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WHEN AI ISN'T ENOUGH: THE UI/UX EXCEPTION IN AI-SUPPORTED LEARNING AT JAPAN DIGITAL UNIVERSITY

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Abstract. Artificial Intelligence (AI) has revolutionized educational methodologies by providing adaptive learning environments that enhance student performance in technical disciplines. At Japan Digital University (JDU), a phased integration of AI tools was implemented across the IT curriculum, including courses in programming, data management, and project planning. The results demonstrated consistent academic improvement across AI-supported subjects. However, the User Interface and User Experience (UI/UX) Design course remained an exception, being taught without AI involvement. This study analyzes academic outcomes, student engagement, and cognitive-emotional responses in both AI-integrated and traditional learning contexts. Findings suggest that while AI optimizes structured learning, it falls short in creative, subjective domains like UI/UX, where empathy, aesthetic judgment, and human-centered thinking are paramount. The research concludes that educational institutions must adopt a balanced, discipline-sensitive approach to AI integration to preserve essential human elements in learning.

Keywords: Artificial Intelligence, UI/UX Design, Creative Education, Adaptive Learning, Student Performance, Japan Digital University, Human-Centered Learning, Educational Technology, Cognitive Engagement, Pedagogical Strategy

I. Introduction.

Artificial Intelligence (AI) is no longer a futuristic concept but a transformative force in modern education. Over the past decade, AI has become deeply embedded in teaching and learning processes worldwide, bringing significant shifts in how students engage with content, how instructors manage classrooms, and how academic performance is measured. Through intelligent tutoring systems, adaptive feedback platforms, and AI-based learning analytics, institutions now offer students a more personalized, efficient, and scalable educational experience.

According to Gligorea et al. (2023), adaptive AI platforms significantly improve retention and student engagement in online and blended education settings by allowing learners to move at their own pace and receive timely, individualized support [1]. AI tools not only provide automated feedback and code corrections but also help students detect errors, understand theoretical concepts, and manage learning tasks independently. Yet, with these advancements come new concerns. Scholars such as Zhai et al. (2024) argue that excessive dependence on AI systems may inhibit students' long-term cognitive development by replacing effortful thinking

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with machine-generated shortcuts [2].

As demonstrated in previous research conducted at Japan Digital University (JDU), the integration of AI-supported learning into the IT curriculum followed a clearly defined, phased structure and was closely observed through the academic progress of students admitted in 2021. The study covered three consecutive semesters, each representing a distinct stage in the AI integration process:

Semester 1 – Traditional instruction without the use of AI tools;

Semester 2 – Partial integration of AI, including video lectures, code assistants, and basic chatbot support;

Semester 3 – Full-scale implementation of AI tools across most technical subjects. [6].

The results revealed a steady improvement in student performance. In subjects such as PHP & SQL, Python, Object-Oriented Programming, and Project Management, academic outcomes improved significantly. The use of AI tools—including intelligent suggestions, automated feedback, and adaptive instructional systems—enabled students to grasp complex topics more quickly and approach practical tasks with greater confidence [6].

However, amidst this digital transformation, one course remained untouched by AI: User Interface and User Experience (UI/UX) Design. While technical subjects saw increasing automation, UI/UX was consistently delivered using traditional methods—manual prototyping, live critiques, instructor-led design reviews, and peer collaboration. This pedagogical decision was intentional. UI/UX, unlike programming, is rooted in human emotion, intuition, and social sensitivity. It requires the designer to think not like a machine, but like a user—to empathize, to anticipate needs, and to craft experiences that resonate across cultures and contexts.

As Saini & Ahmed (2023) point out, although AI can assist in generating basic layouts or optimizing visual contrast, it lacks the emotional intelligence and cultural awareness needed to design interfaces that truly connect with users [3]. The same point is emphasized by UX experts like Malik (2023), who argues that AI still fails to answer key questions like "Does this design feel intuitive?" or "Will it frustrate the user?"—questions that rely on context, empathy, and creativity rather than data-driven logic [4].

Furthermore, Lu et al. (2024) stress that collaborative creativity, emotional nuance, and aesthetic judgment remain outside the scope of current AI systems, especially in visual and interaction design [5]. When comparing student outcomes, a clear trend emerges: while performance steadily improved in AI-enhanced courses, the UI/UX course maintained a higher proportion of failing or underperforming students. This suggests that students, accustomed to automated support in other areas, may have struggled when required to think independently, make subjective decisions, and defend their creative choices without digital assistance.

II. Main part.

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2.1. Academic Trajectory Across AI Integration Phases

To understand the impact of AI on student outcomes, Japan Digital University implemented a phased integration of AI into its IT curriculum. Each of the three semesters represented a distinct level of AI adoption and offered a window into how students responded to new instructional technologies [6].

In Semester 1, teaching relied solely on traditional lectures without any AI support. Students had limited access to supplementary resources, and classes were large, making individual assistance difficult. As a result, many students struggled in subjects such as PHP & SQL and Object-Oriented Design (OOD). The lack of personalized support contributed to a high rate of academic failure [6].

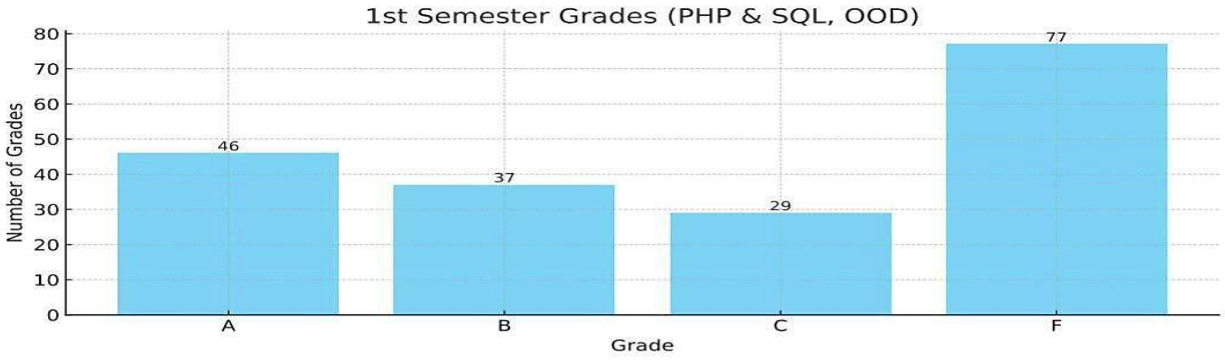

Diagram 1. Grade distribution during the 1st semester, reflecting the traditional, non-AI-supported learning environment. A significant number of students (77) received failing grades (F), highlighting the limitations of conventional teaching methods in large IT classes.[6]

The second semester marked the transition phase. AI-based tools such as video lectures, basic coding assistants, and chatbot interfaces were introduced. Instructors uploaded pre-recorded lectures to the online platform, and classroom time was repurposed for Q&A sessions and collaborative problem-solving. However, both students and instructors faced adjustment difficulties: AI platforms were underutilized due to inexperience, and many students struggled to formulate structured questions for the AI tools. Nonetheless, the environment became more flexible, and some students began to benefit from on-demand access to learning materials and automated feedback.[6]

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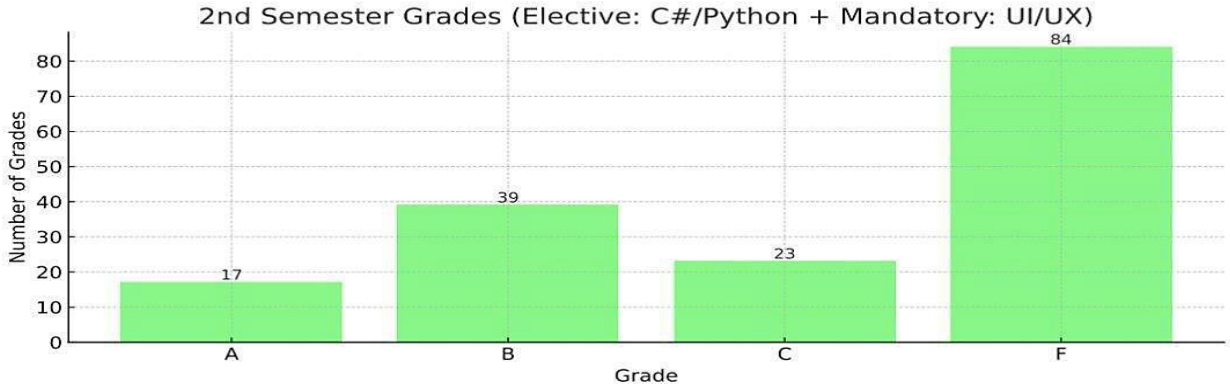

Diagram 2. Grade distribution in the 2nd semester following the partial integration of AI tools and video lectures. While the number of F grades remained high (84), the increased number of A and B grades indicates early signs of improvement due to AI-assisted learning.[6]

In the third semester, AI integration reached its full potential. Nearly all technical subjects—Project Management, Python, Django, .NET, and OOP—were supported by intelligent systems that could assess student work, offer real-time corrections, and provide adaptive feedback. Students showed increased confidence, problem-solving efficiency, and task independence. Teachers shifted from direct instruction to facilitation roles, supporting higher-level discussions and personalized mentoring.[6]

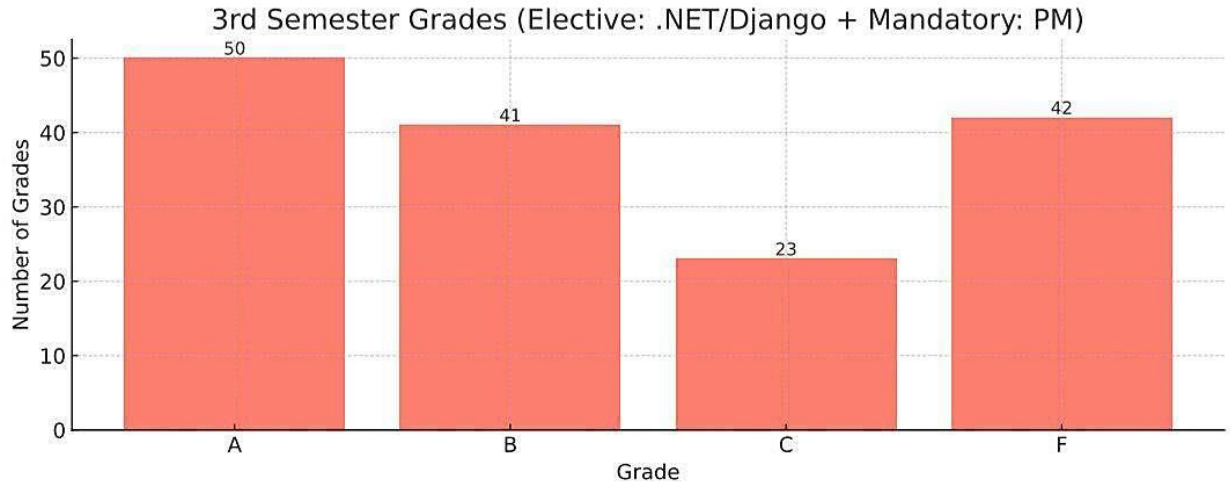

Diagram 3. Grade distribution during the 3rd semester, reflecting the full adoption of AI tools in teaching. A marked improvement is observed, with 50 students earning A grades and a reduced failure count (42), showcasing the effectiveness of AI-supported pedagogy.[6]

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Grade	1st Semester	2nd Semester	3rd Semester
A	46	17	50
B	37	39	41
C	29	23	23
F	77	84	42

Table. Comparative summary of student performance across the 1st, 2nd, and 3rd semesters. The data shows a steady improvement in academic outcomes as AI tools became more integrated into the IT curriculum.[6]

2.2. UI/UX Design as a Non-AI Course

Unlike other courses in the IT curriculum, the UI/UX Design course was deliberately excluded from AI enhancement. This subject was taught through traditional methods: instructor-led seminars, sketch-based prototyping, and peer feedback sessions. Students were required to develop user personas, create design mockups manually, and justify their decisions in verbal presentations. No AI platforms were used to suggest layouts, generate wireframes, or interpret user feedback. [6].

This approach was based on pedagogical reasoning. UI/UX education emphasizes human empathy, visual perception, storytelling, and emotional resonance—dimensions that are difficult, if not impossible, to simulate with current AI systems [4]. Creativity in UI/UX design often involves ambiguity, emotional logic, and social context that do not lend themselves well to data-driven processing

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[5].

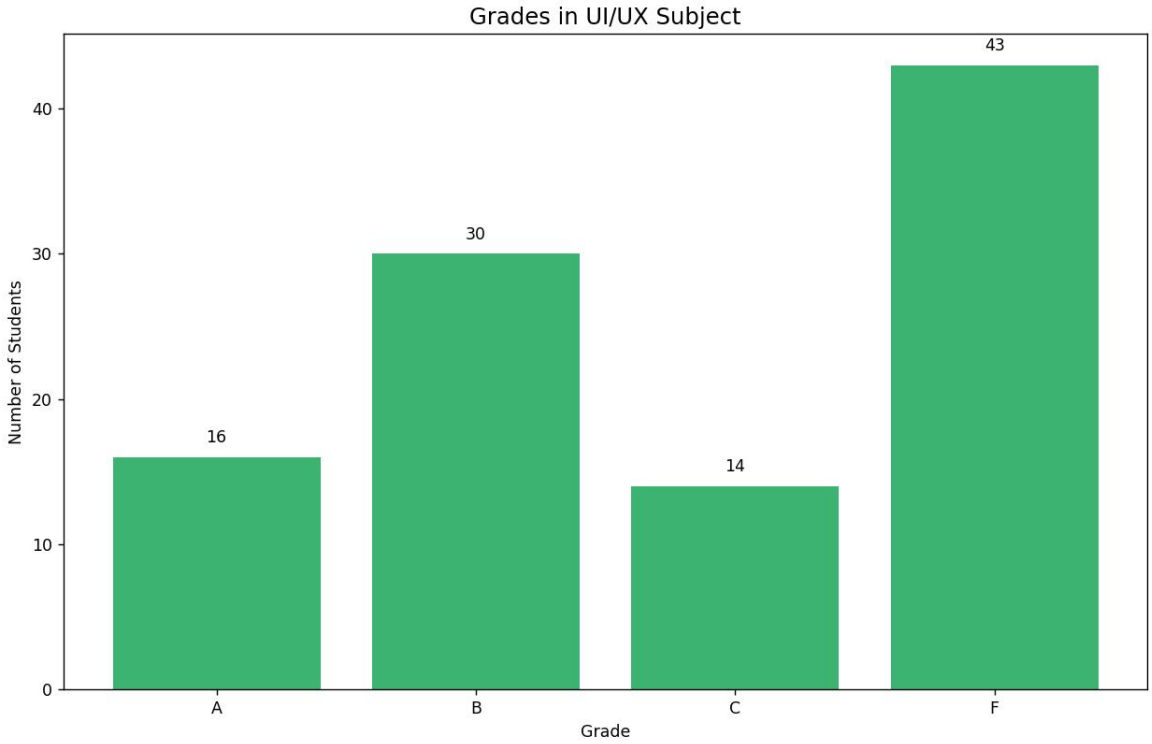

Diagram 4 presents the grade distribution in the UI/UX course, which remained AI-free. The results show a concentration of mid-range grades, with fewer students achieving top marks.

Moreover, students faced unique challenges. Those accustomed to the instant support and feedback from AI platforms in other courses felt uncertain in UI/UX tasks that demanded subjective judgment. They often hesitated to finalize design decisions or struggled to articulate their choices during critiques. The absence of automated guidance required a deeper level of personal responsibility and introspection.

2.3. Patterns and Disparities in Student Performance

While AI-assisted courses showed steady progress over three semesters, UI/UX remained an outlier both in structure and results. Interestingly, although AI-supported courses like Project Management and Python exhibited higher A and B rates, the number of F grades was still notable. This reveals that AI, while helpful, is not a universal solution; student motivation, participation, and foundational knowledge remain critical to academic success [1][2][6].

In contrast, the UI/UX course generated more C and D grades, suggesting that students struggled to meet design expectations without structured digital help. However, the number of outright failures was not significantly higher than in technical subjects. This implies that the absence of AI did not necessarily lead to greater academic failure, but it did expose a deeper gap in students' creative independence, visual reasoning, and critical reflection [5][6].

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Unlike technical subjects where errors can be clearly diagnosed and corrected with AI assistance, UI/UX assessments rely on subjective interpretation, user empathy, and design logic. Many students, accustomed to binary correctness and automated validation, struggled when faced with open-ended tasks and ambiguous outcomes. Without AI-generated scaffolding, some students hesitated to take creative risks or to engage fully in peer critiques, fearing judgment without algorithmic reinforcement [4][6].

This disparity highlights the different cognitive and emotional demands across disciplines. AI is highly effective in domains that require accuracy, structure, and repetition. But in creative courses like UI/UX, students must learn to rely on human feedback, intuition, and personal judgment—competencies that cannot be automated [5].

2.4. Student Perception and Engagement

While AI tools brought significant academic improvements in technical subjects, their absence in the UI/UX course revealed deeper differences in how students perceived their learning experience. In AI-supported courses such as Python, SQL, or Project Management, students reported a higher sense of control over their progress. The availability of instant feedback, automated assistance, and structured learning materials allowed them to approach assignments with greater confidence and independence [1][3]. These tools also reduced anxiety by offering quick validation and troubleshooting during challenging tasks [3].

In contrast, the UI/UX course, which lacked any AI integration, demanded a different cognitive and emotional approach. Students were expected to justify their design choices during live critiques, defend their decisions based on subjective feedback, and manage open-ended tasks without concrete "right" answers. Many found this transition difficult. Having become accustomed to the clarity and support of AI in previous courses, they struggled to adapt to an environment where creativity, intuition, and human judgment were central [4][5].

Although no formal survey was conducted, informal interviews and classroom observations indicated that students were less confident when engaging with design challenges in UI/UX. Some expressed hesitation in finalizing decisions, while others avoided experimental or unconventional ideas due to fear of subjective criticism [6]. This emotional burden impacted their ability to express creativity and take risks—elements that are essential to the learning process in design education [5].

Overall, the contrast between the AI-supported and non-AI-supported environments highlighted how digital assistance not only influences academic performance, but also shapes students' emotional engagement, risk tolerance, and confidence in independent thinking. The case of UI/UX confirms that in creative disciplines, the absence of AI can expose important gaps in students' readiness for open-ended, human-centered learning [4][5].

2.5. The Limits of AI in Creative Education

Despite its advantages in optimizing and personalizing technical education, AI has clear boundaries in creative disciplines. It can replicate patterns, generate layouts, and automate design suggestions, but it cannot comprehend emotional nuance, cultural symbolism, or user-centered narratives [4][5]. In UI/UX, students must anticipate user intent, express personality

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through design, and align visual elements with psychological effects—tasks that require human judgment [5].

Instructors in design education must nurture qualities that AI cannot simulate: empathy, ethical reasoning, storytelling, and aesthetic sensitivity [4][5]. While AI may serve as a supportive tool in basic design stages (e.g., checking contrast or accessibility), it cannot replace the mentorship, critique, and emotional development central to creative learning [5].

Tasks AI Can Do	Tasks Only Humans Can Do
Generate basic wireframes	Show empathy and emotional sensitivity
Check color contrast & accessibility	Understand cultural context
Recommend layout patterns	Tell stories visually
Summarize user survey responses	Make ethical design decisions
Suggest font/spacing combinations	Handle ambiguity and open-ended problems

Table2. Comparison of tasks AI can support versus tasks that require human creativity, intuition, and judgment in UI/UX education.

III. Conclusion.

The integration of artificial intelligence into higher education has opened new pathways for adaptive, student-centered learning—especially in technical disciplines. As demonstrated through the phased implementation at Japan Digital University, AI tools significantly enhanced academic outcomes in programming-related courses such as PHP & SQL, Python, and Project Management. Students benefited from immediate feedback, round-the-clock access to guidance, and individualized pacing. The progression from traditional instruction in Semester 1 to full AI integration in Semester 3 resulted in a clear improvement in academic performance, reduced failure rates, and increased learner autonomy.

However, the case of the UI/UX Design course illustrates that AI is not universally applicable across all areas of education. This subject remained outside the scope of AI support, and its pedagogical structure relied entirely on human interaction, subjective judgment, and creative inquiry. While students still achieved reasonable academic results, their confidence and satisfaction levels were often lower. The absence of automated assistance exposed difficulties in emotional reasoning, decision-making, and visual communication—skills that current AI systems cannot replicate.

These findings suggest that while AI is highly effective in optimizing structured, logic-driven tasks, its capabilities are limited when it comes to fostering creativity, empathy, and ethical thinking. In disciplines like UI/UX, education must remain human-led, with a focus on mentorship, exploration, and emotional development. Future applications of AI in education should therefore be discipline-sensitive: used where appropriate and withheld where it might hinder critical human capacities.

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Ultimately, a balanced approach is needed—one that combines the efficiency of AI with the irreplaceable strengths of human educators. As educational institutions continue to embrace digital transformation, thoughtful integration strategies will be essential to ensuring that all learners benefit, regardless of subject matter.

REFERENCES:

1. Roll, I., & Wylie, R. (2016). Evolution and revolution in artificial intelligence in education. International Journal of Artificial Intelligence in Education, 26(2), 582–599. https://link.springer.com/article/10.1007/s40593-016-0110-3
2. Zhang, J., & Zheng, Y. (2020). Challenges and opportunities of AI for creative thinking in education. Educational Technology Research and Development, 68(2), 857–860. https://link.springer.com/article/10.1007/s11423-020-09779-0
3. Nguyen, H. N., Dang, T., & Nguyen, V. T. (2020). Interface Design for HCI Classroom: From Learners' Perspective. arXiv. https://arxiv.org/abs/2010.01651
4. Chen, W., Yu, H., & Chang, C. (2021). Adaptive learning platforms: Impacts on retention and performance in STEM. Frontiers in Education, 6, 702178. https://www.frontiersin.org/articles/10.3389/feduc.2021.702178/full
5. Anantrasirichai, N., & Bull, D. (2020). Artificial intelligence in the creative industries: A review. arXiv. https://arxiv.org/abs/2007.12391
6. Ziyadullaev, A. (2025). The application of artificial intelligence in education: A case study at Japan Digital University https://global-science-review.com/ojs/index.php/gsr/article/view/1928