

**GENERATIVE AI USE IN DESIGN EDUCATION:
GAINING INSIGHTS FROM EDUCATORS AND
STUDENTS**



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GENERATIVE AI USE IN DESIGN EDUCATION: GAINING INSIGHTS FROM EDUCATORS AND STUDENTS

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GENERATIVE AI USE IN DESIGN EDUCATION: GAINING INSIGHTS FROM EDUCATORS AND STUDENTS

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To my family & my friends, their support and encouragement...



DECLARATION OF ORIGINALITY

I hereby declare that I am the sole author of this thesis and that this is the true copy of my thesis, including the final revisions, approved by my thesis committee. All data and information have been obtained, produced, and presented in accordance with the rules of research ethics and principles of academic honesty. As required by these rules, to the best of my knowledge I have acknowledged ideas, thoughts, and any copyrighted material in accordance with the standard referencing rules. I certify that any part of this thesis has not been submitted for a degree or diploma in another educational institution.

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ABSTRACT

This project explores the integration and educational potential of generative artificial intelligence (GenAI) tools within illustration-focused design education. Using a qualitative method research design that incorporates interviews, surveys, and focus group discussions, the study examines how students and educators interact with both AI-based and conventional tools across various stages of the ideation and illustration process. The research aims to: (1) Investigate design educators' and students' perspectives on the dynamics of designer-AI collaboration, (2) Examine student approaches and typologies based on their use of GenAI in creative workflows, (3) Analyze the implementation of GenAI in academic design studio settings in higher education and identify key ethical issues, educational strategies, and effective integration methods within communication and visual design curricula. By analyzing perspectives and practices across different stakeholders and course levels, this study contributes to the ongoing discourse on the responsible and reflective integration of AI in creative education, offering insights for shaping future design education.

Keywords: Generative artificial intelligence, design education, human-ai collaboration, education transformation, ethical awareness

ÖZET

Bu çalışma, illüstrasyon odaklı tasarım eğitimi bağlamında üretken yapay zekâ (GenAI) araçlarının entegrasyonunu ve eğitsel potansiyelini incelemektedir. Görüşmeler, anketler ve odak grup tartışmalarını içeren nitel araştırma yöntemi kullanılarak, öğrencilerin ve öğretim elemanlarının fikir geliştirme ve illüstrasyon sürecinin farklı aşamalarında yapay zekâ tabanlı ve yapay zekâ dışı araçlarla nasıl etkileşime girdikleri araştırılmıştır. Araştırmanın temel amaçları şunlardır: (1) Tasarımcı-yapay zekâ iş birliğinin dinamiklerine ilişkin tasarım eğitmenlerinin ve alan uzmanlarının görüşlerini incelemek, (2) Yaratıcı çalışma süreçlerinde GenAI kullanan tasarım öğrencilerinin yaklaşımlarını ve tipolojilerini analiz etmek, (3) Akademik tasarım stüdyosu ortamlarında GenAI uygulamalarını vurgulayarak iletişim ve görsel tasarım müfredatlarında etik konular, eğitsel stratejiler ve etkili entegrasyon yöntemlerini belirlemek. Farklı paydaşlar ve ders düzeyleri arasındaki perspektifleri ve uygulamaları karşılaştırmalı olarak analiz eden bu çalışma, yaratıcı eğitimde yapay zekânın sorumlu ve yansıtıcı biçimde entegrasyonuna yönelik güncel tartışmalara katkı sunmakta ve geleceğin tasarım eğitimine ışık tutacak çıkarımlar sunmaktadır.

Anahtar Kelimeler: Üretken yapay zeka, tasarım eğitimi, insan-yapay zeka iş birliği, eğitim dönüşümü, etik farkındalık

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TABLE OF CONTENTS

DECLARATION OF ORIGINALITY	iv
ABSTRACT.....	v
ÖZET	vi
ACKNOWLEDGMENTS	vii
LIST OF TABLES.....	xiv
LIST OF FIGURES	xvi
LIST OF ACRONYMS AND ABBREVIATIONS	xviii
1. INTRODUCTION	1
1.1 Background.....	3
1.1.1 Creativity and the Role of Generative AI Tools	4
1.1.2 Ethical Concerns in GenAI-Integrated Design Practices.....	5
1.1.3 Prompt Literacy and Technical Competence.....	7
1.1.4 Perceived Impact of GenAI on Creative Thinking	8
1.2 Aims and Objectives	9
2. METHODS	11
2.1 Phase 1: Understanding Design Education Experts' Views via Interviews	13
2.1.1 Recruitment of Participants	13
2.1.2 Data Collection	15
2.2 Phase 2: Gaining Insights About Communication Design Students' AI Use in Education Through Survey	15
2.2.1 Recruitment of Participants	16
2.2.2 Data Collection	17
2.2.3 Data Analysis.....	18
2.3 Phase 3: Focus Group to Discuss and Unpack the Integration of Artificial Intelligence Into Courses	20
2.3.1 Recruitment of Participants	21
2.3.2 Data Collection	22
2.3.3 Data Analysis.....	25
2.4 Ethical Considerations	26
3. RESULTS	27

3.1 Phase 1: Understanding Design Education Experts' Views via Interviews	27
3.1.1 Theme 1: Generative AI Tools Versus Conventional Design Tools	28
3.1.1.1 The Rise of Verbal Creativity Skills Against Visual Creativity Skills...	28
3.1.1.2 Shifting in the Role of the Designer	29
3.1.2 Theme 2: Role of Chatbots in the Ideation Process.....	29
3.1.3 Theme 3: The Importance of Verbal Communication.....	30
3.1.3.1 Value of AI Design Tools: Tips and Suggestions in the Design Process	30
3.1.3.2 Prompts' Limitation on Human Creativity	30
3.1.4 Theme 4: Collaborative AI Design Tools.....	31
3.1.4.1 Positive Effects on the Creative Processes	31
3.1.4.2 The Importance of the Human Factor	31
3.1.5 Theme 5: Predictability Concerns.....	32
3.1.5.1 The Silent Erosion of Creativity in the Age of AI.....	32
3.1.5.2 Generative AI Signature and Design Quality	33
3.2 Phase 2: Gaining Insights About Communication Design Students' AI Use in Education Through Survey	34
3.2.1 Theme 1: Integration of GenAI Across Design Phases	34
3.2.1.1 Ideation Phase	35
3.2.1.1.1 Divergent Thinking in Ideation and Inspiration.....	36
3.2.1.1.2 Agile Thinking in the Design Process	38
3.2.1.2 Implementation Phase.....	40
3.2.1.2.1 Visualization and Creative Asset Generation	41
3.2.1.2.2 Functional and Practical Applications of GenAI.....	43
3.2.2 Theme 2: Practical Benefits and Drawbacks of GenAI Use.....	45
3.2.2.1 AI as a Supportive Partner	45
3.2.2.1.1 Student Approaches Reflecting AI as a Supportive Partner	46
3.2.2.2 Efficiency and Time-Saving in Design Flows	48
3.2.3 Theme 3: The Originality-Creativity Dilemma	50
3.2.3.1 Student Approaches Reflecting Perception of Originality and Authenticity	52
3.2.3.2 Perceptions of Originality and Authenticity	53

3.2.3.2.1 Student Approaches Reflecting Perception of Creativity in Relation to GenAI.....	54
3.2.4 Theme 4: Challenges in Prompt-Output Interaction.....	56
3.2.4.1 Prompt-Related Challenges	57
3.2.4.1.1 Student Approaches Reflecting Perception of Prompt-Related Challenges.....	59
3.2.4.2 Output-Related Challenges	60
3.2.4.2.1 Student Approaches Reflecting Perception of Output-Related Challenges.....	61
3.2.5 Theme 5: Ethical Considerations and Ownership in GenAI Use	63
3.2.5.1 Creative Inspiration and Homogenization of Ideas	64
3.2.5.1.1 Student Approaches Reflecting Creative Inspiration and Homogenization of Ideas	65
3.2.5.2 AI-Supported Co-Creation and Labor	67
3.2.5.2.1 Student Approaches Reflecting Creative Inspiration and Homogenization of Ideas	67
3.2.5.3 Ownership and Intellectual Property	69
3.2.5.3.1 Approaches Reflecting Ownership and Attribution.....	69
3.2.5.4 Intellectual Property, Misuse, and Societal Risk	71
3.2.5.4.1 Approaches Reflecting Intellectual Property, Misuse, and Societal Risk	71
3.3 Phase 3: Focus Group to Discuss and Unpack the Integration of Artificial Intelligence Into Courses	73
3.3.1 The Role of AI in the Creative Process	74
3.3.1.1 Divergent Thinking in Ideation and Inspiration	74
3.3.1.2 Agile Thinking in the Design Process	75
3.3.1.3 Visualization and Creative Asset Generation	77
3.3.1.4 Functional and Practical Applications of GenAI.....	77
3.3.2 AI in Design Education and Workflow	79
3.3.2.1 AI as Supportive Design Partner	79
3.3.2.2 Efficiency and Time-Saving in Design Flow	80
3.3.3 Creativity, Originality, and Authenticity	81

3.3.3.1 Perceptions of Originality and Authenticity	82
3.3.3.2 Perceptions of Creativity in Relation to GenAI.....	83
3.3.4 Limitations and Challenges	85
3.3.4.1 Prompt-Related Challenges	86
3.3.4.2 Output-Related Challenges	87
3.3.5 Ethical and Societal Dimensions	88
3.3.5.1 Ownership and Attribution	89
3.3.5.2 Intellectual Property, Misuse, and Societal Risk	90
3.3.5.3 Creative Inspiration and Homogenization of Ideas	92
3.3.5.4 AI-Supported Co-Creation and Labor	93
3.3.6 Emerging New Themes	94
4. DISCUSSION.....	97
4.1 Phase 1: Understanding Design Education Experts' Views via Interviews	98
4.1.1 Fast and Effective Design With Human-Artificial Intelligence Collaboration	98
4.1.2 AI Chatbots in the Design Process	99
4.1.3 Brainstorming and Problem Solving With Human-AI Collaboration	100
4.1.4 Accelerating the Creative Process	100
4.2 Phase 2: Gaining Insights About Communication Design Students' AI Use in Education Through Survey	101
4.2.1 Cross-Theme Student Typology: Ethical and Constructive Spectrum of GenAI Use	102
4.2.1.1 The Constructive Spectrum of AI-Design Users	103
4.2.1.2 The Ethical Spectrum of AI-Design Users	104
4.2.2 Ideation Phase: From Stimulus to Direction.....	105
4.2.3 Implementation Phase: From Visualization to Functionality	107
4.2.4 Reframing Collaboration: AI as a Design Partner in Education.....	109
4.2.5 From Efficiency to Depth: Balancing Speed and Reflective Thinking	110
4.2.6 Negotiate Between Originality and Creativity.....	111
4.2.6.1 Originality.....	111
4.2.6.2 Creativity	113
4.2.7 Cultivating AI Literacy Through Reflective and Critical Engagement.....	114

4.2.7.1 Prompt-Related Difficulties	114
4.2.7.2 Output Quality and Reliability.....	115
4.2.8 Ownership and Authorship Dilemma	117
4.2.9 Originality, Copyright, and the Redistribution of Creative Labor.....	118
4.2.10 Human Contribution as an Ethical Anchor.....	119
4.3 Phase 3: Focus Group to Discuss and Unpack the Integration of Artificial Intelligence Into Courses	120
4.3.1 The Positive Constraint Dilemma of GenAI in Creativity and Design Education	121
4.3.1.1 Facilitating Role of GenAI in the Creativity Learning Process.....	122
4.3.1.2 Cognitive Dependency and Superficiality of GenAI in Creative Practice	123
4.3.2 The Paradox of Efficiency and Authenticity in AI Support Design Education	125
4.3.2.1 Efficiency as Cognitive Leverage in the Creative Process	125
4.3.2.2 Authenticity, Originality, and the Limits of AI-Generated Aesthetics.	127
4.3.2.3 The Creative Paradox: Between Cognitive Support and Critical Erosion	128
4.3.3 The Educational Value of Limitations: Learning Through AI Constraints.	129
4.3.3.1 Prompt Literacy as an Educational Competence	129
4.3.3.2 Learning From Imperfect Outputs	130
4.3.4 Ethical and Societal Dimensions of AI-Supported Design Practice.....	131
4.3.4.1 Creative Inspiration and the Risk of Homogenization.....	132
4.3.4.2 AI-Supported Co-Creation and Shifting Definition of Labor.....	133
4.3.4.3 Ownership, Attribution, and the Ethics of Transparency	134
4.3.4.4 Intellectual Property, Misuse, and Institutional Responsibility	134
4.3.5 Interpretative Overview: Academics’ Reflections on the Future of AI in Design Education	136
4.3.5.1 Rethinking the Foundations of Design Education	136
4.3.5.2 AI as a Reflective Mirror for Thinking and Making	137
4.3.5.3 Educational Innovation and Course Design for AI Literacy	137
4.3.5.4 Balancing Innovation With Convention	139

4.3.5.5 Towards a Responsible and Reflective Design Education	139
4.3.6 Shared and Divergent Insights From Students and Educators: Rethinking Creativity With GenAI in Design Education.....	140
5. LIMITATIONS.....	142
6. CONCLUSION.....	144
REFERENCES	145



LIST OF TABLES

Table 2.1 Participant Demographics & Academic Experience.....	14
Table 2.2 Participant Demographics & Academic Level.....	16
Table 2.3 Experience & AI Tool.....	17
Table 2.4 Creative Thinking Process	17
Table 2.5 Ethics.....	18
Table 2.6 Participant Demographics & Academic Experience.....	22
Table 2.7 Indicator Keywords of Newly Emerged Themes.....	24
Table 3.1 Indicator Keywords.....	35
Table 3.2 Classification of Student Approaches in Theme 1: Divergent Thinking	37
Table 3.3 Classification of Student Approaches in Theme 1: Agile Thinking	40
Table 3.4 Classification of Student Approaches in Theme 1: Visualization and Creative Assets Generation	42
Table 3.5 Classification of Student Approaches in Theme 1: Implementation Phase: Visualization and Creative Assets Generation.....	44
Table 3.6 Indicator Keywords.....	45
Table 3.7 Classification of Student Approaches in Theme 2: As a Supportive Design Partner.....	47
Table 3.8 Classification of Student Approaches in Theme 2: Efficiency and Time-Saving in Design Workflows	50
Table 3.9 Indicator Keywords.....	51
Table 3.10 Classification of Student Approaches in Theme 3: Perception of Originality and Authenticity.....	53
Table 3.11 Classification of Student Approaches in Perception of Creativity in Relation to GenAI	55
Table 3.12 Indicator Keywords.....	57
Table 3.13 Classification of Student Approaches in Theme 4: Prompt-Related Challenges	60
Table 3.14 Classification of Student Approaches in Theme 4: Output-Related Challenges	62
Table 3.15 Indicator Keywords.....	63

Table 3.16 Classification of Student Approaches in Theme 5: Creative Inspirations and Homogenization of Ideas	66
Table 3.17 Classification of Student Approaches in Theme 5: AI-Supported Co-Creation and Labor	68
Table 3.18 Classification of Student Approaches in Theme 5: Ownership and Attribution	70
Table 3.19 Classification of Student Approaches in Theme 5: Intellectual Property, Misuse, and Societal Risks	72
Table 3.20 New Themes Identified in Phase 3	73
Table 3.21 Focus Group Participants' Perspectives on Divergent Thinking in Ideation and Inspiration	75
Table 3.22 Focus Group Participants' Perspectives on Agile Thinking in the Design Process	76
Table 3.23 Focus Group Participants' Perspectives on Visualization and Creative Asset Generation.....	77
Table 3.24 Focus Group Participants' Perspectives on Functional and Practical Applications of GenAI.....	78
Table 3.25 Focus Group Participants' Perspectives on Supportive Partner of AI.....	80
Table 3.26 Focus Group Participants' Perspectives on Efficiency and Time-Saving in Design Flow	81
Table 3.27 Focus Group Participants' Perspectives on Originality and Authenticity	83
Table 3.28 Focus Group Participants' Perspectives on Creativity in Relation to GenAI	85
Table 3.29 Focus Group Participants' Perspectives on Prompt-Related Challenges	87
Table 3.30 Focus Group Participants' Perspectives on Output-Related Challenges.....	88
Table 3.31 Focus Group Participants' Perspectives on Ownership and Attribution	90
Table 3.32 Focus Group Participants' Perspectives on Intellectual Property, Misuse, and Societal Risk	92
Table 3.33 Focus Group Participants' Perspectives on Creative Inspiration and Homogenizations of Ideas	93
Table 3.34 Focus Group Participants' Perspectives on AI-Supported Co-Creation and Labor.....	94

LIST OF FIGURES

Figure 2.1 Research Process Overview	11
Figure 2.2 Color Assigned to Participants by Class Level	19
Figure 2.3 Colors Indicate the Themes	19
Figure 3.1 Visual Overview of Student Approaches in Divergent Thinking	37
Figure 3.2 Visual Overview of Student Approaches in Agile Thinking.....	40
Figure 3.3 Visual Overview of Student Approaches in Visualization and Creative Assets Generation.....	42
Figure 3.4 Visual Overview of Student Approaches in Functional and Practical Applications of GenAI.....	44
Figure 3.5 Visual Overview of Student Approaches in AI as Supportive Design Partner	47
Figure 3.6 Visual Overview of Student Approaches in Efficiency and Time-Saving in Design Flows	49
Figure 3.7 Visual Overview of Student Approaches in Perception of Originality and Authenticity	52
Figure 3.8 Visual Overview of Student Approaches in Perception of Creativity in Relation to GenAI.....	55
Figure 3.9 Visual Overview of Student Approaches in Prompt-Related Challenges....	59
Figure 3.10 Visual Overview of Student Approaches in Output-Related Challenges...	62
Figure 3.11 Visual Overview of Student Approaches in Divergent Thinking	66
Figure 3.12 Student Approaches Visual Overview of Student Approaches in AI-Supported Co-Creation and Labor.....	68
Figure 3.13 Visual Overview of Student Approaches in Ownership and Attribution...	70
Figure 3.14 Visual Overview of Student Approaches in Intellectual Property, Misuse, and Societal Risks.....	72
Figure 3.15 Distribution of Codes by Focus Group Questions Within Theme 1	74
Figure 3.16 Distribution of Codes by Focus Group Questions Within Theme 2	79
Figure 3.17 Distribution of Codes by Focus Group Questions Within Theme 3	82
Figure 3.18 Distribution of Codes by Focus Group Questions Within Theme 4	86
Figure 3.19 Distribution of Codes by Focus Group Questions Within Theme 5	88

Figure 3.20 Distribution of Newly Emerged Codes by Focus Group Questions.....	95
Figure 4.1 Student Typology Design Scheme	101
Figure 4.2 The Dual Spectrum of AI-Design User	102
Figure 4.3 The Constructive Spectrum of AI-Design Users.....	103
Figure 4.4 The Ethical Spectrum of AI-Design User	104
Figure 4.5 Summary of Focus Group Codes	121



LIST OF ACRONYMS AND ABBREVIATIONS

AI:	Artificial Intelligence
API:	Application Programming Interface
ATLAS.ti:	Qualitative Data Analysis Software
BARD:	Google Bard Generative AI Tool
Bing Image:	Microsoft Bing Image Creator
COD:	Communication and Design
DALL·E:	OpenAI Text-to-Image Generator
DTS:	Design, Technology, and Society
GAN:	Generative Adversarial Network
GenAI:	Generative Artificial Intelligence
GPT:	Generative Pre-Trained Transformer
HCI:	Human-Computer Interaction
LEONARDO:	Leonardo AI Image Generation Platform
LLM:	Large Language Model
MCP:	Model Context Protocol
MIDJOURNEY:	AI-Based Image Generation Platform
PDF:	Portable Document Format
P-ID:	Participant Identifier
PSD:	Photoshop
Q-ID:	Question Identifier
RQ:	Research Question
RunwayML:	Runway Machine Learning Platform

1. INTRODUCTION

In recent years, artificial intelligence (AI) based tools have reshaped the design industry and creative practices (Bhat et al., 2024; Rezk, 2023). Generative AI (GenAI) technologies, such as OpenAI's ChatGPT, Google's Gemini, DALL·E, DeepSeek, and Microsoft Copilot, are rapidly transforming various sectors, including higher education (Nguyen, 2025). Nguyen's review demonstrates that GenAI tools (e.g., ChatGPT, DALL·E) facilitate students in generating more and diverse ideas within a shorter timeframe by providing textual and visual prompts (Nguyen, 2025).

As one of the most recent developments, GenAI enables designers to speed up their workflows by quickly generating visual, textual, or multimodal content (Kalving et al., 2024). In a comparative study, participants using a visual-interactive ideation interface produced 8-28 alternatives per person ($M = 16.05$), while those interacting only through text-based chat tended to fixate on a single idea within 4-12 turns (Shen et al., 2025). In this context, the value of human expertise, working conditions, economic distribution, and professional roles are being redefined (Shen et al., 2025). This balance is increasingly challenged by the rapid advancement of GenAI tools (Dalsgaard, 2025b).

These tools, which rely on advanced algorithms and large datasets, support rapid prototyping, concept development, and the exploration of alternative ideas (Peng et al., 2024). However, the long-term effects of GenAI on design students and different learner typologies have not yet been sufficiently explored (Akverdi & Baykal, 2024; J. Li et al., 2024).

The primary objectives of design education are to cultivate technical skills, foster creativity, promote originality, and cultivate critical thinking (Fui-Hoon Nah et al., 2023; Muller et al., 2024, Shen et al., 2025). While GenAI tools provide students with quick

inspiration and idea generation, they also raise concerns related to ethics and originality (Rezk, 2023). Since GenAI models are primarily trained on large datasets comprising user-generated and shared content, their production processes respond to prompts based on existing patterns in the data (Dalsgaard, 2025b). As students increasingly use AI-generated content, issues of ownership and copyright have become more visible (Akverdi & Baykal, 2024). A lack of transparency in the use of GenAI in education, combined with the potential for imitation in prompt practices, may lead to issues with originality and citation in students' work (Muller et al., 2024; Oppenlaender et al., 2025). Moreover, relying on AI instead of personal creative skills may impact students' professional competence and their development of a unique style (Muller et al., 2024). Therefore, it is crucial to examine how GenAI influences students' motivation and professional identity. Literature emphasizes the technical benefits of GenAI, including enhancements to the speed and diversity of visual ideation (Capel et al., 2024; Moruzzi & Margarido, 2024; Schmidt et al., 2023). However, student-centered analyses and insights into student experiences remain limited (J. Li et al., 2024).

Recent studies have explored the integration of artificial intelligence into design education and its effects on creativity from different perspectives (C. F. Ho, 2024; Hashem & Hakeem, 2024; Nguyen, 2025; Qiu et al., 2024; Wei et al., 2025). However, most of these studies have mainly focused on students' experiences, while data concerning the educational, ethical, and guiding roles of instructors remain limited. (Hashem & Hakeem, 2024; Wei et al., 2025) emphasize that both students' and educators' perspectives should be considered to understand better the holistic integration of GenAI tools into learning environments. Similarly, (C. F. Ho, 2024) points out that the role of artificial intelligence in education is shaped not only by technical competencies but also

by the ethical guidance and values conveyed by instructors. (Nguyen, 2025) emphasizes the importance of faculty training and institutional policies in ensuring the sustainable management of AI applications in higher education. Meanwhile, Qiu et al. (2024) note that the use of artificial intelligence may evolve over time, suggesting that this transformation should be monitored through longitudinal research. In this context, the present study aims to address this gap in the literature by combining multiple perspectives from both students and educators and by examining the temporal transformation of AI-assisted design education within the 2023-2025 period.

This original analytical structure contributes to understanding GenAI not only as a technical tool but also as an agent of educational, ethical, and creative transformation within the field of design education. The study also examines the perspectives and practices of various stakeholders and course levels. The primary aim of this study is to explore how GenAI reshapes creative processes, ethical awareness, and educational practices in illustration-based design education, with the goal of filling the existing gap. The research seeks to understand these dynamics from the perspectives of both students and educators, providing a multi-layered view of how GenAI tools are experienced, negotiated, and reflected upon within studio-based learning environments. The study also aims to propose guiding principles for the responsible and reflective integration of GenAI into future design curricula.

1.1 Background

This thesis, which focuses on the role of generative artificial intelligence (GenAI) in design education, aims to map its impact on illustration-based courses through both conceptual and empirical studies. The review is based on peer-reviewed publications and field reports released between 2023 and 2025, and it is organized around four main axes:

(1) the theoretical and contextual background of GenAI and its workflows in design education, (2) its effects on creativity and design processes, (3) ethical discussions in relation to data, originality, and ownership, and (4) prompt literacy and technical competence.

1.1.1 Creativity and the Role of Generative AI Tools

Generative Artificial Intelligence (GenAI) is transforming creative practices in education by providing faster, more innovative, and more accessible tools for both visual and verbal production (Fui-Hoon Nah et al., 2023; Kumar et al., 2025). With the development of GenAI tools such as ChatGPT, RunwayML, and Midjourney, new forms of participation in creative production have emerged (Dalsgaard, 2025a). These tools have become valuable components of design workflows by supporting processes such as ideation, rapid prototyping, and the exploration of alternative concepts (Kalving et al., 2024; Peng et al., 2024).

From a graphic design perspective, GenAI can serve as a design tool that offers abundant sources of inspiration, supporting designers' artistic development and innovation (Qian et al., 2023). For example, graphic designers often utilize GenAI to expedite the creation of visual materials, such as mood boards, and to generate new ideas (Peng et al., 2024; Rezk, 2023). As an assistive tool, GenAI can contribute to solving fundamental design problems, improving work efficiency, and allowing designers to dedicate more energy to artistic growth and innovation (Wang et al., n.d.).

Beyond visual output, GenAI has also been shown to enhance students' creative thinking in verbal tasks such as creative writing and critical reflection (Shibani et al., 2024). This multimodal potential allows designers to engage in more holistic and in-depth creative processes (Muller et al., 2024; Shibani et al., 2024). In addition, designers have

begun to see AI not only as a tool but also as a “creative partner,” a role that has been found to increase motivation and promote innovation (Kalving et al., 2024).

Studies examining tools such as ChatGPT indicate that AI-assisted ideation can produce more novel ideas, although sometimes at the expense of contextual relevance (Schmidt et al., 2023). Addressing this limitation, Li et al. (2025) indicate that integrating human oversight into structured AI workflows improves the quality and relevance of the generated content.

Although these tools clearly improve efficiency, their long-term impact on design education remains underexplored (Akverdi & Baykal, 2024; J. Li et al., 2024). Despite their frequent use in ideation and concept development, students’ interactions with GenAI often remain superficial, indicating the need for more structured educational approaches (Shibani et al., 2024).

Users reflect not only the system’s output but also their own prompts, frameworks, and orientations. When prompt literacy in the classroom is low, outputs tend to be generic and of lower quality; as literacy and structured use improve, output quality and consistency increase significantly (Dalsgaard, 2025b). Overall, GenAI tools have strong potential to support creativity in design education when they are integrated within educational frameworks that encourage experimentation and critical thinking (Fui-Hoon Nah et al., 2023; Muller et al., 2024).

1.1.2 Ethical Concerns in GenAI-Integrated Design Practices

The increasing integration of Generative AI (GenAI) into design processes has raised critical ethical issues, especially concerning copyright, originality, and data ownership (Akverdi & Baykal, 2024; Muller et al., 2024). Designers often question the originality of AI-generated outputs and the risk of repetitive styles when the source data

remains opaque (Akverdi & Baykal, 2024; J. Li et al., 2024). These concerns become even more evident as the boundaries between authorship and creative ownership grow increasingly blurred.

The transforming production ecosystem can provide accessibility and ease of creation for individuals with strong ideas but limited technical skills (Dalsgaard, 2025b). However, in a competitive market environment, designers are expected to continuously learn and master new GenAI tools (Wang et al., n.d.). In fields that require manual expertise, such as Adobe Illustrator and typography, the ability of AI models to easily imitate such outputs introduces potential risks of value loss (Dalsgaard, 2025b). To avoid overreliance on GenAI, designers should consciously continue to develop their own creativity and artistic skills; otherwise, their personal style and originality may weaken (Wang et al., n.d.).

Another urgent issue is data privacy. Since AI systems rely on large datasets, the inclusion of personal or sensitive information can make users feel vulnerable (Capel et al., 2024). Researchers emphasize the importance of transparency in how GenAI operates and suggest that increasing user awareness of underlying processes can reduce ethical risks (J. Li et al., 2024). Similarly, the accuracy of the content produced by Large Language Models (LLMs) is not always guaranteed, raising concerns about misinformation and its potential effects on academic integrity (Bhat et al., 2024; Capel et al., 2024).

From an educational perspective, overdependence on GenAI may weaken students' creative depth and reduce their engagement with fundamental design skills (Han et al., 2024). To exemplify, in illustration-based design education, maintaining a balanced relationship between human creativity and AI support is considered essential to

preserving originality (Kalving et al., 2024). In controlled studio-like experiments, AI-supported teams often focus more on rapid idea generation and postpone selection and refinement steps, resulting in decreased visibility of sketching, iteration, and justification processes (Frich et al., 2024). Some researchers caution against placing students in a passive “prompt-giver” role and instead propose educational strategies that foster individual creativity and encourage active participation (J. Li et al., 2024). Also, the factor affecting students’ engagement with AI is the effort needed to write clear and effective prompts. Poorly written prompts often lead to bad results, and some students end up spending extra time revising their prompts to get the desired output (Sandhaus et al., 2025).

1.1.3 Prompt Literacy and Technical Competence

Effective interaction with GenAI tools largely depends on the user’s ability to design clear and purposeful prompts (Dalsgaard, 2025a; Shibani et al., 2024). In current practice, rather than focusing solely on drawing, it has become increasingly important to understand how textual prompts are interpreted, how ambiguities are processed, and which phrases trigger specific visual features in tools such as Midjourney (Dalsgaard, 2025b). Students who struggle with prompt design often produce limited results, while those who develop structured prompt skills can significantly improve the quality and contextual relevance of AI-generated content, particularly during the ideation stage (Shibani et al., 2024).

Personalized interaction models can also be beneficial. For example, configuring AI as an Assistant, Collaborator, or Idea Challenger supports different creative strategies and roles (Moruzzi & Margarido, 2024). Participants report turning to AI assistance during creative blocks (Frich et al., 2024). Such user-centered frameworks allow students

to adapt their creative workflows flexibly according to the nature of the task and learning needs.

Recent approaches also suggest using AI-generated fictional personas for simulated feedback in the early stages of design. This technique enables students to critically evaluate their ideas under time constraints and provides a new approach to testing assumptions (Rönnberg & Börütecene, 2024). Moreover, multimodal AI systems that integrate visual, textual, and auditory inputs encourage creative diversity by enabling intuitive, context-sensitive interaction (Wei et al., 2025). These strategies are especially valuable in illustration-focused education, where color, form, and textual meaning are considered together (Kalving et al., 2024; Peng et al., 2024).

1.1.4 Perceived Impact of GenAI on Creative Thinking

Students generally report that GenAI tools increase their confidence and sense of satisfaction in creative tasks (Akverdi & Baykal, 2024; Han et al., 2024). These tools provide quick feedback, stimulate ideation, and enable fast visual prototyping, making the creative process more accessible. Additionally, AI tools can automate repetitive and basic design tasks, such as typesetting, color matching, and image processing. As a result, they can significantly shorten the design cycle and improve work efficiency (Wang et al., n.d.). However, AI in graphic design offers benefits, but also brings some drawbacks (Wang et al., n.d.). Some challenges reported include overreliance on technology and concerns about the originality of the produced work (Han et al., 2024; J. Li et al., 2024). Although GenAI can offer useful suggestions, some participants have emphasized that such feedback can occasionally be superficial and provide limited depth in idea development (Shibani et al., 2024).

Among students, the importance of maintaining a balanced relationship between human input and AI-generated contributions is becoming increasingly recognized. While AI enables the production of higher-quality outcomes in a shorter timeframe, excessive dependence may erode the sense of ownership or originality (J. Li et al., 2024). The literature also suggests a potential decline in intrinsic motivation and skill development, particularly among novice designers, who may rely on AI “shortcuts” and skip essential learning stages (J. Li et al., 2024). Therefore, in GenAI-supported design education, strengthening critical awareness and encouraging reflective engagement appear to be key to sustaining long-term creative development.

1.2 Aims and Objectives

The fast integration of generative artificial intelligence (GenAI) tools into design education has reopened discussions about creativity, originality, ethics, and educational guidance. However, the current literature contains only a few in-depth studies on how this transformation is occurring in illustration-based studio courses and how students utilize GenAI tools during different stages of the creative process, as well as at what level of awareness. In 2024, all undergraduate design cohorts (first to fourth year) simultaneously engaged with Generative AI tools. This unique convergence created an opportunity to analyze differences in adaptation across experience levels. Specifically, the study investigated (1) how prior exposure to non-AI design methods influenced tool adoption, (2) how students’ perceptions of creativity evolved with AI integration, and (3) how teaching practices adjusted to this technological shift. In addition, the study aims to provide guidance that supports design educators in thoughtfully integrating GenAI into future studio curricula. These findings contribute to understanding how design education transitions from conventional to AI-augmented modes.

In line with this framework, the Methods section presents a qualitative research design consisting of three interconnected stages: (1) semi-structured interviews with nineteen design educators, (2) an open-ended online survey with eighty-one design students, and (3) focus group discussions with eight educators. The study aims to explore how Generative Artificial Intelligence (GenAI) is experienced, interpreted, and reflected upon within the context of illustration-based design education. Given the qualitative studies that examine both educator and student perspectives within studio-based learning contexts, this research addresses this gap by providing contextual insights across different educational levels.

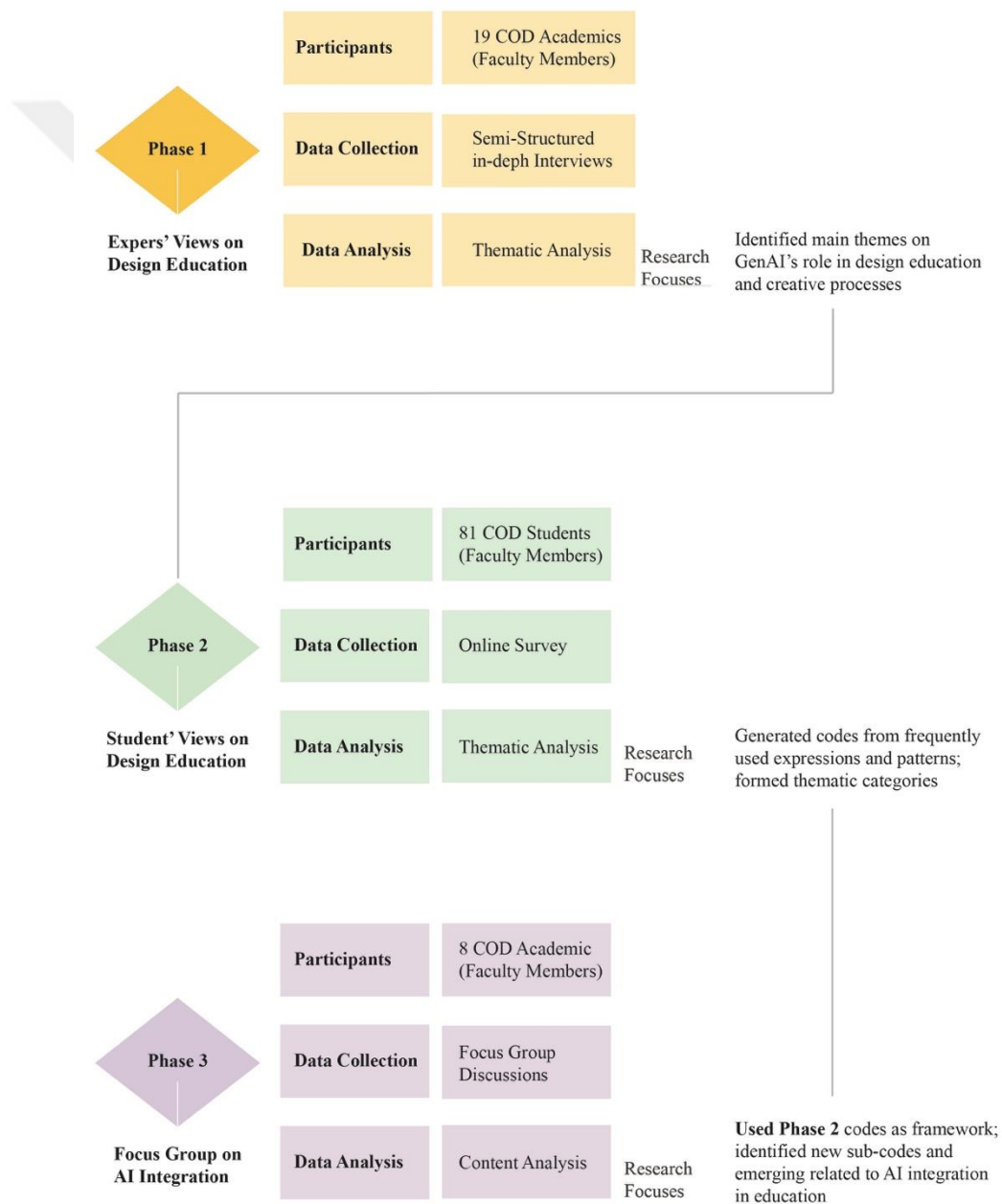
The study also introduced eight original typologies that explain how students use Generative AI (GenAI) tools, which have not been previously defined in the literature. These categories are organized within a two-dimensional conceptual framework consisting of the Constructive Spectrum and the Ethical Spectrum. *The Constructive Spectrum* describes the extent of GenAI's involvement throughout the stages of idea development, visualization, and production. It illustrates how AI can function as a supportive, co-creative, or directive partner within the creative process. This dimension includes four typologies: Starters, Accelerators, Doubters & Survivors, and Finishers. *The Ethical Spectrum*, on the other hand, represents students' levels of ethical awareness, ownership, and responsibility in their use of AI. It examines how students make ethical decisions during design production and the degree of creative agency they attribute to AI. This dimension includes Advocates, Guardians, Witnesses, and Suspects.

Together, these two axes illustrate how students position AI at different points in the creative production cycle, revealing distinct patterns of human-machine interaction and evolving roles within the design process.

2. METHODS

This study comprises three phases. The research process was organized into three qualitative stages. Each stage aimed to understand a different aspect of how GenAI is used in illustration-based design education (see Figure 2.1).

Figure 2.1 Research Process Overview



Note. The table provides an overview of the thesis, including participants, data collection, and data analysis.

Phase 1 - Understanding Design Education Experts' Views via Interviews. In the first stage, semi-structured interviews were held with faculty members from the Communication and Design (COD) department. The goal was to gather their opinions on how GenAI tools impact idea generation and design education. Participants were intentionally selected to include individuals with experience using both AI-based and conventional design tools. The interviews consisted of five main questions, covering their experiences with AI and non-AI-based design tools, as well as their perspectives on the role of creativity. The answers were written down, transcribed, and analyzed to find common patterns and differences between AI-supported and conventional design practices. Additionally, informal classroom observations were conducted by the teaching assistant (the researcher) to examine how students and instructors utilize GenAI tools in real studio settings.

Phase 2 - Gaining Insights about Communication Design Students' AI Use in Education through Survey. The second stage involved an online survey administered to undergraduate students from the Communication and Design department. The purpose was to understand students' experiences, opinions, and habits when using GenAI tools in illustration courses. The survey, which included both open-ended and closed questions, was shared via Google Forms in both English and Turkish. It was sent to students who were taking or had completed the COD 103 course.

Phase 3 - Focus Group to Discuss and Unpack the Integration of Artificial Intelligence into Courses. The third stage involved focus group discussions with eight educators who were the instructors of the students from Phase 2. The goal was to discuss their experiences, opinions, and suggestions for utilizing GenAI in design education. The discussions focused on three main topics: (1) how GenAI influences idea generation and

creative sketching, (2) ethical issues related to originality, authorship, and ownership, and (3) effective strategies for integrating GenAI into illustration-based design courses. The focus group data were analyzed in two stages. First, questions 1-3 were examined through content analysis to identify shared perspectives. Then, question 4 was analyzed separately, as it provided insights into the future direction of design education and the integration of GenAI into curricula. All data from these sessions were analyzed to identify common themes, educational challenges, and opportunities for utilizing AI responsibly and effectively in design education.

2.1 Phase 1: Understanding Design Education Experts' Views via Interviews

This study employed a qualitative research design, utilizing semi-structured expert interviews, to explore communication designers' perspectives on the use of artificial intelligence (AI) tools and conventional design tools in their idea generation processes. Thematic analysis was applied to the interview data, resulting in five themes. The following section outlines the procedures for participant recruitment, data collection, and analysis.

2.1.1 Recruitment of Participants

Data Participants were recruited from Özyeğin University, specifically from the Department of Communication and Design (COD) and the Design, Technology, and Society (DTS) master's and doctoral programs (see Table 2.1). A purposive sampling strategy was adopted to ensure the inclusion of individuals who had both practical and educational engagement with GenAI tools in the context of design education.

The recruitment aimed to include a diverse group of experts, academics, and graduate students representing a variety of perspectives, from those who directly

employed GenAI tools in creative practice to those who had supervised or observed their use in educational settings. This approach enabled the study to capture nuanced insights into educational implications, tool adoption strategies, and emerging tensions between conventional and AI-supported design workflows.

A total of 19 experts participated in the study, including faculty members (Assistant Professors, Instructors, and Research Assistants) and graduate students (master's and doctoral level). Participants were selected based on their experience with design education and familiarity with AI-based tools.

Table 2.1 *Participant Demographics & Academic Experience*

Participant No	Gender	Profession	Academic Title
P1	Female	Interaction Designer	Assistant Professor
P2	Female	Graphic Designer	Assistant Professor
P3	Male	Visual Designer	Assistant Professor
P4	Male	Animation Designer	Assistant Professor
P5	Male	Filmmaker	Assistant Professor
P6	Female	Filmmaker	Assistant Professor
P7	Female	Interaction Designer	Instructor
P8	Male	Motion Designer	Research Assistant
P9	Female	Motion Designer	Research Assistant
P10	Male	Motion Designer	Research Assistant
P11	Female	Communication Designer	Research Assistant
P12	Male	Game Designer	Phd Student
P13	Female	Communication Designer	Phd Student
P14	Female	Communication Designer	Msc. Student
P15	Male	Interface Designer	Msc. Student
P16	Male	Interface Designer	Msc. Student
P17	Male	XR Designer	Msc. Student
P18	Female	Content Designer	Msc. Student
P19	Female	Graphic Designer	COD Grad.

2.1.2 Data Collection

Data were collected through semi-structured interviews conducted between January 8 to February 27, 2024. Each interview lasted approximately 15 minutes and took place in person on the university campus. All interviews were conducted in Turkish, audio-recorded with participant consent, and transcribed verbally. The transcripts were subsequently translated into English for analysis.

The interview protocol consisted of two parts. The first part gathered background information by reviewing the participants' current research interests and areas of specialization, as listed on the university website.

The second part addressed the research questions (RQs) guiding the study: (RQ1) What are the main differences between AI-based and non-AI design tools? (RQ2) What are the participants' experiences with AI-based design tools? (RQ3) How do AI tools affect the idea generation process? (RQ4) Which AI tools are commonly used in design work? (RQ5) In what ways do AI tools enhance the quality of design outcomes?

2.2 Phase 2: Gaining Insights About Communication Design Students' AI Use in Education Through Survey

During the second phase of the thematic analysis, the initial codes were reviewed, refined, and organized into potential themes and sub-themes. This stage focused on identifying meaningful patterns within the dataset that represented participants' experiences with generative AI tools, resulting in the main themes, sub-themes, and emerging codes. Subsequently, axial coding was applied to organize the data into clusters and generate typologies based on these themes.

2.2.1 Recruitment of Participants

Presents participants' academic levels. This study was conducted at the end of the Fall semester from December 16 to 29, 2024 (see Table 2.2). Participants were classified according to the design courses they had completed or were currently taking during that semester. This classification reflects how students' design skills and creative experiences develop throughout their academic years as detailed below:

First-year students: Beginners learning basic design tools, such as Adobe Illustrator. *Second-year students:* Students working on intermediate-level illustration projects. *Third-year students:* Students creating illustrations for games and interactive media. *Fourth-year students:* Students developing illustrations for web-based and advanced design projects.

Table 2.2 Participant Demographics & Academic Level

Participant No	Grade Level	Description	Completed Course(s)	Completed Course(s)
P1-P22	1st year	COD Students	COD 103	COD 103
P23-P36	1st year (minor)	Minor Students	COD 103	COD 103
P37-P50	2nd year	COD Students	COD 103	COD 201
P51-P54	2nd year	COD Students	COD 103-201	COD 202
P55-P67	3rd year	COD Students	COD 103-201-202	COD 301
P68-P75	4th year	COD Students	COD 103-201-202-301-302	COD 401
P76-P81	4th year	COD Students	COD 103-201-202-301-302-401	COD 402

Note. The table presents the distribution of participants by academic year and the COD courses they have completed. Participants include both majors and minors in COD.

2.2.2 Data Collection

Survey Questions and Thematic Structures. The qualitative dataset of this study was collected through nine open-ended survey questions designed to explore students' experiences, perceptions, and ethical evaluations regarding their own use of generative AI (GenAI) tools in illustration-based design education. Each question was developed to address a specific thematic dimension and coded accordingly. The thematic structure of these questions, grouped under three main themes: (1) Experience / AI Tool Use (see Table 2.3), (2) Creative Thinking Process (see Table 2.4), and (3) Ethics (see Table 2.5).

Table 2.3 *Experience & AI Tool*

Question No	Sub-Theme	Main Question
Q2	General view for illustration	What are your general thoughts on the use of generative AI tools in illustration projects?
Q3	Prior use in educational purposes	If you have experienced generative AI tools before your COD projects, please indicate in which areas and for which purposes.
Q4	Perceived Opportunities	If you had positive experiences with GenAI tools, what were they?
Q5	Perceived Challenges	If you had negative experiences with GenAI tools, what were they?

Note. Questions addressing students' experiences and perceptions regarding the use of GenAI tools.

Table 2.4 *Creative Thinking Process*

Question No	Sub-Theme	Main Question
Q6	Perceived opportunities and challenges for originality	How do you think GenAI tools shape design processes? What are the positive and negative aspects of these tools on originality and creativity?

Note. Questions addressing students' views on how GenAI tools influence creativity and originality.

Table 2.5 Ethics

Question No	Sub-Theme	Main Question
Q7	Ownership	What do you think about the copyrights of the designs produced with GenAI tools? (Who do you think should own these designs?)
Q8	Perceived ethical opportunities	Are there any situations that you find ethical in the use of GenAI tools?
Q9	Perceived ethical challenges	Are there any situations that you find unethical in the use of GenAI tools?

Note. Questions focusing on students' ethical perceptions and concerns about the use of GenAI tools.

These thematic groupings formed the foundation for the coding framework used in the subsequent thematic analysis process.

2.2.3 Data Analysis

The survey was created using Google Forms and later transferred to an Excel file. All responses were carefully read from beginning to end. Some inconsistencies were found between the class levels reported by the participants and the courses they had taken. Therefore, the following corrections were made:

P33-P36: These participants did not indicate that they were enrolled in a minor program; however, their responses revealed that they were, in fact, minor program students.

P17: This participant reported being a second-year student, but since they were taking the COD 103 course, they were reclassified as first-year students.

P53: This participant stated that they were a third-year student, but because they were enrolled in COD 202, they were reclassified as second-year students.

Responses exported to Excel were organized by academic level (1st, 2nd, 3rd, and 4th year) and preliminarily grouped according to thematic similarities. This step established a basic framework for understanding how students at different academic

levels utilize GenAI tools in their learning processes. Additionally, the dataset was visually coded during the analysis process. Participant groups were visualized using different colors according to their class levels (see Figure 2.2).

Figure 2.2 *Color Assigned to Participants by Class Level*



Note. Green indicates P1-P21 (First-Year Students), Dark Green indicates P22-P36 (First-Year Students - Minor Program), Yellow indicates P37-P54 (Second-Year Students), Pink indicates P55-P67 (Third-Year Students), Purple indicates P68-P81 (Fourth-Year Students).

First-year students (P1-P21) were shown in light green, first-year minor students (P22-P36) in dark green, second-year students (P37-P54) in yellow, third-year students (P55-P67) in pink, and fourth-year students (P68-P81) in purple. This color coding made it easier to visually follow thematic connections between different class levels.

Figure 2.3 *Colors Indicate the Themes*



Note. Each color corresponds to a specific theme identified in the thematic analysis.

Theme 1 is represented in purple, Theme 2 in pink, Theme 3 in green, Theme 4 in orange, and Theme 5 in navy blue. These colors were used to visually distinguish the thematic groups and enhance the overall readability (see Figure 2.3).

The open-ended responses were analyzed using Braun and Clarke's six-phase thematic analysis method (Braun & Clarke, 2019; Byrne, 2022). This process aimed to understand how students at different academic levels experienced and perceived the use of GenAI tools. The analysis was first conducted separately for each class level and then

reviewed as a whole. The analysis process included the following steps: (1) Data organization: The responses were grouped according to academic level and sorted based on thematic similarities using Miro Board (2011, n.d.). (2) Initial reading and note-taking: All responses were carefully read, and important ideas or repeated expressions were noted. (3) Theme generation: Common patterns and ideas were identified, and differences between levels were explored. (4) Theme review: Similar themes were combined, and very broad themes were narrowed to make them clearer. (5) Defining and naming themes: The final themes were clearly named and supported with student quotations. (6) Final analysis: The relationships between themes were analyzed in terms of creativity, originality, ethics, and AI literacy.

This thematic analysis helped reveal how students position GenAI tools in the design process and the level of awareness they have about creativity and ethics. The findings also provided useful insights

2.3 Phase 3: Focus Group to Discuss and Unpack the Integration of Artificial Intelligence Into Courses

The third phase of the study included a focus group session conducted with educators working in the field of Communication Design. The aim of this phase was to explore participants' experiences, challenges, and perspectives regarding the integration of GenAI tools into illustration-based design education. During the session, questions about ethical aspects were asked, and participants were also invited to share their views on how GenAI could be integrated into design courses. At the end of the discussion, based on participants' contributions, several suggestions were developed for course content and instructional strategies related to the use of GenAI in design education.

2.3.1 Recruitment of Participants

In this phase, expert opinions were collected from academic members, including faculty and research assistants from the Department of Communication and Design at Özyeğin University (see Table 2.6). Participants were purposefully selected from among those who actively use GenAI tools in illustration-based studio courses or possess relevant instructional experience in this area. A total of eight participants took part in the focus group session.

In the participant selection process, attention was given to include both academics with direct experience using GenAI tools in creative studio applications and instructors who had observed or supervised students' use of these tools. Particular care was taken to involve participants teaching across different studio levels (from first-year to fourth-year) to enable a multidimensional evaluation of GenAI's educational implications.

This diversity in academic rank, disciplinary focus, and teaching experience allowed for a comprehensive exploration of expert insights regarding GenAI adoption strategies, emerging educational challenges, and evolving instructional practices. Ultimately, eight academic participants contributed to the discussion, offering complementary perspectives informed by their professional, educational, and research backgrounds in communication design.

Table 2.6 *Participant Demographics & Academic Experience*

ID	Gender	Profession	Studio Level Taught	Academic Title	Experience
P1	Female	Graphic Design	Studio 4 (4th year)	Assistant Professor	5-20 years
P2	Male	Game Design	Studio 3 (3rd year)	Assistant Professor	5-20 years
P3	Male	Visual Design	Studio 2 (2nd year)	Assistant Professor	5-20 years
P4	Female	Visual Design	Studio 2 (2nd year)	Assistant Professor	5-20 years
P5	Male	Code Generator	Creative Coding 2 (2nd year)	Assistant Professor	5-20 years
P6	Male	Researcher	Studio 1(1st year)	Teaching Assistant	2-5 years
P7	Female	Researcher	Studio 4 (4th year)	Teaching Assistant	2-5 years
P8	Male	Researcher	Studio 4 (4th year)	Teaching Assistant	2-5 years

Note. The table displays demographic and academic details of the participating instructors, categorized by the studio level they teach and their years of teaching experience.

2.3.2 Data Collection

The focus group interview was conducted in person at Özyeğin University on May 28, 2025, and lasted approximately two hours. The session followed a semi-structured discussion format, guided by four overarching questions designed to capture expert reflections on GenAI's role in design education: (1) The contributions of GenAI to the creative process, (2) Its limitations and associated concerns, (3) Ethical considerations, and (4) Approaches to integrating GenAI into design education.

The entire session was audio-recorded with consent and subsequently transcribed verbatim. Transcription was initially performed using the aTrain automated speech-to-text tool, after which all transcripts were manually reviewed and refined to ensure accuracy and fidelity to participants' original expressions.

The third phase addressed the research questions (RQs) guiding the study:

RQ1. How do AI tools support your idea generation, style development, and creative sketching processes in illustration projects?

RQ2. How do AI tools limit your idea generation, style development, and creative sketching processes in illustration projects?

RQ3. How do you evaluate the outputs you produce using AI in your courses from an ethical perspective? What are your suggestions for overcoming ethics-related challenges?

RQ4. In your opinion, how should GenAI be integrated into illustration-focused design courses? At which stages, and with what educational strategies and content, should it be used?

Research questions RQ1, RQ2, and RQ3 were coded in Atlas.ti (ATLAS.ti Scientific Software Development GmbH, 2025) using the codes generated during Phase 2 of the analysis. Throughout the focus group discussions, several new codes and patterns emerged that were not present in the initial codebook. In the Table 3.20 to Table 3.33, a checkmark (✓) indicates the perspective each participant contributed from. Participants who drew on both their teaching experience and their observations of students are marked as T/S.

In addition, RQ4, which focuses on the integration of AI into education, was addressed as a separate section and analyzed independently to explore its educational implications (see Table 2.7).

Table 2.7 *Indicator Keywords of Newly Emerged Themes*

Code Title	Definition	Indicator Keywords
Rethinking Teaching Through AI Limitations	Using AI's mistakes and limits as learning tools to improve reflection and creativity in design education.	AI limitation, reflective learning, trial and error, creative failure, feedback, awareness
Critical Thinking Erosion	The risk that easy access to AI reduces students' ability to think deeply, question ideas, and reflect critically.	Automation dependency, shallow thinking, overreliance, lack of reflection, surface creativity
Cultural Bias in Prompt Interpretation	The tendency of AI tools to produce Western-style visuals, limiting cultural diversity and representation.	Western aesthetics, bias, lack of diversity, cultural homogeneity, stereotype, visual repetition
Curriculum Transformation and Educational Adaptation	The need to update design curricula to include AI responsibly and build ethical and digital awareness.	Curriculum redesign, responsible use, pedagogical adaptation, AI integration, digital literacy
Cultivating Ethical Co-Creation Mindset	Promoting ethical awareness, ownership, and shared responsibility in human-AI collaboration.	Ethics, transparency, accountability, authorship, ownership, co-creation, responsibility
AI Literacy and Pedagogical Readiness	Helping educators and students learn to use AI tools consciously, critically, and creatively.	AI literacy, technical skill, awareness, creative use, adaptability, informed use

Note. The indicator keywords were identified from repeated ideas and common phrases in participant statements and acted as conceptual guides for defining and refining each thematic code.

Collectively, the indicator keywords reflect participants' growing emphasis on reflective learning, ethical awareness, and curriculum adaptation in AI-integrated design education.

2.3.3 Data Analysis

In the focus group, data were analyzed using Krippendorff's content analysis framework (Krippendorff, 2018), which provides a systematic approach for identifying patterns, meanings, and relationships within qualitative data. The analysis began with the formulation of the four main research questions (Q1-Q4), which served as the conceptual framework for interpreting meaning within the dataset. The unit of analysis consisted of semantically meaningful text segments at the paragraph level.

The coding process followed a deductive approach, as the initial codes were derived from the results of Phase 2. These existing codes were used as a starting point for analyzing the focus group data. During the process, new sub-codes were also created inductively when participants mentioned ideas not previously captured in the earlier phase. This combination of deductive and inductive reasoning allowed for both continuity and flexibility in data interpretation.

Coding was carried out using a meaning-based thematic approach. For each research question, overarching categories were established, and sub-codes were refined and grouped under these categories. The coding was conducted digitally using Atlas.ti (ATLAS.ti, 2025), qualitative data analysis software, and each code was linked to illustrative participant quotations to ensure transparency and interpretative validity.

To strengthen coding reliability, the analyses completed by the primary researcher were cross-checked by a second researcher, and any differences were discussed until consensus was reached. In line with (Krippendorff, 2018) criteria for reliability and validity, both intra-theme consistency and alignment with the research questions were carefully examined throughout the analysis.

Finally, the resulting themes were contextualized within the broader discussion of GenAI in design education and interpreted in relation to the study's main research problem. Findings are presented under each theme in the results section, accompanied by direct quotations from participants to ensure accuracy, authenticity, and representational richness.

2.4 Ethical Considerations

All research procedures were conducted in accordance with the ethical standards of the Özyeğin University Ethics Committee, and approval was obtained prior to data collection (Approval Code: 2025/07/08). Participants were informed about the purpose of the study, the voluntary nature of their participation, and the confidentiality and anonymity of their responses. Written informed consent was obtained from each participant before participation. Participation in this study was entirely voluntary. Participants were informed that they had the right to withdraw from the study at any point without any negative consequences. There were no foreseeable risks or discomforts associated with the data collection procedures. The names and signatures of participants were only included in the Consent Form and were not used in any written outputs of the research. Demographic information (e.g., age, gender) was collected solely for analytical purposes. Data obtained through interviews, surveys, and photographs of participants' outputs were used exclusively for qualitative evaluation and did not include any identifiable personal information. All collected data were stored securely on a platform accessible only to the researchers involved in the project and were not shared with third parties.

3. RESULTS

The results of this study are presented across three interconnected phases, reflecting the perspectives of educators, students, and their shared reflections on the integration of Generative Artificial Intelligence (GenAI) in design education. In Phase 1, interviews with academics and research assistants revealed five main themes, focusing on how AI-based design tools reshape creative processes compared to conventional methods, the role of chatbots in ideation, the importance of verbal communication, collaborative AI tools, and concerns about predictability and reliability. Phase 2, based on survey findings, explored students' experiences and attitudes toward GenAI, identifying themes related to its integration across design stages, its practical benefits and limitations, prompt-related challenges, and the tension between creative inspiration and stylistic homogenization. Finally, Phase 3, drawing on focus group discussions, examined the approaches to GenAI and the views of both educators and their students on the role of AI in creativity, originality, and authorship, while addressing broader ethical, educational, and societal implications. Together, these findings offer a comprehensive understanding of how GenAI impacts creative learning, transforms design workflows, and raises new questions about authenticity, agency, and responsibility in visual design education.

3.1 Phase 1: Understanding Design Education Experts' Views via Interviews

The analysis of interview responses from academics, research assistants, and graduate students (both doctoral and master's levels) revealed five main themes corresponding to our five research questions. Thematic analysis of these responses first highlights how AI-based design tools influence design processes in conventional tools.

The second theme explores the role of chatbots in enhancing ideation processes. The third theme highlights the importance of cues and verbal communication in design interactions, while the fourth theme focuses on the application of collaborative AI design tools. Finally, the fifth theme addresses participants' concerns regarding the predictability and reliability of AI-driven tools.

3.1.1 Theme 1: Generative AI Tools Versus Conventional Design Tools

This theme explores the experiences of using generative AI and conventional tools, as well as their impact on the creative role of designers. It was especially observed that as GenAI accelerates the workflow, verbal expression and communication skills have become more prominent than visual skills in design processes.

3.1.1.1 The Rise of Verbal Creativity Skills Against Visual Creativity Skills

It was observed that AI-based tools shift designers from being creators to taking on a role that involves evaluating and directing options. Participants emphasized that the responsibility of selecting the most suitable alternative among the multiple outputs provided by AI lies with the designer. For this reason, prompt writing has become a critical skill. Additionally, while designers traditionally create visual data using design tools, integrating artificial intelligence now requires them to develop verbal writing skills. The better their prompt writing skills, the more successful visual results they achieve. Therefore, an alternation between their visual and verbal skills was observed. For example, according to the answer received by participant 7, she experienced designing persona cards using ChatGPT and Midjourney design tools. However, due to a lack of knowledge on how to write the right prompt, she was unable to achieve the desired result.

She completed the persona card design with conventional design tools, which is her main area of expertise.

3.1.1.2 Shifting in the Role of the Designer

Participants stated that with the increasing use of GenAI tools, strong verbal expression skills have become more important than visual production capabilities. While traditional tools were seen as more suitable for manual creation and developing an original aesthetic, it turned out that most designers specialized in visual design should learn verbal elaboration and accuracy skills instead of improving their visual creativity skills. For instance, P4: “...*explore more alternatives in the design process, while pushing the human designer towards the role of evaluating and guiding options...*”, P16: “...*AI tools offer a diverse range of ideas, likening it to a versatile catalog adaptable to various contexts and accessible anytime, anywhere.*” Therefore, these observations were consistently reported across participants, indicating a clear trend in the evolving role of designers when working with GenAI tools.

3.1.2 Theme 2: Role of Chatbots in the Ideation Process

This theme focuses on creative thinking and idea generation. Participants shared that chatbots can both support and limit creativity. While some stated that chatbots help generate new ideas by offering different perspectives, others noted that their formulaic and predictable responses may restrict personal creativity. Thus, chatbots can inspire new ways of thinking but may also constrain individual imagination.

Participants stated that chatbots can be both supportive and limiting in creative processes. Some participants noted that chatbots enriched the ideation phase by offering

new perspectives: P2: “...*AI chatbots might aid designers in idea generation by interacting with users, fostering new ideas.*”

On the other hand, some participants expressed that the formulaic and predictable responses of algorithms could limit creativity: P12: “...*AI tools could limit creativity during idea generation, potentially stifling inspiration and personal creativity.*”

In conclusion, while chatbots can encourage designers to think from different perspectives, their algorithmic predictability and fixed patterns can at times constrain individual creativity.

3.1.3 Theme 3: The Importance of Verbal Communication

This theme examines the relationship between the quality of prompts given to GenAI tools and the impact of AI-generated suggestions on the design process. Participants noted that verbal expression skills are becoming increasingly important. They also stated that the suggestions provided by AI can sometimes support the design process, while at other times they may have limiting effects.

3.1.3.1 Value of AI Design Tools: Tips and Suggestions in the Design Process

Participants stated that the suggestions offered by AI tools enriched the design process by supporting aesthetic decisions and helping them develop user-centered solutions. AI-powered tools that provide different perspectives enabled designers to bring innovative approaches to their projects.

3.1.3.2 Prompts’ Limitation on Human Creativity

Participants stated that writing effective prompts requires strong verbal communication skills, which can be an additional challenge, especially for visually-oriented designers. Achieving original and successful outcomes in the design process

depends not only on technical knowledge but also on the ability to give detailed and creative instructions.

Participant 10 specifically emphasized the importance of asking the right questions when interacting with chatbots and experimenting with different platforms. This finding highlights that effective use of AI-powered tools requires not only verbal clarity but also strategic thinking and flexible problem-solving approaches.

3.1.4 Theme 4: Collaborative AI Design Tools

It was noted that AI tools accelerate idea generation, allowing designers to focus more on core design decisions and making creative processes more efficient. To illustrate, P13: “...AI significantly accelerates reaching the prototyping phase, making the initial stages much faster and more manageable.” Likewise, P6: “...AI enables me to generate and compare ideas much more rapidly, which allows me to focus on the most promising concepts.”

3.1.4.1 Positive Effects on the Creative Processes

Participants stated that writing effective prompts requires strong verbal communication skills, which can be an additional challenge, particularly for visually oriented designers. Achieving original and successful outcomes in the design process depends not only on technical knowledge but also on the ability to give detailed and creative instructions.

3.1.4.2 The Importance of the Human Factor

Participants emphasized that the human factor and the designer’s expertise are critical in guiding AI-generated outputs and ensuring quality. It was stated that the human touch goes beyond the predictable and fast results offered by AI, contributing to creativity

and the overall integrity of the design. P11: “...*The need for clear examples amid confusion, relying on AI tools to provide data that can be further explored independently.*”, P19: “...*While AI tools offer predictable results, the human touch and creativity remain crucial for ensuring the quality of design.*”

These findings demonstrate that, despite the technical conveniences offered by AI, the designer’s knowledge and creative guidance remain essential components of the creative process.

3.1.5 Theme 5: Predictability Concerns

This theme explores the potential negative impacts of GenAI tools on intuitive thinking, originality, and quality, despite their advantages in speed. Participants emphasized that the repetitive outputs of AI may impose limitations on creativity and design quality.

3.1.5.1 The Silent Erosion of Creativity in the Age of AI

Although AI tools are often praised for enhancing efficiency and supporting creative exploration, participants noted that their increasing integration into everyday design practices may gradually dull intuitive thinking in ways that often go unnoticed. Participant 18 stated that the speed and practicality offered by AI tools are not always advantageous; on the contrary, they can sometimes limit intuitive thinking and creative originality. It was particularly emphasized that AI-generated instant solutions, rather than encouraging critical thinking or independent idea development, can lead to a loss of motivation among designers. Consequently, some designers are wary of using AI tools out of concern that their creativity may be overshadowed.

P11: *"...AI tools do not appeal to me because my creative vision is different. I prefer traditional tools."*, P14: *"...Using AI sometimes negatively affects my creativity and the quality of my work, so I usually avoid it. However, I do use AI-based design programs when speed is absolutely necessary."* This tension reflects a broader concern among participants, who emphasized the need to balance efficiency with the preservation of authentic creative engagement.

3.1.5.2 Generative AI Signature and Design Quality

Some designers stated that tools such as Midjourney and Stable Diffusion have a distinctive and repetitive visual style, which they found creatively limiting. These participants mentioned that they prefer alternative AI tools that offer more control and flexibility. P8: *"...I avoid using Midjourney because of its distinctive visual signature. Instead, I prefer tools that offer me more control and flexibility."* P2: *"...The visuals produced by these tools often stand out with excessive brightness and polished surfaces; they fail to adequately convey emotion and texture."*

Additionally, some participants noted that the visuals generated by these tools often have overly contrasted, glossy, and polished surfaces, which makes it difficult to manually convey texture and emotion. For this reason, they argued that AI-based tools are still in an experimental phase and that the lack of a personal touch remains a significant limitation.

In conclusion, the findings show how GenAI tools are transforming the creative process in design education, offering practical advantages while also raising new concerns related to ethics, authorship, and originality. The overall tendency among participants suggests that the human touch and creative direction remain essential. While GenAI provides benefits in terms of speed and variety, it also introduces new technical

and ethical boundaries, requiring designers to develop new skills and adopt a more critical mindset.

3.2 Phase 2: Gaining Insights About Communication Design Students' AI Use in Education Through Survey

A closer examination of students' responses reveals distinct approaches to integrating Generative AI (GenAI) tools across various stages of the design process. These approaches differ in terms of creativity, dependency, and critical awareness, reflecting diverse patterns of engagement and varying levels of agency in how students interact with GenAI. A total of fourteen codes were identified, each accompanied by relevant keywords. The content analysis was conducted systematically according to these established codes.

3.2.1 Theme 1: Integration of GenAI Across Design Phases

Students stated that generative AI (GenAI) tools have been integrated into many stages of the design process, from idea development to visualization and finalization. Participants explained that they use GenAI both as a source of inspiration at the beginning of the ideation phase and as a practical assistant during rapid prototyping and visual iteration processes. This shows that AI has evolved from being a tool for specific tasks to becoming a continuous and adaptable component throughout the entire creative workflow. However, while students acknowledged the advantages of efficiency and

flexibility that GenAI offers, they also emphasized that excessive reliance on these tools may narrow the space for creative exploration and reduce opportunities for critical

Theme 1 encompasses several codes (see Table 3.1) that elucidate the main ideas and common points in the participants' responses as detailed below:

Table 3.1 *Indicator Keywords*

Code Title	Definition	Indicator Keywords
Divergent Thinking in Ideation and Inspiration	Early-stage use of AI tools aimed at gaining inspiration, diversifying ideas, and overcoming creative blocks.	inspiration, idea trigger, starting point, overcoming creative block, generating initial ideas, producing alternatives, expanding perspective, not the final product
Agile Thinking in the Design Process	Refining, deepening, and advancing existing ideas through agile iterations.	refinement, deepening, development, iterative process, trial and error, filling missing parts, process continuity, generating keywords according to the brief, limited supportive use, feedback-based improvement
Visualization and Creative Asset Generation	Visualization of ideas and the creation of creative assets (visuals/compositions).	illustrating, visual composition, story visualization, image generation from prompts, transition from sketch to visual
Functional and Practical Applications of GenAI	Supportive use for accelerating technical and practical micro-tasks.	background removal/extension, generative fill, content aware, crop/resize, retouching, color palette creation, adapting to canvas/format, minor adjustments

Note. Codes and Definitions Related to Theme 1: Integration of GenAI Across Design Phases.

3.2.1.1 Ideation Phase

Participants noted that the suggestions generated by AI tools enriched the design process by supporting aesthetic decision-making and facilitating the development of user-centered solutions. AI-powered systems that offered diverse perspectives enabled

designers to adopt more innovative and exploratory approaches in their projects, broadening the scope of creative exploration and enhancing design outcomes.

3.2.1.1.1 Divergent Thinking in Ideation and Inspiration

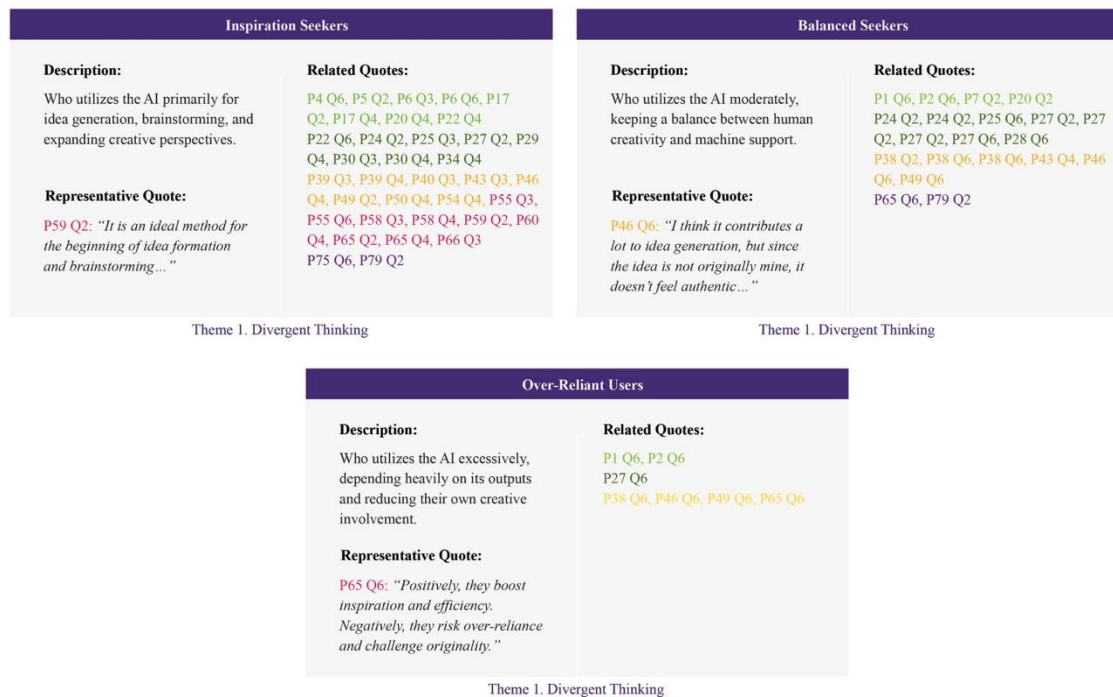
Some students stated that generative AI tools play a supportive role in the processes of idea generation and inspiration. Many of them mentioned that they use these tools when they feel stuck in their creative process or struggle to generate new ideas. To exemplify: P65 (Q4): *“They help me think of ideas when I am confused, out of ideas, or running out of time.”*, P60 (Q4): *“It can create things that would never come to mind and can direct my perspective in a different way.”*, P59 (Q2) *“It is an ideal method for designing ideas and starting the brainstorming process.”*, P27 (Q2) *“It is very useful for getting inspiration and expanding my perspective.”* These statements indicate that students perceive AI as a valuable tool for overcoming creative blocks and generating new ideas. However, some students also emphasized that this process carries certain risks in terms of originality: P46 (Q6): *“It helps a lot in idea generation, but since the idea is not originally mine, it lacks originality.”*, P24 (Q2): *“It’s good for inspiration, but it shouldn’t be the final product.”*, P38 (Q6): *“It’s positive for brainstorming, but it reduces my potential.”*

Some students also mentioned that while the diversity of ideas provided by AI can be inspiring, it may limit practical thinking skills: P2 (Q6): *“It has a positive effect if you don’t take too many ideas, but since people get used to convenience, creativity can fade over time.”*, P27 (Q6): *“I feel like I can’t use my own originality and creativity, which makes me feel inadequate.”*, P43 (Q4): *“It increases creativity by offering different ideas, but I think it also limits practical thinking to some extent.”*, P1 (Q6): *“It helps us find ideas and makes the process easier, but it also blocks personal creative thinking.”*, P79

(Q2): “It can be used for idea generation and inspiration, but it shouldn’t form a large part of the project.”

Within this theme, three distinct student approaches emerged, each reflecting different ways of engaging with GenAI as described in detail below (see Figure 3.1).

Figure 3.1 Visual Overview of Student Approaches in Divergent Thinking



Students identified in the Ideation phase under Theme 1: Divergent Thinking are presented in tabular form (see Table 3.2).

Table 3.2 Classification of Student Approaches in Theme 1: Divergent Thinking

Approach Type	Description	Related Theme and Participant IDs
Inspiration Seekers	Who utilizes the AI primarily for idea generation, brainstorming, and expanding creative perspectives.	P59 Q2, P30 Q4, P30 Q3, P22 Q4, P22 Q6, P55 Q6, P6 Q3, P4 Q6, P75 Q6, P50 Q4, P17 Q2, P17 Q4, P65 Q2, P65 Q4, P46 Q4, P29 Q4, P60 Q4, P79 Q2, P40 Q3, P27 Q2, P24 Q2, P5 Q2, P58 Q4, P58 Q3, P39 Q3, P39 Q4, P49 Q2, P54 Q4, P20 Q4, P6 Q6, P55 Q3, P25 Q3, P43 Q3, P34 Q4, P66 Q3

Balanced Seekers	Who utilizes the AI moderately, keeping a balance between human creativity and machine support.	P38 Q6, P2 Q6, P79 Q2, P43 Q4, P20 Q2, P65 Q6, P46 Q6, P27 Q6, P28 Q6, P49 Q6, P25 Q6, P27 Q2, P24 Q2, P38 Q6, P27 Q2, P1 Q6, P38 Q2, P24 Q2, P7 Q2, P27 Q2
Over-Reliant Users	Who utilizes the AI excessively, depending heavily on its outputs and reducing their own creative involvement.	P65 Q6, P2 Q6, P1 Q6, P27 Q6, P46 Q6, P49 Q6, P38 Q6

At this point, students considered AI as a starting point, a brainstorming tool, and a trigger for creativity in idea development processes. Yet, they also expressed concerns about loss of originality and the mechanization of creativity. Therefore, while students acknowledged that AI supports their creative process, they also recognized its limitations in relation to human-centered thinking.

3.2.1.1.2 Agile Thinking in the Design Process

Students stated that they use AI tools not only for idea generation but also for developing and deepening their existing ideas. The participants emphasized that these tools provide important support in bringing new perspectives to the design process, refining ideas, and saving time.

For example, one student mentioned, P51 (Q4): *“After I find my idea, it helps me add more details.”* Another student expressed a similar opinion: P78 (Q3): *“It helps me notice the missing parts when I get stuck.”* Likewise, the statement P44 (Q4): *“It helps me a lot when I get stuck or face difficulties.”* shows that AI is perceived as a problem-solving and progress-supporting tool within the design process. Some students also highlighted that AI supports agile thinking in their creative process. For example, P20 (Q6): *“In the brainstorming part, I can ask it to create words related to the brief. Then I*

can make my own combinations from those keywords, which is really useful for me.” This suggests that AI facilitates a faster and more flexible design process by enhancing creative production. Similarly, P74 (Q2): *“As long as it gives inspiration without removing originality, I find it important, especially in terms of saving time,”* shows that students value AI for time efficiency and productivity.

However, some students expressed that AI may limit creativity even in the idea development stage and cannot fully reflect the unique processes of the human mind. For instance, one participant stated, P19 (Q6): *“It can be creative, but most of the time it corrects more than it creates something new,”* suggesting that AI often plays a corrective rather than creative role in the design process. Another student described this situation as follows: P72 (Q6): *“..., AI is just a tool. Using it actively throughout the whole process can make you inefficient and confused ...It has limitations and cannot use what we call the ‘flow of mind,’ the step-by-step progress, as effectively as we can.”* Similarly, the statement P10 (Q6): *“..., rapid idea generation and experimentation, pushing creative boundaries, and helping overcome creative blocks. However, ... pose risks to originality by producing outputs that may feel derivative or overly influenced by their training data, potentially leading to homogenization or ethical concerns about intellectual property.”* This highlights that while AI encourages creativity, it also brings risks to originality and raises ethical concerns.

Within this theme, two distinct student approaches emerged, each reflecting different ways of engaging with GenAI (see Figure 3.2).

Figure 3.2 Visual Overview of Student Approaches in Agile Thinking

Augmentation Seekers		Deep Divers	
Description: Who utilizes the AI as a supplementary tool, augmenting their creative capacity without replacing it.	Related Quotes: P3 Q6, P5 Q3, P8 Q6, P10 Q6, P13 Q2, P16 Q4, P20 Q6 P23 Q2, P34 Q2, P34 Q6 P39 Q6, P42 Q3, P42 Q6, P44 Q2, P44 Q4, P49 Q4 P60 Q2, P64 Q6 P68 Q4, P68 Q6, P72 Q6, P74 Q2, P78 Q3, P79 Q4, P81 Q3, P81 Q4	Description: Who utilizes the AI by going deeper into iterations, refining and developing ideas systematically.	Related Quotes: P10 Q6, P13 Q3, P19 Q6 P34 Q2 P51 Q3, P51 Q4 P66 Q4 P68 Q2, P68 Q4, P68 Q6, P78 Q3, P79 Q3, P79 Q4, P81 Q3, P81 Q4
Representative Quote: P81 Q3: "I will use it to give my ideas and ask for improvement and ... add to make it even better."		Representative Quote: P19 Q6: "It can be creative but ... it can correct more than create something new."	
Theme 1. Agile Thinking		Theme 1. Agile Thinking	

Students identified in the Ideation phase under Theme 1: Agile Thinking are presented in tabular form (see Table 3.3).

Table 3.3 Classification of Student Approaches in Theme 1: Agile Thinking

Approach Type	Description	Participant IDs
Augmentation Seekers	Who utilizes the AI as a supplementary tool, augmenting their creative capacity without replacing it.	P68 Q4, P79 Q4, P78 Q3, P42 Q3, P81 Q4, P49 Q4, P34 Q2, P74 Q2, P13 Q2, P16 Q4, P23 Q2, P68 Q6, P72 Q6, P64 Q6, P34 Q6, P20 Q6, P3 Q6, P39 Q6, P42 Q6, P8 Q6, P81 Q3, P5 Q3, P44 Q2, P60 Q2, P44 Q4, P10 Q6
Deep Divers	Who utilizes the AI by going deeper into iterations, refining and developing ideas systematically.	P68 Q4, P79 Q4, P78 Q3, P81 Q4, P51 Q3, P51 Q4, P34 Q2, P79 Q3, P19 Q6, P66 Q4, P68 Q6, P81 Q3, P13 Q3, P68 Q2, P10 Q6

Overall, these findings show that students view AI as a supportive and complementary tool in the design process, yet they remain cautious about placing it at the center of their creative work.

3.2.1.2 Implementation Phase

Participants emphasized that the insights and suggestions generated by AI tools significantly enriched the design process by supporting aesthetic decision-making and

facilitating the development of user-centered solutions. By offering diverse perspectives and alternative visual directions, AI-powered systems enabled designers to adopt more innovative and exploratory approaches, ultimately enhancing the depth and creativity of their design outcomes.

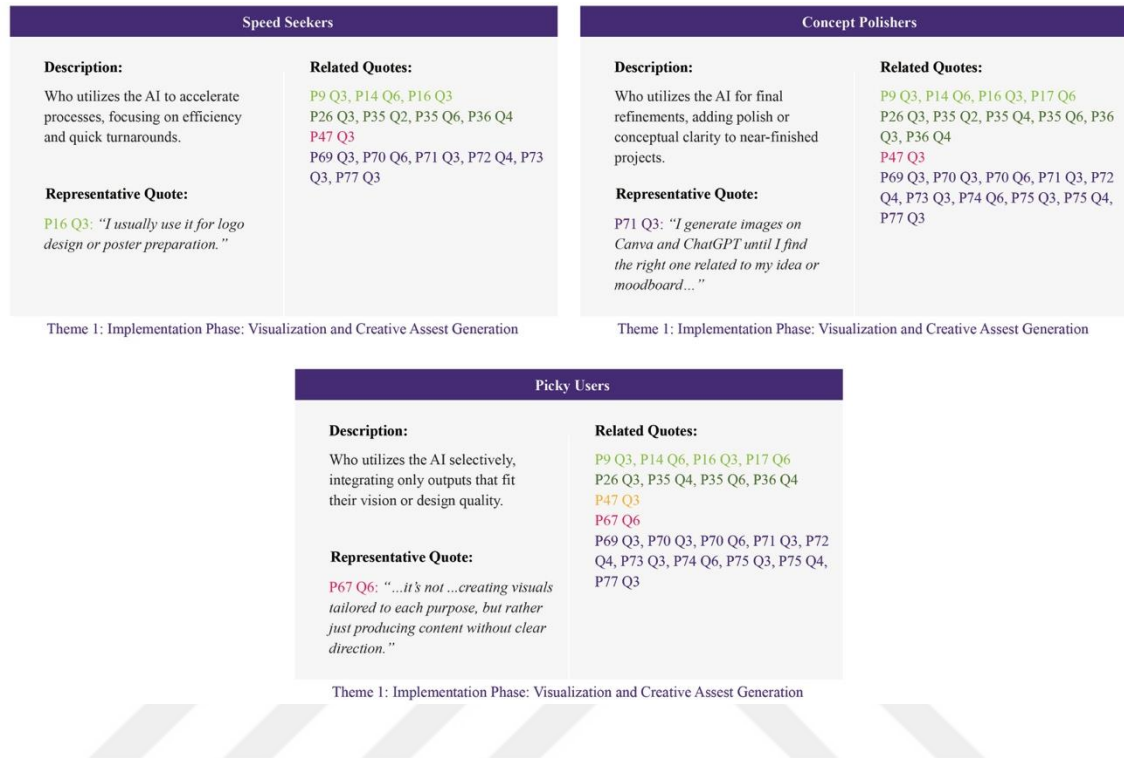
3.2.1.2.1 Visualization and Creative Asset Generation

Some students use AI tools in visualization and creative content production processes. They mentioned that tools such as Midjourney, Vizcom, and Leonardo AI are effective for finding visual representations of ideas, generating alternative designs, and creating inspirational examples. For example: P26 (Q3): *“I visualize my space designs with Leonardo AI.”*, P35 (Q3): *“It helps me think about what a beach illustration should include.”*, P75 (Q3): *“I used it to create visuals for my project. For example, I asked it to draw a vending machine I was designing.”*

Some students also described AI as a tool to visualize the ideas in their minds: P74 (Q6): *“Originality and creativity start in the mind. If we use it to visualize what’s already in our mind, I don’t see a problem.”*, P72 (Q4): *“It helps me move from the sketch in my head to a more detailed visual form.”* These findings indicate that students perceive AI as a creative accelerator in the visualization process, while also acknowledging that such speed may have a negative impact on original thinking. This suggests that generative AI is becoming a tool that redefines the balance between efficiency and originality in design practice.

Within this theme, three student approaches emerged, each reflecting different ways of engaging with GenAI (see Figure 3.3).

Figure 3.3 Visual Overview of Student Approaches in Visualization and Creative Assets Generation



The student approaches identified in the Ideation phase, under Theme 1: Visualization and Creative Asset Generation, are presented in tabular form (see Table 3.4).

Table 3.4 Classification of Student Approaches in Theme 1: Visualization and Creative Assets Generation

Approach Type	Description	Participant IDs
Speed Seekers	Who utilizes the AI to accelerate processes, focusing on efficiency and quick turnarounds.	P26 Q3, P73 Q3, P77 Q3, P9 Q3, P35 Q2, P72 Q4, P16 Q3, P36 Q4, P35 Q6, P47 Q3, P14 Q6, P70 Q6, P71 Q3, P69 Q3
Concept Polishers	Who utilizes the AI for final refinements, adding polish or conceptual clarity to near-finished projects.	P26 Q3, P73 Q3, P77 Q3, P9 Q3, P35 Q2, P72 Q4, P16 Q3, P36 Q4, P35 Q6, P47 Q3, P14 Q6, P70 Q6, P71 Q3, P69 Q3

Picky Users	Who utilizes the AI selectively, integrating only outputs that fit their vision or design quality.	P14 Q6, P35 Q6, P73 Q3, P35 Q4, P72 Q4, P70 Q6, P74 Q6, P17 Q6, P26 Q3, P75 Q3, P70 Q3, P36 Q4, P9 Q3, P77 Q3, P69 Q3, P47 Q3, P67 Q6, P75 Q4, P16 Q3, P71 Q3
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3.2.1.2.2 Functional and Practical Applications of GenAI

Students use AI tools not only for idea generation and visualization, but also as supportive tools for technical and practical tasks. They mentioned that GenAI provides significant convenience in tasks such as background editing, image completion, and color palette creation. For example: P26 (Q4): *“The background removal feature in Photoshop is very practical. When images are not the right size, I use a prompt to adjust them to the right canvas.”* P15 (Q3): *“I use Photoshop’s Generative Fill feature for manipulation.”* P10 (Q4): *“I use Photoshop’s Generative Fill to make a better crop for my images.”* P41 (Q4): *“The only positive experience I have had is using Content Aware or Generative Fill in Photoshop.”* P15 (Q3): *“It saves time when creating color palettes.”* P64 (Q9): *“For simple color generation, something that doesn’t require big creations.”*

These statements show that students view AI tools not as replacements for their creative decisions, but as assistive technologies that simplify and support the production process. The findings indicate that students perceive GenAI as a supportive and complementary tool within the design process; however, they remain cautious about placing it at the center of their creative workflows.

Within this theme, a distinct student approach emerged, each reflecting different ways of engaging with GenAI (see Figure 3.4).

Figure 3.4 Visual Overview of Student Approaches in Functional and Practical Applications of GenAI

Post-Production Peeps	
Description: Who utilizes the AI to handle post-production tasks such as adjustments, clean-ups, or finishing touches.	Related Quotes: P8 Q3, P8 Q4, P10 Q4, P15 Q3, P15 Q4 P26 Q4, P34 Q3 P41 Q4, P67 Q9 P71 Q4, P74 Q3
Representative Quote: P41 Q4: "The only positive experience I have had is of using content aware or generative fill in photoshop"	

Theme 1: Implementation Phase: Visualization and Creative Assest Generation

The student approaches identified in the Ideation phase, under Theme 1: Functionality and Practical Applications of GenAI, are presented in tabular form (see Table 3.5).

Table 3.5 Classification of Student Approaches in Theme 1: Implementation Phase: Visualization and Creative Assets Generation

Approach Type	Description	Participant IDs
Post-Production Peeps	Who utilizes the AI to handle post-production tasks such as adjustments, clean-ups, or finishing touches.	P26 Q3, P73 Q3, P77 Q3, P9 Q3, P35 Q2, P72 Q4, P16 Q3, P36 Q4, P35 Q6, P47 Q3, P14 Q6, P70 Q6, P71 Q3, P69 Q3

Collectively, these approaches suggest that students position GenAI as a secondary yet valuable component of the design process. They acknowledge its potential for idea generation, visualization, and efficiency, while remaining aware of the importance of maintaining originality and human creativity as the foundation of design learning. The following theme examines students' experiences with the practical advantages and challenges of using GenAI in their design practice.

3.2.2 Theme 2: Practical Benefits and Drawbacks of GenAI Use

This theme explores the practical advantages and challenges that students encounter when using GenAI tools. Most students stated that AI helps them save time, simplify project processes, and support production during their assignments and design projects. However, some students also pointed out negative effects, such as the loss of originality, increased dependency, and a decline in creativity. These findings suggest that AI creates a two-sided impact in educational settings, improving efficiency on one hand, while potentially reducing originality on the other.

This theme includes several codes that explain the main ideas and common points in the participants' responses (see Table 3.6).

Table 3.6 *Indicator Keywords*

Code Title	Definition	Indicator Keywords
AI as a Supportive Design Partner	Providing support in organizing ideas and writing, acting as a “supportive partner” in design and academic production.	supportive partner, co-thinking, collaboration, assisting in idea organization, understanding brief/concept, generating drafts or visuals, structuring information, developing sentences, summarizing sources, human-AI cooperation
Efficiency and Time-Saving in Design Workflows	Use focused on saving time and improving workflow efficiency.	<i>time-saving, simplifying tasks, quick results, within seconds, repetitive tasks, faster workflow, efficiency, result inconsistency and process delay</i>

Note. Codes and Definitions Related to Theme 2: Practical Benefits and Drawbacks of GenAI Use.

3.2.2.1 AI as a Supportive Partner

Students stated that they view AI tools as a supportive element in both their creative work and academic endeavors. They mentioned using these tools during different stages of design projects, such as analyzing metaphors, understanding project briefs, and

generating alternative ideas. In addition, students reported using AI in writing assignments, preparing reports, developing concepts, and creating presentations.

Some student statements clearly illustrate this situation: P27 (Q3): *“I use it to organize my ideas and improve my sentences when writing reports.”*, P27 (Q4): *“I don’t prefer to use it much in illustration or product projects, but it really helps me in theoretical parts, especially in defining concepts and writing processes.”* These statements show that AI supports students in text generation, information organization, and conceptual framework development. Similarly, some students mentioned that AI offers important advantages in time management and productivity: P23 (Q4): *“I quickly prepared a visual to show my project to my instructor. If I had done it myself, it would have taken much longer, and I might have spent weeks in case it wasn’t liked.”*, P57 (Q4): *“It can create a very good base for presentations.”*, P73 (Q4): *“It really helped me when I didn’t have enough time to draw my assignment from scratch.”* These examples show that students see AI as a “working partner” that helps increase productivity under time pressure.

However, some students also pointed out that AI might have negative effects on the learning process: P25 (Q2): *“It’s good for research at first, but I don’t think it’s very useful in later stages.”*, P27 (Q3): *“I usually use it like a more advanced Google. I prefer when it summarizes information and shares sources.”* These statements suggest that students find AI to be practically useful but limited in terms of intellectual depth and originality.

3.2.2.1.1 Student Approaches Reflecting AI as a Supportive Partner

This section focuses on how students perceive AI as a supportive partner in the design process, highlighting its role in facilitating both visual and informational tasks.

Visual Support Seekers primarily engage with AI to accelerate production and enhance visual communication. They use AI to create mock-ups, references, or illustrations that streamline their workflow. For these students, AI functions as a collaborative assistant, reducing technical barriers and saving time while still leaving creative control in human hands. Meanwhile, Informational Support Seekers employ AI to access and synthesize knowledge, using it as a research aid during the early stages of the design process. Nonetheless, they often recognize that its usefulness diminishes as projects progress, emphasizing that critical interpretation and contextual understanding remain uniquely human responsibilities (see Figure 3.5).

Figure 3.5 *Visual Overview of Student Approaches in AI as Supportive Design Partner*

Visual Support Seekers		Informational Support Seekers	
Description: Who utilizes the AI to generate visual references, mock-ups, or illustrations that support their design process.	Related Quotes: P3 Q3, P3 Q4, P14 Q4, P20 Q3, P23 Q4, P24 Q4 P55 Q4, P57 Q4 P73 Q4	Description: Who utilizes the AI to gather textual or factual information that enriches their design outcomes.	Related Quotes: P10 Q3, P11 Q3, P20 Q3 P25 Q2, P27 Q3, P27 Q4, P32 Q3, P38 Q3, P38 Q4, P47 Q4, P48 Q3, P57 Q3 P72 Q3
Representative Quote: P23 Q4: "...quickly generate a visual to get my project approved by the instructor... doing it myself would have taken weeks of effort."		Representative Quote: P25 Q2: "It's useful at the beginning for research, but I don't think it helps much in the later stages."	
Theme 2: As a Supportive Design Partner		Theme 2: As a Supportive Design Partner	

The students identified in the AI as a Supportive Partner under Theme 2 are presented in tabular form (see Table 3.7).

Table 3.7 *Classification of Student Approaches in Theme 2: As a Supportive Design Partner*

Approach Type	Description	Participant IDs
Visual Support Seekers	Who utilizes the AI to generate visual references, mock-ups, or illustrations that support their design process.	P14 Q4, P20 Q3, P55 Q4, P73 Q4, P3 Q4, P57 Q4, P23 Q4, P3 Q3, P24 Q4

Informational Support Seekers	Who utilizes the AI to gather textual or factual information that enriches their design outcomes.	P20 Q3, P38 Q3, P47 Q4, P27 Q3, P27 Q4, P38 Q4, P48 Q3, P11 Q3, P32 Q3, P10 Q3, P57 Q3, P72 Q3, P25 Q2
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3.2.2.2 Efficiency and Time-Saving in Design Flows

One of the primary reasons students utilize artificial intelligence is to save time and organize their work processes. Many students stated that AI helps them speed up the design process, especially during the idea development and visualization stages, allowing them to reach results faster and manage repetitive tasks more efficiently.

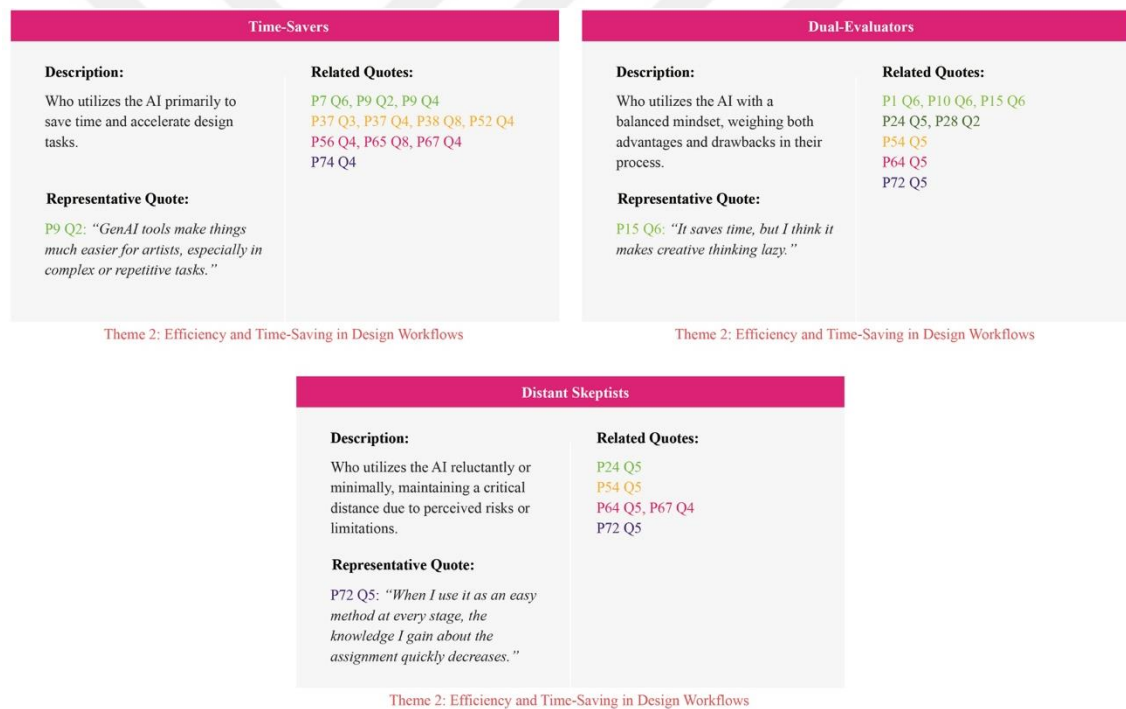
Some students explained this as follows: P1 (Q6): *“I think AI helps save time and makes things easier because it helps us find ideas quickly.”*, P52 (Q4): *“It allows me to save time and makes my work easier.”*, P9 (Q4): *“It helped me avoid wasting time.”*, P7 (Q4): *“It can make what I want happen in seconds.”*, P37 (Q4): *“I get answers to my questions quickly, and filling in documents takes less time.”*, P9 (Q2): *“GenAI tools provide great convenience to artists, especially for complex or repetitive tasks.”* These statements indicate that students perceive AI as a tool that enhances efficiency and supports productivity in design-related tasks. However, some students also mentioned that this convenience may weaken creative thinking: P15 (Q6): *“It saves time, but I think it makes creative thinking lazy.”*

Others noted that AI tools do not always provide the expected results: P64 (Q5): *“It doesn’t give me the result I want; sometimes it’s faster to do it with existing tools”*, P54 (Q5): *“It doesn’t consider my requests and often makes the process longer.”*, P56 (Q4): *“Sometimes it takes too long to explain what I mean, so I usually give up.”* These responses suggest that while AI is advantageous in terms of time efficiency, it also has limitations in terms of control, quality, and originality. All in all, students tend to view

AI as a “fast production assistant”, but they are also aware that such speed can sometimes conflict with the depth of creativity. This brings forward a deeper discussion about the balance between efficiency and originality, leading to the next theme, which examines students’ perceptions of the tension between creativity and authenticity.

Within this theme, three distinct student approaches emerged, each reflecting different ways of engaging with GenAI (see Figure 3.6).

Figure 3.6 Visual Overview of Student Approaches in Efficiency and Time-Saving in Design Flows



Students identified in the Efficiency and Time-Saving in Design Workflow under Theme 2 are presented in tabular form (see Table 3.8).

Table 3.8 *Classification of Student Approaches in Theme 2: Efficiency and Time-Saving in Design Workflows*

Approach Type	Description	Related Theme and Participant IDs
Time-Savers	Who utilizes the AI primarily to save time and accelerate design tasks.	P52 Q4, P74 Q4, P9 Q2, P37 Q4, P9 Q4, P7 Q6, P37 Q3, P38 Q8, P65 Q8, P56 Q4, P67 Q4
Dual-Evaluators	Uses AI with a balanced mindset, carefully weighing both its advantages and drawbacks throughout the process.	P1 Q6, P15 Q6, P10 Q6, P72 Q5, P28 Q2, P64 Q5, P24 Q5, P54 Q5
Distant Skeptics	Who utilizes the AI reluctantly or minimally, maintaining a critical distance due to perceived risks or limitations.	P72 Q5, P64 Q5, P24 Q5, P54 Q5, P67 Q4

Overall, these approaches demonstrate that students' interactions with GenAI are characterized by an ongoing negotiation among control, creativity, and trust in the tool. The following theme examines how students perceive the originality-creativity dilemma when incorporating GenAI into their design practice.

3.2.3 Theme 3: The Originality-Creativity Dilemma

The findings indicate that students believe GenAI supports the creative process; however, they also express concerns that it may compromise originality, blur ethical boundaries, and render creativity more superficial. This suggests that AI in design education is positioned as both an inspiring tool and a producer that carries the risk of imitation.

This section reflects students' views on the impact of AI on originality, personal expression, and ethical creativity. Some students stated that GenAI supports original production, makes the design process more flexible, and nurtures creativity by offering

different ideas. For example: P61 (Q6): *“I think it supports originality, but I also think it dulls creativity.”*, P79 (Q6): *“In my own use, I don’t think it made me lose my creativity, but depending on how it’s used, it can reduce originality.”* These statements show that the impact of AI on originality depends on user intention and usage style. Similarly, comments such as: P27 (Q2): *“It’s useful for getting inspiration and broadening perspective, but it shouldn’t prevent being original.”* reflect an awareness that conscious and limited use can help protect originality.

On the other hand, many students stated that AI undermines originality, produces similar outcomes, and raises ethical concerns. P62 (Q2): *“I don’t think its use is right; I believe it destroys originality. At the same time, I don’t find it ethical.”*, P60 (Q5): *“It prevents designs from being unique to the individual.”*, P45 (Q6): *“I think GenAI negatively affects originality. The results people get are very similar.”* Some students summarized this issue as follows: P62 (Q2): *“I think it dulls both originality and creativity. The solutions AI produces are other designers’ ideas,”* and P41 (Q6): *“I think it dulls creativity in some cases; people don’t think of original ideas, they just use AI.”*

Students view originality not only as part of creative production but also as an element of ethical responsibility. In this context, AI is seen as a dual-sided tool, one that can both support and threaten originality. This theme includes several codes that explain the main ideas and common points in the participants’ responses (see Table 3.9).

Table 3.9 *Indicator Keywords*

Code Title	Definition	Indicator Keywords
Perceptions of Originality and Authenticity	A dual perception of originality and authenticity seen as both supportive and limiting.	originality/authenticity, personal expression, uniqueness, similar or uniform products, derivative/copy, ethics/ethical issues, impact depending on use or intention

Perceptions of Creativity in Relation to GenAI	The balance between contributing to creativity (in drafts, prototypes, or alternatives) and weakening it through excessive use.	creativity, creative contribution, complementary tool, draft/prototype, exploring alternatives, moderate use, risk of dependency, superficiality, reduction of personal contribution
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Note. Codes and Definitions Related to Theme 3. The Originality-Creativity Dilemma.

3.2.3.1 Student Approaches Reflecting Perception of Originality and Authenticity

This section explores how students perceive originality and authenticity when engaging with AI tools in the design process. Two distinct yet overlapping orientations emerged. Originality Guardians demonstrate a protective attitude toward creative authorship, emphasizing the preservation of individuality and uniqueness in design. They view AI as a useful support tool but express concern that excessive dependence may blur authorship and diminish personal expression. On the other hand, Conditional Acceptors take a more pragmatic approach; they acknowledge AI's value for idea generation while consciously setting ethical and creative boundaries. For these students, maintaining originality depends not on rejecting AI, but on controlling its role within the design process (see Figure 3.7).

Figure 3.7 *Visual Overview of Student Approaches in Perception of Originality and Authenticity*

Originality Guardians		Conditional Acceptors	
Description: Who utilizes the AI with strong awareness of protecting originality and uniqueness in design.	Related Quotes: P10 Q6, P16 Q6, P17 Q8 P27 Q2, P28 Q2, P30 Q6 P42 Q7, P45 Q6, P52 Q2 P60 Q5, P61 Q6, P62 Q2, P62 Q6, P66 Q6 P76 Q6, P79 Q6	Description: Who utilize the AI only under certain creative thresholds, accepting its role while setting limits for originality.	Related Quotes: P10 Q6, P16 Q6 P27 Q2, P28 Q2, P30 Q6 P41 Q6, P45 Q6, P46 Q2, P52 Q2 P60 Q5, P61 Q6, P62 Q2, P62 Q6, P66 Q6 P76 Q6, P79 Q6
Representative Quote: P79 Q6: "I don't think it reduces my creativity or originality, but depending on how it's used, it can lessen originality."		Representative Quote: P62 Q6: "I think it dulls originality and creativity. The solutions generated by AI are actually other designers' ideas."	

Theme 3: Perceptions of Originality and Authenticity

Theme 3: Perceptions of Originality and Authenticity

The students identified in the Perception of Originality and Authenticity under Theme 3 are presented in tabular form, (see Table 3.10)

Table 3.10 *Classification of Student Approaches in Theme 3: Perception of Originality and Authenticity*

Approach Type	Description	Related Theme and Participant IDs
Originality Guardians	Who utilizes the AI with strong awareness of protecting originality and uniqueness in design.	P76 Q6, P61 Q6, P79 Q6, P27 Q2, P17 Q8, P62 Q2, P66 Q6, P52 Q2, P45 Q6, P60 Q5, P62 Q6, P30 Q6, P10 Q6, P28 Q2, P16 Q6, P42 Q7
Conditional Acceptors	Who utilize the AI only under certain creative thresholds, accepting its role while setting limits for originality.	P76 Q6, P61 Q6, P79 Q6, P27 Q2, P62 Q2, P66 Q6, P52 Q2, P46 Q2, P45 Qco6, P60 Q5, P62 Q6, P30 Q6, P10 Q6, P41 Q6, P28 Q2, P16 Q6

3.2.3.2 Perceptions of Originality and Authenticity

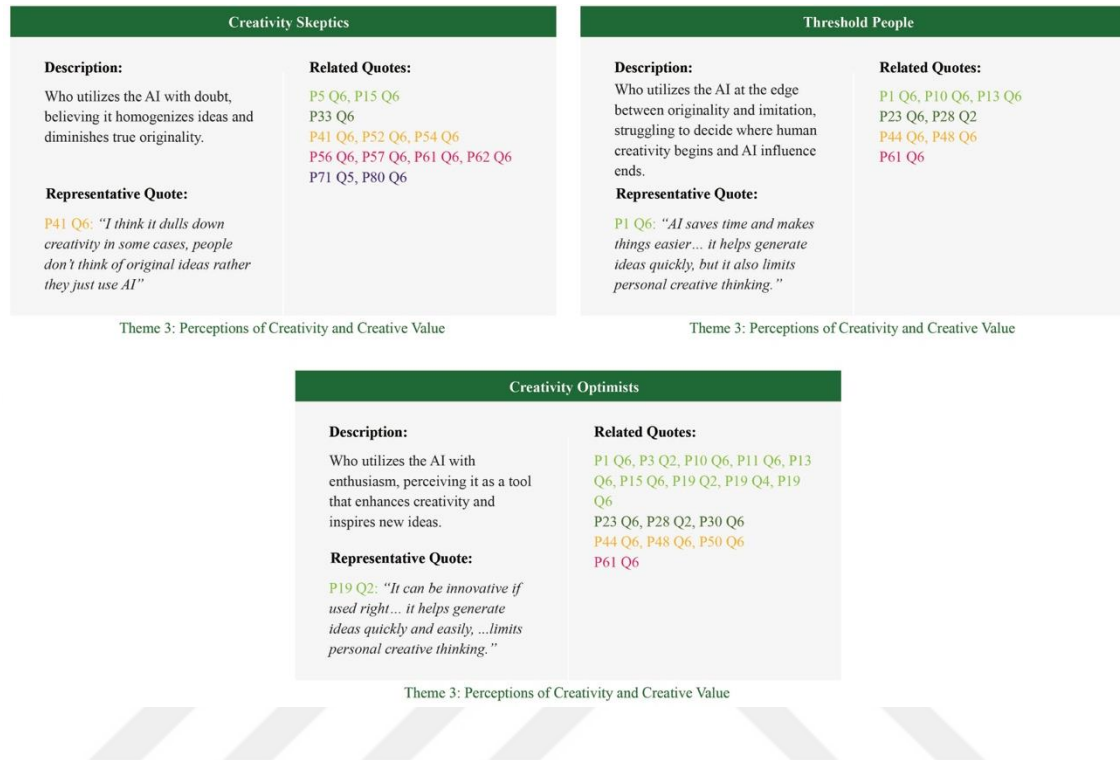
Students show an uncertain attitude toward the impact of AI on creativity. Some believe that GenAI positively influences creativity by helping with idea generation, rapid prototyping, and developing alternative solutions: P3 (Q2): *“It adds creativity to my projects.”*, P23 (Q6): *“I think it affects our creativity positively, but it should only be used in the sketch phase.”* Such statements show that AI is seen as a supportive and complementary creative tool. Similarly, comments such as: P48 (Q6): *“When used only as needed, it can have a positive effect on creativity. But constant use, even for small tasks, can make the user dependent on AI.”*, P19 (Q6): *“It can be creative, but most of the time it corrects more than it creates something new.”* That supports the idea that moderate and purposeful use of AI can encourage creativity.

In contrast, many students stated that AI weakens creativity, makes it more superficial, and limits personal contribution: P80 (Q6): *“I think it destroys creativity.”*, P57 (Q6): *“It kills creativity and prevents people from adding their own ideas.”*, P33 (Q6): *“I think it dulls creativity; since we take the easy way, our ability to create and solve problems gets weaker.”*, P28 (Q2): *“It can make the design process faster, but it may be limiting in terms of creativity and originality.”*, P44 (Q6): *“When used too much, it can dull creativity, but using it only when needed makes sense.”* These findings indicate that students perceive creativity as a process rooted in human choices, interpretation, and refinement. Therefore, while AI is often perceived as a supportive creative assistant, it is evaluated negatively when it replaces original human thinking. Students’ conflicted attitudes toward originality and creativity are closely related to how they interact with AI tools. Not only the formation of creative thought but also how this thought is communicated to AI directly affects the quality and originality of the output.

3.2.3.2.1 Student Approaches Reflecting Perception of Creativity in Relation to GenAI

This section presents a perspective of student approaches toward creativity in relation to GenAI. The findings reveal three distinctive yet interconnected orientations: Creativity Skeptics, Threshold People, and Creativity Optimists. While Skeptics express concerns about AI’s homogenizing effect and the erosion of originality, Threshold People navigate between human and machine input, reflecting a state of negotiation and uncertainty. In contrast, Optimists embrace AI as a catalyst for creative expansion, viewing it as a tool for idea generation and inspiration (see Figure 3.8).

Figure 3.8 Visual Overview of Student Approaches in Perception of Creativity in Relation to GenAI



The students identified in “Perception of Creativity in Relation to GenAI”, under Theme 3, are presented in tabular form (see Table 3.11).

Table 3.11 Classification of Student Approaches in Perception of Creativity in Relation to GenAI

Approach Type	Description	Related Theme and Participant IDs
Creativity Skeptics	Who utilizes the AI with doubt, believing it homogenizes ideas and diminishes true originality.	P80 Q6, P5 Q6, P52 Q6, P54 Q6, P57 Q6, P33 Q6, P56 Q6, P15 Q6, P61 Q6, P41 Q6, P62 Q6, P71 Q5
Threshold People	Who utilizes the AI at the edge between originality and imitation, struggling to decide where human creativity begins and AI influence ends.	P48 Q6, P23 Q6, P10 Q6, P1 Q6, P44 Q6, P28 Q2, P61 Q6, P13 Q6

Creativity Optimists	Who utilizes the AI with enthusiasm, perceiving it as a tool that enhances creativity and inspires new ideas.	P50 Q6, P48 Q6, P23 Q6, P11 Q6, P19 Q6, P19 Q2, P3 Q2, P30 Q6, P10 Q6, P13 Q6, P1 Q6, P44 Q6, P28 Q2, P15 Q6, P61 Q6, P19 Q4
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Overall, these orientations suggest that students' understanding of originality oscillates between ethical responsibility and creative pragmatism. The following theme focuses on students' experiences of using prompts with GenAI in their design work. In this context, the next theme focuses on the communicative and technical challenges students experience while interacting with GenAI tools.

3.2.4 Theme 4: Challenges in Prompt-Output Interaction

This theme addresses the communicative and technical challenges students encounter when interacting with generative AI (GenAI) tools. The findings indicate that students frequently struggle to convey their creative ideas to the AI effectively and often fail to achieve the expected quality in the generated outputs. Students frequently reported problems, such as misunderstandings of prompts, misinterpretations of requests, or unsatisfactory results in the outputs they produced. These experiences reveal that interaction with AI is not only a technical process, but also involves human aspects such as expression, meaning-making, and trust. Overall, students experienced the most difficulty in two key stages: (1) Communicating their ideas clearly through prompts (2) Aligning the output with their creative expectations. These challenges were examined under two main categories: (1) Prompt-Related Challenges and (2) Output-Related Challenges.

This theme includes several codes that explain the main ideas and common points in the participants' responses (see Table 3.12)

Table 3.12 *Indicator Keywords*

Code Title	Definition	Indicator Keywords
Prompt-Related Challenges	Difficulties students experience while writing or structuring prompts such as unclear instructions, too many details, or not knowing how to control the AI to match their intention.	wrong prompt, unclear prompt, too specific/too vague, not matching idea, hard to control, trial-and-error
Output-Related Challenges	Issues arising from the generated visuals including unrealistic forms, unwanted artifacts, style inconsistencies, or results that do not align with the intended concept.	unrealistic outputs, distorted details, style mismatch, irrelevant results, low quality, inaccurate images

3.2.4.1 Prompt-Related Challenges

This section reflects students' views on the impact of AI on originality, personal expression, and ethical creativity. Some students stated that GenAI supports original production, makes the design process more flexible, and encourages creativity by offering different ideas.

Students reported that they often had difficulty expressing their ideas to AI systems due to linguistic or technical limitations. Many mentioned experiencing situations such as "not getting the desired result" or "the AI not understanding what they meant." For example: P9 (Q5): *"There were times when I couldn't get the design or answer I wanted."*, P25 (Q5): *"Sometimes I don't get the kind of answer I expect in my*

projects.”, P79 (Q5): *“Not being able to explain exactly what I want or not reaching the result I hoped for.”*, P43 (Q5): *“In some projects, it doesn’t understand the question and gives different answers, which can be misleading.”*, P10 (Q2): *“Sometimes, even if I write a good prompt, it doesn’t give creative ideas.”* These statements suggest that students struggle with transferring expression and meaning during the process of creating prompts.

Similarly, P74 (Q5): *“Not being able to express my prompt correctly and not being able to turn what’s in my mind into reality.”*, P75 (Q2): *“I think it’s very difficult to tell GenAI tools what we want; we don’t really know how to write good prompts.”*, P38 (Q5): *“Even though I explained what I wanted, it couldn’t produce a proper collage it just stacked the photos on top of each other.”* These statements indicate that students view prompt writing as a technical skill and perceive themselves as lacking competence in this area.

Some students mentioned trying to overcome this issue through trial and error: P72 (Q2): *“I came across faulty drawings, which I think were caused by my prompt writing. Choosing the right words is very important.”*, P13 (Q5): *“...when I asked for a happy pizza, it gave completely unrelated results. Maybe this is also related to the prompt.”*, P52 (Q5): *“Sometimes I can’t make it do what I want because I can’t fully express the idea in my mind.”* The views indicate that, for students, interacting with GenAI is not only a technical production process, but also a new form of digital communication and meaning-making that requires expressive skills. In addition, some students described the AI’s responses as unreliable or unpredictable, reflecting a lack of trust in the output within the user experience.

3.2.4.1.1 Student Approaches Reflecting Perception of Prompt-Related Challenges

This section outlines four distinct student approaches to prompt-related challenges when using GenAI tools. The findings indicate that students' struggles are not solely technical but also conceptual revealing differences in how they communicate creative intent and interpret AI feedback. Iterative Refiners engage in repeated experimentation, adjusting prompts step by step to align with their envisioned outcomes. Trust-Doubters exhibit hesitation, questioning AI's accuracy and authenticity. Meanwhile, Expression Strugglers face difficulties articulating ideas clearly in text-based prompts, and Misinterpreted Users feel that AI often misreads their intentions (see Figure 3.9).

Figure 3.9 Visual Overview of Student Approaches in Prompt-Related Challenges

Iterative-Refiners Description: Who utilize the AI through multiple iterations, refining prompts step by step to achieve desired outputs. Related Quotes: P34 Q5 P44 Q5, P46 Q5 P70 Q5, P72 Q2, P74 Q5, P75 Q5 Representative Quote: P74 Q5: "Not being able to express the prompt correctly and failing to turn what's in my mind into reality..."	Trust-Doubters Description: Who utilizes the AI with hesitation, doubting the reliability or authenticity of generated outputs. Related Quotes: P10 Q2 P39 Q5, P43 Q5, P48 Q5, P51 Q5 Representative Quote: P48 Q5: "It misunderstands what is said and explains things it doesn't know as if it does (fabricating information)."
Theme 4: Prompt-Related Challenges	Theme 4: Prompt-Related Challenges
Expression Strugglers Description: Who utilizes the AI but struggle to express their creative intent effectively in prompts. Related Quotes: P10 Q5, P26 Q5 P38 Q5, P52 Q5 P70 Q5, P72 Q2, P74 Q5, P75 Q2, P75 Q5, P79 Q5 Representative Quote: P74 Q5: "Not being able to express the prompt correctly and ... failing to turn what's in my mind into reality."	Misinterpreted Users Description: Who utilizes the AI but often feel misinterpreted, as the outputs do not reflect their intended meaning. Related Quotes: P8 Q5, P9 Q5, P13 Q5, P15 Q5, P16 Q5 P23 Q5, P25 Q5, P34 Q5, P36 Q5 P44 Q5, P46 Q5, P47 Q5 P55 Q5, P66 Q5 P77 Q5 Representative Quote: P46 Q5: "Even when I write a really good prompt, sometimes it doesn't generate any good ideas."
Theme 4: Prompt-Related Challenges	Theme 4: Prompt-Related Challenges

The students identified in the Prompt-Related Challenges under Theme 4 are presented in tabular form (see Table 3.13).

Table 3.13 *Classification of Student Approaches in Theme 4: Prompt-Related Challenges*

Approach Type	Description	Participant IDs
Iterative-Refiners	Who utilizes the AI through multiple iterations, refining prompts step by step to achieve desired outputs.	P72 Q2, P34 Q5, P44 Q5, P70 Q5, P75 Q5, P74 Q5, P46 Q5
Trust-Doubters	Who utilizes the AI with hesitation, doubting the reliability or authenticity of generated outputs.	P43 Q5, P48 Q5, P39 Q5, P51 Q5, P10 Q2
Expression Strugglers	Who utilizes the AI but struggle to express their creative intent effectively in prompts.	P79 Q5, P74 Q5, P10 Q5, P75 Q2, P72 Q2, P75 Q5, P70 Q5, P52 Q5, P38 Q5, P26 Q5
Misinterpreted Users	Who utilizes the AI but often feel misinterpreted, as the outputs do not reflect their intended meaning.	P9 Q5, P25 Q5, P36 Q5, P15 Q5, P66 Q5, P23 Q5, P77 Q5, P16 Q5, P13 Q5, P55 Q5, P47 Q5, P44 Q5, P8 Q5, P46 Q5, P34 Q5

3.2.4.2 Output-Related Challenges

These challenges are related to situations where the drawings, ideas, or suggestions generated by AI do not align with user expectations, contain technical errors, or appear superficial in quality. Many students stated that GenAI tends to produce similar, repetitive, and less original outputs: P45 (Q5): *“Drawing styles with GenAI become very ordinary and monotonous. Everyone who uses it ends up with the same style.”*, P58 (Q6): *“The models’ outputs look very similar to each other.”*, P24 (Q6): *“After a while, it keeps reusing existing data, so the results are no longer innovative.”* These statements show that students perceive AI-generated outputs as repetitive and limited in creativity.

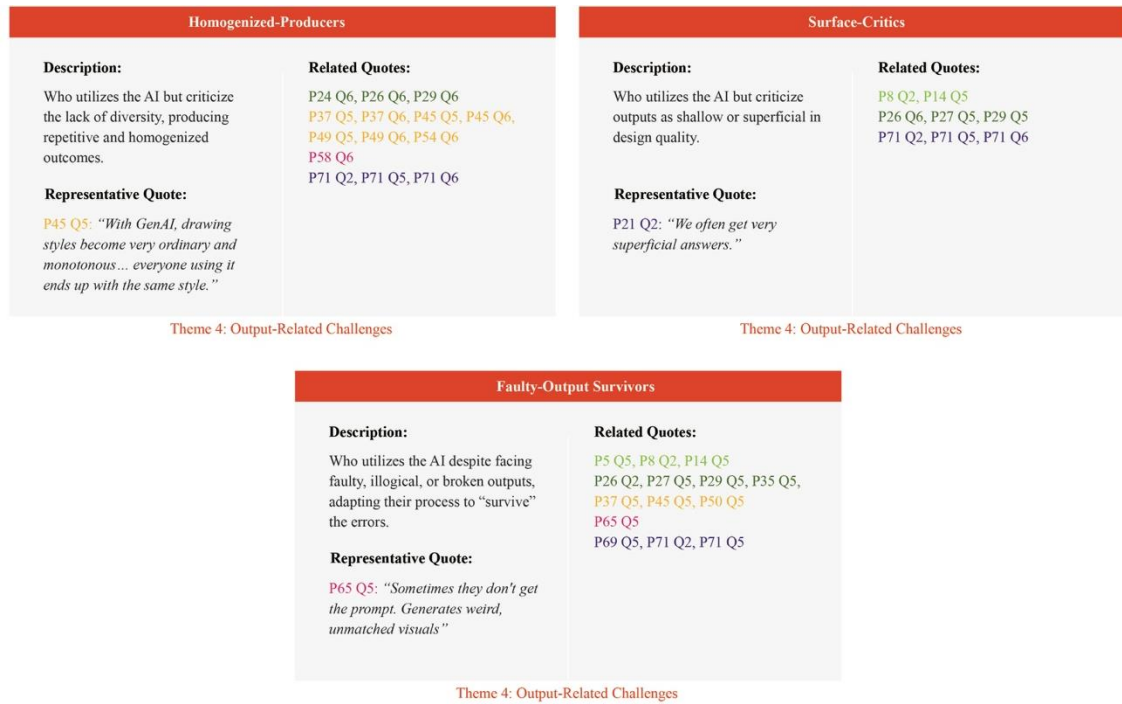
Some students also mentioned that the system sometimes produced undefined or faulty forms, superficial responses, and inconsistent visuals: P35 (Q5): *“Some outputs*

are undefined and disproportionate.”, P71 (Q5): *“The responses stay too superficial.”*, P65 (Q5): *“The visuals do not match each other.”*, P26 (Q2): *“Post-production is still needed; the system sometimes adds random details on its own.”* These opinions show that students perceive AI-generated outputs as limited in both technical accuracy and creative diversity. Students summarized this situation as follows: P54 (Q6): *“Overall, it’s positive, but sometimes it drifts away from what I ask for and produces one type of output; this negatively affects creativity.”*, P37 (Q5): *“Sometimes it gives repetitive, long, and complex answers; I don’t always get the right result.”* The communicative and technical challenges that students experience with GenAI show that the relationship between humans and generative AI is not only technical but also ethical. Therefore, the next theme examines students’ ethical awareness, understanding of originality, and perceptions of ownership in relation to the use of AI.

3.2.4.2.1 Student Approaches Reflecting Perception of Output-Related Challenges

This section examines how students perceive and evaluate the quality of AI-generated outputs, highlighting three major approaches. Homogenized-Producers express frustration over repetitive or stylistically monotonous results, emphasizing the lack of creative diversity in AI visuals. Surface-Critics recognize the efficiency of AI tools but criticize the superficial nature of generated outputs, noting that they often lack conceptual or aesthetic depth. In contrast, Faulty-Output Survivors adapt to the system’s limitations by embracing error-driven exploration, using unexpected results as creative opportunities (see Figure 3.10).

Figure 3.10 Visual Overview of Student Approaches in Output-Related Challenges



The students identified in the Output-Related Challenges under Theme 4 are presented in tabular form (see Table 3.14).

Table 3.14 Classification of Student Approaches in Theme 4: Output-Related Challenges

Approach Type	Description	Related Theme and Participant IDs
Homogenized-Producers	Who utilizes the AI but criticize the lack of diversity, producing repetitive and homogenized outcomes.	P49 Q5, P49 Q6, P58 Q6, P24 Q6, P45 Q6, P29 Q6, P45 Q5, P71 Q6, P71 Q5, P71 Q2, P26 Q6, P37 Q6, P37 Q5, P54 Q6
Surface-Critics	Who utilizes the AI but criticize outputs as shallow or superficial in design quality.	P27 Q5, P71 Q6, P71 Q5, P8 Q2, P71 Q2, P29 Q5, P26 Q6, P14 Q5
Faulty-Output Survivors	Who utilizes the AI despite facing faulty, illogical, or broken outputs, adapting	P50 Q5, P27 Q5, P65 Q5, P35 Q5, P71 Q5, P29 Q5, P45 Q5, P69 Q5, P5 Q5, P37 Q5, P14 Q5, P26 Q2, P8 Q2, P71 Q2

their process to “survive”
the errors.

Overall, these interaction types suggest that students perceive GenAI not merely as a technical system but as a communicative partner that requires interpretation, trust, and adaptation. The following theme examines how students assess the ethical implications of utilizing GenAI tools and their perceptions of issues related to creativity, originality, ownership, and copyright.

3.2.5 Theme 5: Ethical Considerations and Ownership in GenAI Use

The students’ responses reveal different perspectives on where to draw the line between human creativity and AI’s generative capacity. The findings show that students generally perceive GenAI tools as supportive instruments that facilitate the creative process and make learning easier; however, they also express significant concerns about originality, ethical responsibility, and the value of human effort. These concerns are discussed in two main dimensions: (1) Human Contribution and Originality: the influence of AI on idea generation and creative processes. (2) Ownership and Intellectual Property: questions about who owns AI-generated content and how human labor can be protected.

This theme includes several codes that explain the main ideas and common points in the participants’ responses (see Table 3.15).

Table 3.15 *Indicator Keywords*

Code Title	Definition	Indicator Keywords
Creative Inspiration and Homogenization of Ideas	The risk of aesthetic and conceptual homogenization while providing inspiration.	Idea expansion, stylistic similarity, same line/aesthetic, single-type production, reduction of diversity, repetition/monotony, hindering originality

AI-Supported Co-Creation and Labor	Co-creation with artificial intelligence; collaboration and labor sharing guided by the designer, increased speed and productivity, and the necessity of acknowledging human contribution.	Co-creation, collaborative production, cooperation, designer-AI partnership, division of labor, accelerating the process, drafting/refining, quality control, indicating AI support
Ownership and Attribution	Principles of ownership and attribution in AI-assisted designs; creative responsibility is mostly assigned to the user who writes the prompt, emphasizing transparent acknowledgment.	Ownership, attribution, crediting, prompt author, user responsibility, declaration/transparency, human contribution, statement of AI assistance
Intellectual Property, Misuse, and Societal Risks	Intellectual property and ethical risks: unauthorized training or data usage, copyright infringement, misuse, and concerns about the replacement of designers.	Intellectual property, copyright, unauthorized use, consent/approval, data or drawings used for AI training, misuse, risk of replacement/substitution, ethical/social impact

Note. Codes and Definitions Related to Theme 5: Ethical Considerations and Ownership in GenAI Use.

3.2.5.1 Creative Inspiration and Homogenization of Ideas

Some students viewed GenAI as a source of inspiration or a trigger for creative thinking: P23 (Q2): *“It can be used to get ideas, but we need to add our own touch to separate it from what already exists in the data pool.”*, P46 (Q8): *“I only find it ethical when it’s used for idea generation.”*, P66 (Q8): *“Idea generation is ethical.”* These statements indicate that students generally view AI as a supportive tool, within ethical limits, for generating ideas. They emphasized that AI could provide different perspectives and stimulate creativity in the early design phases, but human input should remain essential in the final outcome.

In contrast, some students felt that AI undermines originality or makes creativity superficial: P36 (Q9): *“Using AI-generated ideas without adding any creativity.”*, P41 (Q9): *“AI tools almost feel like cheating.”*, P26 (Q9): *“Copying artists’ styles and using them commercially is unethical.”* These views reveal a clear ethical divide among students: while some perceive AI as an inspirational partner, others regard it as a tool that overshadows human effort and homogenizes creative ideas.

3.2.5.1.1 Student Approaches Reflecting Creative Inspiration and Homogenization of Ideas

This section examines how students navigate ethical boundaries and foster creative originality in their interactions with GenAI, identifying three primary approaches. Conditional-Use Advocates employ AI under specific ethical and academic conditions, emphasizing consent, transparency, and crediting of sources. Ethical Guardians take a stricter stance, ensuring that human intention remains central, adding personal contribution to distinguish AI-assisted outputs. Conversely, Originality-Erosion Pessimists express concern that AI may erode individuality and creative effort, leading to stylistic homogenization (see Figure 3.11).

Figure 3.11 Visual Overview of Student Approaches in Divergent Thinking

Conditional-Use Advocates		Ethical Guardians	
Description: Who utilizes the AI under certain conditions, emphasizing consent, transparency, and academic honesty.	Related Quotes: P26 Q8 P51 Q8, P57 Q2	Description: Who utilizes the AI strictly within ethical boundaries, acting as protectors of integrity.	Related Quotes: P1 Q9, P3 Q9, P5 Q9, P15 Q8, P22 Q8 P23 Q2, P29 Q8, P36 Q9 P38 Q9, P42 Q8, P43 Q8, P44 Q8, P46 Q8, P53 Q9 P66 Q8 P71 Q9, P80 Q9
Representative Quote: P57 Q2: "...inspiration can be necessary, but creating datasets from artists' works without permission or credit is not ethical."		Representative Quote: P23 Q2: "...getting ideas, but we ...add something of our own to distinguish it from the ready-made information it draws from."	
Theme 5: Creative Inspirations and Homogenization of Ideas		Theme 5: Creative Inspirations and Homogenization of Ideas	

Originality-Erosion Pessimists	
Description: Who utilize the AI with concern that originality and uniqueness might erode.	Related Quotes: P1 Q9, P3 Q9, P5 Q9, P15 Q8, P22 Q8 P23 Q2, P26 Q8, P29 Q8, P36 Q9 P38 Q9, P41 Q9, P42 Q8, P43 Q8, P44 Q8, P46 Q8, P51 Q8, P51 Q9, P53 Q9 P57 Q2, P66 Q8 P71 Q9, P80 Q9
Representative Quote: P53 Q9: "Ending the effort and individuality in design."	
Theme 5: Creative Inspirations and Homogenization of Ideas	

Students identified under Theme 5: Creative Inspirations and Homogenization of Ideas are presented in tabular form (see Table 3.16).

Table 3.16 Classification of Student Approaches in Theme 5: Creative Inspirations and Homogenization of Ideas

Approach Type	Description	Related Theme and Participant IDs
Conditional-Use Advocates	Who utilizes the AI under certain conditions, emphasizing consent, transparency, and academic honesty.	P57 Q2, P26 Q8, P51 Q8
Ethical Guardians	Who utilizes the AI strictly within ethical boundaries, acting as protectors of integrity.	P15 Q8, P46 Q8, P23 Q2, P44 Q8, P42 Q8, P66 Q8, P29 Q8, P22 Q8, P43 Q8, P36 Q9, P80 Q9, P53 Q9, P3 Q9, P71 Q9, P5 Q9, P1 Q9, P38 Q9
Originality-Erosion Pessimists	Who utilize the AI with concern that originality	P41 Q9, P57 Q2, P15 Q8, P44 Q8, P29 Q8, P46 Q8, P66 Q8, P22 Q8, P36 Q9, P80 Q9, P53 Q9, P23 Q2, P42 Q8, P43 Q8, P71 Q9,

and uniqueness might
erode.

P5 Q9, P3 Q9, P51 Q9, P26 Q8, P1 Q9, P38
Q9, P51 Q8

3.2.5.2 AI-Supported Co-Creation and Labor

Students mostly position GenAI as a productive yet controllable partner in the creative process. Some students stated that these tools provide ethical support in terms of accessibility and time efficiency: P16 (Q8): *“It helps us complete drawings and similar tasks more easily.”*, P34 (Q8): *“It makes it easier to reach the desired designs through verbal and visual directions.”*, P67 (Q9): *“For simple color generation, something that doesn’t require big creations.”*

In contrast, some students expressed that AI devalues human labor and threatens artistic originality: P9 (Q9): *“It’s not ethical that something people spend hours on can be created in seconds.”*, P15 (Q9): *“Letting AI do the design is disrespectful to designers.”*

Overall, students neither completely reject nor fully embrace AI. Instead, they emphasize transparency, respect for human effort, and the preservation of human contribution as key principles for ethical AI use.

3.2.5.2.1 Student Approaches Reflecting Creative Inspiration and Homogenization of Ideas

This section explores how students conceptualize AI’s role in collaborative creation and its implications for human labor in design. Two distinct orientations emerged: Co-Creation Pragmatists view AI as a practical partner a co-designer that enhances workflow efficiency as long as ethical transparency is maintained. They focus on productive integration rather than moral tension, emphasizing acknowledgment of AI’s contribution as sufficient ethical practice. Conversely, Labor-Threatened students

express deep concern that AI devalues human creativity and risks replacing traditional forms of artistic labor. Their reflections highlight broader anxieties about authorship, originality, and the commodification of creative work (see Figure 3.12).

Figure 3.12 *Student Approaches Visual Overview of Student Approaches in AI-Supported Co-Creation and Labor*

Co-Creation Pragmatists		Labor-Threatened	
Description: Who utilizes the AI pragmatically as a co-creator, focusing on practical outcomes rather than moral questions.	Related Quotes: P1 Q7, P4 Q8, P6 Q7, P7 Q7, P13 Q8, P15 Q7, P16 Q8 P23 Q7, P24 Q7, P34 Q8, P35 Q7, P36 Q8 P48 Q7, P53 Q7, P53 Q8 P56 Q8, P57 Q7, P64 Q7, P64 Q8, P65 Q8, P66 Q7, P67 Q9 P75 Q8, P79 Q7	Description: Who utilizes the AI while feeling that human labor and creative professions are at risk of being replaced or undervalued.	Related Quotes: P9 Q9, P10 Q9, P15 Q9, P20 Q9 P23 Q9, P24 Q9, P26 Q9, P29 Q9, P30 Q9, P31 Q9 P64 Q9, P66 Q9 P68 Q9, P75 Q9
Representative Quote: P36 Q8: "Its contribution to the design process is ethical, as long as it's stated that the ideas come from AI."		Representative Quote: P66 Q9: "Using the product of Gen AI tools as the final design and as your work is unethical"	
Theme 5: AI-Supported Co-Creation and Labor		Theme 5: AI-Supported Co-Creation and Labor	

The students identified in the AI-supported Co-Creation and Labor under Theme 5 are presented in tabular form (see Table 3.17).

Table 3.17 *Classification of Student Approaches in Theme 5: AI-Supported Co-Creation and Labor*

Approach Type	Description	Related Theme and Participant IDs
Co-Creation Pragmatists	Who utilizes the AI pragmatically as a co-creator, focusing on practical outcomes rather than moral questions.	P65 Q8, P75 Q8, P36 Q8, P16 Q8, P53 Q8, P34 Q8, P67 Q9, P64 Q8, P13 Q8, P4 Q8, P56 Q8, P24 Q7, P35 Q7, P7 Q7, P57 Q7, P23 Q7, P48 Q7, P1 Q7, P53 Q7, P79 Q7, P66 Q7, P64 Q7, P15 Q7, P6 Q7, P65 Q8 , P16 Q8
Labor-Threatened	Who utilizes the AI while feeling that human labor and creative professions are at risk of being replaced or undervalued.	P26 Q9, P75 Q9, P24 Q9, P64 Q9, P23 Q9, P66 Q9, P20 Q9, P29 Q9, P30 Q9, P10 Q9, P15 Q9, P31 Q9, P9 Q9, P68 Q9, P26 Q9, P64 Q9

3.2.5.3 Ownership and Intellectual Property

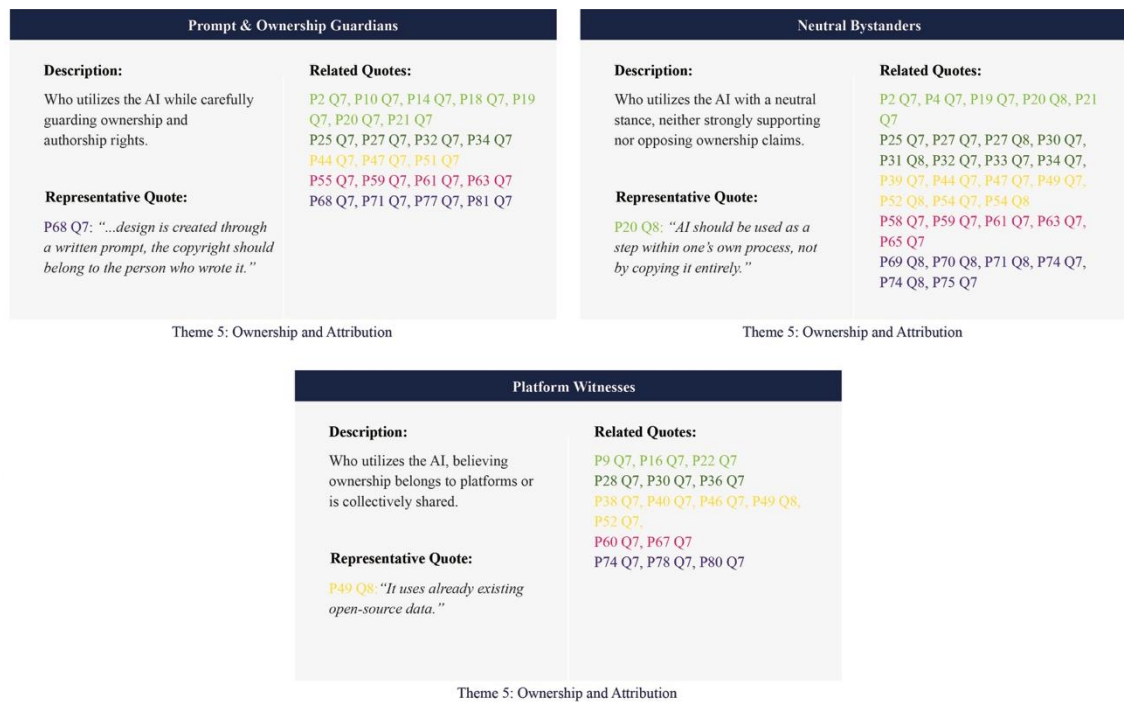
According to most students, the human still remains at the center of the creative process, and responsibility belongs to the user who writes the prompt: P69 (Q8): *“It is ethical because the prompt comes from me.”*, P68 (Q7): *“Copyright should belong to the person who writes the prompt, since they direct the production.”* These views indicate that most students consider intentional authorship to be the primary factor in defining ownership. However, some students argued that ownership should belong to the AI system or even be publicly shared: P9 (Q7): *“It should be public.”*, P67 (Q7): *“The credit for AI-generated work should not go to the user, but to the AI tool.”*, P36 (Q7): *“It should belong to the AI company.”*

Therefore, two main ownership models emerge: (1) Human-centered ownership model: creative responsibility belongs to the user. (2) System-centered or shared ownership model: production is shared between the user and the system.

3.2.5.3.1 Approaches Reflecting Ownership and Attribution

This section examines how students conceptualize ownership and attribution in AI-assisted design, revealing three primary orientations. Prompt & Ownership Guardians advocate for strong authorship protection, emphasizing that creative ownership belongs to the individual who formulates the prompt or initiates the design process. Neutral Bystanders maintain a balanced stance, recognizing AI as a tool within one’s creative workflow rather than a source of authorship itself. Finally, Platform Witnesses perceive ownership as inherently collective or platform-based, viewing AI outputs as extensions of open-source data and shared systems (see Figure 3.13).

Figure 3.13 Visual Overview of Student Approaches in Ownership and Attribution



The students identified in the Ownership and Attribution under Theme 5 are presented in tabular form (see Table 3.18).

Table 3.18 Classification of Student Approaches in Theme 5: Ownership and Attribution

Approach Type	Description	Related Theme and Participant IDs
Prompt & Ownership Guardians	Who utilizes the AI while carefully guarding ownership and authorship rights.	P44 Q7, P61 Q7, P71 Q7, P68 Q7, P25 Q7, P34 Q7, P59 Q7, P63 Q7, P20 Q7, P51 Q7, P32 Q7, P2 Q7, P47 Q7, P77 Q7, P10 Q7, P55 Q7, P19 Q7, P27 Q7, P21 Q7, P18 Q7, P14 Q7, P81 Q7, P68 Q7, P25 Q7, P51 Q7, P10 Q7
Neutral Bystanders	Who utilizes the AI with a neutral stance, neither strongly supporting nor opposing ownership claims.	P69 Q8, P27 Q8, P70 Q8, P74 Q8, P31 Q8, P52 Q8, P54 Q7, P20 Q8, P71 Q8, P44 Q7, P61 Q7, P75 Q7, P4 Q7, P58 Q7, P65 Q7, P33 Q7, P47 Q7, P2 Q7, P32 Q7, P25 Q7, P34 Q7, P59 Q7, P63 Q7, P39 Q7, P21 Q7, P19 Q7, P27 Q7, P54 Q8, P49 Q7, P74 Q7, P30 Q7, P49 Q7, P70 Q8

Platform	Who utilizes the AI,	P40 Q7, P80 Q7, P60 Q7, P9 Q7, P28 Q7,
Witnesses	believing ownership	P36 Q7, P22 Q7, P46 Q7, P78 Q7, P67 Q7,
	belongs to platforms or is	P38 Q7, P16 Q7, P30 Q7, P49 Q8, P52 Q7,
	collectively shared.	P74 Q7

3.2.5.4 Intellectual Property, Misuse, and Societal Risk

Students expressed concerns about plagiarism, lack of citation, and the unauthorized use of artists' works for AI training: P57 (Q2): *"It's not ethical to create datasets from artists' works without permission."*, P45 (Q9): *"The drawings used for AI training are often taken without the artists' knowledge."* They also emphasized the potential misuse of AI and its possible negative effects on society: P79 (Q9): *"GenAI tools can easily be misused when used incorrectly or excessively."* These findings show that students' ethical awareness is shaped not only by individual responsibility but also by a sense of social and institutional accountability. Overall, students tend to view AI-generated production not just as an individual creative act but as part of a shared ethical space.

3.2.5.4.1 Approaches Reflecting Intellectual Property, Misuse, and Societal Risk

This section examines how students conceptualize issues of intellectual property, misuse, and societal risks in the context of AI-assisted design. Two key orientations emerged. Consent-Credit Advocates prioritize proper attribution and transparency, emphasizing the ethical necessity of acknowledging sources, datasets, and creative ownership in AI-generated work. Their reflections suggest a desire to preserve academic honesty and uphold professional integrity within emerging digital practices. In contrast, Societal-Risk Witnesses demonstrate broader ethical awareness, expressing concerns about data exploitation, consent violation, and the replacement of human labor by AI-

driven systems. These participants highlight potential dangers in how AI tools are trained and deployed raising questions about fairness, accountability, and the erosion of creative authorship (see Figure 3.14).

Figure 3.14 *Visual Overview of Student Approaches in Intellectual Property, Misuse, and Societal Risks*

Consent-Credit Advocates		Societal-Risk Witnesses	
Description: Who utilizes the AI with a strong emphasis on credit, citation, and proper acknowledgement.	Related Quotes: P23 Q2, P57 Q2 P72 Q9, P74 Q9	Description: Who utilizes the AI while highlighting societal risks, ethical dangers, or potential misuse.	Related Quotes: P4 Q9, P10 Q6, P22 Q9 P37 Q9, P39 Q9, P43 Q9, P44 Q9, P50 Q9 P65 Q9 P72 Q9, P73 Q9, P78 Q9, P79 Q9
Representative Quote: P74 Q9: "Uses that are made without proper referencing appear to function as a workaround rather than a legitimate practice."		Representative Quote: P45 Q9: "...train AI ...used without artists' consent, ...companies use GenAI not as a tool but to replace designers and illustrators."	
Theme 5: Intellectual Property and Misuse		Theme 5: Intellectual Property and Misuse	

The students identified in the Intellectual Property, Misuse, and Societal Risks under Theme 5 are presented in tabular form (see Table 3.19).

Table 3.19 *Classification of Student Approaches in Theme 5: Intellectual Property, Misuse, and Societal Risks*

Approach Type	Description	Related Theme and Participant IDs
Consent-Credit Advocates	Who utilizes the AI with a strong emphasis on credit, citation, and proper acknowledgement.	P57 Q2, P74 Q9, P23 Q2, P72 Q9
Societal-Risk Witnesses	Who utilizes the AI while highlighting societal risks, ethical dangers, or potential misuse.	P39 Q9, P37 Q9, P43 Q9, P22 Q9, P65 Q9, P50 Q9, P72 Q9, P44 Q9, P Q9, P10 Q6, P73 Q9, P78 Q9, P79 Q9, P4 Q9

Overall, these ethical orientations reveal how students negotiate issues of authorship, ownership, and moral accountability in their engagement with GenAI tools.

3.3 Phase 3: Focus Group to Discuss and Unpack the Integration of Artificial Intelligence Into Courses

In Phase 3, several new themes and sub-themes emerged that extended the original coding framework. These new codes reflect emerging concepts and deeper insights that were not present in earlier phases, highlighting the evolving nature of GenAI integration in design education (see Table 3.20).

Table 3.20 *New Themes Identified in Phase 3*

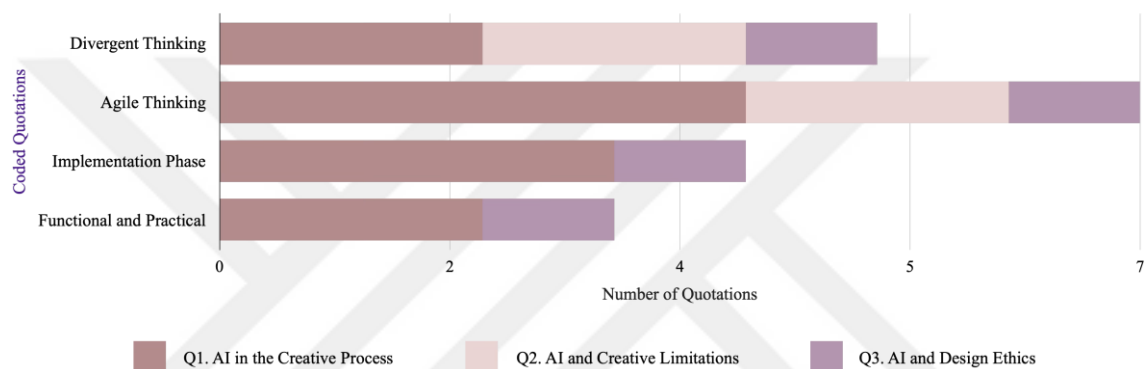
Main Theme	Sub-Theme	New Codes
AI in the Creative Process	1.1 Divergent Thinking in Ideation and Inspiration	-
	1.2 Agile Thinking in the Design Process	
	1.2.1 Visualization and Creative Asset Generation	
	1.2.2 Functional and Practical Applications of GenAI	
AI in Design Education and Workflow	2.1 AI as a Supportive Design Partner	Curriculum
	2.2 Efficiency and Time-Saving in Design Workflows	Transformation and Educational Adaptation
Creativity, Originality and Authenticity	3.1 Perceptions of Originality and Authenticity	Critical Thinking
	3.2 Perceptions of Creativity in Relation to GenAI	Erosion
Limitations and Challenges	4.1 Prompt-Related Challenges	Cultural Bias in Prompt Interpretation
	4.2 Output-Related Challenges	
Ethical and Societal Dimensions	5.1.1 Creative Inspiration and Homogenization of Ideas	Cultivating Ethical Co-Creation
	5.1.2 AI-Supported Co-Creation and Labor	Mindset
	5.2.1 Ownership and Attribution	
	5.2.2 Intellectual Property, Misuse, and Societal Risks	

Note. Themes, sub-themes, and new codes were identified during Phase 3 of thematic analysis and represent additional concepts that emerged beyond the initial coding framework.

3.3.1 The Role of AI in the Creative Process

This theme is explored in various studies to define the role of artificial intelligence at different stages of the design process and its applications. The participants described AI as a supportive tool, especially in the stages of idea generation, visualization, and technical implementation (see Figure 3.15).

Figure 3.15 Distribution of Codes by Focus Group Questions Within Theme 1



Note. This table shows how participants' statements are grouped under the three research questions. The numbers indicate the number of quotations included in each theme.

3.3.1.1 Divergent Thinking in Ideation and Inspiration

The participants stated that artificial intelligence is used at the beginning of the design process to gain inspiration and create a diversity of ideas. The academics emphasized that AI functions especially in the early stages as a tool that initiates the creative process and triggers alternative ideas.

P02 (T), (Q2): "...students need to think beyond the average designs that AI already provides... They should see AI not as an easier path, but as a different one."

P06 (T), (Q2): "...exists in the core is already being distorted... it also blocks the branching and developing brainstorming process in research."

P05 (T/S), (Q1): "In the final project, students can find inspiration in the way they want."

P06 (T/S), (Q1): “...first-year students... ChatGPT... at least it plays a supportive role... no blank page at the first stage of communication with the student.”

P02 (T/S), (Q3): “...even before AI, students were always inspired by something... design itself is an iterative process...”

The participants’ statements suggest that while artificial intelligence serves as a source of inspiration during the idea generation process, it may also constrain deeper creative exploration. The summary of participants’ perspectives is provided in Table 3.21.

Table 3.21 *Focus Group Participants' Perspectives on Divergent Thinking in Ideation and Inspiration*

Participants	P1	P2	P3	P4	P5	P6	P7	P8
Perspective of T		✓				✓		
Perspective of T/S		✓			✓	✓		

Note. Checkmarks (✓) indicate which perspective each participant contributed from during the discussion. Some participants provided insights from both their own teaching experiences and their observations of students, as shown in the table (T/S).

3.3.1.2 Agile Thinking in the Design Process

The participants stated that artificial intelligence is effective in the process of developing, deepening, and advancing ideas iteratively. During the interviews, it was emphasized that AI particularly supports trial-and-error processes and provides flexibility for students in their production stages.

P02 (T), (Q1): “...develop students’ thinking and production skills through a very specific medium... I wanted them to visualize with sketches and overcome that stage first.”

P02 (T), (Q1): “I may use it in the idea phase, perhaps in asset production... but it is not a process that I start with.”

P04 (T), (Q1): *“It can be useful at the initial stage for understanding and interpreting the topic; it offers a clue.”* P04 (T), (Q1): *“It provides a clue for understanding metaphors... it serves as a starting point at the beginner level.”*

P01 (T), (Q2): *“...instructor, I had changed the process and asked them to first bring the ideas they generated with AI... turned AI’s weaknesses into advantages.”*

P02 (T), (Q2): *“...we don’t yet know how to position it within the process... create guidelines in curriculum design for AI tools to become a ‘design production toolkit.’”*

P05 (T), (Q2): *“When designing, we go through stages like research, sketching, and building context; expecting results just by entering a prompt is an illusion.”*

P02 (T/S), (Q3): *“Even before AI, students were finding inspiration... design is an iterative process that develops through observation and inspiration.”*

P06 (T/S), (Q1): *“We make sketchbooks mandatory; I’ve seen students who use them to make their ideas more concrete.”*

P08 (T/S), (Q1): *“We continue with the methodology we had before... Inspiration Board for ideas, Mood Board for style... It’s like a customizable Pinterest for us.”*

The participants’ statements indicate that artificial intelligence is perceived as a tool that supports agile thinking skills in the initial stages of the design process. The summary of participants’ perspectives is provided below in Table 3.22.

Table 3.22 *Focus Group Participants' Perspectives on Agile Thinking in the Design Process*

Participants	P1	P2	P3	P4	P5	P6	P7	P8
Perspective of T	✓	✓		✓	✓			
Perspective of T/S		✓				✓		✓

Note. Checkmarks (✓) indicate which perspective each participant contributed from during the discussion. Some participants provided insights from both their own teaching experiences and their observations of students, as shown in the table (T/S).

3.3.1.3 Visualization and Creative Asset Generation

The participants stated that artificial intelligence is effectively used, especially in the stages of visual composition creation, sketch development, and visualization of project presentations. This form of use demonstrates that AI is viewed as a complementary tool in the visualization process of design ideas.

P02 (T), (Q1): *“The visual production part there served more as a supporting factor for them.”*

P02 (T), (Q1): *“In the third and fourth years... in the visuals they generated from prompts...”*

P05 (T/S), (Q1): *“You can also produce an image through artificial intelligence.”*

P04 (T), (Q3): *“...there were students from different faculties in the elective course... I asked them to give me a list of all their prompt processes. It was important to see where they started and where they ended up...”*

The summary of participants’ perspectives is provided in Table 3.23.

Table 3.23 *Focus Group Participants' Perspectives on Visualization and Creative Asset Generation*

Participants	P1	P2	P3	P4	P5	P6	P7	P8
Perspective of T		✓		✓				
Perspective of T/S					✓			

Note. Checkmarks (✓) indicate which perspective each participant contributed from during the discussion. Some participants provided insights from both their own teaching experiences and their observations of students, as shown in the table (T/S).

3.3.1.4 Functional and Practical Applications of GenAI

The participants stated that artificial intelligence is frequently used in the design process to accelerate technical and application-oriented tasks. During the interviews, it

was emphasized that AI tools play a time-saving role, particularly in the stages of prototyping, visual editing, and implementation.

P02 (T), (Q1): *“Depending on the progress of the project, if they need to create a quick prototype...”* P06 (T), (Q3): *“...I use image traces in my own work, and I see that my students also use it. Approaching it through this method seems healthier to me.”* P04 (T/S), (Q1): *“For example, when they create a company that applies café matcha branding... applying the logo on various cups and structures...”* P04 (T/S), (Q1): *“...applying it onto interior and exterior visuals...”*

P05 (T/S), (Q1): *“if they are not skilled at drawing, by using image-to-image tools, they can more easily create elements such as shading, texture, and lighting.”*

These statements suggest that artificial intelligence is viewed as a highly effective and time-efficient tool in the functional and practical stages of the design process, enabling the streamlining of visual production and prototyping activities.

P04 (T/S), (Q1): *“They need to create mock-up applications for the brand they developed... they can present it as a realistically implemented display.”*

The participants’ statements reveal that artificial intelligence plays a supportive role in transforming ideas into visual representations and enhancing the quality of design presentations. The summary of participants’ perspectives is provided in Table 3.24.

Table 3.24 *Focus Group Participants' Perspectives on Functional and Practical Applications of GenAI*

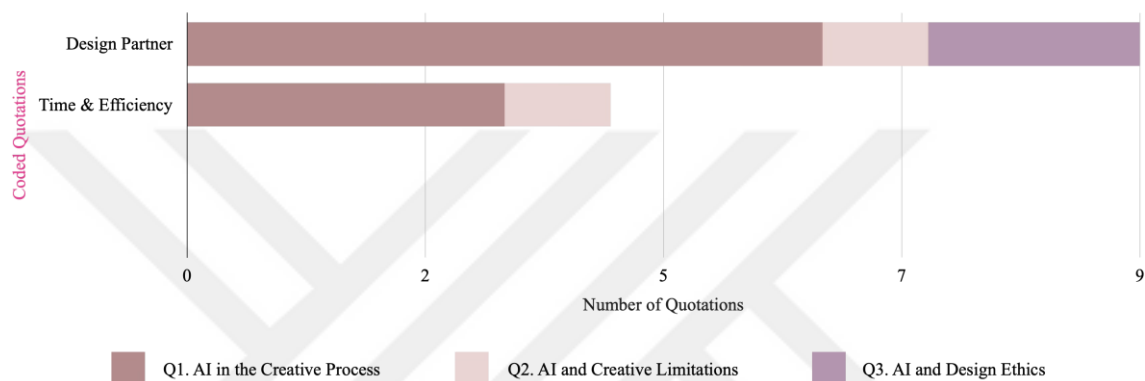
Participants	P1	P2	P3	P4	P5	P6	P7	P8
Perspective of T		✓				✓		
Perspective of T/S				✓	✓			

Note. Checkmarks (✓) indicate which perspective each participant contributed from during the discussion. Some participants provided insights from both their own teaching experiences and their observations of students, as shown in the table (T/S).

3.3.2 AI in Design Education and Workflow

This theme reveals how the participants position artificial intelligence within the context of the educational process and design workflows. The findings show that AI is perceived both as a supportive design partner and as a time-saving tool (see Figure 3.16).

Figure 3.16 Distribution of Codes by Focus Group Questions Within Theme 2



Note. This table shows how participants' statements are grouped under the three research. The numbers indicate the number of quotations included in each theme.

3.3.2.1 AI as Supportive Design Partner

The participants described artificial intelligence as a supportive partner in tasks such as organizing ideas, generating text, producing drafts, and structuring information. During the interviews, it was observed that these tools were perceived as guiding, motivating, and collaborative elements within students' production processes.

P02 (T), (Q1): *"...I didn't want them to see it as something safe... I wanted them to overcome that stage first and then consider AI as a support, as a supplement."*

P04 (T), (Q1): *"It provides a clue for understanding those metaphors."*

P05 (T), (Q1): *"In my own blogs... instead of using any random image from Google, I define my own needs, create something accordingly, and use that."*

P06 (T), (Q2): *"...it turns easiness and mediocrity into an ideal... also getting used to this; both educators and students... we need to take a critical stance against it."*

P06 (T), (Q3): “...I use image traces in my own work, and I see that my students also use it. This method seems healthier to me.”

P02 (T/S), (Q3): “...the ability to understand and manipulate technical language... when students lack problem-solving skills, they become fully dependent on AI.”

P06 (T/S), (Q1): “When we first interact with students, we usually don’t get a response, but with ChatGPT, we can at least see that they have made an attempt.”

P08 (T/S), (Q1): “...it works for us like a more customizable version of Pinterest.”

The participants’ statements show that artificial intelligence is embraced in design education as a collaborative partner that guides students’ creative processes and provides cognitive support during production. The summary of participants’ perspectives is provided in Table 3.25.

Table 3.25 Focus Group Participants' Perspectives on Supportive Partner of AI

Participants	P1	P2	P3	P4	P5	P6	P7	P8
Perspective of T		✓		✓	✓	✓		
Perspective of T/S		✓				✓		✓

Note. Checkmarks (✓) indicate which perspective each participant contributed from during the discussion. Some participants provided insights from both their own teaching experiences and their observations of students, as shown in the table (T/S).

3.3.2.2 Efficiency and Time-Saving in Design Flow

The participants stated that artificial intelligence enhances efficiency in the design process, particularly by reducing repetitive tasks and shortening working times. The interviews revealed that AI tools serve as process accelerators for both students and educators who work under heavy workloads.

P02 (T), (Q1): “In the third and fourth years... I encourage them more because they can communicate their story faster through the visuals they generate from prompts.”

P02 (T), (Q1): “When there is a tight deadline... it creates a wireframe.”

P07 (T), (Q2): “...fourth-year students are about to graduate... they can achieve this speed only through artificial intelligence.”

P07 (T), (Q2): “... cropping a photo used to take a few minutes, but now we do it with one click; however, the time for reflecting on the design itself is also disappearing.”

P05 (T/S), (Q1): “...for example, during class, when I ask them to create a character right away... it helps to produce visuals quickly. It saves time.”

P07 (T/S), (Q1): “...in courses where we assess different skills... as an art director, one should be able to analyze how the text is positioned within the design.”

The participants’ statements indicate that artificial intelligence is viewed as a tool that increases efficiency, saves time, and accelerates design workflows. These expressions suggest that AI is positively evaluated in terms of productivity and process acceleration. The summary of participants’ perspectives is provided in Table 3.26.

Table 3.26 *Focus Group Participants' Perspectives on Efficiency and Time-Saving in Design Flow*

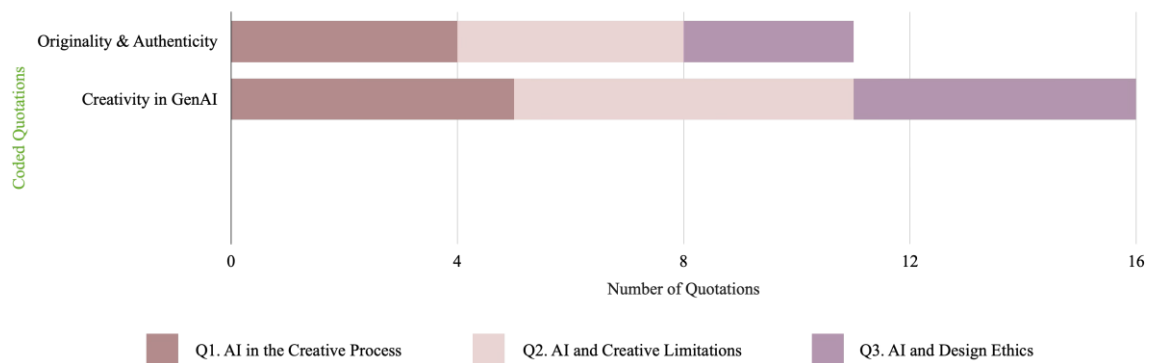
Participants	P1	P2	P3	P4	P5	P6	P7	P8
Perspective of T		✓			✓		✓	
Perspective of T/S							✓	

Note. Checkmarks (✓) indicate which perspective each participant contributed from during the discussion. Some participants provided insights from both their own teaching experiences and their observations of students, as shown in the table (T/S).

3.3.3 Creativity, Originality, and Authenticity

This theme explores the participants' perspectives on the impact of artificial intelligence on creativity, originality, and authenticity. The opinions generally indicate a dual perception: on one hand, AI is seen as a tool that supports creativity; on the other hand, it is thought to reduce personal expression and originality (see Figure 3.17).

Figure 3.17 Distribution of Codes by Focus Group Questions Within Theme 3



Note. This table shows how participants' statements are grouped under the three research questions. The numbers indicate the number of quotations included in each theme.

3.3.3.1 Perceptions of Originality and Authenticity

The participants drew attention to the potential of artificial intelligence to standardize forms of design expression and weaken the perception of originality. The interviews emphasized that the widespread use of AI may lead to aesthetic homogenization and a decrease in cultural diversity.

P02 (T), (Q1): *"...it can easily become something that overshadows their own creativity."*

P04 (T), (Q2): *"...it brings everything to the same kind of image, shifting toward Western aesthetics... it causes the disappearance of different cultural backgrounds."*

P01 (T), (Q3): *"...in creative industries, authenticity matters... If someone tries to market work made by following others' paths as 'I did all of this myself'..."*

P01 (T), (Q3): *"...hundred years since Duchamp placed his urinal in the museum, yet questions like 'do you still find it your own?' still sound very naïve to me..."*

P03 (T), (Q3): *"...can draw like Picasso or Miyazaki, it no longer holds value... what students should do is not imitate others' styles, find their own form of expression..."*

P04 (T/S), (Q3): *"...third- and fourth-year students evaluate AI use more ethically and in terms of originality... therefore, they approach it more sensitively."*

P01 (T/S), (Q3): “...sometimes students say, ‘my papers look like they were written in perfect English’... sense of authenticity... because ethics actually begins there.”

P03 (T/S), (Q1): “...how much of the style really belongs to them... we start asking questions like how much of it we can truly call their own.”

P06 (T/S), (Q1): “Finally, since it channels style development into a single direction, we see very shallow and concrete outcomes.”

P08 (T/S), (Q1): “They try to repeat whatever they see.”

P01 (T/S), (Q2): “...it produces the most frequently repeated ideas and images from the internet... inexperienced students tend to jump on whatever they see first.”

P03 (T/S), (Q2): “...their projects look visually pleasing, but they all start to resemble one another... we try to encourage them toward originality.”

The participants’ statements indicate that artificial intelligence reinforces similar aesthetic tendencies, leads to uniformity in cultural representation, and carries the risk of overshadowing creative originality. The summary of participants’ perspectives is provided in Table 3.27.

Table 3.27 Focus Group Participants' Perspectives on Originality and Authenticity

Participants	P1	P2	P3	P4	P5	P6	P7	P8
Perspective of T	✓	✓	✓	✓				
Perspective of T/S	✓		✓	✓		✓		✓

Note. Checkmarks (✓) indicate which perspective each participant contributed from during the discussion. Some participants provided insights from both their own teaching experiences and their observations of students, as shown in the table (T/S).

3.3.3.2 Perceptions of Creativity in Relation to GenAI

The participants stated that they developed a dual perception of artificial intelligence, recognizing both its potential to support and to limit creativity. The

interviews revealed that while AI facilitates idea generation in the design process, it also carries the risk of weakening critical thinking and original creative skills.

P02 (T), (Q1): *“Depending on the progress of the project, if they need to create a quick prototype...”*

P01 (T), (Q2): *“In the idea generation process, it only increases speed... but it reduces richness... they are swimming in shallower waters.”*

P02 (T), (Q2): *“...students need to think beyond the average designs AI already provides... they should see AI not as the easy way, but as an alternative path.”*

P03 (T), (Q2): *“...there is a kind of shallowness... they try to produce without realizing how powerful the tool actually is.”*

P07 (T), (Q2): *“...in the past, cropping a photo used to take a few minutes, but now we do it with one click, yet the process of thinking about the design itself disappears.”*

P02 (T/S), (Q3): *“...even before AI, students were always inspired by something... design itself is an iterative process that develops through observation and inspiration.”*

P05 (T), (Q3): *“...I don’t prohibit the use of AI, but I want to guide them on how it can be used... without understanding the basics of programming.”*

P07 (T/S), (Q3): *“...when I work with AI, sometimes I feel more confident in my work.’ But then I wonder if that idea is really mine, or AI’s?”*

P04 (T/S), (Q3): *“...third- and fourth-year students evaluate AI use more ethically and in terms of originality.”*

P02 (T/S), (Q3): *“...when they are without AI, they feel almost paralyzed... that situation is truly frightening.”*

P06 (T/S), (Q1): *“since it determines the direction of the process, it can also be limiting... I think it should be used as a tool, not as the main purpose.”*

P05 (T/S), (Q1): “...I don’t give specific instructions like ‘create an image from a text prompt and use it’... should at least be some kind of initial input.”

P04 (T/S), (Q1): “...they all need to share the same visual language... multiple images have to be in the same style and structure. We’ve seen a great increase in this.”

The participants’ statements indicate that although artificial intelligence serves as a tool that facilitates the creative process, it also poses a risk of weakening critical thinking, originality, and personal production skills. The summary of participants’ perspectives is provided in Table 3.28.

Table 3.28 *Focus Group Participants' Perspectives on Creativity in Relation to GenAI*

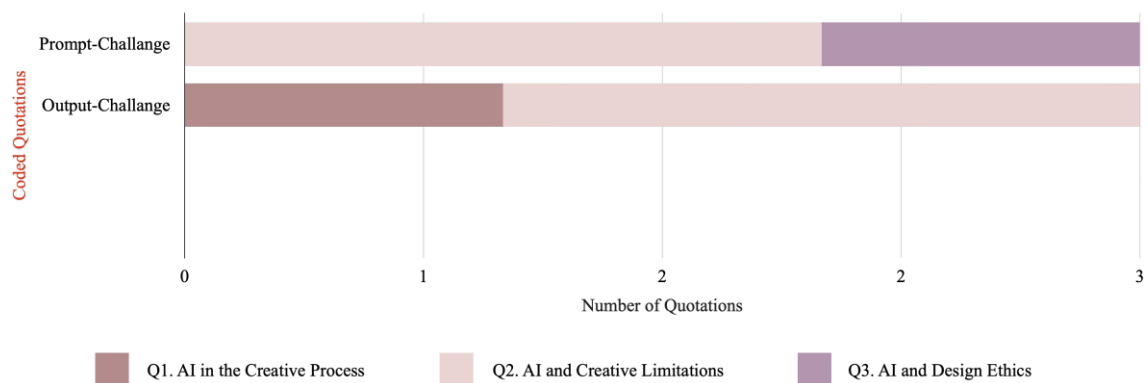
Participants	P1	P2	P3	P4	P5	P6	P7	P8
Perspective of T	✓	✓	✓		✓		✓	
Perspective of T/S		✓		✓	✓	✓	✓	

Note. Checkmarks (✓) indicate which perspective each participant contributed from during the discussion. Some participants provided insights from both their own teaching experiences and their observations of students, as shown in the table (T/S).

3.3.4 Limitations and Challenges

This theme highlights the main challenges encountered in the AI-based design process. The participants grouped these difficulties under two main categories: communication problems caused by prompts, and technical and aesthetic limitations related to output quality (see Figure 3.18).

Figure 3.18 Distribution of Codes by Focus Group Questions Within Theme 4



Note. This table shows how participants' statements are grouped under the three research questions. The numbers indicate the number of quotations included in each theme.

3.3.4.1 Prompt-Related Challenges

The participants emphasized that developing prompt literacy and technical expression skills is essential for effective communication with artificial intelligence. The interviews revealed that creating accurate and intentional prompts is an integral part of the creative process, and that the lack of this skill makes users overly dependent on AI.

P05 (T), (Q2): *"When designing, ...such as research, sketching, and building context... expecting to achieve this only by entering a single prompt is an illusion."*

P07 (T), (Q2): *"... knowing how to write prompts. Instead of receiving ready-made outputs, they need to learn the process itself."*

P02 (T/S), (Q3): *"I can read that code; AI only showed where the error was... when students lack problem-solving skills, they become completely dependent on AI."*

The participants' statements suggest that developing prompt creation and comprehension skills should become an educational priority to establish effective communication with AI tools. The summary of participants' perspectives is provided in Table 3.29.

Table 3.29 Focus Group Participants' Perspectives on Prompt-Related Challenges

Participants	P1	P2	P3	P4	P5	P6	P7	P8
Perspective of T					✓		✓	
Perspective of T/S		✓						

Note. Checkmarks (✓) indicate which perspective each participant contributed from during the discussion. Some participants provided insights from both their own teaching experiences and their observations of students, as shown in the table (T/S).

3.3.4.2 Output-Related Challenges

The participants stated that the outputs produced by artificial intelligence systems are limited in terms of quality, consistency, and cultural diversity. The interviews emphasized that, due to the biased nature of the data on which the models are trained, the resulting visuals tend to be repetitive, superficial, and homogeneous.

P05 (T), (Q2): *“AI provides a statistical summary of the existing information on the internet... when asked to ‘show 8:15,’ the model always draws 10 past 10...”*

P05 (T), (Q2): *“...there is also the issue of aesthetic output... whichever visual AI engine we use, the results change depending on the data it is trained on...”*

P05 (T), (Q2): *“...for instance, if it is trained with ...paintings, it produces dark and black tones, whereas with colorful datasets, it generates more vivid visuals.”*

P01 (T/S), (Q2): *“...I asked for a packaging design themed around the Enlightenment period... four students in the class chose the same brand.”*

P01 (T/S), (Q2): *“...AI directly suggested that brand. So, it’s always the first ideas that come to mind... this is as far as AI can go for now.”*

P06 (T/S), (Q1): *“Finally, since it channels style development into a single direction, we see very shallow and concrete outcomes.”*

The participants' statements indicate that the visuals generated by artificial intelligence reflect dataset bias, cultural uniformity, and aesthetic limitations. The summary of participants' perspectives is provided in Table 3.30.

Table 3.30 *Focus Group Participants' Perspectives on Output-Related Challenges*

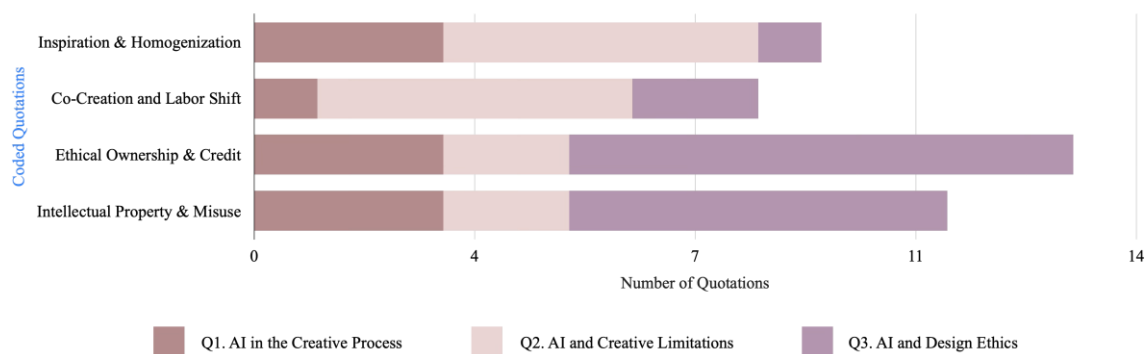
Participants	P1	P2	P3	P4	P5	P6	P7	P8
Perspective of T					✓			
Perspective of T/S	✓					✓		

Note. Checkmarks (✓) indicate which perspective each participant contributed from during the discussion. Some participants provided insights from both their own teaching experiences and their observations of students, as shown in the table (T/S).

3.3.5 Ethical and Societal Dimensions

This theme covers the ethical, ownership, and social responsibility dimensions of AI-assisted design production. The participants emphasized that ethical awareness, transparency, and responsibility should become integral parts of design education. The findings indicate that various approaches have emerged regarding ownership, attribution, and the visibility of human labor in the production process (see Figure 3.19).

Figure 3.19 *Distribution of Codes by Focus Group Questions Within Theme 5*



Note. This table shows how participants' statements are grouped under the three research questions. The numbers indicate the number of quotations included in each theme.

3.3.5.1 Ownership and Attribution

The participants stated that principles of ownership and attribution in AI-assisted productions should be clearly defined. The interviews highlighted that making human contribution visible in works produced with artificial intelligence is one of the fundamental elements of an ethical design approach.

P02 (T), (Q1): *“After gaining skills and certain competencies... they may think, ‘Okay, now I can find easier ways for myself using this.’”*

P07 (T), (Q1): *“...I think there is a problem when it comes to producing an illustration or taking the idea directly from AI.”*

P01 (T), (Q3): *“...creative industries, authenticity matters, being genuine... tries to market work made by following others’ paths as ‘I did all of this myself’...”*

P01 (T), (Q3): *“...student might say, ‘Professor, I don’t believe in private ownership’... students show how different our experiences have become.”*

P02 (T), (Q3): *“...being aware of this process means, just as we cite sources in written texts, ...need to provide references when using visual inspiration or models.”*

P06 (T), (Q3): *“...saying ‘produced by AI’ or ‘produced with AI support’ really enough? ... labor and production...raises questions about the nature of creative effort.”*

P08 (T), (Q3): *“...not disclosing that a work was created with AI is no different, in my opinion, from manually copying an illustration found online.”*

P03 (T/S), (Q2): *“...in the icon design course, students tend to rely heavily on AI... this makes the purpose of the course meaningless.”*

P04 (T/S), (Q3): *“...third- and fourth-year students evaluate AI use more ethically and in terms of originality... therefore, they approach it more sensitively.”*

P02 (T/S), (Q3): “...for example, in senior projects, we ask students to explain how and at what stage they used AI... documenting the process is essential.”

P03 (T/S), (Q1): “... a three-line haiku... they have to turn each line into an image... they first use ChatGPT to understand it, then have AI illustrate the metaphor.”

P01 (T/S), (Q3): “...some students wrote in their papers, ‘I produced this with AI’... the important thing is to help them develop ethical awareness...”

The participants’ statements indicate that in works produced with artificial intelligence, human contribution should be explicitly stated, attribution should be made transparent, and the recognizability of creative labor should be preserved. The summary of participants’ perspectives is provided in Table 3.31.

Table 3.31 *Focus Group Participants' Perspectives on Ownership and Attribution*

Participants	P1	P2	P3	P4	P5	P6	P7	P8
Perspective of T	✓	✓				✓	✓	✓
Perspective of T/S	✓	✓	✓	✓				

Note. Checkmarks (✓) indicate which perspective each participant contributed from during the discussion. Some participants provided insights from both their own teaching experiences and their observations of students, as shown in the table (T/S).

3.3.5.2 Intellectual Property, Misuse, and Societal Risk

The participants stated that issues related to intellectual property rights, ethical violations, and social responsibility in AI-assisted production are becoming increasingly complex. The interviews revealed that questions such as who owns the content generated by artificial intelligence, how ethical use should be defined, and who will determine legal regulations have come to the forefront.

P07 (T), (Q1): “...I think there is a problem when it comes to producing an illustration or taking the idea directly from AI.”

P02 (T), (Q2): *“...we don’t yet know... later, guidelines should be developed in curriculum design on how these AI tools will serve as a ‘design production toolkit.’”*

P04 (T), (Q2): *“...bringing everything to similar images, shifting toward Western aesthetics... it causes the disappearance of different cultural backgrounds.”*

P01 (T), (Q3): *“...a student might say, ‘Professor, I don’t believe in private ownership’... even encountering ...shows how diverse our experiences have become.”*

P05 (T), (Q3): *“...citing an AI-generated text is problematic, because traditionally, we can follow an author’s thought process.*

P05 (T), (Q3): *...with AI, there is a ‘data cloud’; the source is unclear and cannot be traced. That’s exactly where the ethical problem emerges.”*

P08 (T), (Q3): *“...not disclosing that a work was produced with AI is, ...no different from manually copying an illustration found online ...essentially plagiarism.”*

P06 (T), (Q3): *“...this is one of the biggest problems: do we need a protocol? Who will establish it professional organizations, universities, or another institution?”*

P07 (T), (Q3): *“...I don’t think... sense of ‘ethics’ within AI... copyright is more of a legal issue, while originality is a major topic of debate in art and design.”*

P07 (T), (Q3): *“...in today’s post-truth era, issues like deepfakes also come into play... it’s not just about ethics; we also need to develop competencies in other fields.”*

P08 (T), (Q2): *“...students haven’t fully developed their personal styles... how to protect them feels difficult... in this sense, GenAI might have negative effects.”*

P02 (T/S), (Q1): *“I think that, at least at the classroom level, AI will not be used much... students themselves are asking for it to be restricted legally.”*

P03 (T/S), (Q1): *“...they have AI draw the metaphor, and they are fine with whatever style appears.”*

The participants' statements suggest that in AI-based design production, the boundaries of intellectual property are becoming increasingly blurred, and ethical violations are emerging in new forms. This raises an urgent need for institutional, legal, and educational regulations in this field. The summary of participants' perspectives is provided in Table 3.32.

Table 3.32 *Focus Group Participants' Perspectives on Intellectual Property, Misuse, and Societal Risk*

Participants	P1	P2	P3	P4	P5	P6	P7	P8
Perspective of T	✓	✓		✓	✓	✓	✓	✓
Perspective of T/S		✓	✓					

Note. Checkmarks (✓) indicate which perspective each participant contributed from during the discussion. Some participants provided insights from both their own teaching experiences and their observations of students, as shown in the table (T/S).

3.3.5.3 Creative Inspiration and Homogenization of Ideas

The participants stated that although artificial intelligence functions as a supportive tool for creativity in the design process, in the long term, it may lead to aesthetic and conceptual homogenization. The interviews emphasized that AI tools, by promoting similar styles and visual languages, limit design diversity and narrow the space for originality and personal expression.

P02 (T), (Q1): *“A design that I would truly sign my name under... I don’t use AI for that.”*

P04 (T), (Q2): *“...bringing everything to similar images, shifting toward Western aesthetics... it causes the disappearance of different cultural backgrounds.”*

P03 (T/S), (Q2): *“...their projects are visually appealing, but they all start to look the same... we try to encourage them toward originality.”*

P06 (T/S), (Q1): *“Finally, since it channels style development into a single direction, we see very shallow and concrete outcomes.”*

The participants emphasized that, especially among students, a “uniform aesthetic understanding” has become widespread, and that this visual similarity driven by AI systems threatens cultural diversity and individual originality in design. The summary of participants’ perspectives is provided in Table 3.33.

Table 3.33 *Focus Group Participants' Perspectives on Creative Inspiration and Homogenizations of Ideas*

Participants	P1	P2	P3	P4	P5	P6	P7	P8
Perspective of T		✓		✓				
Perspective of T/S			✓			✓		

Note. Checkmarks (✓) indicate which perspective each participant contributed from during the discussion. Some participants provided insights from both their own teaching experiences and their observations of students, as shown in the table (T/S).

3.3.5.4 AI-Supported Co-Creation and Labor

The participants described AI tools as collaborative partners in the design process but noted that this situation raises new questions about the definition of labor and the boundaries of creative contribution. The interviews revealed that “co-creation” with AI both increases production speed and places the designer in a more directive position.

P02 (T), (Q1): *“...it creates a template and a wireframe for me.”*

P02 (T), (Q2): *“... it takes away designers’ jobs. But the important thing is that we teach them how to use AI to strengthen their own design focus.”*

P03 (T), (Q2): *“...labor is becoming cheaper, production costs are decreasing... this will cause various crises.”*

P07 (T), (Q2): *“...fourth-year students are about to graduate... clients will ask for work at the last minute, and speed will be crucial, ... achieve this speed through AI.”*

P08 (T), (Q3): “...banning AI completely for ethical reasons would have the opposite effect... everyone would become a ‘sinner,’ but no one would talk about it.”

P01 (T/S), (Q3): “...some students have written in their papers, ‘I produced this with AI’... what matters is developing ethical awareness among students... need to adopt”

P03 (T/S), (Q2): “This shallowness... it leads to laziness. If students can produce at the same level as other faculties after graduation, then we have a problem.”

The participants’ statements indicate that artificial intelligence is transforming the design workforce and accelerating production processes; however, it also makes the visibility and value of creative labor increasingly debatable. A summary of participants’ perspectives is presented in Table 3.34.

Table 3.34 Focus Group Participants' Perspectives on AI-Supported Co-Creation and Labor

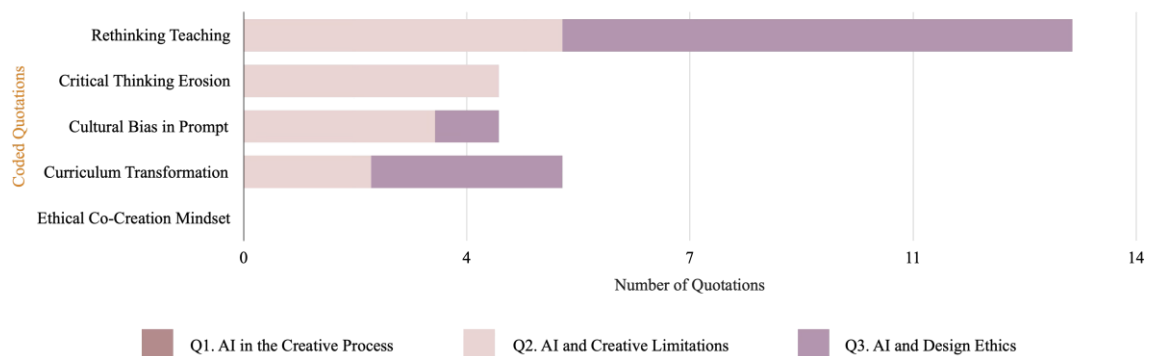
Participants	P1	P2	P3	P4	P5	P6	P7	P8
Perspective of T		✓	✓				✓	✓
Perspective of T/S	✓		✓					

Note. Checkmarks (✓) indicate which perspective each participant contributed from during the discussion. Some participants provided insights from both their own teaching experiences and their observations of students, as shown in the table (T/S).

3.3.6 Emerging New Themes

During the focus group analysis, several new themes emerged from participants’ responses to the first three questions (Q1 - AI in the Creative Process, Q2 - AI and Creative Limitations, Q3 - AI and Design Ethics). These themes were identified inductively as recurring ideas that extended beyond the initial coding framework (see Figure 3.20)

Figure 3.20 Distribution of Newly Emerged Codes by Focus Group Questions



Note. This table presents the new codes that emerged during the focus group analysis, which are highlighted in orange. These codes were derived from participants' responses to the first three focus group questions. The numbers indicate the number of quotations coded under each question.

The analysis identified recurring conceptual patterns not initially included in the codebook, highlighting AI's impact on design education and its potential for future transformation. During the coding process, six new themes emerged: (1) *Rethinking Teaching through AI Limitations*: Evaluating the limitations of artificial intelligence as tools for learning and awareness within teaching processes. The participants stated that the mistakes or shortcomings of AI provide opportunities to encourage critical and creative thinking among students. (2) *Critical Thinking Erosion*: It was observed that the facilitating nature of AI tools carries the risk of weakening critical thinking and inquiry skills in the long term. (3) *Cultural Bias in Prompt Interpretation*: The prominence of Western-centered representations and the insufficient reflection of cultural diversity in AI-generated outputs were identified by participants as significant ethical and aesthetic concerns. (4) *Curriculum Transformation and Educational Adaptation*: The necessity of restructuring design education curricula to responsibly integrate AI tools was strongly emphasized. (5) *Cultivating an Ethical Co-Creation Mindset*: It was emphasized that integrating ethical awareness, a sense of ownership, and balanced collaboration between humans and AI should be a key component of educational approaches. (6) *AI Literacy*

and Educational Readiness: The need to develop the abilities of both academics and students to use AI tools consciously, critically, and creatively was highlighted.

These themes demonstrate that the participants not only reflected on the current situation but also developed foresight regarding the future of design education. The findings reveal that the growing awareness of AI's transformative role in education is shaped around the axes of critical thinking, ethical responsibility, and educational renewal.



4. DISCUSSION

This discussion summarizes the study's three phases by theme. In Phase 1, five key themes emerged from the interviews conducted with design educators. The first theme, "Generative AI Tools versus Conventional Design Tools," highlights the AI-assisted and conventional creative methods, emphasizing how educators navigate the balance between automation and human intuition. The second theme, Role of Chatbots in the Ideation Process, explores how conversational AI supports brainstorming and enhances divergent thinking. The third theme, "The Importance of Verbal Communication," emphasizes the necessity of maintaining dialogue and human interaction in AI-supported learning environments. The fourth theme, Collaborative AI Design Tools, focuses on integrating AI as a co-creative partner rather than a substitute for human creativity. Finally, the fifth theme, Predictability Concerns, reflects educators' awareness of the risks of homogenization and over-reliance on algorithmic patterns in design production.

Secondly, in Phase 2, the survey data revealed several interrelated themes concerning students' use of generative AI tools in the design process. The first theme, Integration of GenAI Across Design Phases, shows that students employ AI at multiple stages, from idea generation to refinement and visualization. The second theme, "Practical Benefits and Drawbacks of GenAI Use," captures the tension between efficiency and creativity, illustrating how AI reduces technical barriers but may also limit in-depth reflection. Within this theme, two subcategories were identified: Prompt-Related Challenges, which involve difficulties in formulating effective prompts, and Creative Inspiration and Homogenization of Ideas, referring to the balance between creative support and stylistic repetition in AI outputs. Together, these findings demonstrate the

complexity of students' engagement with AI tools and their ongoing negotiation between speed, originality, and ethical awareness.

Thirdly, In Phase 3, focus group discussions with students and educators generated six interconnected themes. The first, The Role of AI in the Creative Process, highlights AI's dual function as both a creative catalyst and a limiting factor. The second, "AI in Design Education and Workflow," discusses how AI tools are reshaping studio practices and learning experiences. The third theme, Creativity, Originality, and Authenticity, explores how participants define creative authorship in the age of AI. The fourth, Limitations and Challenges, points to technical, conceptual, and cognitive barriers that arise during AI use. The fifth, Ethical and Societal Dimensions, addresses participants' concerns regarding transparency, responsibility, and cultural bias in AI-generated content. Finally, the emerging theme, New Directions in AI and Design Education, suggests that AI's role in education is evolving toward more reflective, collaborative, and ethically grounded models of creative learning.

4.1 Phase 1: Understanding Design Education Experts' Views via Interviews

4.1.1 Fast and Effective Design With Human-Artificial Intelligence Collaboration

It turns out that the most important criteria among artificial intelligence and conventional design tools are simplicity, efficiency, thought-provoking, diversity, and assistance. Designers write their ideas as commands to AI tools, and product outputs emerge. AI tools are faster than manual tools in terms of time, allowing designers to be creative without limitations. To illustrate, in the world of design, we can obtain visual data by exploring through a program without being an expert, and we can think outside the box and write the ideas in our mind as prompts. This opens the boundaries of design

and encourages creativity. For conventional tools, most design programs can be fully learned over a prolonged period with training and repeated use. However, since they are applied designs, a design job can take anywhere from a few days to a few weeks. It offers designers a flexible design space through collaboration with Designer-Artificial Intelligence. At this point, as stated in the article (De Cremer & Kasparov, 2021). People can utilize their intuition, emotions, and cultural sensitivity in conjunction with their real intelligence. Artificial armor, on the contrary, can use its speed, accuracy, and rationality. At this point, when humans and artificial intelligence cooperate, quality work emerges.

4.1.2 AI Chatbots in the Design Process

Conventional design tools have paved the way for the integration of artificial intelligence into design processes, providing designers with the advantage of overcoming challenges and enhancing workflow efficiency. As noted by (Schmidt et al., 2023) ChatGPT supports idea generation and helps accelerate design processes. In particular, AI design tools, including chatbots, have a significant impact on creative ideation. While chatbots contribute to brainstorming by providing new perspectives and problem-solving approaches, some participants express concerns that their limited data may restrict creativity.

Interacting with chatbots often requires carefully phrased prompts that can lead to different outcomes, highlighting the importance of experimenting with multiple tools. The challenges associated with tools like ChatGPT, Midjourney, and Adobe's AI features often stem from a lack of knowledge about how to craft effective prompts. The concept of "Lorem Ipsum" symbolizes a paradigm shift in human-AI interaction, emphasizing the dynamic relationship between words and visuals (Dang et al., 2022).

4.1.3 Brainstorming and Problem Solving With Human-AI Collaboration

The choice of generative AI tools depends on the specific needs of each project. Tools like ChatGPT and Bard excel in idea generation and development, enhancing creative processes by providing insights and supporting concept creation. For visual production, tools such as Bing Image, Midjourney, and Leonardo are used to generate visual content, visualize ideas, and create engaging imagery. In addition, the integration of AI tools like Adobe Firefly and DALL·E has enhanced design workflows, enabling the creation of diverse outputs, including visuals, logos, and sketches.

As emphasized by (Cichocki & Kuleshov, 2021), the multiple intelligences of AI tools significantly enhance idea generation, creativity, and problem-solving abilities, especially when designers face obstacles. Throughout the ideation process, these tools offer participants a wide range of perspectives, fostering a sense of collaboration and co-creation.

4.1.4 Accelerating the Creative Process

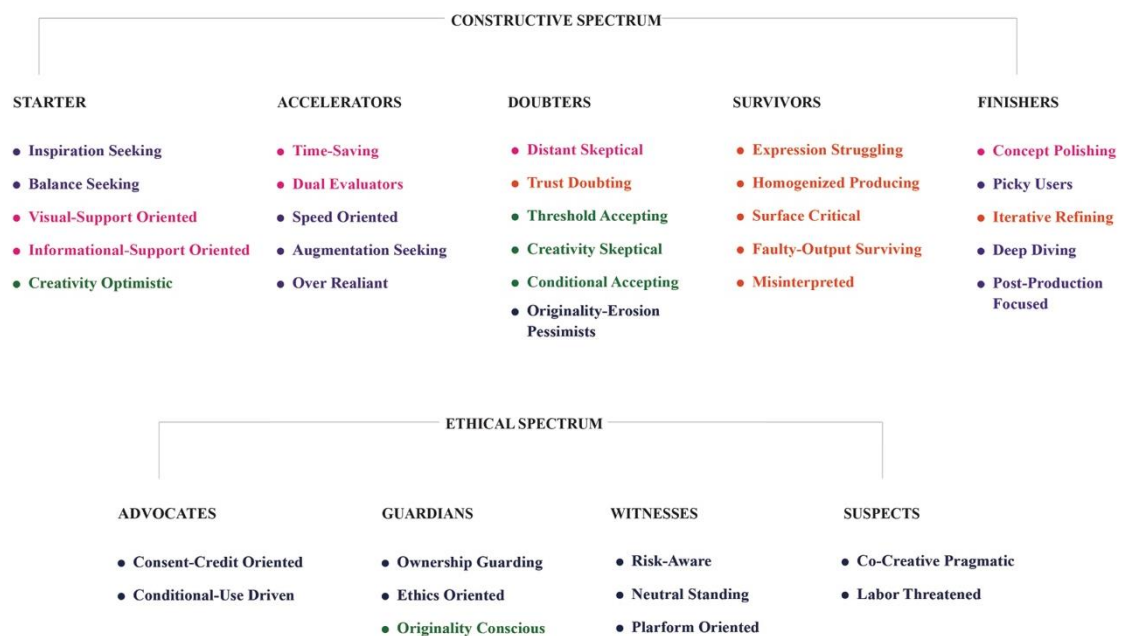
Hughes et al. (2021) claim that artificial intelligence enables the emergence of effective designs in areas such as visual design, thanks to the Generative Adversarial Network system it contains. In this regard, artificial intelligence design tools help create visual content, visualize ideas, and create interesting images in line with the data received from the participants. The utility of these tools lies in their capacity to enrich and enhance the creative process, offer different perspectives, and facilitate a more comprehensive and nuanced approach to both idea generation and visual design. According to the participants' experiences, it was noted that artificial intelligence has a practical impact on design work, saving time by providing rapid results in text editing and video editing processes, particularly in video production areas. In addition, as a common data source

for participants, artificial intelligence helps designers produce high-quality work in a short time by generating ideas during brainstorming processes, refining these ideas, and suggesting alternative options.

4.2 Phase 2: Gaining Insights About Communication Design Students' AI Use in Education Through Survey

The findings reveal that students exhibit distinct differences in their use of GenAI tools. These differences are not only related to technical skills but also to their attitudes toward creativity, originality, and ethical awareness. Therefore, students' approaches to GenAI were categorized under specific patterns of behavior and engagement. As a result of this analysis, students interacting with generative AI were grouped into eight typologies as shown in Figure 4.1

Figure 4.1 Student Typology Design Scheme



Note. Students' Approaches to the Use of GenAI Tools.

4.2.1 Cross-Theme Student Typology: Ethical and Constructive Spectrum of GenAI Use

The results collected from the five themes indicate that students evaluate their relationship with GenAI not only in terms of technical competence, but also through ethical and creative perspectives. The students identified in each theme were compared across themes to form broader patterns of engagement. These patterns describe how students integrate GenAI into their creative process and how they define ethical boundaries. Based on this, two main typological frameworks were developed to explain students' approaches to GenAI use: (1) The Constructive Spectrum of AI-Design Users: Focuses on creativity, productivity, and collaboration with AI tools. (2) The Ethical Spectrum of AI-Design Users: Explains user attitudes in terms of ownership, originality, ethical responsibility, and social awareness.

Figure 4.2 *The Dual Spectrum of AI-Design User*



Note. The Dual Spectrum of AI-Design Users - The main typological frameworks were developed to explain students' approaches to GenAI use.

Figure 4.2 visualizes two intersecting dimensions of GenAI use among design students: the Constructive Spectrum (horizontal axis) and the Ethical Spectrum (vertical

axis). Together, they illustrate how students balance creativity, originality, and ethical awareness in their design practice.

4.2.1.1 The Constructive Spectrum of AI-Design Users

The Constructive Spectrum of AI-Design Users (see Figure 4.3) illustrates how students position generative AI (GenAI) within their creative processes. This typology is based on the student approaches derived from Themes 1-4 and visualizes the different roles of GenAI use, ranging from ideation to implementation.

Figure 4.3 *The Constructive Spectrum of AI-Design Users*



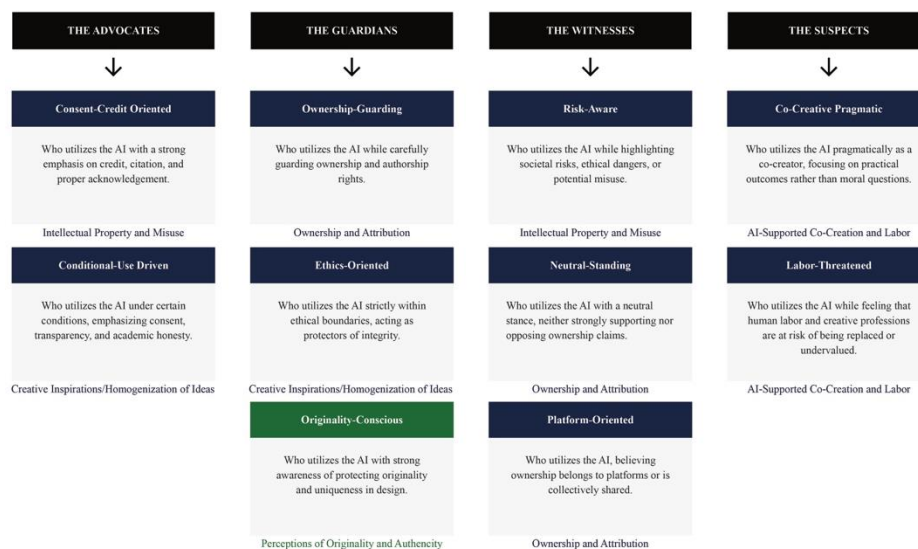
Note. All approaches are grouped under the Constructive Spectrum and clustered according to their corresponding typologies.

On the left side of the spectrum, the “Starters” represent students who use GenAI for inspiration and idea generation, while on the right side, the “Finishers” represent those who use the tool for refining ideas or making final adjustments in the later stages of design. Between these two ends, the “Accelerators” and the “Doubters & Survivors” illustrate contrasting positions, one emphasizing efficiency-oriented use, and the other reflecting a more cautious or critical relationship with AI. This typological framework suggests that students tend to view GenAI as a creative collaborator, yet they also demonstrate an awareness of maintaining a balance between creativity and originality.

4.2.1.2 The Ethical Spectrum of AI-Design Users

The Ethical Spectrum of AI-Design Users (see Figure 4.4) how students evaluate GenAI tools in relation to ethical awareness, ownership, and originality. This spectrum is mostly derived from Theme 5 and represents students’ positions regarding ethical responsibility, authorship, and the social implications of creative production.

Figure 4.4 *The Ethical Spectrum of AI-Design User*



Note. All approaches are grouped under the Ethical Spectrum and clustered according to their corresponding typologies.

The spectrum defines four main user groups: (1) “The Advocates,” who emphasize principles of consent, credit, and transparency; (2) “The Guardians,” who focus on protecting originality and ethical integrity; (3) “The Witnesses,” who question the social risks and ethical boundaries of AI; and (4) “The Suspects,” who take a more pragmatic view of AI as a means of co-creation and labor sharing.

This framework shows that students perceive GenAI not only as a production tool but also as an ethical domain reflecting a growing awareness of the need to preserve human effort, originality, and transparency in creative work. These two spectrums reveal both the productive and ethical dimensions of students’ relationships with GenAI tools, indicating the emergence of a new learning paradigm in design education. The findings suggest that students engage not only with technical skill development but also with multidimensional competencies such as creative thinking, decision-making, and ethical awareness.

4.2.2 Ideation Phase: From Stimulus to Direction

In this context, the typologies defined within the spectrums provide a holistic framework for understanding how students position GenAI within their design processes. The following sections discuss the educational implications of these typologies in relation to each theme and explore the evolving role of GenAI within design education in greater depth. Students’ ways of integrating GenAI into the design process signal a new transformation in the relationship between design tools and users within design education. The findings show that students position GenAI as a supportive assistant that stimulates creative thinking and accelerates production; however, this also reopens the debate about the meaning of creativity and the value of “human effort” in learning. Student experiences show that GenAI helps them overcome the “*blank page syndrome*” (P49 (Q2)...),

especially during the idea generation stage. This finding supports the work of Chandrasekera et al. (2025). In this phase, the “Starters” type from the Constructive Spectrum becomes clear. This group utilizes GenAI as a source of inspiration and exploration, viewing it as a creative partner that enhances productivity. However, this ease also creates a new mental space in which control partly shifts from the user to the technology (Howell et al., 2024). This change necessitates a reevaluation of the designer’s role: creativity is no longer solely about “making” but also about “guiding.” The “Accelerators” group stands out in this process; for them, GenAI is a system that speeds up creative decisions and makes production more efficient (Howell et al., 2024). Yet, this speed sometimes brings the risk of losing reflective depth.

In addition, students’ use of GenAI for “*inspiration and alternative idea generation*” (P79 (Q2), P27 (Q2), 60 (Q4), 59 (Q2)...) supports recent HCI research conceptualizes AI as a creative stimulus that provokes or supports human creativity rather than replacing it (Akverdi & Baykal, 2024; Dalsgaard, 2025a; Kong et al., 2024). At the same time, some students expressed concerns about losing originality, fearing that human creativity could be replaced by algorithmic control.

This tension between supporting creativity and risking originality is directly connected to the concept of “augmented creativity” discussed by Tankelevitch et al. (2025). The “Doubters” and “Survivors” in the Constructive Spectrum critically evaluate this balance, attempting to protect human intuition against excessive technological influence. The speed that GenAI brings to “*agile thinking*”, especially during idea development and refinement, gives students more flexibility (P68 (Q4), P79 (Q4), P34 (Q2), P20 (Q6)...) but can also reduce the creative and reflective thinking that true creativity requires (P64 (Q6), P42 (Q6), P36 (Q6)...). This finding supports (J. Li et al.’s

(2024) idea of a “fast design culture.” Therefore, GenAI can be seen not only as a supportive tool but also as a guiding force that partly changes students’ creative independence. In the final stage of the Constructive Spectrum, the “Finishers” group represents those who restore this balance, primarily using AI at the end of the process to refine ideas and ensure visual harmony, while maintaining human control at the center.

4.2.3 Implementation Phase: From Visualization to Functionality

The role of GenAI in the implementation phase redefines the concept of “visual production” within students’ design practice. The findings show that students use these tools not only to increase production speed but also to visualize ideas and generate alternative solutions (P75 (Q3), P72 (Q4), P35 (Q6)...). This aligns with the “Recommendation → Evaluation → Iteration → Release” cycle proposed by (Leora Culén et al., 2024). As students gain experience with GenAI tools, they begin to recognize their strengths and weaknesses, gradually transforming their own creative routines through this process. At this stage of the Constructive Spectrum, the “Accelerators” and “Finishers” groups are particularly notable. The “Accelerators” utilize GenAI’s rapid visual generation capability as a tool for efficiency, leveraging visual variations to quickly test and develop ideas. In contrast, the “Finishers” refine the AI-generated outputs both aesthetically and conceptually, ensuring final coherence and meaning through human control (P73 (Q2) P72 (Q6), P68 (Q6), P2 (Q6)...)

In the visualization stage, GenAI’s ability to produce rapid outputs and offer multiple alternatives has encouraged students to adopt a more “exploratory” approach. However, this speed also carries the risk of reducing the cognitive depth of the design process (P67 (Q9), P2 (Q6), P43 (Q4)...). Notably, students also comment on issues of quality, consistency, and style, particularly in logo or identity-based designs (P70 (Q3),

P67 (Q9), P15 (Q4)...), which supports this limitation. At this point, the concept of “AI as a collaborator” discussed by Leora Culén et al. (2024) becomes crucial: GenAI does not replace human creativity but rather complements it, fostering an iterative space for learning and co-creation. The strength of GenAI becomes most apparent in micro-level tasks. Actions such as background editing, object addition or removal, color palette generation, and scale adjustment were described by students as “supportive layers” that provide technical convenience (P8 (Q3), P74 (Q3), P26 (Q4), P67 (Q9), P34 (Q3) P41 (Q4)...). This pattern of use aligns with (Alsswey, 2025) concept of “utilitarian benefits” that students do not view GenAI as a creative partner that replaces aesthetic decision-making but rather as a productivity tool that accelerates workflow and reduces repetitive effort.

However, the main educational concern emerging here is maintaining the balance between creativity and originality. As Bhat et al. (2024) note, when artificial intelligence begins to replace human reasoning, the inner depth of creativity may weaken. Students’ experiences reflect this tension, while GenAI provides flexibility and practicality in visualization and production stages, the ultimate responsibility for design decisions still lies with the human creator. From the perspective of the Constructive Spectrum, this represents the “balanced partnership” stage. At this point, students use technology not only as a tool for speed but also as a “partner” that helps structure their learning process (P27 (Q4), (P23 (Q4), (P25 Q2)...). This suggests that in design education, GenAI should be seen not merely as a technical accelerator but also as a reflective and critical thinking tool that requires conscious engagement.

4.2.4 Reframing Collaboration: AI as a Design Partner in Education

Bhat et al. (2024) showed that human-GAI interaction accelerates the mutual redefinition of problem and solution spaces. In particular, during the retrospection phase, moving back from the solution to the problem, GAI helps expand the problem definition, enabling designers to reframe creative challenges more effectively. In this context, students also stated that GenAI provided significant support in their assignments, presentations, and project development processes both visually and conceptually. Fast visual generation made it easier for students to present early ideas to instructors and contributed to time efficiency (P23 (Q4), 44 (Q1)...). Some participants described GenAI as an effective assistant for building the foundation of their projects or organizing presentation materials (P57 (Q4), P3 (Q4), 27 (Q4)...). These findings are consistent with the study by (Kalving et al., 2024) which revealed that both students and professional designers often perceive AI tools as “collaborative partners” in the design process. From the perspective of the Constructive Spectrum, this stage highlights the “Starters” and “Accelerators” groups. The “Starters” utilize GenAI as a guide for inspiration and idea generation, helping them take the first step toward creativity. The “Accelerators,” on the other hand, structure the process around efficiency, adopting GenAI as a systematic tool that increases production speed. However, there is a clear difference between these two groups: while the Starters are oriented toward learning and exploration, the Accelerators are focused on goals and results. This distinction highlights how GenAI supports various learning approaches within the context of design education.

However, some students stated that GenAI made the learning process more superficial. Expressions such as “*I did my homework*” (P38 (Q4)(Q3), P48 (Q3)...) or “*I passed my classes*” (P47 (Q4)) indicate the risk of the tool pushing the student out of

the learning process. This concern was also emphasized in the meta-analysis by (Holzner et al., 2025), which found that while GenAI can be a helpful guide for inexperienced users, it may reduce the depth of learning for more advanced ones. This finding aligns with the “Doubters & Survivors” group in the Constructive Spectrum. Although these students acknowledge the benefits of GenAI, they are also aware that excessive convenience may dull creativity; therefore, they have developed a more cautious and reflective attitude.

Another contribution of GenAI is observed in text-based support. Students reported using the tool for tasks such as preparing written assignments, organizing reports, summarizing texts, and guiding research (P27 (Q4-Q3), P20, Q3; P27, P32, P72). Some described using it “*like Google*” (P48 (Q3), P72 (Q3)...) while others found it helpful mainly in the early stages of research but less useful in later phases (P25 (Q2), P27 (Q4)...). This tendency corresponds to the “Finishers” typology, representing students who use GenAI not at the beginning but in the final stages of production for refining ideas, organizing content, or improving presentations.

4.2.5 From Efficiency to Depth: Balancing Speed and Reflective Thinking

The tool accelerates idea generation, enables faster completion of assignments, and provides convenience, especially in repetitive tasks (P9 (Q2), P37 (Q4)...). This finding aligns with Alsswey’s (2025) study, which demonstrated that AI tools provide students with instant feedback, enabling them to quickly identify and correct mistakes, thereby shortening the learning process. Similarly, students in this study noted that obtaining results within seconds made their work more efficient P74 (Q4), P37 (Q4-Q3)...). However, the perception of time-saving is not always positive. Some students expressed that this speed makes creativity more superficial and reduces reflective

thinking P71 (Q6), P15 (Q6), P28 (Q6)...). This creates a tension that represents the two ends of the Constructive Spectrum: while the “Accelerators” prioritize productivity and efficiency, the “Doubters” argue that this speed weakens the depth of the creative process. As a result, a new balance emerges between efficiency and originality.

Some students also mentioned that GenAI does not always save time; in some cases, it can even slow down the process. When the tool fails to meet expectations, students reported spending more time compared to traditional methods (P64 (Q6), P54 (Q5), P67 (Q5)...). This finding indicates that the time advantage of GenAI is conditional; when the system produces irrelevant or inaccurate outputs, its efficiency can be easily compromised. This variation also reflects different perceptions of time among the typologies in the Constructive Spectrum. For the “Starters,” speed acts as a motivating factor that facilitates learning; for the “Accelerators,” it is a strategic tool for production; for the “Finishers,” time-saving becomes an opportunity to improve quality; and for the “Doubters,” speed is perceived as a potential threat to creative depth.

4.2.6 Negotiate Between Originality and Creativity

Although students valued GenAI’s supportive and time-saving functions, a clear duality emerged regarding its impact on originality and creativity in the design process. Some participants viewed the tool as an inspiring and efficiency-enhancing aid, while others expressed concerns about loss of originality, repetitive outputs, and the diminishing of creative thinking.

4.2.6.1 Originality

Some students stated that the variations offered by GenAI helped them broaden their perspectives and enhance originality in their projects (P76 (Q6), P27 (Q2)...).

However, a larger group emphasized that the generated outputs were often too similar to each other, leading to a loss of personal originality (P45 (Q5), P60 (Q5), P62 (Q2)...). On the other hand, several students suggested that this loss of originality depends on how the tool is used, implying that originality can be preserved through thoughtful and controlled integration (P79 (Q6)). The literature supports this discussion. Chandrasekera et al. (2025) argued that AI tools serve as sources of inspiration by generating a large number of ideas in a short time, but the similarity among these ideas creates a dilemma regarding the sustainability of creativity. Their study conceptualizes the role of AI in early design stages as supportive but limited. Similarly, Park et al. (2024) found that the high volume of production facilitated by GenAI can sometimes turn into information overload and remains mostly restricted to stylistic variations. The participants' statements in this study also reflect this dual nature, showing that GenAI can both enhance and weaken originality, depending on how it is used.

In this study, students' perceptions of originality were shaped differently across the Constructive Spectrum. The "Starters" use GenAI as a source of inspiration and view the potential loss of originality not as a risk but as part of the learning process. The "Accelerators," on the other hand, aim to preserve originality within efficiency, seeing GenAI as a collaborator that diversifies production. In contrast, the "Finishers" regain originality through human intervention, treating AI outputs as raw material to be refined. Meanwhile, the "Doubters" criticize the uniform nature of GenAI's outputs, arguing that true originality can only be sustained through human intuition. Thus, students' perspectives on originality differ not only based on the similarity of outputs but also according to the type of creative relationship they establish with the tool.

4.2.6.2 Creativity

A significant number of participants stated that GenAI accelerated the creative process and helped generate new ideas (P66 (Q3), P39 (Q4), P23 (Q6)...). This suggests that the tool is primarily perceived as a creativity-enhancing aid during the early stages of design. On the other hand, some students noted that overreliance on GenAI can dull creative thinking and make the process more superficial (P33 (Q6), P71 (Q2)...). Repetitive outputs were also seen as a factor that limits students' ability to develop their own creative productivity. These findings align with discussions in the literature. Park et al. (2024) highlighted that while GenAI has the potential to support creativity, it simultaneously carries the risk of repetition and homogenization. Therefore, the dual perception observed among students reflects the coexistence of two possibilities that GenAI can both stimulate and constrain creativity within the design process.

However, many studies emphasize that AI complements rather than replaces the human factor. The participants also expressed that, although AI tools accelerate the process, the human role remains essential for direction and quality control (Akverdi & Baykal, 2024; Kalving et al., 2024). Especially during idea generation and rapid prototyping, GenAI is considered a valuable and supportive tool, yet one that should remain secondary to the creative judgment and authorship of the human designer.

From the perspective of the Constructive Spectrum, students establish different levels of productive relationships with GenAI: "Starters" use AI as a tool for inspiration and idea generation, gaining creative confidence in the early stages of the process. "Accelerators" define creativity through speed and efficiency, systematizing idea generation but sometimes reducing reflective thinking. "Finishers" regain creative control by refining AI outputs through their own aesthetic judgment. "Doubters & Survivors"

critically examines the influence of technology, acknowledging its limitations and emphasizing the value of human intuition. These typological differences show that students are beginning to redefine creativity not only as “producing” but also as “directing” and “evaluating.”

4.2.7 Cultivating AI Literacy Through Reflective and Critical Engagement

The dilemma surrounding originality and creativity becomes more visible when considering the technical and procedural challenges students face while interacting with GenAI. In particular, prompt writing and output quality emerge as critical areas that have the potential to both support and limit creativity. The findings reveal a communication gap caused by students’ difficulties in clearly expressing their intentions and the system’s limited ability to accurately interpret those intentions.

4.2.7.1 Prompt-Related Difficulties

GenAI tools require users to possess strong skills in prompt development to use them effectively. This indicates that, in addition to traditional visual design education, verbal creativity and written expression skills are becoming increasingly important (Akverdi & Baykal, 2024). Most students reported that the prompts they provided to GenAI often did not match their expectations. Despite giving detailed instructions, participants stated that the tools were frequently misunderstood, partially interpreted, or produced irrelevant outputs (P43 (Q5), P10 (Q6), P71 (Q5-Q6), 26 (Q2)...). These findings are consistent with the study by (Goloujeh et al., 2024), which found that users often struggle to align their intentions with AI-generated outputs and that this misalignment can limit the development of prompt literacy.

Dalsgaard (2025b) notes that when users encounter unsatisfactory outputs, they engage in a continuous process of “interpretive negotiation.” Misaligned results push them to redefine their prompts, which, over time, contribute to the development of expressive and communication skills. In that study, students also described trial and error as a natural part of the learning process. Some mentioned that by experimenting with different word combinations, tones, or sequential prompt strategies, they gradually learned how to communicate more effectively with the tool (Dalsgaard, 2025b). This suggests that GenAI is not merely a technical tool, but also a learning environment that enhances students’ language, expression, and strategic thinking skills. In this context, the findings of Theme 4 are directly related to the early stages of the Constructive Spectrum. The “Starters” are those who learn GenAI through experimentation, using it in an exploratory way for idea generation and inspiration. For this group, making mistakes is an integral and instructive part of the process. The “Accelerators,” on the other hand, have systematized their prompt experimentation practices, turning them into efficiency-driven learning processes. Thus, the challenges students face also represent a constructive stage of creative development.

4.2.7.2 Output Quality and Reliability

Akverdi & Baykal (2024) pointed out that professional designers are concerned that AI’s ability to produce fast, yet predetermined results, may limit critical thinking and original exploration. In particular, the phenomenon known as the “*AI signature*,” characterized by a repetitive and recognizable aesthetic style observed in tools such as Midjourney, exacerbates concerns about originality. Similarly, students in this study frequently mentioned uniformity, unpredictability, and superficiality in AI-generated outputs (P24 (Q6), P71 (Q6), P58 (Q6)...). The findings presented by Gmeiner et al.

(2023) at the C&C conference also support these observations while GenAI enhances fluency, flexibility, and elaboration in idea generation, it tends to create noticeable homogenization in terms of originality.

Gmeiner et al. (2023) further reported that designers often struggle to understand why AI generates certain forms, especially in “odd” or unexpected outputs, where it is unclear whether the result stems from an error or an algorithmic preference. Students in this study shared similar experiences, expressing that in such cases, AI seemed to take control of the process, making them feel more passive in their creative roles. Some described the generated forms as overly complex or artificial in style, which led them to make manual interventions or post-production adjustments to regain authorship and control P26 (Q4), P35 (Q2). In this respect, the “Doubters & Survivors” user type stands out. This group developed a critical awareness of the unpredictable nature of AI, yet managed to maintain their productivity by developing strategies to cope with errors and transform imperfect outputs into creative opportunities.

Similarly, the findings of Park et al. (2024) are consistent with students’ experiences in this study. Participants stated that GenAI outputs were sometimes “close to expectations” but at other times “completely unrelated.” Also, the study of Goloujeh et al. (2024) shows that students described Midjourney’s visuals as often “too artificial” or “lacking a personal touch.” However, some students suggested that even this artificiality could have value, offering potential for exploring “*new aesthetic languages.*” Therefore, the unpredictability of AI should not be viewed solely as a limitation, but also as a productive input that encourages students to think flexibly, reinterpret visuals, and expand their creative problem-solving abilities.

4.2.8 Ownership and Authorship Dilemma

Students often asked, “Does this work belong to me or to the AI?” This question reflects the findings of Goloujeh et al. (2024), who noted that when users lose control over AI-generated outputs, their sense of ownership and responsibility becomes weaker. Do et al. (2025) describe this phenomenon as the “AI ghostwriter effect,” explaining that when AI acts as an invisible creative partner, users feel less emotionally connected to their own work. Similarly, Park et al. (2024) refer to this as the idea that “there is no soul,” showing that students also experienced a sense of “soulless creation.” Some students clearly expressed this tension, emphasizing that the source of creativity skills lies in the human mind (Park et al., 2024). P69 (Q8) *“It’s ethical because the prompt comes from me.”*, P68 (Q7) *“Copyright should belong to the person who writes the prompt because they guide the creation.”* These statements show that ownership is not only related to the final output but also to the intention and creative control behind it. On the other hand, some students viewed ownership as a more shared responsibility: P9 (Q7): *“It should be public.”*, P67 (Q7): *“The credit for AI-generated work should not go to the user, but to the AI tool.”* These views reflect the idea of a collective creative space where ownership is shared between the human and the system.

This diversity is also reflected in the students’ ethical typologies. The “Advocates” and “Guardians” associated ownership with human intention, creativity, and moral integrity, while the “Suspects” and “Witnesses” interpreted it within the framework of human-system collaboration. This shows that students’ views on ownership vary depending on the type of relationship they establish with GenAI.

4.2.9 Originality, Copyright, and the Redistribution of Creative Labor

Training AI tools on existing artworks raises concerns about originality, copyright, and ethical responsibility. Alsswey (2025) noted that while these tools can encourage creativity, they also expand areas of ethical risk. This situation requires redefining the boundaries of human labor, intention, and responsibility within generative AI processes. Do et al. (2025) explained this dilemma through the “disclosure-ownership-accountability” framework, emphasizing that creativity should be evaluated not only by the final product but also by the intention and ethical guidance behind the process. In this context, “meaningful human contribution” emerges not only as a legal requirement but also as a fundamental condition for ethical creativity.

Dalsgaard (2025a) argues that generative AI redistributes creative labor but concentrates most of the economic value within technology companies. This aligns with students’ remarks about the “invisibility of creative labor.” Some students emphasized that when AI can produce in seconds what humans spend hours creating, it diminishes the perceived value of human effort: P9 (Q9): *“It’s not ethical when something people spend hours working on can be produced in seconds.”* Such statements demonstrate that discussions of ownership encompass not only individual originality but also the economic fairness of creativity. Similarly, Kalving et al. (2024) found that while AI tools offer practical benefits, they also risk eroding designers’ sense of identity. For some students, AI is a supportive assistant that makes production easier; for others, it represents a “shortcut” that devalues human labor and aesthetic authenticity. This perspective is consistent with Meron’s ideas of the “blurring of professional identity through the democratization of creativity” (Meron, 2022).

Ethical awareness levels also differ across typologies. “Advocates” associate ownership with human intention, while “Guardians” prioritize the preservation of originality. “Witnesses” and “Suspects,” on the other hand, view creation as a shared and collective space. In the Constructive Spectrum (see **Figure 4.3**) “Starters” and “Accelerators” see GenAI as a functional assistant, while “Finishers” aim to preserve human contribution in the final stages, and “Doubters” question the ethical boundaries of the system. This shows that perceptions of ownership and ethical responsibility are shaped not only by individual attitudes but also by the nature of users’ interactions with the tool.

4.2.10 Human Contribution as an Ethical Anchor

Qadri et al. (2025) describe working with AI in art as a genuine creative process that highlights human involvement and cultural expression in technology-driven art. The findings of this study reveal a similar tendency; students argued that AI should remain a complementary tool, with ultimate creativity belonging to humans. For them, the essence of the creative process lies in human intuition, guidance, and the ability to create meaning. Similarly, Leora Culén et al. (2024) found that tools like ChatGPT initially act as “assistive tools,” but as students develop stronger prompting skills, they evolve into “semi-partners”. This shift reflects a growing movement in human-technology interaction toward co-creation. However, for students, the boundary remains clear; final creativity and intellectual ownership must stay with the human creator.

In this study as well, students perceived GenAI as a complementary tool that supports idea diversity and facilitates production, while defining the essence of creativity through human intention, effort, and responsibility: P69 (Q8): *“It’s ethical because the prompt comes from me.”*, P34 (Q7): *“Since the prompt input belongs to the user, I believe*

the copyright should also belong to them.” These statements indicate that students perceive “intentional authorship” as the primary factor in determining ownership. Therefore, human contribution is not just a part of the production process; it acts as a stabilizing element that maintains ethical balance.

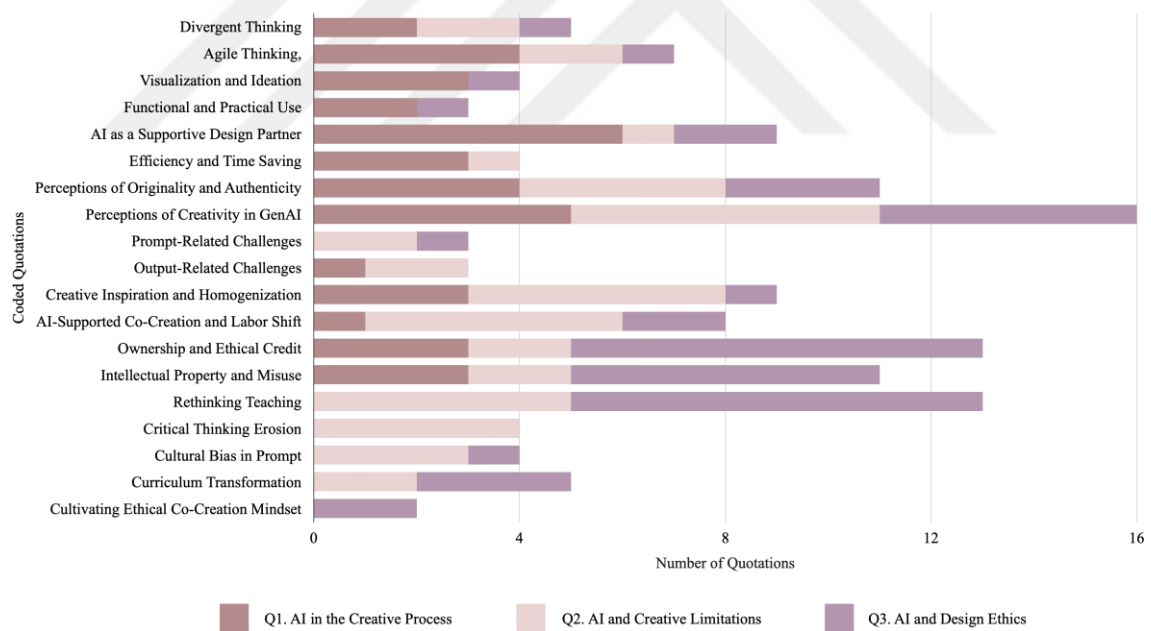
This perspective is particularly evident among the “Advocates” and “Guardians” typologies, who emphasized the importance of protecting human labor and originality, viewing AI as a guiding tool that should operate within ethical boundaries. In contrast, the “Witnesses” and “Suspects” acknowledged that the creative process is becoming an increasingly shared space between humans and AI, but they stressed that this collaboration must be managed with a strong sense of responsibility.

4.3 Phase 3: Focus Group to Discuss and Unpack the Integration of Artificial Intelligence Into Courses

Phase 3 explores participants’ perceptions and experiences in greater depth through a focus group discussion. This stage was designed to validate and expand the findings obtained from previous phases (RQ1-RQ3), while also identifying new insights related to RQ4, which focused on integrating AI into education. Based on the codes derived from the student survey, the third phase focused on coding the academics’ perspectives. The emerging codes were then organized thematically and summarized in Figure 4.5 to present a holistic view of the participants’ perspectives. With faculty members teaching Studio 1 to Studio 4 provided a deeper understanding of how generative AI is experienced, discussed, and integrated into studio-based design education. Some instructors shared views only from their own perspective, while others also reflected on the student interactions they observed during class. All quotations from these sessions were analyzed, and new codes were produced. The findings show that both

positive and negative dilemmas exist in the context of creativity and design education. Although AI offers clear benefits in idea generation and brainstorming, some participants expressed concerns about the erosion of creative thinking, ownership, the ethics of transparency, the risk of homogenization, and other related issues. These concerns highlight important limitations that need to be addressed in design education. During the focus group discussions, participants explored how these negative effects could be reduced and transformed into positive outcomes. Based on these conversations, several educational recommendations were developed for integrating AI into future studio courses.

Figure 4.5 *Summary of Focus Group Codes*



Note. The data presents a summary of all focus group data, including emergent themes, their definitions, and indicator keywords derived from participant statements.

4.3.1 The Positive Constraint Dilemma of GenAI in Creativity and Design Education

This theme reveals the ways in which artificial intelligence both supports and limits creativity in the design process. According to the code distributions, the subthemes “Agile Thinking” (n=7) and “Divergent Thinking” (n=5) indicate that most participants

consider artificial intelligence a useful tool in the stages of idea development, flexibility, and inspiration generation. However, as seen in the code Functional and Practical Applications (n=3), some participants emphasized that although artificial intelligence provides technical convenience, it also creates certain constraints in deep thinking and originality.

4.3.1.1 Facilitating Role of GenAI in the Creativity Learning Process

Most participants stated that artificial intelligence is perceived as a factor that encourages and guides creative production, especially in the early stages of the design process. The intensity of the codes “Agile Thinking” (n=7) and “Visualization and Creative Asset Generation” (n=4) indicates that AI has become a frequently used tool in idea generation and visualization processes.

Participants expressed that artificial intelligence is more effective in expanding or diversifying existing ideas rather than producing entirely new ones. The data indicate that the codes “Agile Thinking” and “Divergent Thinking” often overlap. This suggests that AI is perceived as a cognitive partner that simultaneously supports both idea diversity (divergent thinking) and agile production processes (agile thinking).

Frich et al. (2024) noted a clear trade-off between novelty and appropriateness in AI-assisted idea generation. Their study observed that while AI tools expand the creative process by increasing idea diversity, they may also reduce the contextual relevance of the generated ideas. This finding aligns with participants’ views, which describe AI as a “flexible but superficial” tool.

Academics mentioned that AI helps students overcome the “*blank page fear*” (P06, T/S) and develop alternative ideas. These tools were found to increase motivation and provide a starting point in the early stages of the creative process. For example, P02

(T) and P04 (T) stated that AI offers “*a guiding starting point*” in the initial idea phase, while P08 (T/S) described these tools as functioning like a “*personalized Pinterest*,” facilitating visual reference generation.

Similarly, Doshi & Hauser (2023) reported that GenAI tools are effective in overcoming creative block (e.g., writer’s block); however, when used without critical reflection, they may harm originality and diversity. These findings indicate that AI is positioned as a cognitive partner that supports creativity in educational settings. Moreover, thanks to the rapid visualization and prototyping capabilities of AI tools, students were able to materialize their ideas in the early stages, enabling more efficient feedback from instructors. As a result, the learning cycle accelerated, and motivation and engagement levels increased.

In conclusion, the contribution of GenAI to the creative process extends beyond technical convenience. It also emerges as an educational element that encourages students to participate confidently in trial-and-error processes, develop visual thinking skills, and build creative self-confidence. Holzner et al. (2025) noted that while GenAI plays a supportive role in idea development, its use without clear goals and guidance may limit idea diversity and lead to similar outcomes. This finding suggests that although human-AI collaboration is productive, it also carries certain risks related to preserving originality.

4.3.1.2 Cognitive Dependency and Superficiality of GenAI in Creative Practice

Participants’ statements also reveal that artificial intelligence creates certain limiting and risky effects in the design process. In particular, P06 (T) and P02 (T) stated that AI “*inhibits branching brainstorming*” and directs students toward thinking patterns based on ready-made templates. This situation narrows the essential areas of the creative

process: exploration, experimentation, and the possibility of making mistakes. In other words, students tend to turn to AI suggestions before exploring their own ideas, which restricts original design thinking.

P05 (T) pointed out that AI “*reflects statistical averages,*” drawing attention to the risk of repeating similar aesthetic tendencies in design outcomes. This suggests that the emphasis on diversity in the Divergent Thinking theme may lead to a superficial abundance. Therefore, the literature argues that the “uncontrolled use of AI” can create risks such as superficiality, cognitive laziness, and over-dependence among students, emphasizing that AI integration should be structured and guided. The integration of AI into education must take place within a clear educational framework. Otherwise, students may develop tendencies toward cognitive dependency and superficial thinking (Nguyen, 2025). This finding is consistent with the participants’ emphasis on the need for a “critical awareness-based use” of AI.

Similarly, in the code “Functional and Practical Applications” (n=2), it was mentioned that although AI facilitates technical skills, students tend to move away from manual production practices. This raises concerns about the potential for increasing cognitive dependence and weakening critical thinking skills during the learning process.

Likewise, the literature also notes that interacting with AI without developing critical thinking strategies can reinforce automatic thought patterns in educational contexts. Therefore, engaging with GenAI within a structured and guided learning process is crucial for cognitive development and creative autonomy (Lee & Low, 2024). When integrating AI tools into design education, it is essential to support not only technical skills but also critical thinking, awareness, and creative self-regulation abilities.

Educators should position GenAI tools not merely as productivity tools, but as educational tools that foster reflective thinking processes among students.

In the study by Frich et al. (2024) participants reported that they mostly used AI-generated ideas as indirect sources of inspiration rather than adopting them directly. This shows that AI plays a stimulating but guiding role in idea generation.

Overall, participant statements indicate that artificial intelligence has a dual effect in the context of design education: on one hand, it supports idea diversity, speed, and productivity; on the other, it may create potential limitations in originality, depth, and critical reflection processes. These findings suggest that AI should be positioned in design education as a balanced element between creative exploration and cognitive comfort.

4.3.2 The Paradox of Efficiency and Authenticity in AI Support Design Education

This theme focuses on the dual nature of artificial intelligence in design education. While it is seen as a tool that supports creativity, it can also limit processes of originality, depth, and critical thinking. The code distribution (*AI as a Supportive Design Partner*, n = 9; *Efficiency and Time-Saving*, n = 4; *Perceptions of Originality*, n = 11; *Perceptions of Creativity*, n = 16) indicates that participants' experiences with AI reflect a complex balance at both educational and cognitive levels.

4.3.2.1 Efficiency as Cognitive Leverage in the Creative Process

Most participants stated that artificial intelligence offers clear advantages in terms of time management and production efficiency, especially by reducing repetitive tasks. P02 (T) and P07 (T) emphasized that AI accelerates idea generation and prototyping processes, allowing students to produce more alternatives. P07 (T/S) described this as “an opportunity for students to develop the ability to think like an art director at an early

stage.” Similarly, Wei et al. (2025) found that AI-assisted digital storytelling improves collaborative problem-solving skills.

These findings suggest that artificial intelligence serves as a supportive tool, reducing cognitive load during the production process. With the help of GenAI, students were able to overcome technical barriers and generate a wide range of idea variations in a short time, which improved the quality of feedback received from instructors. This process contributed to strengthening the principles of trial and error and rapid iteration in design education. However, many participants overlooked the fact that AI subtly imitates their own writing and expression styles (Frich et al., 2024). This finding suggests that when students place excessive trust in AI-generated outputs, their originality and critical awareness processes may weaken.

Chandrasekera et al. (2025) also noted that while AI can enhance creative performance in the short term, its long-term effects on learning and creativity may remain limited. Their research suggests that GenAI tools, particularly those designed for visual learning styles, promote more active, exploratory, and inclusive learning experiences. However, participants also mentioned that this acceleration may sometimes lead to superficiality and a decrease in intellectual depth. Wei et al. (2025) observed weaknesses in emotional connection and deep reflection within AI-assisted processes, emphasizing that these technologies affect not only cognitive but also affective development.

P01 (T) stated that AI *“only increases speed but reduces intellectual richness,”* while P07 (T) expressed that *“the process of thinking about design is easily overlooked.”* Therefore, the increase in efficiency is perceived as being in constant tension with creative depth. Similar concerns have been expressed in the literature. (Chiu, 2024) reported that students often use GenAI tools in a superficial way, which weakens their

information evaluation processes. Therefore, (Chiu, 2024) argues that AI should be integrated into education alongside approaches that promote critical thinking. He emphasizes that question-based learning frameworks, such as the Paul-Elder model and systems thinking, support students in engaging with GenAI outputs not superficially, but analytically.

4.3.2.2 Authenticity, Originality, and the Limits of AI-Generated Aesthetics

Despite the advantages of speed and convenience offered by artificial intelligence, participants noted that the concepts of originality and authenticity have become important topics of discussion within the field of design education. P01 (T) emphasized that *“authenticity is the most fundamental ethical value in creative industries,”* while P04 (T) stated that *“AI reproduces Western-centered visual aesthetics, thereby weakening cultural diversity.”*

Similarly, P03 (T/S) observed that *“students’ works are becoming increasingly similar to one another”* and suggested that *“the concept of originality needs to be redefined.”* These observations suggest that similar aesthetic tendencies are being reinforced among students, resulting in a decline in cultural diversity in design.

Participant statements reveal that AI-assisted production contributes to aesthetic homogenization, making it more difficult for students to develop their own personal styles. In particular, the tendency of first- and second-year students to rely on the *“first outputs generated by AI”* can disrupt the cognitive balance between convenience and originality.

The literature discusses this issue in similar terms. Doshi & Hauser (2023) found that stories generated with GenAI were perceived by evaluators as less “human-written”, meaning that lower levels of creativity were attributed to the user rather than to the tool

itself. Anderson et al. (2024) reported that during idea generation with ChatGPT, participants' levels of mental effort decreased, and creative control largely shifted to the tool. These findings suggest a weakening of creative subjectivity and a redistribution of agency within the design process. Zhou & Lee (2024) emphasized that while this shift may allow designers to focus more on idea development, it also involves a restructuring of human agency.

Therefore, preserving originality in AI-assisted production processes becomes not only a technical challenge but also an ethical and educational responsibility. However, some participants interpreted this situation as an educational opportunity. P05 (T) remarked that *“instead of banning AI, we should question how students use it,”* highlighting that AI tools can be used to foster critical awareness. In this context, AI-generated content should be seen not only as technical outputs but also as objects of ethical inquiry.

4.3.2.3 The Creative Paradox: Between Cognitive Support and Critical Erosion

The findings indicate that artificial intelligence creates a paradox between creative support and cognitive constraint in design education. Participants stated that while AI provides flexibility in idea generation, it can also weaken students' abilities in critical thinking, originality, and taking responsibility for their work.

This situation shows that artificial intelligence has become not only a *“production tool”* from an educational perspective, but also a domain in which the ethics of learning and modes of thinking are being redefined. Participants' observations that ethical awareness has increased, particularly among third- and fourth-year students, suggest that this transformation represents a process of educational maturation.

In conclusion, this theme highlights the importance of striking a balance between efficiency and originality in design education. AI can serve as a supportive tool that enhances creative confidence in the learning process, yet in cases of overreliance, it may also lead to an erosion of critical thinking. This dual condition clearly highlights the importance of positioning artificial intelligence in educational settings in a responsible, conscious, and critical manner.

4.3.3 The Educational Value of Limitations: Learning Through AI Constraints

This theme reveals that the limitations of artificial intelligence systems can be regarded not merely as obstacles in design education, but also as cognitive and educational opportunities that stimulate learning. The code distribution (Prompt-Related Challenges, $n = 3$; Output-Related Challenges, $n = 3$) indicates that participants perceived the technical and aesthetic problems experienced with AI tools as having the potential to enhance creative problem-solving and critical thinking skills.

4.3.3.1 Prompt Literacy as an Educational Competence

Participants emphasized that the fundamental condition for working effectively with artificial intelligence is prompt literacy. This skill enables students not only to obtain outputs from the system but also to develop their competencies in directing, questioning, and reformulating the process.

P07 (T) described this situation as “*not about receiving ready-made outputs, but about learning the process,*” while P05 (T) stated that “*prompt creation has now become a part of design itself.*” These views demonstrate that artificial intelligence is not merely a production tool, but also a learning domain in which language, thinking, and expression skills are being reshaped.

Participants highlighted that when students recognize the system's limitations during the process of formulating effective prompts, they engage their critical thinking skills more actively. In particular, the tendency of AI to produce repetitive visual patterns encourages students to critically examine their own design decisions when presented with such outputs.

The frequent generation of similar visuals by AI systems creates aesthetic uniformity, especially among first- and second-year students. This situation may restrict, rather than enhance, creativity. The findings clearly reveal the dual nature of GenAI in creative processes: it can function as both a supportive and a constraining element.

Participants also stated that students tend to shape their personal styles based on AI-generated outputs, leading to a phenomenon that can be described as an *"illusion of identity."* This indicates that the creative process should be addressed not only from a technical standpoint but also through its cognitive and cultural dimensions.

4.3.3.2 Learning From Imperfect Outputs

Participants stated that artificial intelligence systems are limited in terms of output quality, cultural representation, and aesthetic diversity. P05 (T) described this situation as *"AI providing a statistical summary of existing data,"* while P01 (T/S) emphasized that *"many students producing the same idea"* reveals the boundaries of creativity defined by AI.

Participants emphasized that directly relying on ready-made or rapidly generated visual or conceptual outputs tends to superficialize students' creative decision-making processes and yield similar aesthetic results. This situation reduces opportunities for developing an original style and limits individual spaces of expression.

Similar findings are reported in the literature. The meta-analytic study by (Holzner et al., 2025) revealed that individuals collaborating with GenAI produced less diverse and more similar ideas ($g \approx -0.86$). Anderson et al. (2024) also found that ChatGPT homogenizes ideas at the group level, leading participants to produce similar outcomes.

These findings suggest that repetition and homogeneity in AI-generated outputs create an educational space for awareness. Through these similarities, students are introduced to concepts such as data bias, cultural uniformity, and representation issues, which enable them to discuss design not only from an aesthetic perspective but also through ethical and socio-technical dimensions. (Dalsgaard, 2025a) argues that to sustain the future of creative labor, educational institutions must develop new educational models that integrate not only technical skills but also ethical, critical, and cultural awareness. This perspective supports participants' emphasis on *"AI-assisted modes of thinking that are reflective, inquisitive, and critically engaged."*

Within this framework, artificial intelligence becomes not a tool that produces flawless results, but rather an object of design critique. Educators use these imperfections to help students develop the ability to engage critically with technology.

In conclusion, the limitations of AI systems should not be viewed as deficiencies in design education, but rather as opportunities that enhance learning. The approach of learning from imperfect outputs strengthens students' cognitive flexibility as well as their ethical awareness.

4.3.4 Ethical and Societal Dimensions of AI-Supported Design Practice

This theme encompasses the process through which creative labor, ownership, and ethical responsibility are being redefined in AI-assisted design production. The code distribution (Creative Inspiration, $n = 9$; AI-Supported Co-Creation,

n = 8; Ownership and Attribution, n = 13; Intellectual Property, n = 11) indicates that these topics were among the most intensely discussed areas among participants. Academics emphasized that artificial intelligence should be positioned in design education not merely as a technical tool, but also as a learning component that fosters ethical awareness and a sense of responsible production.

4.3.4.1 Creative Inspiration and the Risk of Homogenization

Participants acknowledged that artificial intelligence serves as a strong source of inspiration and ideas for students in the design process. However, they also noted that with the widespread use of these tools, a risk of aesthetic uniformity and cultural homogenization emerges.

Zhou & Lee (2024) reported that the level of visual novelty tends to decrease over time and that GenAI reinforces a tendency toward style repetition in artistic outputs. According to the researchers, this is linked to users' growing dependency on system-generated results due to the convenience GenAI provides, which in turn suppresses individual creative judgment.

P01 (T/S) and P03 (T/S) stated that students “*quickly turn to the first images provided by AI,*” which weakens originality and diversity of expression. Similarly, P04 (T) emphasized that “*Western-centered aesthetic forms*” have become dominant in AI outputs, rendering local design languages increasingly invisible.

These findings demonstrate that AI-assisted creativity carries a dual educational nature: AI acts both as a source of inspiration and as an object of critical awareness. In this context, the restrictive aesthetic patterns of AI can be viewed as educational opportunities to teach cultural diversity in design and to encourage students to question and reflect on their own visual identities.

4.3.4.2 AI-Supported Co-Creation and Shifting Definition of Labor

Participants noted that the inclusion of artificial intelligence as a “*collaborative partner*” in the design process reshapes the concepts of creative labor, contribution, and ownership. P02 (T) and P07 (T) emphasized that while AI increases production speed and transforms design workflows, it also carries the risk of fostering “over-dependence on AI” and creating a sense of “artificial confidence” among students. Shen et al. (2025) argue that excessive trust in AI systems can weaken critical thinking and problem-solving skills; therefore, the integration of AI should be structured gradually under the guidance of education.

The study highlights that artificial intelligence functions not merely as a tool of automation but as a co-pilot learning partner that guides students’ cognitive processes. Particularly in writing, problem-solving, and idea generation, students are reported to develop greater cognitive self-awareness (Nguyen, 2025). P03 (T) described this process as “*the devaluation of labor and the invisibility of creative effort,*” whereas P08 (T) argued that “*completely banning AI would have a counterproductive educational effect.*” These perspectives suggest that co-creation with AI in design education has evolved into not only a technical phenomenon but also an ethical issue.

Wang et al. (n.d.) emphasize that AI serves as a factor that both supports creativity and can lead to cognitive dependency in graphic design education. As participants in this study also pointed out, the flexibility provided by AI tools may simultaneously undermine critical thinking and originality. Similarly, the academics involved in this research consider the concepts of “*thinking with AI*” and “*designing with AI*” as opportunities to cultivate students’ critical awareness and reflective engagement.

4.3.4.3 Ownership, Attribution, and the Ethics of Transparency

Participants emphasized that making human contribution visible and transparently documenting the production process in AI-assisted creations is an ethical necessity. Holzner et al. (2025) noted that in “GenAI content directly integrated by users,” the boundaries of ownership and responsibility have become blurred, conflicting with existing academic norms.

P02 (T/S) stated that they ask students to “*explain at which stage and how they used AI,*” while P08 (T) argued that “*presenting AI-generated work without acknowledging the use of AI is equivalent to plagiarism.*”

Anderson et al. (2024) reported that some participants developed the perception that AI “*takes over a significant portion of the creative workload,*” leading to a shift in creative responsibility from the user to the AI. Similarly, it was argued that due to the structural opacity of GenAI systems, issues of trust and transparency arise, and that ethical evaluations should therefore be considered in conjunction with technical limitations.

Participants also emphasized that citation is not merely an ethical requirement, but a way of preserving the value of creative labor. In this context, attribution in AI-assisted productions is associated not only with the principle of academic integrity but also with the core values of design ethics.

4.3.4.4 Intellectual Property, Misuse, and Institutional Responsibility

Participants stated that the boundaries of intellectual property in AI-assisted production are becoming increasingly blurred and that existing ethical frameworks struggle to keep pace with this transformation. Similarly, the study indicated that the lack of clearly defined ethical boundaries for AI use in education has created educational ambiguities, particularly concerning issues of ownership and attribution. It was observed

that during students' interaction with AI tools, the sense of responsibility distribution and perceived originality tended to weaken.

Recent literature highlights that GenAI blurs the concepts of responsibility and ownership in educational contexts, necessitating the development of new frameworks for educational ethics (Nguyen, 2025). P05 (T) noted that *"attributing responsibility becomes difficult when AI-generated texts or visuals lack identifiable sources."*

Scholars emphasize that the use of GenAI in academic production must be defined within ethical principles such as transparency, human oversight, and authorship accountability (da Veiga, 2025). Similarly, H. Li et al. (2025) argued that if GenAI systems do not openly disclose their content generation criteria, instructors will struggle to align outputs with learning objectives, thereby rendering GenAI an untransparent 'black box.' Likewise, P06 (T) remarked that *"as AI takes over the production workload, the nature of creative labor is increasingly being questioned."* Participants stressed that these issues should be addressed not only at the individual level but also through institutional and legal frameworks.

Frich et al. (2024) noted that generative AI introduces new ethical dilemmas in creative processes, particularly regarding ownership and representational justice. The growing uncertainty surrounding the ownership of AI-generated content necessitates a reevaluation of the principles of responsibility and transparency in the production process. P07 (T) emphasized that since *"AI lacks ethical self-awareness,"* ethical protocols should be collaboratively developed by professional organizations, universities, and legal authorities. This indicates that ethics education in design should extend beyond individual awareness and be integrated with a broader sense of institutional responsibility.

4.3.5 Interpretative Overview: Academics' Reflections on the Future of AI in Design Education

This section presents instructors' forward-looking perspectives on integrating artificial intelligence into design education, drawing on their experiences and educational insights. Participants' views reveal that they perceive the potential of AI to transform design education not merely as a technological innovation, but as a paradigm shift that requires the restructuring of learning processes.

4.3.5.1 Rethinking the Foundations of Design Education

Participants emphasized that artificial intelligence should not be viewed merely as an *"additional tool"* in course planning, but rather as a catalyst for restructuring design education at the level of its foundational principles. P01 (T) and P02 (T) stated that superficial adjustments, such as *"whether or not AI is included in this course,"* are insufficient, and that genuine transformation can only be achieved through process-oriented thinking and multi-phase project systems.

For example, P01 (T) highlighted the importance of process-based assessment, noting that the model of *"portfolio juries instead of grades at the end of the semester"* enables students to develop a deeper mode of thinking. This approach points to the educational necessity of shifting from product-oriented evaluation to process-oriented learning.

Similarly, P02 (T) emphasized that teaching foundational design and thinking courses through structured and constrained frameworks strengthens students' self-discipline and awareness, whereas in advanced studio courses, different mediums, including AI, should be freely explored. AI should be integrated step by step, rather than treated as something to either ban completely or use without limits.

4.3.5.2 AI as a Reflective Mirror for Thinking and Making

Instructors stated that artificial intelligence is not only a tool that increases production speed but also a reflective instrument that makes thinking processes visible. P01 (T) suggested that analyses such as “*What did AI think?*”, which encourage students to reflect on AI-generated outputs, can be as instructive as traditional composition analyses. This proposal suggests that AI can serve as a cognitive mirror, enabling students to recognize and evaluate their own thought processes.

According to the literature, although participants did not fully understand how AI tools operate, they maintained an open attitude toward experimentation and exploration (Frich et al., 2024). This suggests that AI interactions can be understood not only as technical processes, but also as cognitive learning environments. It can be said that when students become aware of the system’s limitations, they develop deeper learning and stronger critical thinking skills.

Similarly, P04 (T) recommended that students combine AI-generated visuals with their own sketches to produce hybrid creations, noting that this approach enhances individual expressiveness and fosters critical awareness. This perspective indicates that AI-supported reflective learning models could be developed within design education.

4.3.5.3 Educational Innovation and Course Design for AI Literacy

The literature argues that the concept of AI literacy should no longer be viewed as an extension of digital literacy, but rather as a core component of education itself. In particular, students’ abilities to question the nature of AI outputs, identify errors, and engage in critical evaluation are considered among the key learning goals of the future. In current research, AI literacy is defined as a fundamental competence in education. Students’ critical engagement with AI outputs enhances both cognitive awareness and

ethical evaluation skills (Nguyen, 2025). This suggests that AI can educationally evolve into a “teaching tool” in its own right.

Most participants emphasized that artificial intelligence should not be treated merely as a production tool, but as a structuring component of learning processes. P05 (T) referred to the “*black box*” nature of AI, arguing that students should understand not only the interface but also the mechanisms behind the system. Drawing on Flusser’s view (P05) that “*structurally complex but functionally simple systems make humans superficial,*” the participant proposed the inclusion of course modules that make AI literacy an educational requirement.

In the literature, Dalsgaard (2025a, 2025b) states that GenAI has transformed the notion of creative skill, replacing traditional technical mastery with algorithmic literacy and prompt-based direction. This transformation fundamentally changes students’ interaction with the design process, particularly within the context of design education. The approaches participants described as “seeing AI as a learning tool” or “learning through errors” align with what Dalsgaard (2025b) calls an epistemic transformation, a new form of learning driven by human-AI interaction. Accordingly, AI literacy courses can be structured across three educational layers: (1) Foundational Layer (Foundational Skills): Developing students’ awareness of prompt creation, ethical use, and algorithmic bias. (2) Applied Layer (Applied Praxis): Encouraging students to critically test various tools (e.g., ChatGPT, Midjourney, Runway) and develop personalized learning strategies. (3) Reflective Layer (Reflective Integration): Documenting learning experiences emerging from AI interaction through portfolios, blogs, or design journals.

P05 (T)’s reference to the Model Context Protocol (MCP) concept exemplifies this multi-layered framework. This model proposes a learning scenario in which different

agents (research, visual production, analysis, and control) collaborate, thereby envisioning a studio ecosystem that thinks together with AI.

4.3.5.4 Balancing Innovation With Convention

Participants emphasized that in an environment where AI-based tools are rapidly evolving, traditional design methods still hold significant educational value. P08 (T) noted that reintegrating “*old-school*” methods into the studio setting allows students to reclaim cognitive processes such as hand-eye coordination, repetition, and patience. Exercises such as Post-it sketches and large-scale wall drawings were described as fostering a “slow-thinking education” that counters the culture of speed introduced by AI.

Moreover, Frich et al. (2024) found that artificial intelligence tends to be more effective in the early stages of creative processes, particularly during the divergent thinking phase. This suggests that while AI facilitates idea generation, it remains limited in the stages of convergent thinking and critical evaluation. Similarly, P05 (T) argued that “*the age of speed has made thinking superficial,*” emphasizing that AI integration should be balanced with slowing, reflective, and thought-provoking learning experiences.

4.3.5.5 Towards a Responsible and Reflective Design Education

Artificial intelligence is positioned not merely as a tool that accelerates students’ production processes but as a cognitive companion in design education. Recent studies demonstrate that GenAI enhances students’ ability to monitor and regulate their own thinking processes (Nguyen, 2025). Consequently, instructors’ perspectives suggest that the integration of AI into design education is not a technical issue but an educational one.

In the design education of the future, AI should be positioned as:

(1) a reflective tool that makes students’ thinking processes visible,

- (2) an ethical component that cultivates awareness,
- (3) a learning facilitator that deepens rather than accelerates the process, and
- (4) a critical guide that safeguards human-centered creativity.

This perspective reveals that the course contents shaping the future of design education should focus not only on technological proficiency, but also on rebuilding a culture of critical, slow, and conscious creation.

4.3.6 Shared and Divergent Insights From Students and Educators: Rethinking Creativity With GenAI in Design Education

Both Students and Educators reveal that GenAI is perceived not simply as a digital tool, but as a creative partner that reshapes how illustration work begins, evolves, and is evaluated. Students in Phase 2 described GenAI as a constant companion across the design process, supporting idea generation, iteration, visualization, and minor technical tasks, yet also raising concerns about dependence, repetitive outcomes, and blurred authorship. Educators in Phase 3 shared similar reflections, valuing AI for accelerating ideation and prototyping, but emphasized that excessive reliance risks weakening reflection, originality, and critical decision-making.

Two phases converge strongly in their recognition that creativity is shifting toward human-AI co-creation, accompanied by ethical uncertainty regarding ownership, attribution, and transparency. However, they diverge in their interpretation of AI's limitations. Students often experience errors and low-quality outputs as frustration, whereas educators frame these same moments as productive opportunities for “learning through imperfection,” encouraging prompt literacy, critique, and iterative revision. Likewise, while students tend to focus on practical advantages such as speed and efficiency, educators concentrate on broader educational questions, including how AI

should be sequenced in the curriculum, how process-based evaluation can replace product-only assessment, and how to foster responsible and reflective AI literacy.

All in all, these findings suggest that GenAI reshapes illustration-based design education along both creative and educational dimensions: it expands possibilities, but only becomes meaningful when guided by human authorship, ethical awareness, and structured academic support. The challenge ahead is not choosing between AI and conventional practices, but integrating them in ways that sustain depth, originality, and critical thinking.



5. LIMITATIONS

The creative process is not limited to idea generation; it involves several connected cognitive activities such as capturing, developing, organizing, and sharing ideas (Rosselli Del Turco & Dalsgaard, 2024). Their five-stage idea management model emphasizes that creativity encompasses both divergent thinking and convergent thinking processes that support evaluation and decision-making. Similarly, Frich et al. (2024) note that artificial intelligence is most effective in the early stages of the creative process, particularly in idea generation and exploration, but remains limited in synthesis and evaluation phases that require convergent thinking. This suggests that AI is still used mainly as an ideation tool, while its role in critical judgment remains limited.

In this study as well, the use of AI was primarily associated with idea generation and exploratory phases, discussed under the themes of divergent thinking and agile thinking. In contrast, the convergent thinking phase, involving the evaluation, selection, and refinement of ideas, did not emerge as a prominent process. As Dalsgaard (2025b) emphasizes, AI in learning contexts should be structured not only to enhance productivity but also to support reflective and analytical thinking. Accordingly, future studies are encouraged to examine in greater depth how the use of AI in design education influences convergent thinking processes and how these effects evolve over time.

A further limitation of this study is that all data were collected from a single institution, within illustration-based courses offered in the Communication and Design program at Özyeğin University. Conducting all three phases within the same institutional and cultural context restricts the generalizability of the findings to other universities, disciplines, or illustration-focused design programs. Therefore, future research should

extend and validate these findings through multi-site studies that include illustration and visual communication design courses across different institutions, and that examine curriculum development and grading criteria in the context of AI involvement in design education

Moreover, in addition to the student typologies created from the data of 81 participants, future research could also develop typologies of educators who teach illustration-based design courses. Although Phase 3 included focus group discussions with eight educators, this sample was not sufficient to build a typology. To create a stronger and more generalizable framework, future studies should involve illustrating educators from several universities and different teaching contexts. Such research could show how educators use GenAI in various ways and help identify common educator approaches that influence how AI is integrated into design education.

6. CONCLUSION

This thesis was conducted in three qualitative phases: the educational, creative, and ethical implications of incorporating Generative Artificial Intelligence (GenAI) into visual design education, as well as how these insights are perceived by students and educators. The findings reveal that GenAI transforms the creative process by supporting ideation, visualization, and decision-making, while also encouraging students to reflect on their own creative judgment. In early stages of the design process, AI acts as a catalyst that enhances exploration and productivity; however, it also poses risks of overreliance and reduced originality.

Students engage with GenAI in diverse ways, reflecting both creative and ethical dimensions of learning. Their approaches vary from using AI as a tool for inspiration to treating it as a collaborative partner in idea refinement. These typologies demonstrate that students are forming hybrid modes of creativity, blending human intention with machine assistance. At the same time, concerns about authorship, ownership, and authenticity emphasize the importance of ethical awareness and transparency in AI-supported education.

Educators recognize the need for structured guidance and reflective frameworks that help students strike a balance between efficiency and depth, as well as innovation and responsibility. Overall, the study concludes that GenAI should be integrated not merely as a creativity tool but as an educational environment that nurtures creative confidence, critical awareness, and human-centered learning. Building AI literacy and maintaining human agency are essential for preserving the integrity and authenticity of design education in the age of artificial intelligence.

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