

Integrating Interdisciplinary Thinking Skills into University Curricula in the Age of Artificial Intelligence

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Abstract: Higher education is in the midst of a transformation driven by artificial intelligence (AI), but the traditional disciplinary organization of university curricula still restricts students from connecting and applying knowledge, solving complex problems and connecting with other disciplines. The lack of effective integration between disciplines is a significant barrier to creativity as well as to education for workplace participation in the new world of artificial intelligence. This study examined the current status, challenges faculty report encountered in their efforts to include interdisciplinary thinking skills in their university curricula, and future directions faculty may offer for interdisciplinary thinking skills in their future courses. For the data collection, a descriptive quantitative design was used and data were collected using a researcher-developed questionnaire. The questionnaire was content valid and internally consistent. The questionnaire was sent to the faculty members of three universities in Saudi Arabia, via electronic mail, during February 2026, the second semester of the 2025/2026 academic year. 320 complete, voluntary returns were received. Mean, standard deviation and rank order were computed. the overall integration score (1.34) and interdisciplinary learning with AI tools were low. Perceived challenges were high (mean=2.74) with strong agreement on the issues of limited knowledge, limited technical skills and organizational constraints. Future directions were also heavily agreed upon (overall M = 2.74), including professional development and working across departments. The findings show a disconnect between their current practices and the future directions they endorsed. The study suggests curriculum restructuring together with faculty development, using AI for assessments, and fostering interdepartmental collaboration based on these perceptions.

Keywords: Interdisciplinary Thinking, Curriculum Development, Artificial Intelligence, Saudi Higher Education, Faculty Perceptions.

1. Introduction

Artificial intelligence is transforming higher education, altering how information is analysed, decisions are made, and academic and professional work is organised, and prompting universities to rethink their educational and curricular practices (Fu, Weng & Wang, 2025). This shift has intensified attention to interdisciplinary thinking, which involves connecting concepts across disciplines, synthesising them, and solving complex problems (Chamo & Broza, 2025).

Multidisciplinary education places disciplines side by side without fusing them. Interdisciplinary education involves the integration of concepts, methods, and perspectives to produce deeper understanding (Chamo & Broza, 2025). This study adopts an interdisciplinary approach, as it deals with the intentional interdisciplinary integration of knowledge and thinking processes into university curricula under conditions of AI-driven change.

As AI becomes increasingly integrated into higher education and professional life, students need to be prepared for uncertainty not only through disciplinary knowledge but also through flexible and integrative thinking. AI can facilitate such thinking by supporting simulation-based learning, intelligent data analysis, problem-based environments, and knowledge platforms that can integrate aspects of technology, ethics, and social knowledge (Wang et al., 2024). In this context, interdisciplinary education can be regarded as a foundation of an AI-ready learning environment, one that supports adaptable, collaborative, and critical learning.

In Saudi Arabia, these global shifts are being pursued at the national level, with an emphasis on equipping graduates with the skills required by a knowledge-based economy under Saudi Vision 2030. The universities have been called upon to reform the curricula and encourage innovation, digital competence, and interdisciplinary integration (Alshammari et al., 2023). However, there is limited research on embedding interdisciplinary thinking skills in courses, and less still on doing so in combination with AI; faculty members are still facing a lack of professional development, rigidity in curricula, and uncertainty about the benefits of using AI to support their teaching (Alenezi, 2023).

Within this context, there are three gaps to be filled. First, faculty members are the actors who enact the curriculum, yet their own perspectives on interdisciplinary integration are rarely examined. Second, although national policy strongly emphasises AI and interdisciplinary skills, empirical evidence to date is limited at Saudi universities. Third, most existing research has focused on either the adoption of AI or interdisciplinary education, but not on their integration (Fu et al., 2025). Therefore, the current study aims to explore the status of integration, the challenges facing faculty members, and the proposed future directions. Addressing these areas may contribute to curriculum innovation, faculty development, and educational reform in the Saudi higher education context. In doing so, the study offers a faculty-centered, multi-institutional account of AI integration and interdisciplinary curriculum development.

2. Literature Review

2.1. Interdisciplinary Thinking and Curriculum in Higher Education

Interdisciplinary education goes beyond the parallel presentation of disciplines by integrating knowledge and modes of thinking from two or more disciplines to produce an understanding that would be unlikely through a single-disciplinary approach (Oudenampsen et al., 2023; Schijf, van der Werf & Jansen, 2023).

Two tensions run through this literature. The first concerns maintaining sufficient disciplinary depth while achieving breadth and integration across fields. The second concerns assessment, where traditional processes do not necessarily capture integrative thinking and where formative assessment suggests the need for feedback and real-life tasks to assess synthesis across fields (Morris, Perry & Wardle, 2021). However, there is evidence that the importance of interdisciplinary learning must be operationalised and measured, and that this is not the case with all evidence; this is where the importance of faculty perceptions is relevant and is addressed in this study.

2.2. Artificial Intelligence Integration in Higher Education

AI technologies can facilitate an interdisciplinary design process through simulation, adaptive tutoring, learning analytics and platforms. In the field of education, the use of AI has transformed from automation to systems that can facilitate analytical and collaborative learning, while generative AI has been mentioned to create opportunities for personalised and interdisciplinary learning and confront pedagogical and ethical issues (Kasneci et al., 2023; Wu, Dang & Li, 2025). Artificial Intelligence Education Apps (AI apps) can contribute to creativity and students' participation, but the impact can be inconsistent and may present emotional issues, including anxiety (Lin & Chen, 2024). However, most AI initiatives continue to focus on technological implementation, and ethical protections are still not as well addressed in higher-education AI (Mustafa et al., 2024), focusing instead on curriculum redesign (Bond et al., 2024). The advantages of personalised learning tend to be well documented but rarely supported by a consistent framework of learning models (Merino-Campos, 2025). Overall, the reviews suggest that the educational impact of AI goes beyond the technology itself, depending more on the institutional and pedagogical preparedness.

2.3. Faculty Readiness, AI Literacy, and Assessment

AI literacy is often viewed as a blend of skills, knowledge, and attitudes, and the addition of ethical understanding. Ng et al. (2024) described four components of AI literacy: affective, behavioural, cognitive and ethical. Chiu et al. (2024) isolated two concepts from AI literacy: understanding and using it confidently and responsibly, that is, AI competency. Earlier, Kong, Cheung and Zhang (2023) noted that it is essential to build AI literacy in conceptual understanding, application, empowerment, and ethics. These are helpful frameworks to give context to faculty's readiness for using AI to integrate curriculum. Despite this, measurement in this area is still somewhat fragmented, limiting the ability to compare results of studies and, therefore, to evaluate the preparedness of faculty (Lintner, 2024).

Assessment is another area of concern. There is a growing push for assessment to become more AI-supported and authentic to reflect students' synthesis of knowledge, such as the use of automated assessment of written responses (Wang et al., 2024) and the reform of teaching and assessment based on AI (Lyanda, Owidi & Simiyu, 2024). To date, there are few empirical studies that have explored the integration of AI literacy into the curriculum, curriculum changes have been proposed to integrate and support such interdisciplinary models, including one proposed as adjustable (Tadimalla & Maher, 2024).

2.4. The Saudi Context

AI tools offer evident benefits, yet the pedagogical support and professional development required to use them remain under-examined in the Saudi setting, particularly because faculty members may struggle to balance disciplinary depth with interdisciplinary integration (Alenezi, 2023; Mirbahai, Noordali & Nolan, 2024).

3. Conceptual Framework

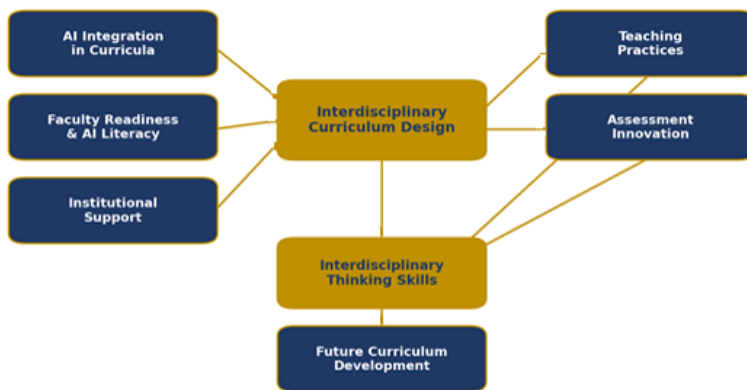
Based on the theoretical concepts, interdisciplinary thinking is the ability to blend

knowledge and thinking styles from two or more subject fields to create a cognitive leap that could not be made using a single-disciplinary strategy, as discussed by Schiff et al. (2023).

AI literacy and competency is a conceptual framework that places a distinction between knowledge (AI literacy) and application, evaluation and ethical dimensions (AI competency), whereas other frameworks focus on AI literacy and AI competency (Kong et al., 2023; Ng et al., 2024). A complementary institutional perspective (Tadimalla & Maher, 2024) situates these competencies within organizational conditions and treats curriculum reform as the joint development of pedagogical and technological systems.

The combination of these views results in the conceptual model presented in Figure 1. The model is presented as an organizing framework rather than as a tested causal model. It groups three enabling conditions (AI integration into curricula, faculty readiness and AI literacy, and institutional support) with interdisciplinary curriculum design, teaching practices, and assessment innovation and relates them to the development of students' interdisciplinary thinking skills. The links displayed are conceptual only; no directional, mediating, or causal relationships were hypothesised or tested in this study. The model also helps to structure the three questions of the study, as enabling conditions are present in the current status, weaknesses in these conditions are evident in the reported challenges, and strengthening them reflects the future directions proposed by faculty members.

Figure 1: Organising Framework of AI-responsive Interdisciplinary Curriculum Integration. The Connectors Indicate Conceptual Grouping Only and do Not Represent Tested Causal Paths.



3.1. Interdisciplinary Thinking: Theoretical and Operational Definitions

Interdisciplinary curriculum integration is treated here as the purposeful synthesis of disciplinary knowledge, perspectives, and modes of thinking (Oudenampsen et al., 2023). It is distinguished from multidisciplinary juxtaposition, in which disciplines remain side by side without integration, and from transdisciplinary work, which extends beyond academic boundaries to societal problem-solving.

Operationally, interdisciplinary thinking skills are defined in this study as faculty members' self-reported integration of these skills into their courses, as measured by the ten items of Domain 1 of the study questionnaire, which cover four sub-dimensions: curriculum design, smart learning environments, teaching practices, and smart assessment. Each item is rated on a three-point scale, and mean scores are interpreted as low (1.00 to 1.66), moderate (1.67 to 2.33), or high (2.34 to 3.00). Accordingly, every reference to the level of integration in this study denotes self-reported integration and not observed classroom behaviour.

4. Statement of the Problem

First, even though international research demands curricula that foster interdisciplinary thinking and problem-solving, university curricula continue to be rooted in traditional disciplinary structures, which provide insufficient opportunities for integration. Second, although AI has become central to higher education and to the skills that students and graduates need, its use for interdisciplinary learning remains inconsistent (Bond et al., 2024). Third, although Saudi Vision 2030 emphasises innovation and digital transformation, little empirical research addresses the extent to which interdisciplinary thinking is integrated and still less documents how faculty members apply it, what constrains them, and what they aspire to achieve. Fourth, faculty members face conceptual constraints such as limited professional preparation, alongside technical and organisational constraints such as the absence of interdisciplinary frameworks in the curriculum (Alshammari et al., 2023). The key problem addressed in this study is the limited empirical evidence on the extent to which interdisciplinary thinking skills are integrated into Saudi university curricula in the age of AI, including how faculty members are currently integrating interdisciplinary thinking skills into their own courses, the challenges they face in doing so, and their future directions for integrating these skills.

5. Significance of the Study

The study addresses a gap in understanding of how interdisciplinary thinking skills can be systematically integrated into university curricula in the age of artificial intelligence. It reflects the opinions of the academics in the universities in Saudi Arabia; provides evidence for the innovation of the curriculum that aligns with the national transformation goals and adopts AI technologies; provides guidance to academic leaders and policymakers regarding the priority challenges and directions in the near future; and provides guidance to faculty members on pedagogical approaches that support interdisciplinary learning in the context of AI.

6. Research Questions

Three questions, one question per results domain, are posed in the study:

1. How are interdisciplinary thinking skills integrated into university courses, according to faculty perceptions?
2. What challenges hinder the integration?
3. What do faculty members suggest about where the curriculum should go in the future to advance the development of interdisciplinary thinking in an age of AI?

7. Methodology

7.1. Research Design

This study adopted a descriptive quantitative survey design to describe the current status, challenges, and future directions of integrating interdisciplinary thinking skills as perceived by faculty members. The design enabled the gathering and analysis of data of practice in an analytical manner for describing the current status of practice, the challenges, and perceptions of future directions. The survey instrument, as well as the e-recruitment procedure, is both in line with the current proposal for conducting structured surveys (Torrejón-Guirado et al., 2024).

7.2. Population, Sample, and Recruitment

This study involved faculty members of Saudi universities as the target population. The study's accessible population included faculty members three institutions, which are King Saud University (KSU), Imam Mohammad Ibn Saud Islamic University (IMSIU), and Princess Nourah bint Abdulrahman University (PNU). The questionnaire was administered electronically in February 2026, during the second semester of the 2025/2026 academic year. It was circulated by departmental coordinators through the universities' official mailing lists and remained open for four weeks. Faculty members who held a teaching role at the time of the survey were eligible to participate. Teaching assistants and administrative staff (non-teaching) were not included. All submitted questionnaires were complete, and data from 320 respondents were used in the analysis.

Since participation was optional, the final sample is best described as a voluntary-response sample from the accessible population and not a probability sample. It is a descriptive, multi-institutional baseline, which is not statistically representative of all faculty members in Saudi Arabia. The survey procedures were reported in line with current guidance for online survey studies (Torrejón-Guirado et al., 2024).

7.3. Instrument

The literature review of interdisciplinary thinking, curriculum development, and integration of AI, in conjunction with standard scale-development guidance (Stefana et al., 2025), was used to create a structured questionnaire. It comprised three domains: (1) the current status of integrating interdisciplinary thinking skills (10 items); (2) the challenges limiting this integration (12 items); and (3) future directions for curriculum development (9 items). Items in the current-status domain were rated as low, moderate, or high. Items in the challenges and future-directions domains were rated as disagree, neutral, or agree. A three-point scale was adopted to obtain a concise profile of status and agreement across a large multi-institutional sample while minimizing respondent burden. Its principal drawback is a narrower response range than five- or seven-point formats.

7.4. Validity and Reliability

A panel of four reviewers, two specializing in educational technology and two in

curriculum development, was used to determine content validity. Correlations were then run with the total scale score to measure internal consistency for each domain score (Table 1).

Table 1: Domain-total Correlations of the Questionnaire.

Questionnaire Dimension	Correlation Coefficient
Dimension 1: Current status of integrating interdisciplinary thinking skills	0.923**
Dimension 2: Challenges limiting integration	0.772**
Dimension 3: Future directions for curriculum development	0.766**
Note. ** Correlation is significant at the 0.01 level. Domain-total correlations are reported for descriptive purposes only; the three domains are treated as conceptually distinct constructs.	

Each of the correlations between the various domains was significant and positive at the 0.01 level. Cronbach's alpha (Table 2) was used to assess reliability.

Table 2: Reliability Coefficients of the Questionnaire and its Dimensions.

Research Instrument	No. of Items	Cronbach's Alpha
Dimension 1	10	0.900
Dimension 2	12	0.797
Dimension 3	9	0.764

Cronbach's alpha coefficients for Domains 1, 2 and 3 were 0.900, 0.797, and 0.764, respectively, showing satisfactory to high internal consistency within each domain. No overall coefficient was reported, as the three domains are measures of three conceptually distinct constructs (practice, challenges, and future directions).

7.5. Ethical Considerations

All responses were anonymous and voluntary. Upon reading an informed consent statement on the landing page of the questionnaire, stating the purpose of the study, that it is voluntary, and that the data will only be used for research, the participants consented electronically. No identifying information was collected in any way; only general information about gender, university, college type, academic rank and their involvement in the curriculum design process was recorded, and anonymity was maintained. Data were kept in password-protected, access-restricted files to ensure confidentiality and reported in summary. Before starting data collection, the study protocol was reviewed and accepted by the committee of research ethics of the institution as a minimal-risk anonymous survey of professional opinions.

7.6. Statistical Methods

Data were analysed using IBM SPSS Statistics. Domain-total correlations were computed with the Pearson correlation coefficient, and reliability was estimated with Cronbach's alpha. Frequencies and percentages describe the sample; means and standard deviations describe response levels; and rank ordering identifies the highest- and lowest-rated items. Mean scores were interpreted using the criterion: 1.00–1.66 = low, 1.67–2.33 = moderate, and 2.34–3.00 = high.

For a descriptive baseline of this kind, item and domain means interpreted against the low, moderate, and high bands provide an appropriate basis for description.

8. Results

8.1. Current Status (Research Question 1)

Table 3: Means, Standard Deviations, and Ranks for Domain 1 (current status of integrating interdisciplinary thinking skills) (N=320).

Items	Mean	SD	Rank	Level
I use smart applications to plan courses and integrate concepts across disciplines.	1.35	0.52	3	Low
I use AI techniques to link theoretical knowledge with practical applications across disciplines.	1.31	0.52	10	Low
I design smart digital activities that encourage cross-disciplinary innovative thinking.	1.32	0.50	8	Low
I use interdisciplinary digital resources to guide students toward innovative solutions.	1.35	0.55	3	Low
Curriculum Design	1.33	0.52	3	Low
I prepare AI-supported virtual environments to enrich cross-disciplinary discussion.	1.34	0.50	5	Low
I apply smart simulation tools to train critical and analytical thinking across fields.	1.32	0.50	8	Low
Smart Learning Environments	1.33	0.50	3	Low
I encourage future-oriented thinking about the impact of interdisciplinary solutions.	1.42	0.57	1	Low
I encourage collaborative interdisciplinary research projects using AI tools.	1.34	0.53	5	Low
I promote AI-enhanced self-directed learning for value-based, inquisitive thinking.	1.40	0.56	2	Low
Teaching Practices	1.38	0.55	1	Low
I use digital learning analytics to assess understanding from an interdisciplinary perspective.	1.34	0.50	5	Low
Smart Assessment	1.34	0.50	2	Low
Overall	1.34	0.51	–	Low

Item means ranged from 1.31 to 1.42, all within the low band. The highest-rated item was encouraging future-oriented thinking about the impact of interdisciplinary solutions ($M = 1.42$, teaching practices), and the lowest-rated item was using AI techniques to link theoretical knowledge with practical applications across disciplines ($M = 1.31$, curriculum design). Items are ranked within the domain and the sub-dimension rows among the four sub-dimensions; “tied” means sharing the same rank. The highest-rated sub-dimension was teaching practices ($M = 1.38$), while the lowest-rated were curriculum design and smart learning environments ($M = 1.33$). The overall mean score was 1.34, indicating that interdisciplinary learning was not well integrated into course design, learning environments, or assessment, although faculty members reported slightly greater activity in encouraging interdisciplinary learning in their day-to-day teaching.

8.2. Challenges (Research Question 2)

Table 4: Means, Standard Deviations, and Ranks for Domain 2 (challenges limiting integration) (N=320).

Items	Mean	SD	Rank	Level
Limited awareness of the importance of interdisciplinary thinking for future problems.	2.86	0.36	1	High
Difficulty grasping interdisciplinary concepts due to narrow disciplinary thinking.	2.76	0.44	3	High
Absence of a culture of cross-disciplinary teamwork in curriculum design.	2.76	0.44	3	High
Cognitive Challenges	2.79	0.41	1	High
Difficulty designing digital activities that stimulate interdisciplinary inquiry.	2.69	0.46	12	High
Limited experience producing integrated digital content across disciplines.	2.73	0.44	7	High
Difficulty assessing learning outcomes in interdisciplinary settings.	2.72	0.46	9	High
Skill-related Challenges	2.71	0.45	4	High
Weak experience using smart analytics to design interdisciplinary activities.	2.80	0.40	2	High
Lack of technical support for multi-domain smart learning environments.	2.70	0.46	11	High
Concerns about data privacy and security when using AI in course design.	2.76	0.44	3	High
Technical Challenges	2.75	0.43	2	High
Poor coordination between departments hinders joint educational projects.	2.74	0.45	6	High
Teaching load and administrative constraints limit course redesign.	2.73	0.44	7	High
Few university initiatives support creative interdisciplinary thinking.	2.71	0.47	10	High
Organisational and Administrative Challenges	2.72	0.45	3	High
Overall	2.74	0.43	–	High

Item means ranged from 2.69 to 2.86, all in the high band. Cognitive challenges ($M = 2.79$) ranked first and skill-related challenges ($M = 2.71$) ranked last, with technical challenges ($M = 2.75$) and organisational challenges ($M = 2.72$) in between. Descriptively, the pattern indicates that awareness-related and conceptual barriers were rated highest, followed by limited analytical and technical support and weak inter-departmental coordination. An overall mean of 2.74 indicates that participants perceived a high level of challenge, and the means for all four categories fell within the high band. Differences across respondent subgroups were not tested.

8.3. Future Directions (Research Question 3)

Table 5: Means, Standard Deviations, and Ranks for Domain 3 (future directions for curriculum development) (N=320).

Items	Mean	SD	Rank	Level
Developing AI-focused training programmes to raise awareness of interdisciplinary thinking.	2.81	0.40	1	High
Redesigning courses to link specialised knowledge with labour-market needs.	2.73	0.45	5	High
Encouraging departments to design joint, AI-based problem-analysis projects.	2.72	0.45	7	High
Forming smart research teams across humanities and applied sciences.	2.71	0.46	9	High
Adopting smart simulation and modelling to stimulate complex thinking.	2.77	0.43	2	High
Building AI-supported virtual environments for cross-disciplinary dialogue.	2.73	0.45	5	High
Developing digital assessment of students' integrated knowledge across fields.	2.77	0.43	2	High
Encouraging AI-enhanced self-directed, interdisciplinary learning.	2.72	0.45	7	High
Strengthening cooperation with innovation and smart-technology institutions.	2.76	0.43	4	High
Overall	2.74	0.43	–	High

Item means ranged from 2.71 to 2.81, all within the high band. The most highly rated direction was AI-related faculty training, while forming cross-disciplinary research teams was the least highly rated direction. The overall mean of 2.74 indicates strong support across all proposed directions, with the strongest support for capacity building and for innovation in teaching and assessment.

9. Discussion

The results show a gap between the low reported application of interdisciplinary thinking skills and the strong future orientation that respondents expressed towards AI-ready practices. This pattern suggests that the gap reflects institutional, technical, and professional constraints; however, no statistical association was examined in this study.

The current status reported here is consistent with the wider literature on institutional and curricular barriers to interdisciplinary integration. Cheng et al. (2023) and Mirbahai et al. (2024) identify intentional course design, collaboration, and integrated assessment as core components of effective interdisciplinary curricula, a position supported by subsequent reviews (Sørensen & Stenalt, 2026; Turner et al., 2024). The pedagogical results from AI that were reported here align with evidence about the fact that the use of AI focuses on technological implementation instead of pedagogical redesign of the curriculum (Bond et al., 2024) and that pedagogical benefit requires institutional/pedagogical readiness (Merino-Campos, 2025). The high level of challenges also indicates the presence of constraints in institutional and organisational settings. However, respondents highlighted the cognitive difficulties, aligning with previous studies that readiness is not just technological but also psychological and that a lack of awareness, confidence, and self-efficacy levels are linked to decreased intentions to adopt AI (Ayanwale et al., 2022; Mah & Groß, 2024). While the technical difficulties reported would indicate evidence of mixed frames of mind about the use of AI with teachers, the lack of structured literacy development would be seen as a problem (Yim & Wegerif, 2024), and the concern with data-privacy issues would signal a lack of resolution to issues of ethics in the higher-education context (Brandhofer & Tengler, 2025). The organisational obstacles mentioned (such as workload and inadequate coordination) emphasise that interdisciplinary reform calls for institutional change and not personal action.

A descriptive pattern is that strong endorsement of future directions is accompanied by low levels of practice. There is general agreement around professional development, and collaboration, which resonates with AI competency and AI literacy standards (Yim & Wegerif, 2024) and with the demands for changing assessment that involves synthesis (Swiecki et al., 2022). The study is descriptive, based on individuals' self-perceptions, and should therefore be viewed as a perception of classroom behaviour and should not imply causal effects. The attitudes or perceptions reported generally suggest faculty members are prepared to move away from disciplinary-based to AI-informed models that prioritise interdisciplinarity, where gaps between what faculty currently do and what they wish to do are met.

10. Conclusion

The study focused on the status, challenges, and future directions of the integration of interdisciplinary thinking skills into university curricula in Saudi Arabia in the age

of artificial intelligence. Respondents reported a low level of integration and limited pedagogical use of AI, high levels of cognitive, technical, and organisational challenges, and strong overall endorsement of the proposed future directions. The study makes two contributions. Empirically, it provides multi-institutional, faculty-level baseline evidence of a gap between low reported current practice and strong endorsement of future development in the Saudi context. Conceptually, it offers an organising framework that links the enabling conditions of AI use, faculty readiness, and institutional support to interdisciplinary curriculum design, instruction, assessment, and future development. Strategic curriculum redesign, faculty development and continued institutional support are likely to be needed to address this gap. Given these findings collectively, the results suggest a need to prepare faculty for implementing AI, design the curriculum with AI guidance, and support the institution in continuous technology advancements, including the development of future directions for curriculum reform in alignment with Saudi Vision 2030.

11. Implications and Recommendations

The points below represent implications and recommendations derived from respondents' perceptions and are not necessarily causal statements. First, given the high ratings of cognitive challenges, universities may need to raise awareness and redesign the curriculum, particularly by introducing interdisciplinary modules, linking theory to practical contexts, and making interdisciplinary thinking explicit in teaching. Second, the technical and skill-related challenges were rated highly, which indicates a need for structured professional-development opportunities at the university level to enhance the AI literacy and practical competencies of faculty members. Workshops on the educational use of AI, digital simulation, and learning analytics, supported by continuous technical assistance, are one practical option. Third, given the organizational barriers reported, universities may establish interdisciplinary committees and joint projects and strengthen coordination between departments. Heavy teaching loads also warrant review, since they act as a structural barrier. Fourth, because of limited integrative assessment, universities may develop digital and authentic assessment instruments that evaluate interdisciplinary thinking and problem-solving ability. Finally, the strong endorsement of institutional measures suggests that academic leadership may consider policies and incentives, such as research grants and formal recognition, to align institutional strategy with AI-supported interdisciplinary education.

12. Limitations and Future Research

There are some limitations to note. A descriptive, cross-sectional design provides a snapshot of perceptions at a given time but does not measure actual classroom practice. The study used a voluntary-response sample from three selected Saudi universities; therefore, the findings are not statistically representative of all faculty members in Saudi higher education. The study relied on self-reported data, which may be affected by social-desirability and overestimation biases. The three-point scale, appropriate for a status profile, restricts the possible range of responses. Future research could use longitudinal or quasi-experimental designs that include larger, probability-based samples from a wider variety of institutions and that combine self-reports with direct observation of classroom practice and student-outcome measures.

Subsequent work could also examine differences across gender, university, college type, academic rank, and participation in curriculum development.

13. Declarations

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Conflict of Interest: The author declares no competing interests, financial or non-financial, related to the subject matter of this manuscript.

Ethics Approval and Consent: This study was approved by the institutional research ethics committee as a minimal-risk anonymous opinion survey. Participation was voluntary, and informed consent was obtained electronically from all participants before data collection. No directly identifying information was collected.

Data Availability: The datasets generated and analysed during the current study are not publicly available in order to preserve participant confidentiality but are available from the corresponding author on reasonable request.

Consent for Publication: Not applicable. The manuscript contains no individual person's identifying data in any form.

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