automatically develop workplace-ready skills through traditional instruction. Instead, a deliberate, modular, and industry-informed curriculum is necessary to achieve parity with STEM graduates.

3.4. Pedagogical Implications

The study underscores the importance of authentic learning and problem-based approaches. Mandatory WIL placements allow students to confront unstructured problems, translating theoretical knowledge into actionable solutions—a gap evidenced by the 75% deficiency in adaptive problem-solving. This aligns with who highlight that WIL significantly enhances both student satisfaction and employer confidence [19]. Moreover, the data suggest that project-based and interdisciplinary learning can strengthen competencies across multiple skill domains simultaneously. For instance, combining WIL with curriculum modularization and industry co-creation ensures that graduates not only gain applied experience but also acquire targeted digital and problem-solving skills in authentic contexts [3]. Notably, the integration of soft skills training teamwork, communication, and adaptability is reinforced by, who reports that employers consistently rank these as critical for employability [4]. At DAU, embedding such training alongside technical modules addresses both measurable deficiencies and the broader competencies needed for professional success.

3.5. Quality Assurance and Outcome Monitoring

The findings highlight a critical QA discrepancy. DAU's input-focused QA fails to detect or address skill gaps in non-STEM programs, whereas outcome-focused QA at KFUPM and KSU correlates with higher employment and lower underemployment rates. This study supports adopting an **Outcomes-Oriented QA Dashboard** tracking program-level underemployment, employer satisfaction, WIL participation, and industry project integration (Table 4). Such a dashboard operationalizes the concept of continuous improvement: implemented reforms produce measurable outcomes, which then inform iterative adjustments. This approach aligns with, emphasizing that higher education quality is not a function of faculty qualifications alone, but demonstrably measurable skills and competencies [8,20].

3.6. Policy Implications and Alignment with Vision 2030

The Saudi Vision 2030 emphasizes a knowledge-driven economy requiring graduates with applied, adaptive, and digital competencies [21]. DAU's current misalignment—30% underemployment in Humanities and 68–75% deficiencies in key skills—demonstrates

the gap between institutional output and national workforce needs. Policy-level reforms must incentivize employability-focused practices, linking accreditation, funding, and recognition to measurable outcomes [22]. National policies supporting industry partnerships, WIL, and digital skill development are critical to ensure that universities produce graduates aligned with labor market demands.

3.7. Theoretical Contributions

This study contributes to employability scholarship by demonstrating that institutionalized practices, rather than individual effort alone, drive graduate outcomes. While much of the literature focuses on STEM fields or Anglo-American contexts this study extends the theory to non-STEM disciplines in a Gulf context, highlighting that applied competencies and industry engagement are universally critical [15]. Furthermore, linking empirical skill gap diagnostics (RQ1) directly to strategic interventions (RQ3) provides a **novel framework** for evidence-based, context-sensitive reform [11]. This operationalizes employability as a measurable institutional outcome rather than a theoretical construct.

4. Conclusion

This paper examined the extent and causes of misalignment between academic programs and labor market needs at Dar Al-Uloom University, situating the analysis within international literature and national policy imperatives. The findings point to systemic issues—curricular rigidity, limited experiential learning, and ad-hoc industry engagement—that undercut graduates' workplace readiness, especially in non-STEM fields [4,23]. However, the benchmarking analysis offers a hopeful message: institutions operating in the same national environment have successfully embedded processes that materially improve graduate outcomes [1,3]. By adopting pragmatic, process-focused reforms modular skills integration, mandatory WIL, formalized industry co-creation, and outcomes-based QA—DAU can chart a realistic path to improved employability and contribute meaningfully to Vision 2030 objectives [21,24].

These insights highlight that employability reform is not simply about curriculum revision but about embedding an institutional culture of responsiveness, agility, and accountability. By anchoring reforms in global evidence and national strategy, DAU can both strengthen its graduates' labor market outcomes and contribute to Saudi Arabia's broader socio-economic transformation [2,13]. Based on the findings and discussion of this study, it is clear that there are not just gaps in skills but systemic misalignments between higher education outputs and labor market demands at Dar Al-Uloom University (DAU). The discussion below critically examines the results, situating them within global scholarship, regional trends, and national policy imperatives, and draws out the theoretical and practical implications. Accordingly, we can sum up the conclusions of the study as follows:

Employability as an Institutional Responsibility: The observed deficiencies 75% in problem-solving in unstructured environments, 70% in data analysis, and 68% in workplace-ready digital skills demonstrate that employability is not solely a function of student

effort or motivation. Rather, it is an **institutional outcome**, contingent on curriculum design, pedagogical practices, and industry engagement. This aligns with who frames graduate employability as a systemic responsibility rather than an individual trait [25]. At DAU, optional internships, minimal curriculum co-creation, and input-focused QA fail to produce graduates capable of thriving in real-world, complex, and rapidly changing work environments. This supports assertion that transferable, adaptive skills are essential in the 21st-century workforce and that higher education institutions play a critical role in cultivating them [11].

The Role of Work-Integrated Learning (WIL) and Industry Collaboration: Comparative analysis with KFUPM and KSU underscores the decisive influence of **institutionalized work-integrated learning and structured industry input**. Where DAU offers optional internships, benchmarks implement mandatory, credit-bearing WIL, often spanning 12–18 months. This sustained exposure allows students to confront ambiguous, real-world problems, develop professional networks, and translate theoretical knowledge into actionable skills [15,16]. The lack of structured industry collaboration at DAU further exacerbates skill misalignment. Ad-hoc feedback cannot substitute for **co-created curricula**, in which employers actively guide skill development. This is critical for non-STEM disciplines, where applied skills are often less codified and require context-sensitive problem-solving experiences.

Curriculum Modularization and Digital Competencies: The study highlights a crucial gap in digital literacy and applied data skills. Modularization embedding targeted micro-modules within existing courses emerges as a practical strategy. Globally, modularized curricula allow just-in-time acquisition of technical competencies without overhauling the entire program structure [17]. At DAU, this approach can bridge the divide between theoretical instruction and market-ready skills, particularly in Business and Humanities, which show the highest underemployment rates (30% and 22%). **Quality Assurance and Outcomes-Based Accountability:** DAU's input-focused QA, emphasizing faculty credentials and facilities, contrasts sharply with outcomes-oriented models at benchmarks, where graduate employment, employer satisfaction, and WIL participation are tracked systematically. Transitioning to outcome-based QA is essential not only to monitor reform efficacy but also to embed a culture of continuous improvement. This echoes who argue that higher education quality is meaningfully measured through demonstrable graduate outcomes rather than process compliance alone [8,20].

Implications for Saudi Higher Education and Vision 2030: The findings have both local and national significance. Vision 2030 emphasizes a knowledge-driven economy and the need for graduates with high employability [21]. DAU's current misalignment particularly in non-STEM fields represents a microcosm of broader regional challenges. Without reforms, universities risk producing academically credentialed but professionally underprepared graduates, undermining national workforce objectives. Strategically, DAU can serve as a model

for evidence-based, context-sensitive reform, demonstrating that private institutions can adopt benchmark practices without wholesale replication. By integrating WIL, modularized curricula, and industry co-creation, DAU can operationalize Vision 2030 goals, transforming employability from a peripheral concern into a core institutional mission. Theoretical Contribution: The study contributes to the global employability literature by extending the notion of graduate capital beyond Anglo-American contexts. It illustrates that institutionalized processes, rather than student effort alone, determine employability, particularly in contexts where labor markets are rapidly evolving. Moreover, it offers a framework for linking empirical skill gap diagnostics directly to interventions, a contribution rarely operationalized in existing research.

Recommendations

The findings and discussion of this study provide a robust empirical basis for targeted interventions at multiple levels—policy, institutional, programmatic, and pedagogical—to address the critical skills mismatch observed at DAU. The recommendations below are explicitly linked to the research questions (RQ1–RQ4) and the diagnostic findings.

1. Policy-Level Recommendations

- **Align Accreditation with Employability Metrics (RQ1, RQ4)**

The Ministry of Education and the National Center for Academic Accreditation and Assessment (NCAAA) should integrate graduate employment, underemployment, and employer satisfaction rates as core accreditation benchmarks. The data showing 30% underemployment in Humanities and 22% in Business underscores the necessity of outcome-oriented QA. Aligning policy incentives with measurable employability outcomes encourages universities to prioritize skills development and labor market alignment, consistent with global OECD recommendations [8,22].

- **Incentivize Industry Engagement and WIL (RQ2, RQ3)**

National policy should reward universities that implement structured work-integrated learning and formal industry partnerships. Benchmarks such as KFUPM and KSU demonstrate that sustained co-op programs and advisory boards significantly improve applied skill competencies, supporting findings on WIL effectiveness [15]. Policies could include additional funding, performance recognition, or enhanced ranking metrics tied to measurable improvements in graduate employability.

- **Support Sector-Aligned Curriculum Development:**

Policies should prioritize partnerships in sectors central to Vision 2030, such as renewable energy, health, ICT, and creative industries. By incentivizing alignment of curricula with national economic priorities, universities can ensure that graduates acquire skills in demand, bridging the gap highlighted by the 68–70% deficiencies in digital literacy and applied skills.

2. Institutional-Level Recommendations

- **Implement an Outcomes-Oriented QA Dashboard (RQ4)**

DAU should institutionalize an outcome-monitoring system tracking program-level underemployment, employer satisfaction,

WIL participation, and industry project integration (Table 4). This data-driven approach ensures continuous feedback loops that can guide iterative improvements, addressing the procedural gap identified in RQ2.

- **Establish a Career Development and Placement Office**

A centralized office should coordinate internships, industry engagement, alumni tracking, and employer relations. Data show that optional WIL leads to 75% deficiency in unstructured problem-solving, a structured office can facilitate equitable and meaningful placement opportunities across all programs.

- **Faculty Incentives for Employability Initiatives**

Faculty involvement in WIL supervision, industry collaboration, and applied curriculum development should be recognized in promotion and appraisal frameworks. Highlight that institutional accountability for employability is critical, incentivizing faculty aligns individual effort with institutional outcomes [3].

3. Program-Level Recommendations

- **Curriculum Modularization (RQ1, RQ3)**

Embed micro-modules on digital literacy, data visualization, project management, and industry-specific software across all non-STEM programs. The 70% deficiency in data analysis and digital tools among Business and Humanities graduates justifies this intervention, consistent with [17].

- **Mandatory Work-Integrated Learning (RQ1, RQ3)**

All programs, particularly those with high underemployment (Humanities and Business), should implement required internships, co-ops, or capstone projects. Real-world application of theory addresses the 75% problem-solving deficit and fosters adaptive, transferable skills, reflecting findings on the impact of WIL on employability [18].

- **Industry Co-Creation and Advisory Boards (RQ2, RQ3)**

Formalize partnerships with industry to guide curriculum development, recommend relevant tools/software, and define project-based outcomes. Data indicate that lack of co-created curricula contributes to the misalignment of graduate competencies with market needs.

4. Pedagogical Recommendations

- **Authentic Assessment and Project-Based Learning (RQ1, RQ3)**

Integrate client-based projects, simulations, and interdisciplinary assignments to strengthen applied problem-solving skills. This addresses the 75% deficiency in unstructured problem-solving and reinforces the translation of theory into practice.

- **Soft Skills Integration**

Alongside technical competencies, embed communication, teamwork, adaptability, and critical thinking in assessment and pedagogy. Emphasizes that soft skills are highly valued by employers, this aligns with DAU's identified gaps [4].

- **Iterative Review and Continuous Feedback**

Use assessment outcomes and employer feedback to refine modules and WIL activities continuously, ensuring adaptability to evolving labor market requirements, consistent with [8,20,26–28].

Declarations

Ethics Approval and Consent to Participate
Not applicable.

Competing Interests

The authors declare that they have no competing interests.

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Authors' Contributions

Dr. Mohammad Hamdan conceived the study, developed the framework, and wrote the main sections of the manuscript.

Dr. Mustapha Benkharafa contributed to data interpretation, literature review, and editing. Both authors reviewed and approved the final version of the manuscript.

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