TINKERWEB: AN INTERACTIVE PLATFORM FOR LEARNING WEB DESIGN FOR TEENAGERS

A PROJECT REPORT

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE
OF

MASTER OF DESIGN

IN

PRODUCT DESIGN

Submitted by

KRISHNAPRAKASH K (2K23/MDPD/04)

Under the supervision of

ASST. PROF. NEERAJ RATHEE

DEPARTMENT OF DESIGN
DELHI TECHNOLOGICAL UNIVERSITY
(Formerly Delhi College of Engineering)
Bawana Road, Delhi 110042

MAY, 2025

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CANDIDATE'S DECLARATION

I, **Krishnaprakash K**, Roll No: **2K23/MDPD/04**, student of M.Des (Product Design), hereby declare that the project dissertation titled "**TinkerWeb: An Interactive Platform for Learning Web Design for Teenagers**", submitted by me to the Department of Design, Delhi Technological University, Delhi, in partial fulfilment of the requirements for the award of the degree of Master of Design, is my original work and has not been copied from any source without proper citation. This work has not previously formed the basis for the award of any Degree, Diploma, Associateship, Fellowship, or any other similar title or recognition.

Place: Delhi   **Krishnaprakash K**

Date: 12 May 2025

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CERTIFICATE

I hereby certify that the Project Dissertation titled "**TinkerWeb: An Interactive Platform for Learning Web Design for Teenagers**" which is submitted by **Krishnaprakash K**, Roll No: **2K23/MDPD/04**, Department of Design ,Delhi Technological University, Delhi, in partial fulfilment of the requirement for the award of the degree of Master of Design, is a record of the project work carried out by the student under my supervision. To the best of my knowledge this work has not been submitted in part or full for any Degree or Diploma to this University or elsewhere.

Place: Delhi   **Asst. Prof. Neeraj Rathee**

Date: 12 May 2025   **SUPERVISOR**

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ACKNOWLEDGEMENT

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Date: 18-02-2025

Internship Offer for Krishnaprakash Kovilakam

Dear Krishnaprakash,

I am pleased to confirm your internship at the Divine Lab, Department of Design Indian Institute of Technology Delhi (IIT, Delhi).

You will be working as a UI/UX design intern on the curriculum development of the Digital Design and Development course at the Schools of Applied Learning in Punjab.

The internship is scheduled to begin on February 7th, 2025, and will be a 2 and a half month-long opportunity, ending on April 25th, 2025.

If you have any questions, please feel free to contact me.

Prof. Jyoti Kumar

Department of Design

Indian Institute of Technology, Delhi

Prof. Jyoti Kumar

Department of Design

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Hauz Khas, New Delhi-110016, India

tinkerWeb.pdf

Abstract

The graduation project titled 'tinkerWeb' focuses on the research, design, and development of a conceptual solution aimed at enhancing foundational web design learning for teenage students and individuals seeking to upskill. The project addresses a notable gap in the current landscape of online learning platforms, where beginner-friendly, interactive, and visually intuitive tools for learning web design remain limited. Through an extensive research process including competitive analysis, literature review, surveys, and user interviews, the project uncovers key learner needs such as hands-on practice, visual feedback, and contextual understanding. These insights inform the design of tinkerWeb, a platform that bridges the gap between passive video tutorials and active design engagement by offering a low-floor, high-ceiling environment for exploration. The prototype applies user experience principles, interactive content, and scaffolded design experiences to support self-paced, practice-oriented learning. The project contributes to the evolving field of digital design education and underscores the role of design-led thinking in creating more inclusive and engaging learning environments.

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Chapter 1

INTRODUCTION

1.1   About the Institute

This graduation project was conducted under the guidance of the Design and Innovation in Villagepreneurs' Indigenous Network Ecosystem (DIVINE) Lab, established on 28 December 2020. The DIVINE Lab, supported by the Common Service Centres (CSC) initiative, serves as a collaborative platform for students and entrepreneurs to address challenges and opportunities, particularly in rural contexts. The lab operates within the Department of Design at the Indian Institute of Technology (IIT) Delhi, a department recognised for its commitment to interdisciplinary research and innovation at the intersection of technology, design, and social impact.

The Department of Design at IIT Delhi fosters a vibrant culture of academic excellence and applied research, supported by specialised labs such as the User Experience Lab, Makerspace, Human Factors and Ergonomics Lab, QuEST Lab, and the DIVINE Lab itself. These facilities enable students to engage in a wide range of research activities, particularly those that combine digital technology with design thinking. The objectives of the DIVINE Lab and the Department of Design are closely aligned with this project, which seeks to advance equity and effectiveness in digital design education through a focus on user experience and web-based learning.

1.2   Project Brief

This project centres on the design and prototyping of an e-learning platform that introduces web design principles and best practices through interactive activities. By employing user experience (UX) research and user interface (UI) design strategies, the platform aims to enhance learner engagement and comprehension of foundational web design concepts. Interactive features and learner-centred approaches are integral to the platform's design, ensuring that the learning experience is accessible and adaptable for teenage students and self-learners seeking to upskill.

The final result is a tested high-fidelity prototype of a digital learning interface, specifically tailored to support a practice-oriented and engaging web design education.

1.3 Overview

1.3.1 History of Design Education

Design education has evolved from traditional apprenticeship models, where skills were passed through hands-on guidance, to structured academic programs that integrate theory and practice. The establishment of the Bauhaus School in the early 20th century marked a pivotal moment, legitimising design as a formal discipline and promoting the integration of art, craft, and technology (Droste, 2002). Over time, design pedagogy has shifted towards problem-solving, interdisciplinary collaboration, and the adoption of digital tools, reflecting the changing demands of industry and society.

1.3.2 The Role of Educational Technology in Design Education

The integration of technology has transformed design education, particularly with the rise of digital platforms and tools. Educational technology (EdTech) has progressed from early innovations such as overhead projectors and personal computers to the present use of AR/VR and AI-driven learning environments (Selwyn, 2016). The proliferation of online learning platforms has democratised access to design education, allowing learners to acquire skills in UX/UI, interaction design, and web development regardless of geographical location. However, challenges remain, including digital literacy gaps, socio-economic barriers, and the need for platforms that support hands-on, interactive learning experiences.

1.3.3 Designing for the Web

The discipline of web design has become central in the digital age, requiring a blend of visual design, usability, accessibility, and technical sensibility. As businesses and educational institutions increasingly rely on digital platforms, the demand for skilled web designers continues to grow. Effective web design education must therefore go beyond theoretical instruction, offering learners opportunities to engage in practical, project-based activities that mirror real-world challenges (Krug, 2014). This project addresses these needs by developing an e-learning platform that emphasises active learning and user-centred design principles in the context of web design.

1.4 Background

This project extends the Digital Marketing, Digital Design, and Digital Development (DDD) initiative, which forms part of the Learning Experience Design project for the Digital Design and Development (DDD) course at the Government Senior Secondary School of Applied Learning in Punjab. The project is developed in accordance with the National Education Policy (NEP) 2020, which advocates a holistic, skills-based approach to education. NEP 2020 emphasises the cultivation of skills of the 21st century, critical thinking, creativity, digital literacy, collaboration, and adaptability and encourages the integration of vocational education within mainstream curricula to better prepare students for industry demands (Ministry of Education, 2020).

By focusing on web design, this project seeks to create scalable and engaging digital learning experiences that support the development of practical, industry-relevant skills aligned with national educational priorities.

1.5   Significance

As digital platforms become ubiquitous across industries, web design skills are increasingly essential, not only for design professionals but also for educators, entrepreneurs, and students in diverse fields. Despite the proliferation of e-learning platforms, many fall short in effectively teaching hands-on web design principles, often relying on passive content formats that do not foster practical skill development.

This project addresses this gap by creating a learner-centred digital platform that prioritises active, experiential learning in web design. By integrating instructional design strategies with UX research, the platform is designed to:

- Democratise access to web design education for self-learners, upskillers, educators, and young professionals.

- Bridge the gap between theoretical knowledge and practical application through interactive tools and real-world design challenges.

- Support NEP 2020's emphasis on 21st-century skills by fostering creativity, critical thinking, and digital literacy.

- Contribute to the evolution of online education by providing a prototype that synthesises learning experience design (LxD) and UX/UI research for more effective and engaging digital learning environments.

1.6   Aim

The aim of this project is to design, prototype, and evaluate an interactive e-learning platform that teaches web design in an engaging, accessible, and practice-oriented manner. By applying UX design principles and pedagogical strategies, the platform seeks to create a learner-centred experience that encourages active participation, critical thinking, and practical skill development in web design.

1.7   Research Questions

1. How can an interactive e-learning platform be designed to enhance learner engagement, comprehension, and application of practical web design principles and best practices?

2. What user experience design strategies can improve motivation and retention in web design learning for teenage students?

3. How can visual feedback and interactive tools support the comprehension and application of web design best practices?

1.8   Objectives

- Assess the current state of online and web design education to identify challenges and opportunities for improving learning experiences.

- Define key UX parameters that enhance engagement, interactivity, and accessibility in digital learning environments for web design.

- Develop an interactive learning experience that makes practical web design concepts more engaging, immersive, and effective for students.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

The rapid transformation of digital technologies has significantly reshaped how education is delivered, consumed, and conceptualised in the 21st century. With the advent of high-speed internet, cloud computing, and interactive learning tools, the educational landscape has been revolutionised. This shift has been further accelerated by global disruptions such as the COVID-19 pandemic, which necessitated the transition to remote and hybrid learning models at an unprecedented scale. In this evolving context, it is crucial to understand the multiple dimensions that influence the effectiveness of online education, particularly with respect to learner engagement, accessibility, pedagogy, and design.

This chapter presents a comprehensive literature review spanning several interconnected domains: design education reform, user experience in digital learning platforms, persistent challenges in e-learning environments, gamification as an engagement strategy, and projections for the future of digital education. It draws on five peer-reviewed journal articles and two significant online resources to synthesise academic insights with practical implications. The purpose of this review is to build a theoretical and empirical foundation for the design and implementation of innovative educational platforms, specifically those intended for teaching web design to diverse learner populations. In doing so, it highlights emerging trends, critiques existing limitations, and identifies opportunities for transformation in educational design and delivery.

2.2 Changing Design Education for the 21st Century

Meyer and Norman (2020) present a compelling critique of traditional design education, arguing that it is increasingly inadequate for addressing the challenges of contemporary society. Historically, design curricula have focused heavily on craft and technical performance, equipping students with the skills to create aesthetically pleasing artefacts. However, the authors contend that such a narrow focus does not prepare learners for the complex, systemic, and often global problems that modern designers face.

To address these challenges, Meyer and Norman propose a revised educational framework based on four tiers of design complexity: performance, systemic, contextual, and global. These tiers represent a progressive deepening of the designer's responsibilities, from producing effective solutions at the object level to addressing broader

sociocultural and environmental systems. Unfortunately, most academic programmes remain situated at the first tier and rarely progress into interdisciplinary or systems-based problem solving. The paper advocates for embedding human-centred design and systems thinking throughout the curriculum to enable students to develop holistic perspectives.

They further recommend pedagogical shifts that prioritise critical reflection, social ethics, and collaborative inquiry over rote skill acquisition. This approach aligns well with project-based and experiential learning models, where students engage with real-world problems through iterative prototyping and stakeholder feedback.

2.3 User Experience and Interaction in Online Learning

A systematic review by Miya and Govender (2022) examines how user experience (UX) and user interface (UI) design influence engagement, retention, and academic outcomes in online learning environments. The authors highlight the impact of the pandemic in accelerating digital transformation and argue that effective design is now central to pedagogy.

Their analysis identifies several key factors influencing UX, including intuitive navigation structures, accessibility features such as screen reader compatibility, and consistent visual hierarchies. Multimodal content delivery—including video lectures, interactive quizzes, and animated tutorials—enhances learner engagement by catering to different learning preferences. The authors observe that platforms with responsive interfaces and culturally inclusive aesthetics are more likely to sustain learner motivation over time.

Crucially, they argue that UX/UI design is not merely a technical concern but a pedagogical imperative. In disciplines such as web design, where the digital medium is both the content and the context of learning, poor interface design can inhibit comprehension and reduce educational value. The study advocates collaborative design processes in which instructional designers, subject matter experts, and students co-create digital learning environments that are both functional and meaningful.

2.4 Challenges in Online Learning

In her qualitative study, Kuong (2015) explores adult learners' experiences in fully online education. Drawing on interviews, surveys, and discourse analysis, she reveals that while online courses offer flexibility and accessibility, particularly valuable for working professionals, they also introduce unique challenges. Chief among these is the lack of social presence, which can lead to isolation and reduced motivation. Learners reported a weaker sense of community, reluctance to reach out for support, and a fragmented sense of belonging.

The Coursera blog article Life Gets in the Way further elaborates on these barriers. It explains that non-academic responsibilities such as caregiving, employment, and

health issues often disrupt learners' ability to stay on track. Additionally, the absence of immediate feedback, the overwhelming nature of dense course material, and poor interface design exacerbate these difficulties. The article recommends several interventions, including breaking content into micro-learning units, offering flexible deadlines, and providing motivational nudges such as reminders and check-ins.

These findings collectively underscore the importance of designing online learning environments that promote interactivity, scaffolded learning, and a strong sense of learner support. Incorporating discussion forums, peer reviews, and live Q&A sessions can help replicate the social dimensions of traditional classrooms. Furthermore, careful attention must be paid to emotional and cognitive load, ensuring that digital courses do not become overwhelming but instead support progressive mastery of content.

2.5 Gamification and Learner Engagement

Yushaa, Khuzzan, and Hanid (2021) conduct an extensive literature review on gamification elements and their impact on learners in higher education. They explore commonly used elements such as points, badges, leaderboards, levels, feedback loops, avatars, and progress bars. Their study concludes that when these features are well-integrated, they not only improve engagement and motivation but also lead to better learning outcomes. Notably, gamification supports self-directed learning by offering immediate, formative feedback that guides learners' progress.

The authors stress that gamification must be implemented thoughtfully, with clear alignment to learning objectives. When used superficially, as a decorative layer atop traditional content, it risks trivialising learning. However, when designed as part of a coherent pedagogical strategy, gamification supports autonomy, mastery, and purposeful exploration.

The Interaction Design Foundation (n.d.) complements this view by discussing the psychological principles behind gamification. Drawing from self-determination theory, the article argues that learners are most motivated when they feel competent, autonomous, and socially connected. Game elements can foster these feelings when learners are able to customise their learning paths, collaborate on challenges, and observe tangible progress.

2.6 Future of Online Education

Yıldız (2024) offers a historical and forward-looking analysis of educational transformation, with a focus on digitalisation. The study situates modern education within a long trajectory, beginning with oral traditions and apprenticeship models, evolving through formalised schooling in the industrial era, and culminating in today's web-based, asynchronous learning environments.

Central to Yıldız's argument is the emergence of artificial intelligence (AI) and the metaverse as transformative forces. AI enables hyper-personalised education through real-time learning analytics, adaptive content delivery, and intelligent tutoring systems.

The metaverse, in contrast, provides immersive 3D environments in which learners can collaborate spatially, manipulate virtual objects, and experience simulated settings.

However, the paper also urges caution. These technologies pose ethical challenges, including concerns about data privacy, equitable access, and the erosion of human connection. Yıldız advocates a balanced approach, in which emerging tools are integrated in ways that enhance—rather than replace—the humanistic and social dimensions of learning.

2.7   Conclusion

This chapter synthesised insights from diverse streams of literature to illuminate the multifaceted nature of modern digital education. It examined how design education must transition from artefact-based instruction to systemic and socially engaged practice. It also demonstrated that UX/UI design is fundamental to effective online learning, serving not only as an access point but as an enabler of deep engagement.

Challenges such as isolation, cognitive overload, and inflexible structures were identified as significant obstacles, particularly for adult learners managing complex life demands. In response, the literature advocates learner-centred strategies that combine pedagogical rigour with motivational supports. Gamification emerged as a powerful yet nuanced tool for transforming engagement, particularly when aligned closely with learning objectives. Finally, emerging technologies such as AI and immersive learning environments offer new possibilities while calling for ethical and inclusive implementation.

Together, these insights offer a roadmap for designing inclusive, engaging, and future-ready design education platforms. They encourage educators, developers, and policymakers to work collaboratively in creating learning environments that are not only technologically advanced but also deeply responsive to human needs and aspirations.

Chapter 3

METHODOLOGY

3.1 Introduction

To investigate the project objectives within the framework of user-centred design for web-based learning, a comprehensive and strategically structured research methodology was adopted. Rooted in principles of design research and educational inquiry, the methodology aimed to generate insights that are both contextually actionable and theoretically robust. A **mixed-methods approach**, combining qualitative depth with quantitative breadth was determined to be the most effective strategy for capturing a holistic understanding of users' needs, behaviours, and learning experiences in the digital design education domain.

The methodological structure integrated empirical evidence with iterative design exploration, thereby enabling a continuous dialogue between research and design decisions. The process was guided by the **design thinking framework**, which comprises the phases of discover, define, ideate, prototype, and test. This methodological framework ensured that all design outcomes remained grounded in authentic user insights and educational usability principles.

3.2 Research Approach

To ensure methodological rigour and design relevance, the project employed a mixed-method research design. This approach leveraged the complementary strengths of quantitative methods, providing statistically representative data and qualitative methods, offering rich narrative detail and contextual depth. The structure of the research unfolded in two sequential phases: secondary research and primary research.

- **Secondary Research**: The secondary research phase involved an extensive review of scholarly literature, academic journals, and UX case studies in the field of digital learning and design pedagogy. This literature review served to frame the problem space and provided theoretical grounding. In addition, a market study and competitor analysis was conducted to examine the features, interface design, and user flows of leading e-learning platforms such as Coursera, freeCodeCamp, and UXcel. The competitor analysis focused on dimensions such as usability, content structure, user engagement strategies, and responsiveness.

- **Primary Research**: The primary research component was designed to collect first-hand user data and was divided into two key activities. Firstly, a quantita-

tive survey was created using Google Forms and distributed through academic networks and online communities. The survey gathered data on learner profiles, platform usage habits, preferred learning styles, technical familiarity, and motivational barriers. Secondly, a subset of survey respondents who volunteered for further participation were invited to join semi-structured interviews. These qualitative interviews, conducted offline and over Google Meet, enabled open-ended discussion of users' personal learning journeys, frustrations with existing platforms, and expectations from a web design learning environment.

By structuring the research into two interconnected phases, the project ensured a layered understanding of both systemic patterns and individual nuances, thereby enriching the design process.

3.3 Research Methods and Tools

A diverse set of research methods and digital tools was utilised throughout the project to facilitate data collection, interpretation, and synthesis.

- **Survey Design and Distribution**: The online survey included both closed-ended and Likert scale questions. It was designed to collect demographic information, measure user satisfaction with current learning platforms, and understand preferences for visual and interactive learning content. Data were analysed using basic descriptive statistics to identify trends and correlations.

- **Semi-Structured Interviews**: The interviews were structured around a guiding set of questions but allowed flexibility for participants to elaborate on their experiences. This format encouraged candid storytelling and enabled the researcher to probe deeper into emerging themes. Interviews were recorded (with participant consent), transcribed using the Otter AI application, and kept for further analysis.

- **Literature Review**: The literature review included articles from credible UX and EdTech platforms, white papers, and industry reports. These secondary sources were used to benchmark best practices and inform the framing of research questions.

- **Competitor Analysis**: A detailed table was developed to assess competing platforms on key variables such as content, learning format, user experience, and interactivity. Screenshots of the interactions and user reviews were also collected and analysed.

Collectively, these tools enabled a triangulation of data sources, ensuring greater reliability and depth in insight generation.

3.4 Data Analysis

To interpret both the quantitative and qualitative data collected, the project employed affinity mapping. This technique was applied to qualitative data from interviews. After transcription, individual statements, quotes, and observations were written on virtual

sticky notes in Figjam. These notes were grouped based on shared meanings or behavioural patterns into broader categories such as challenges with learning platforms, motivational triggers, preferred interface features, and user frustrations. This method allowed for the visual clustering of data to identify emerging themes organically.

Affinity mapping ensured a rigorous interpretation of qualitative data, grounded in user narratives and supported by behavioural evidence.

3.5 Design Process

The overarching structure for the design process was informed by the Design Thinking framework, a widely accepted model in user-centred design. The five-phase model includes:

1. **Discover**: Focused on secondary literature review, competitor analysis, survey data collection, and interviews. The aim was to develop a well-rounded understanding of the design context before defining the core problem.

2. **Define**: This phase involved the synthesis of research findings into actionable design artefacts such as user personas, empathy maps, and problem statements. It provided clarity on user goals, pain points, and contextual variables.

3. **Ideate**: A combination of brainstorming sessions, mindmapping, and rapid sketching was used to generate diverse ideas. Divergent thinking was encouraged to explore unconventional solutions, while clustering techniques helped in narrowing down themes.

4. **Prototype**: High-priority ideas were translated into interactive wireframes and mid-to-high fidelity prototypes using Figma. The prototyping process emphasised layout design and user flow clarity.

5. **Test**: Usability testing sessions were conducted with teenage students. Feedback focused on navigational intuitiveness, task clarity, and aesthetic appeal. Findings were used to inform successive design iterations.

This structured yet adaptable process ensured that every design decision was backed by research and validated through real-world testing.

3.6 Concept Generation and Selection

The ideation phase was supported by deliberate techniques designed to balance creativity with feasibility. Concept generation was guided by exploratory and visual techniques, while concept selection was structured through a prioritisation framework.

- **Brainstorming and Mindmapping**: Brainstorming exercises were conducted using Figjam, generating dozens of potential features and learning interface models. Mind maps helped connect ideas and explore secondary associations, resulting in concept clusters for further exploration.

- **Rapid Sketching**: Low-fidelity sketches were developed to visualise screen layouts, interaction patterns, and user flows quickly. This allowed for efficient critique and iteration before committing to higher fidelity prototypes.

- **MoSCoW Prioritisation**: For concept evaluation, the MoSCoW method was employed, categorising features into must-have, should-have, could-have, and won't-have. This ensured alignment between design ambition, technical feasibility, and user expectations.

This blend of ideation and filtering ensured that the final design was both imaginative and grounded in the constraints and expectations of the target user base.

Chapter 4

DISCOVER

Understanding the landscape of online design education and learner needs was a crucial step in this project. The Discover phase involved a combination of secondary and primary research to uncover existing practices, gaps, and user expectations in digital learning environments, particularly those focused on web design education.

Secondary research included a comprehensive review of prominent online learning platforms and academic literature. It helped identify current best practices in content delivery, interactivity, user experience, and educational formats across different platforms. Academic insights were gathered from peer-reviewed journals and industry articles to understand deeper pedagogical and experiential trends shaping digital education today.

Primary research was conducted through a user survey and semi-structured interviews with learners who had prior experience with online design education. The survey provided quantitative data on learner behaviour, preferences, and pain points. Interviews allowed for a qualitative exploration of users' motivations, frustrations, and expectations. Affinity mapping was used to distil themes from the interview data. Together, these insights revealed unmet learner needs, emotional triggers, and expectations that guided the subsequent ideation and design process.

4.1 Secondary Research

Secondary research involved gathering and synthesising information from existing online learning platforms and academic literature to identify prevailing trends, user experience benchmarks, pedagogical practices, and industry expectations in design education. The focus was on understanding how different platforms deliver design education, their strengths and weaknesses, and the broader challenges and innovations within digital learning environments.

As part of this process, a comparative scan of over thirty online learning platforms was conducted (Figure 4.1). These platforms spanned diverse subject areas, not limited to design, in order to provide a broad understanding of how e-learning is structured across disciplines. This preliminary exploration helped shortlist key platforms for a more detailed analysis based on relevance and pedagogical quality.

Online Learning Platforms

⊞ Table

Aa Name	☰ Tags	🔗 links	☰ Courses
NPTEL	Indian General	nptel.ac.in/	
Swayam Portal	Indian Design General	swayam.gov.in/	Design System Design for Web Design for Mobile
Coursera	International Design	coursera.org/	Design System Design for Web
Unacademy	Indian General	unacademy.com/	
edX	International Design General	edx.org/	Design System Design for Web
LinkedIn Learning	International Design General	linkedin.com/learning/	Design System Design for Web
Udemy	International Design General	udemy.com/	Design System Design for Web
Byju's	Indian General	byjus.com/	
Vedantu	Indian General	vedantu.com/	
Entri App	Indian General	entri.app/	
Physics wallah	Indian General	pw.live/	
IxDF	International Design	interaction-design.org/	Design System Design for Web
Udacity	International General Design	udacity.com/	Design for Web
Khan Academy	International General	khanacademy.org/	
Plural Sight	International Design General	pluralsight.com/	Design System
Aquent Gymnasium	International Design	thegymnasium.com/	Design System Design for Web
freeCodeCamp	International General	freecodecamp.org/	Design for Web
Greater Learning	Indian Design General	mygreatlearning.com/	Design System

Figure 4.1: List of online learning platforms explored

Additionally, selected interactions and interface patterns that stood out during this review were documented and analysed (Figure 4.2). These visual references include onboarding flows, feedback mechanisms, progress trackers, and micro-interactions that were particularly engaging or well-crafted. They served as design inspiration and informed the feature prioritisation for the proposed learning platform.
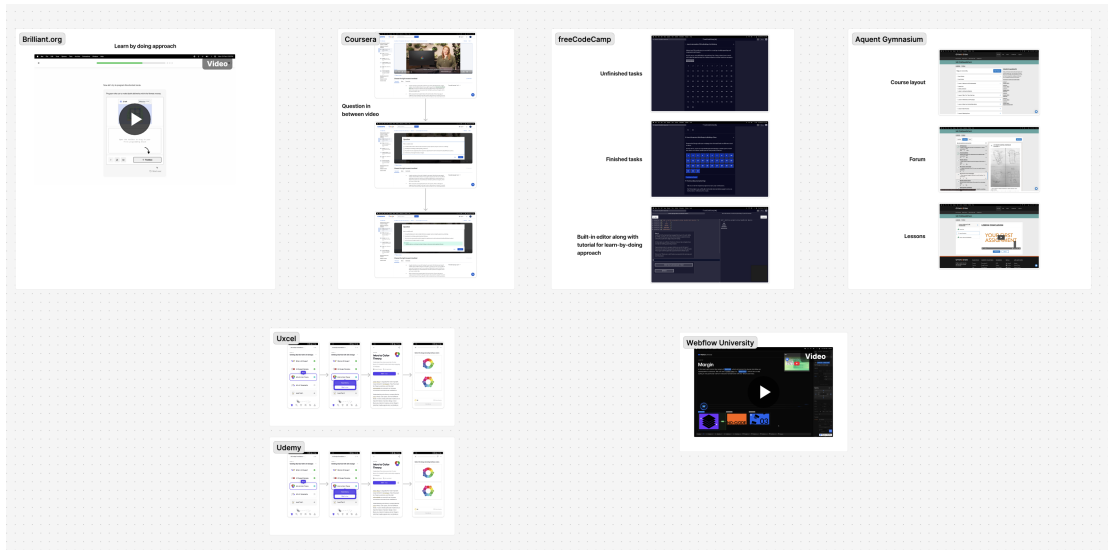
Figure 4.2: UI interactions from selected platforms

4.1.1 Market Landscape of Online Design Education

To understand the current digital learning ecosystem, six popular platforms were re-viewed: Coursera, Udemy, Interaction Design Foundation (IxDF), UXcel, Domestika, and Skillshare. Each platform was evaluated based on the relevance and structure of its design education content, the quality of its user interface and experience, and its instructional delivery model and pedagogical practices.

- **Coursera** partners with universities and institutions to offer structured, academic courses, often culminating in certifications. Its web design courses such as the Google UX Design Certificate are comprehensive, integrating theory with hands-on assignments. The platform uses a formal UI with features like weekly mod-ules, peer-graded assignments, and discussion forums. It is designed for learners who prefer structured pacing and academic rigour.

- **Udemy** is a vast marketplace with thousands of self-paced courses created by individual instructors. Web design courses range from beginner HTML/CSS to advanced UI/UX topics. The quality of courses can vary, but learners benefit from lifetime access and flexible pacing. The UI is straightforward, although interactivity and feedback mechanisms are limited. It is ideal for learners seeking affordable, one-time access to skill-based tutorials.

- **Interaction Design Foundation** (IxDF) focuses entirely on UX/UI and HCI education. Its curriculum is grounded in theory, usability principles, and real-world applications. Courses include text-based lessons, academic references, and quizzes. The platform emphasises structure and depth over visual engagement. The UI is clean and text-heavy, which suits learners who prefer reading-intensive, theory-rich instruction.

- **UXcel** offers interactive, gamified micro-lessons in UX/UI design. Its content is broken into short, focused modules with instant feedback. Users engage through

quizzes, design challenges, and skill assessments. The visual interface is playful, colourful, and designed to reduce learning friction. While it lacks academic depth, it excels at promoting frequent engagement and skill tracking.

- **Domestika** showcases visually rich, project-based design courses led by industry professionals. Web design content leans more toward visual and creative aspects like interface aesthetics and branding. The platform's high-quality video production and polished UI create an engaging learning environment. However, it lacks structured progression and formal assessments.

- **Skillshare** operates on a subscription model, providing access to a wide range of creative courses. Its web design offerings are informal and community-driven. Classes focus on practical skills, often concluding with student projects. The interface is user-friendly, and community features like project galleries and comments help learners stay engaged. However, the platform lacks consistency in instructional depth.

Each of these platforms showcases different strengths: Coursera emphasises academic rigour, Udemy prioritises flexibility, IxDF brings theoretical depth, UXcel offers gamified learning, Domestika delivers creative engagement, and Skillshare fosters community learning. These platforms collectively provide a snapshot of the diverse methods used in today's digital design education landscape.

4.1.2   Competitive Analysis

The platforms were benchmarked using key parameters that reflect the effectiveness and appeal of online design learning environments (Table 4.1).

Table 4.1: Competitive Analysis

Feature / Platform	Coursera	Udemy	IxDF	UXcel	Domestika	Skillshare
Learning Content	Structured, academic	Varied, instructor-led	In-depth, UX-focused	Micro-lessons	Creative, project-based	Creative, skill-based
User Experience	Professional, academic	Functional	Clean, text-heavy	Gamified, modern	Visually appealing	Simple, creative
Interactivity	Low to moderate	Low	Moderate	High	Moderate	Moderate
Learning Format	Videos + assignments	Self-paced videos	Readings + assessments	Quizzes + challenges	Video + projects	Video + projects
Community Engagement	Forums, peer grading	Limited	Strong community	Minimal	Minimal	Peer feedback
Focus Areas	UX, UI, HCI, Dev	UI tools, web design	UX theory & practice	UX/UI practice	Visual design, branding	Creative design skills
Web Design Course Availability	Yes	Yes	Yes	Yes	Yes	Yes

4.1.3   Learnings from Literature Review

A synthesis of seven sources, five peer-reviewed papers and two reputable articles, provided academic insights into the evolution and challenges of design education and e-learning.

1. **Meyer & Norman (2020)** advocated for redesigning design education beyond artefacts to address global, systemic challenges through human-centred and systems thinking approaches.

2. **Miya & Govender (2022)** highlighted how UX/UI design significantly affects engagement and learning outcomes in digital platforms. Emphasised the need for accessibility, intuitive interfaces, and multimodal content.

3. **Kuong (2015)** explored learner isolation and motivation issues in fully online environments. Recommended better community features and emotional design to foster engagement.

4. **Yushaa, Khuzzan & Hanid (2021)** analysed the role of gamification in higher education, emphasising well-integrated game elements to boost motivation, feedback, and self-directed learning.

5. **Yıldız (2024)** discussed emerging technologies like AI and the metaverse in education, highlighting both transformative potential and ethical concerns regarding access and data privacy.

6. **Coursera Blog: "Life Gets in the Way"** addressed challenges faced by adult learners such as time constraints, motivation, cognitive load—and proposed modular, flexible, and supportive course designs.

7. **IxDF Article on Gamification** explained the psychological principles of effective gamification, stressing autonomy, mastery, and social connection as key motivators.

4.1.4   Secondary Research Insights

A synthesis of the reviewed literature and platform analysis reveals the following key insights:

- **Modular, bite-sized content** improves learner engagement and retention.

- **Gamification and interactivity** drive motivation when aligned with learning outcomes.

- **Well-designed UX/UI** is critical in supporting comprehension and reducing cognitive friction.

- **Learner flexibility** is a top priority, particularly for working professionals and adult learners.

- **Community engagement tools** such as forums, peer reviews, and live sessions mitigate isolation.

- **Hands-on, project-based learning** is favoured over passive video consumption.

- **Clear progression pathways** and feedback loops are essential for learner confidence.

- **Challenges** include lack of social presence, overwhelming content, and motivation dips.

- **Emerging technologies** like AI and XR offer potential for immersive and adaptive learning experiences, but ethical, inclusive implementation is essential.

4.2 Primary Research

To complement the findings from secondary research, a primary research study was conducted to directly understand user experiences, expectations, and frustrations with current online design learning platforms. The research followed a mixed-method approach, comprising a quantitative user survey and qualitative user interviews. These efforts aimed to uncover real-world learner behaviour, preferred learning formats, motivational triggers, and existing pain points.

4.2.1 User Survey

An online survey was distributed among students and young professionals aged 18–45 with varied design learning experiences. A total of 40+ responses were received. The survey aimed to gather quantitative insights into learner preferences, platform usage behaviour, and key frustrations.
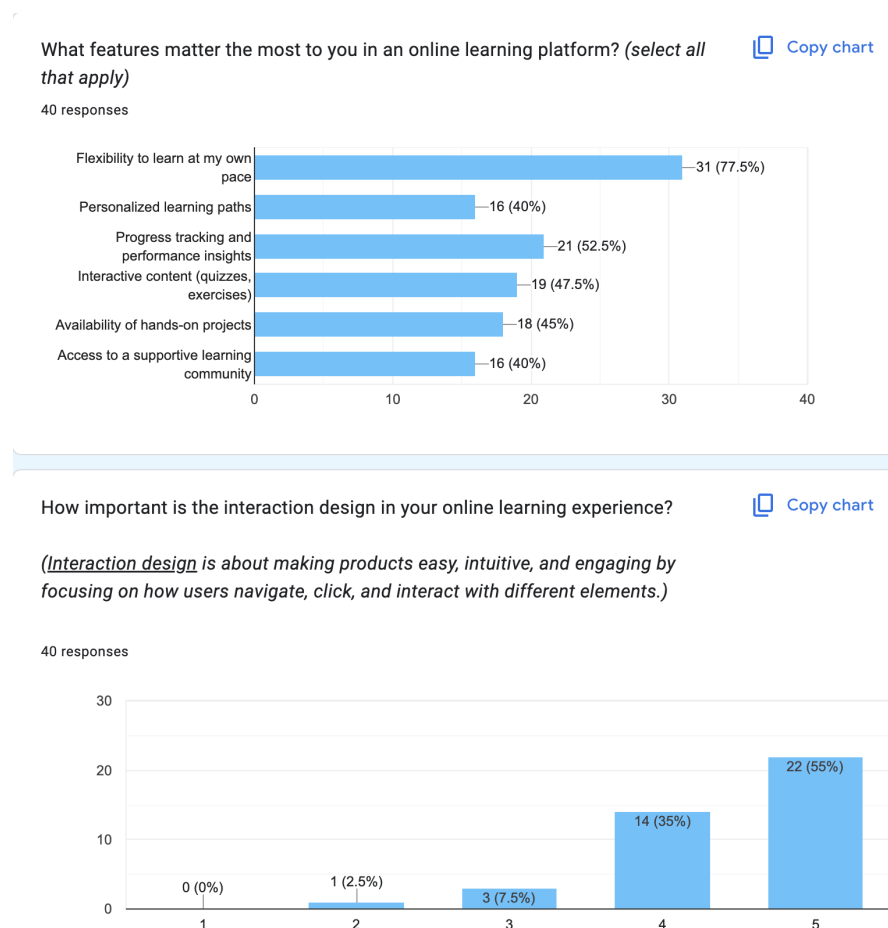

Figure 4.3: Google form response 1

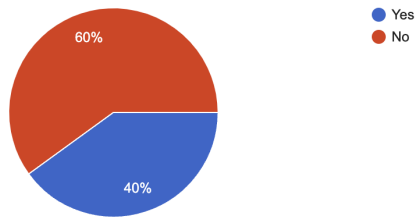Have you ever discontinued using a platform due to poor interaction design?

40 responses

Figure 4.4: Google form response 2

What frustrates you the most while using online learning platforms?
(select all that apply)

40 responses
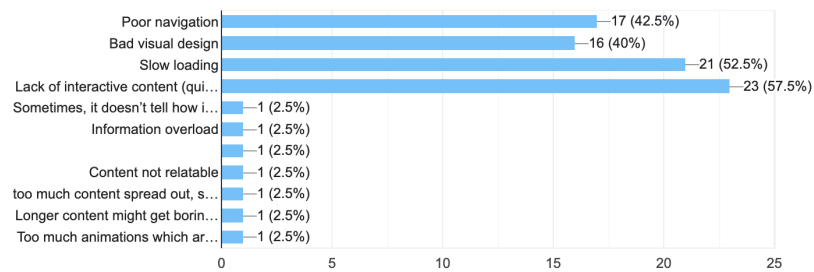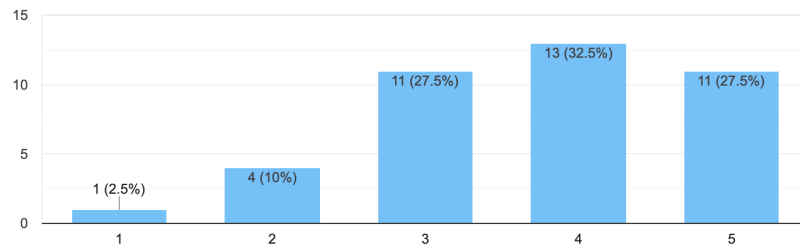

Figure 4.5: Google form response 3

How effective do you find **quizzes** in reinforcing your learning on online platforms?

📋 Copy chart

40 responses

How useful are the **hands-on exercises** in helping you apply what you've learned?
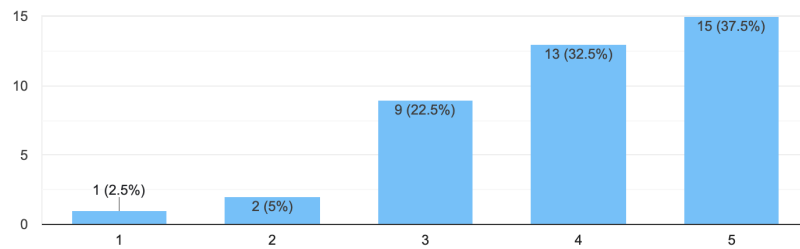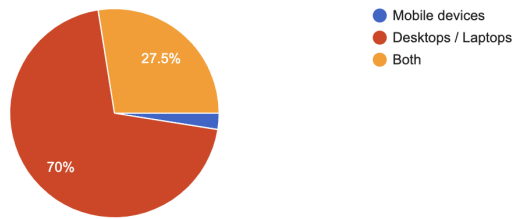
📋 Copy chart

40 responses

Figure 4.6: Google form response 4

Do you prefer learning on mobile devices or desktops / laptops?
40 responses

- Mobile devices
- Desktops / Laptops
- Both

27.5%
70%

Which types of courses do you prefer the most?
40 responses

- Self-paced courses
- Live courses
- Both

35%
57.5%
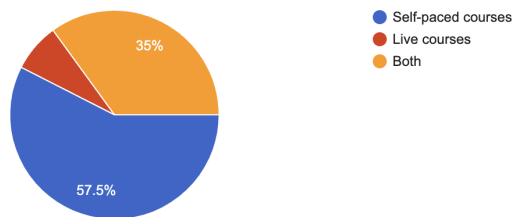
Which do you prioritise more in a learning platform – content quality or interface design?
40 responses

- Content quality
- Both are equally important
- Interface design

70%
30%
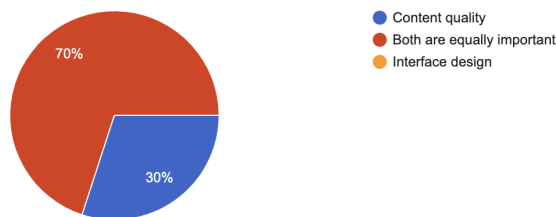
Figure 4.7: Google form response 5

Key survey findings:

- **Platform Usage:** Most respondents had used Coursera and Udemy, followed by IxDF, LinkedIn Learning, and UXcel.

- **Preferred Features**:

    - 80% valued hands-on projects and interactive exercises.
    - 76% prioritised personalised learning paths and progress tracking.
    - 65% found discussion forums moderately helpful.

- **Importance of UX/UI**:

    - 100% rated interaction design as important or very important.
    - 84% had discontinued a course due to poor UI, slow loading, or non-intuitive navigation.

- **Learning Preferences**:

  - Most preferred "learning by doing" through exercises and projects.
  - Short-form, digestible lessons were rated as more effective than long theoretical modules.

- **Frustrations Identified**:

  - Poor navigation and slow loading
  - Lack of engaging content (especially gamified or challenge-based)
  - Bad visual design and overwhelming text
  - Ineffective or absent feedback mechanisms

Survey summary:

- **Strong preference for hands-on learning**: Most participants expressed that they learn best through doing, rather than watching or reading. Practical exercises, design tasks, and real-world projects were highlighted as essential.

- **Demand for personalisation and structure**: Respondents showed interest in having guided learning paths that help them progress in a clear, step-by-step manner, with visible goals and milestones.

- **Interface matters deeply**: Many users reported dropping out of courses due to poor navigation, cluttered dashboards, or confusing layouts. This reinforces the importance of a clean, intuitive UI.

- **Short-form content is more engaging**: Learners prefer modular lessons that break down concepts into bite-sized sections. Long, dense videos or readings were seen as overwhelming and demotivating.

- **Limited peer interaction and feedback**: While discussion forums exist on many platforms, users felt they were underutilised or ineffective. Learners often lacked timely feedback or mentorship.

- **Motivation is hard to maintain**: Learners cited distractions, unclear course progression, and absence of reminders or accountability features as reasons for dropping off midway.

4.2.2   User Interviews

A series of semi-structured interviews were conducted with 12 learners, including students, designers, and working professionals across domains such as UX, architecture, and computer science. Participants were selected based on survey opt-ins and had prior experience using online platforms like Coursera, Udemy, Domestika, UXcel, and IxDF.

Based on affinity mapping of responses, several key themes emerged:

1. **Learning Motivation & Goals**:

   - Learners are often driven by job relevance, portfolio building, or curiosity.
   - Certifications are pursued more for credibility than actual learning.

2. **Frustrations with Content Delivery**:

   - Overly long, text-heavy modules are disengaging.
   - Lack of interaction or gamification leads to boredom.
   - Learners feel isolated in the absence of peer support.

3. **Interface & Usability Challenges**:

   - Poor dashboard layouts and navigation reduce motivation.
   - Learners struggle to track progress or find relevant content easily.
   - Mobile-first learners find desktop-optimised platforms frustrating.

4. **Feedback & Accountability**:

   - Peer review systems are often ineffective or superficial.
   - There is a desire for real-time feedback, reminders, and adaptive tasks.
   - Self-accountability remains a challenge in non-cohort models.

5. **Content Expectations**:

   - Summarized content and structured learning paths
   - Gamified experiences (e.g., points, badges, levels)
   - Interactive tasks like drag-and-drop, design challenges
   - Integration of real-world examples

Table 4.2: Affinity Mapping of User Interview Insights

Theme	Supporting Insights
Engagement	Learners prefer gamified, visually rich content over plain readings
Navigation Issues	Poor dashboards and unclear timelines reduce user confidence
Hands-on Learning	Strong preference for "learning by doing" and application-focused modules
Feedback Gaps	Lack of timely, meaningful feedback is a major barrier
User Types	Visual learners and beginners especially value simplified, structured UI/UX
Motivation Drop-off	Learners often leave courses mid-way due to boredom or unclear progression

4.2.3 Primary Research Insights

From the combined findings of the survey and interviews, the following insights emerged:

- **Learners prioritise clarity, interaction, and application** over theoretical depth.

- **Gamification and microlearning** significantly enhance engagement and retention.

- **UX/UI plays a critical role** - poor navigation or overloaded layouts result in drop-off.

- **Progress tracking and visual feedback** are essential for maintaining motivation.

- **Most users prefer video-based and challenge-driven learning formats** over passive readings.

- **Lack of community or peer support** makes the experience feel isolating and demotivating.

- **Certificates are useful, but not the primary motivator** - users want real skills.

- **Mobile-friendliness and load time** affect overall platform usability.

- **Learners seek content they can apply immediately**, especially in visual formats.

4.3 Chapter Summary

The Discover phase of the project involved an extensive investigation into the landscape of online design education, combining insights from existing platforms, academic literature, and direct user feedback. This research aimed to identify effective practices, learner expectations, and systemic gaps in current digital learning experiences, particularly for design education.

The process involved a detailed review of six online learning platforms (Coursera, Udemy, Interaction Design Foundation, UXcel, Domestika, and Skillshare), an academic literature review, a quantitative user survey with over 40 participants, and semi-structured interviews with 12 learners. These sources provided a multi-dimensional understanding of user behaviours, platform limitations, and pedagogical strategies.

4.3.1 Key Insights

A synthesis of all research methods revealed the following key insights:

- **Learners prefer hands-on, task-driven learning** over passive lectures or long readings. Practical activities and real-world challenges enhance comprehension and motivation.

- **Short, modular lessons with clear progression** are more effective in maintaining attention and reducing cognitive overload.

- **Platform UX/UI plays a critical role** in engagement - confusing interfaces, poor navigation, or visual clutter often lead to course abandonment.

- **Gamified learning elements** (points, levels, badges) improve motivation when aligned with meaningful learning outcomes.

- **Learners value feedback and progress tracking**, including real-time responses, visible achievements, and reminders to continue learning.

- **Many users feel isolated during self-paced learning**, highlighting the need for community-driven features like forums, peer reviews, or mentor interactions.

- **Visual content and interactive design tools** (e.g., Figma) increase engagement, especially for visual learners and beginners.

- **Credibility of content and certifications** matters to learners, but skill application and portfolio-building are equally important outcomes.

4.3.2 Design Opportunity Areas

Based on the consolidated insights, the following opportunity areas emerged as focal points for platform design and feature development:

Table 4.3: Opportunity Areas and Corresponding Design Implications

Opportunity Area	Design Implication
Hands-on, project-based learning	Integrate mini-challenges and portfolio-worthy design tasks into each learning module
Structured and modular learning	Design learning tracks with levels, milestones, and flexible pacing
Simplified and intuitive UI	Prioritize clean layouts, guided onboarding, and minimal cognitive load
Gamified engagement systems	Introduce badges, streaks, points, and unlockable content aligned with learning goals
Real-time feedback & progress tools	Provide instant feedback on tasks, visible progress bars, and personalized nudges
Peer/community interaction	Enable optional discussions, peer feedback, and shared showcases of learner work
Visual and tool-based instruction	Use visual examples, screen recordings, and drag-and-drop tasks in Figma or similar tools
Mobile-first accessibility	Ensure that all content is optimized for mobile devices and low-bandwidth conditions

Chapter 5

DEFINE

Following the insights uncovered during the Discover phase, this chapter synthesises user motivations, behaviours, and challenges into actionable frameworks that will guide the design direction. It includes user empathy mapping, personas, journey mapping, core needs and pain points, and finally, a refined problem statement and 'How Might We' questions. These tools establish a clear understanding of the users and define the scope of opportunity for the proposed solution.

5.1 Empathy Mapping

An empathy map was created to visualise user attitudes, behaviours, frustrations, and aspirations based on survey and interview data. It helps consolidate what users say, think, do, and feel during their online learning experience.

Table 5.1: Empathy Mapping

SAYS	THINKS
"I prefer hands-on tasks over reading long texts."	"Am I actually learning or just watching videos?"
"Gamified platforms are fun to use and learn."	"This course looks useful, but I'm not sure I'll finish it."

DOES	FEELS
Searches for summaries on YouTube.	Overwhelmed by long lessons.
Jumps between platforms seeking better experiences.	Frustrated when content lacks application.

Pain Points:

- Passive content reduces motivation

- Lack of structure and unclear progress

- Long lessons cause disengagement

Needs:

- Engaging visuals and interactive tasks

- Clear goal-setting and feedback mechanisms

- Real-world application and quick wins

5.2   User Personas

Personas are fictional but research-based archetypes that represent the key user groups the platform aims to serve. They humanise user data and help designers empathise with varying motivations, constraints, and preferences.

Persona 1: Hari – The Curious Teen Learner

Hari is a 16-year-old student in Grade 11 who is enthusiastic about technology and creativity. He explores online resources like YouTube and Google for inspiration and has attempted online design courses but dropped out due to boredom and complexity. His learning is largely self-directed, and he prefers hands-on activities to theoretical explanations.

Key insights:

- Easily distracted and loses interest in passive content

- Needs visual, task-oriented modules to stay focused

- Learns better with immediate feedback and small wins

- Enjoys gamified environments and creative freedom

Hari represents younger learners who are just beginning to explore digital design and need scaffolding, encouragement, and engagement to stay committed.

Persona 2: Malavika – The Career Switcher

Malavika is a 23-year-old graduate with a degree in business. She recently decided to pursue a career in UX design. She has tried multiple online platforms but finds it difficult to navigate the large volumes of content. While she values certification, her primary goal is to build a credible portfolio.

Key insights:

- Wants structured guidance and job-relevant learning paths

- Feels overwhelmed by uncurated content and decision fatigue

- Needs a sense of direction and real-world application

- Seeks validation through feedback and peer comparison

Malavika reflects the segment of early-career professionals transitioning into design, requiring platforms that offer clarity, credibility, and outcomes.

These personas guide design decisions regarding tone, structure, features, and visual language, ensuring that diverse user needs are addressed holistically.

5.3   User Journey Map

The user journey map visualises a typical learner's experience across different touch-points, from discovering a platform to eventually disengaging or completing a course. It traces emotional highs and lows, interactions, and challenges at each stage, revealing where design intervention is needed.

Using Hari's journey as an example, the map illustrates his pathway through an online course platform:

Table 5.2: User Journey Mapping: Teen Learner Experience

Stage	Touchpoints & Actions	Emotions	Pain Points	Opportunities
Awareness	YouTube video, friend suggestion	Curious	Unclear if platform suits teens	Youth-focused messaging
Signup & Exploration	Homepage, course list	Hopeful	Overwhelming options	Teen onboarding, curated paths
Starting the Course	Video player, reading materials	Impatient	Text-heavy content	Visual content, interactive intro tasks
Engagement Attempt	Quizzes, forums	Confused	No gamification, unclear progress	Instant feedback, gamified learning
Disengagement	Reminders ignored	Disinterested	No rewards or motivation triggers	Progress bars, community encouragement
Drop-off	Stops learning	Relieved	Boredom, lack of creativity	Creative projects, relatable curriculum

This journey highlights critical design failures in onboarding, engagement, and retention. Interventions such as clear learning tracks, gamified feedback, and peer interaction are needed to keep the learner motivated and progressing.

5.4   User Needs & Pain Points

Synthesising data from the empathy map, personas, and user journeys, the following needs and pain points were identified:

User needs:

- Clear, modular progression to avoid feeling lost or overwhelmed

- Practical, hands-on tasks that build real skills and confidence

- Positive feedback mechanisms to reinforce learning behavior

- Engaging content with visual and interactive elements

- Community or mentor support to reduce isolation

- Ability to build a portfolio or tangible outcomes from learning

User pain points:

- Passive learning formats (e.g., long lectures, dense readings)

- Poor UI design with unclear navigation and cluttered layout

- Absence of motivation triggers (e.g., rewards, challenges)

- Limited feedback or progress tracking

- Unstructured content leading to decision fatigue or confusion

- Perception that time invested does not lead to applicable skills

These user-centred insights will directly inform interface features, interaction flows, and content structuring in the design phase.

5.5   Refined Problem Statement

The initial design challenge was broad and exploratory. Based on the data gathered, the problem statement is refined to reflect user pain points more precisely:

> **"Young learners struggle to stay engaged and complete online design courses due to passive content, lack of interaction, and poor platform usability. There is a need for an engaging, hands-on, and structured learning experience that supports skill-building and sustained motivation."**

This refined statement balances the emotional (engagement), functional (usability), and cognitive (learning outcomes) aspects of the challenge.

5.6   How Might We Statements

To inspire ideation and open up multiple solution pathways, the refined problem was reframed into "How Might We" questions:

- How might we help young learners stay engaged in design learning?

- How might we transform passive content into active, skill-based tasks?

- How might we structure learning in a way that is digestible and motivating?

- How might we reduce friction in onboarding and navigation for first-time users?

- How might we integrate feedback and community to support learner progress?

These statements serve as springboards for the ideation phase, encouraging exploration of solutions that are innovative, inclusive, and grounded in user needs.

Chapter 6

IDEATE

The ideate phase marks a crucial turning point in the design process, where findings from research are translated into meaningful design opportunities. Building on the user needs and challenges uncovered in the Define phase, this stage focused on generating potential features, structures, and experiences for a new web design learning platform. A combination of creative ideation techniques and prioritisation tools was used to explore and evaluate possible directions. These included mind mapping, brainstorming, MoSCoW analysis, and curriculum design, culminating in the development of a preliminary information architecture and user flow.

6.1   Mind Mapping

To initiate ideation, two distinct mind maps were created:

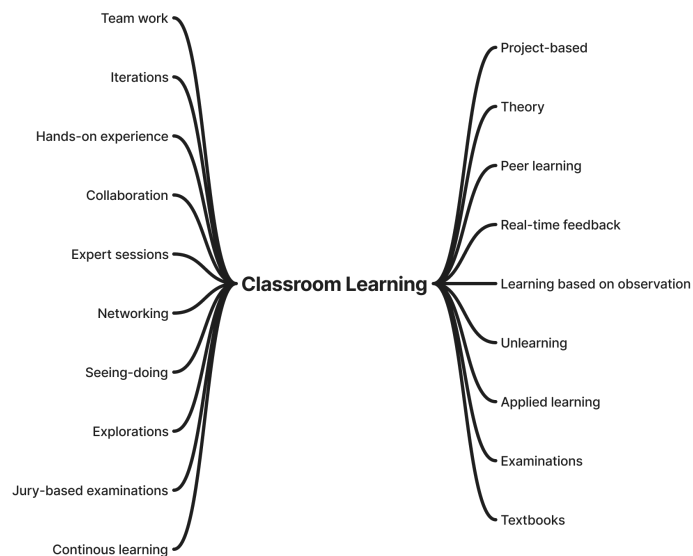1. One capturing the key characteristics of classroom-based learning

Figure 6.1: Mind map of classroom-based learning

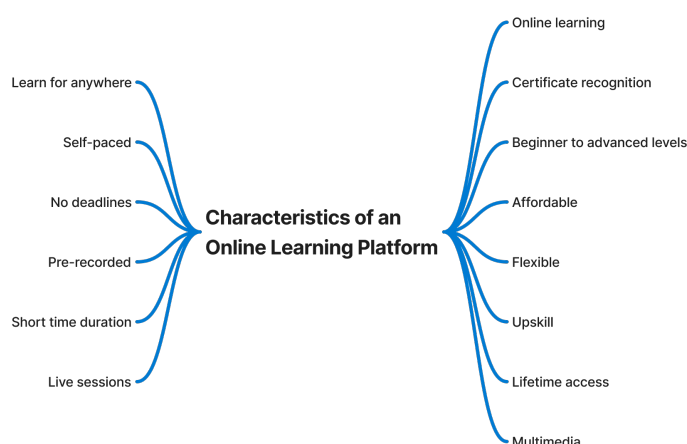2. Another representing online learning platform experiences

Figure 6.2: Mind map of online learning platforms

These visual tools helped uncover patterns in how learners engage with different environments. Classroom learning emphasised peer interaction, mentorship, structure, and real-time feedback, whereas online learning focused on flexibility, autonomy, and multimedia formats. The contrast revealed a critical insight: online platforms often lack the human-centred support and engagement mechanisms found in physical classrooms.

This gap provided the foundation for integrating gamified motivation, project-based tasks, and peer interaction into the online learning experience, creating a hybrid model that borrows the best from both modalities.

6.2 Brainstorming

A series of individual and collaborative brainstorming sessions were held to explore features, content models, motivational triggers, and interaction types suitable for the target user group (teen learners and beginners). Digital boards and sketching were used to externalise and refine raw ideas.

Progress bars	AI - generated quizzes	Reminder and streak system	Offline content access	Personalised learning paths
Drag and drop activities	Real world design challenges	Peer feedback sessions	Daily 5-minutes design drills	Minimal dashboard
Badges and different levels	Micro-interactions	Spot the mistake activities	Story based design missions	Before and after design task comparison
Reverse engineering famous websites	Daily learning goals	Challenge a friend	Mentor chat	Timed design tasks
Short video tutorials	XP points	Different learning modes	Discord channel	Online workshops

Figure 6.3: Brainstormed ideas

Notable ideas generated:

- **Gamified rewards**: XP points, badges, progress meters

- **Daily/weekly goals**: Habit-forming streaks and reminders

- **Drag-and-drop interface activities**

- **Creative story-based challenges**

- 'View Theory' toggle for **bite-sized reading**

- **Reverse design teardown tasks**

- **Offline content access**

- **Project showcase** space for peer appreciation

- **Peer-discussion forums** and design battles

- **Different learning modes**: guided, challenge, or freestyle

These ideas directly addressed users' expressed needs - interactive content, progress visibility, peer engagement, and real-world relevance - revealed during primary research.

6.3 MoSCoW Analysis

To prioritise and filter the brainstormed ideas, the MoSCoW method was applied. This framework grouped features into four categories:

Must Have	Should Have	Could Have	Won't Have
Unlockable levels and badges	Personalised learning path	Moodboard creation task	AI mentor chatbot
Guided prototyping tasks	Daily / weekly goals with reminders	Project showcase	Paid lessons
Interactive activities	Story based design tasks	Challenge a friend	Multi-language options
Peer - discussion forum	Different learning modes	Offline content access	
XP points as reward		Reverse design teardown	
'View Theory' option			

Figure 6.4: MoSCoW Analysis

This filtering exercise helped define a minimum viable learning experience, ensuring that early prototypes remain focused, achievable, and grounded in user value.

6.4 Curriculum Design

From the prioritised features and insights, a draft curriculum was created to structure how web design would be taught.

However, upon faculty and expert feedback, it was revised. The final curriculum focused less on UI/graphic theory and more on building actual webpages using visual design principles and layout tools.

This refinement ensured that learners would walk away with tangible web design skills and a creative portfolio, rather than abstract knowledge.

The finalised curriculum structure is as follows:

- **Module 1:** Introduction to web design

- **Module 2:** Header design

- **Module 3:** Content area design

- **Module 4:** Footer design

- **Module 5:** Responsive design

- **Final Reflection:** MCQ quiz with 20 questions

- **Final Project:** Create a product landing page to obtain the certificate

6.5 Information Architecture

Once the curriculum was structured, a high-level information architecture (IA) was developed to map out the content organisation and platform navigation. It helped establish how a learner would access lessons, submit tasks, engage in challenges, and interact with peers.
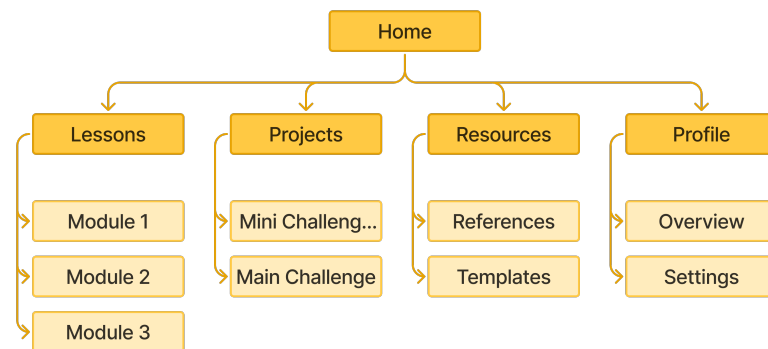

Figure 6.5: Information Architecture

The IA ensured that the platform would support both linear learning paths and exploratory modes while minimising cognitive load through clean categorisation and intuitive navigation.

6.6 User Flow

The user flow diagram illustrated how a user would navigate the platform from entry to course completion. It incorporated feedback mechanisms, activity loops, and checkpoints to foster continuous engagement.
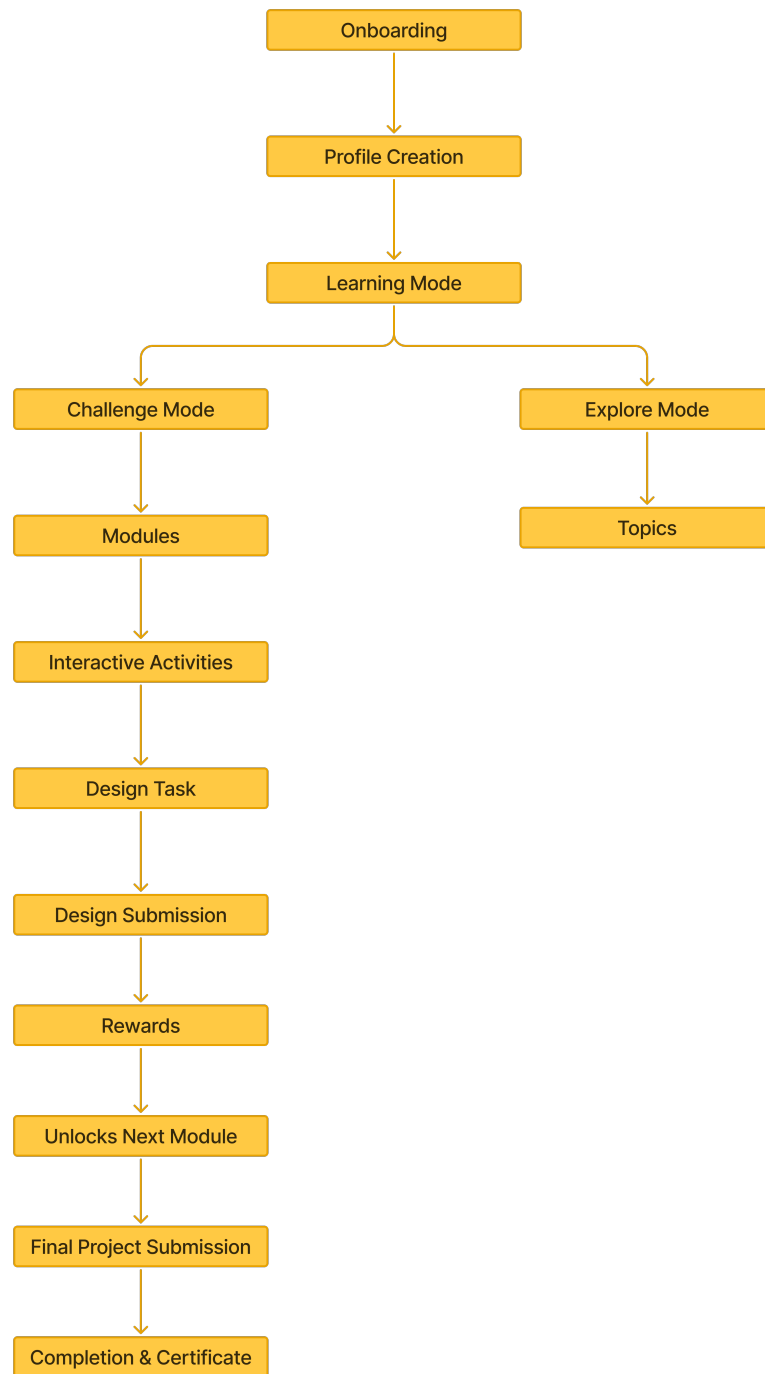
Figure 6.6: User flow

This flow ensured that learners stay active within the platform loop, constantly moving between learning, doing, and reflecting, which is key to building confidence and mastery.

Chapter 7

PROTOTYPE

The prototype phase translates ideation outputs into tangible design artifacts. This stage involved the visualisation and refinement of interface concepts, starting from hand-drawn paper sketches to digital low-fidelity wireframes and finally, to high-fidelity mockups that reflect the intended user experience and visual direction of the learning platform.

Prototyping served multiple purposes: testing the feasibility of the information architecture and user flow, evaluating content hierarchy, refining interaction models, and aligning the visual language with the user personas defined earlier. The iterative nature of this phase allowed for continuous validation, both internally and through informal user feedback.

7.1   Paper Wireframes

The prototyping process began with a series of paper wireframes, which served as quick, low-cost tools to explore layout ideas and user interface patterns. These sketches focused on capturing the core interactions, such as onboarding, learning path navigation, challenge access, project submission, and progress tracking.
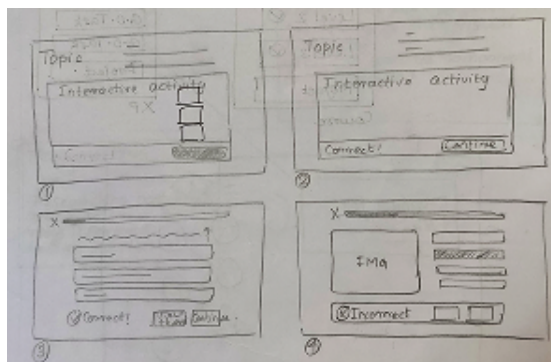

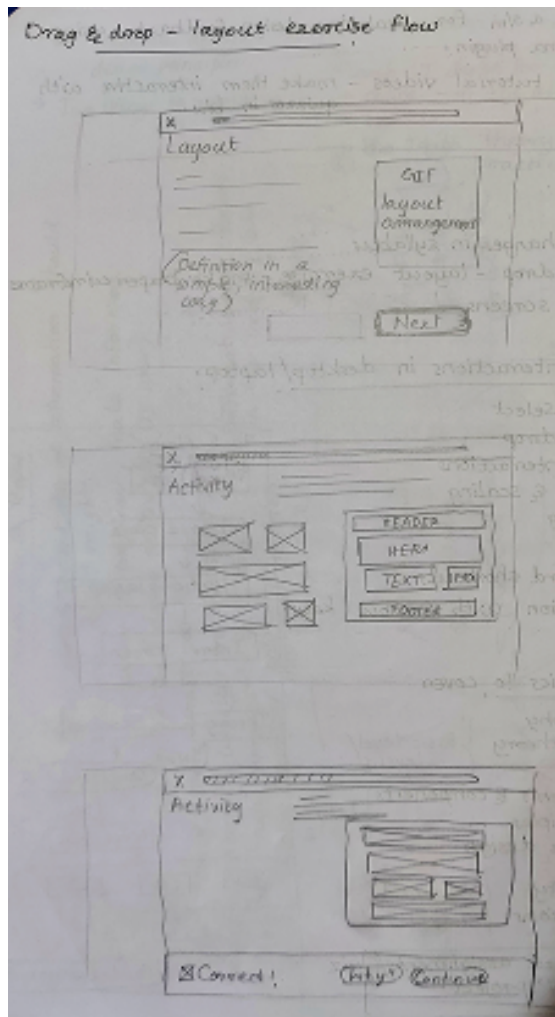Figure 7.1: Paper wireframe 1
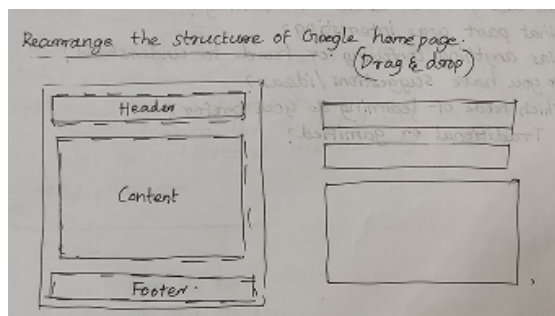
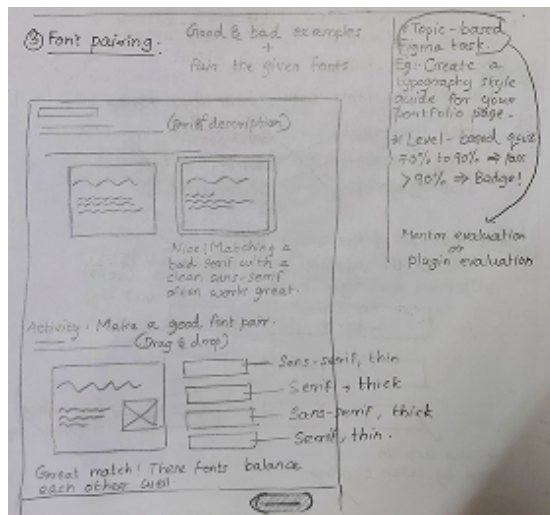Figure 7.2: Paper wireframe 2

Figure 7.3: Paper wireframe 3
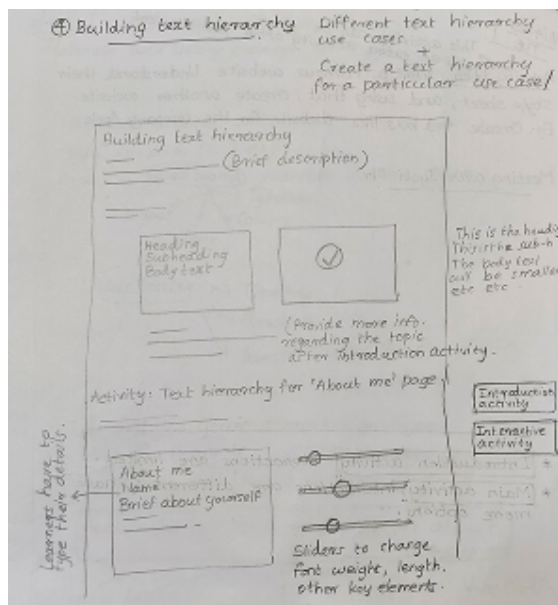
Figure 7.4: Paper wireframe 4

Figure 7.5: Paper wireframe 5

Key objectives of this stage:

- Visualize how a learner would move through a lesson

- Determine placement of key UI elements (e.g., progress bar, XP meter)

- Explore layout possibilities for the dashboard and community space

- Iterate quickly without digital constraints

These wireframes emphasised function over form, allowing the focus to remain on usability and information hierarchy before committing to a visual style. Feedback from peers and advisors during this stage informed key layout changes in later versions.

7.2 Low-Fidelity Wireframes

The second phase involved converting the paper sketches into digital low-fidelity wireframes, created using Figma. These wireframes introduced structure and consistency to the layouts while remaining minimal and devoid of branding to avoid visual bias during evaluation.
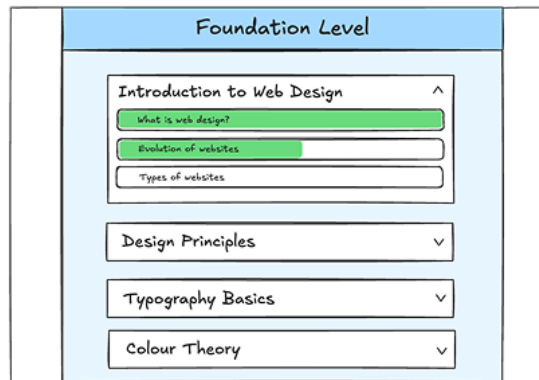

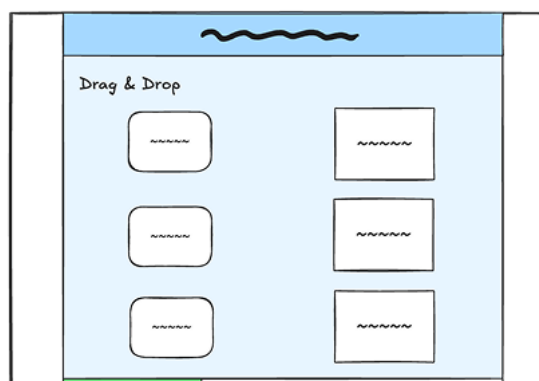Figure 7.6: Low fidelity wireframe 1

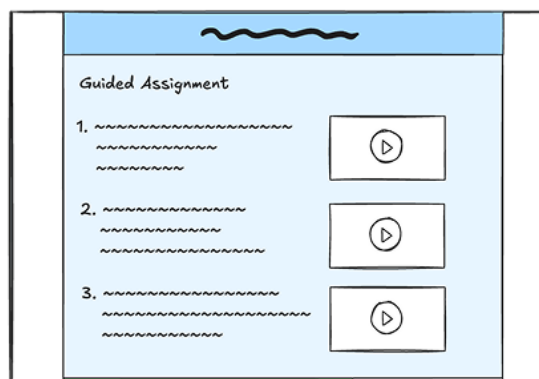Figure 7.7: Low fidelity wireframe 2

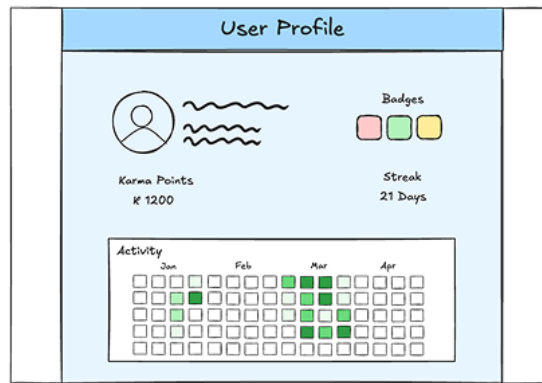
Figure 7.8: Low fidelity wireframe 3

Figure 7.9: Low fidelity wireframe 4

Low-fidelity prototypes were shared with design peers and informal testers, who provided feedback on layout clarity, information grouping, and interactive expectations. Several iterations were made to simplify the user journey and reduce redundant actions.

7.3   High-Fidelity Mockups

The final stage of prototyping focused on high-fidelity mockups that incorporated colours, typography, icons, and imagery, representing the visual identity of the platform. These screens communicated both the look and feel and the intended emotional tone of the product -fun, motivating, beginner-friendly, and educational.
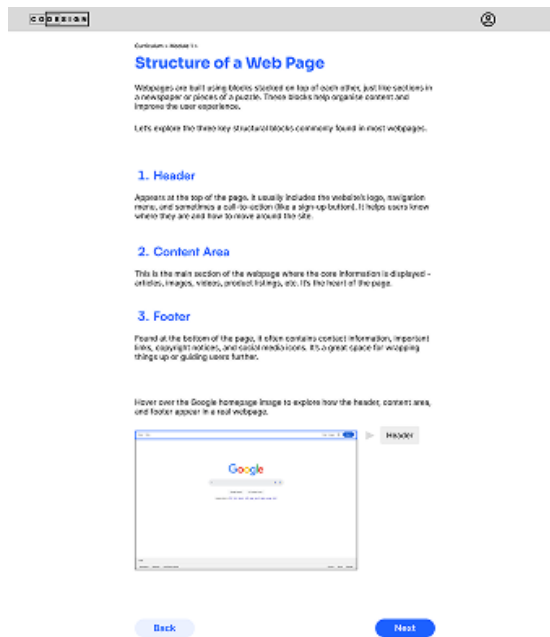

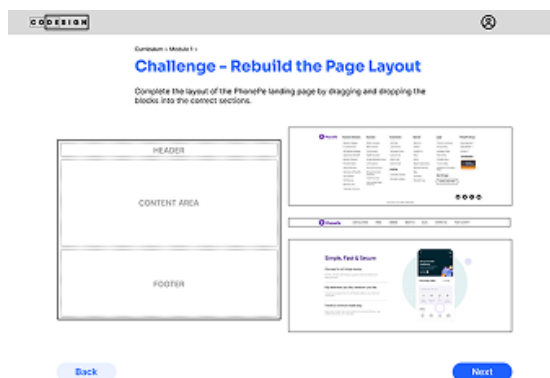Figure 7.10: High fidelity mockup 1

Figure 7.11: High fidelity mockup 2

Figure 7.12: High fidelity mockup 3

Chapter 8

TEST

The test phase aimed to evaluate the usability, engagement, and clarity of the early prototype through direct user observation and feedback. This critical stage helped assess whether the proposed learning experience aligns with the needs and expectations of the target user group - school students exploring web design. Usability testing provided actionable insights to refine interaction design, visual hierarchy, and content delivery.

8.1 Usability Testing Overview

Usability testing was conducted with six students from Dr. B. R. Ambedkar School of Social Sciences (SOSE), Dwarka. The students represented the target age group for the platform and were introduced to Module 1 of the learning content.

The testing focused on three primary goals:

- **Navigation**: Can students understand the platform layout and lesson progression?

- **Interactivity**: Are the drag-and-drop and design task elements intuitive and enjoyable?

- **Comprehension**: Can students complete a topic with minimal confusion or support?

8.2 Testing Methodology

The testing was designed to be moderated but minimally guided, allowing for natural interaction and observation. The sessions were exploratory in nature, using static screen mockups to simulate the learning environment and interaction flow.
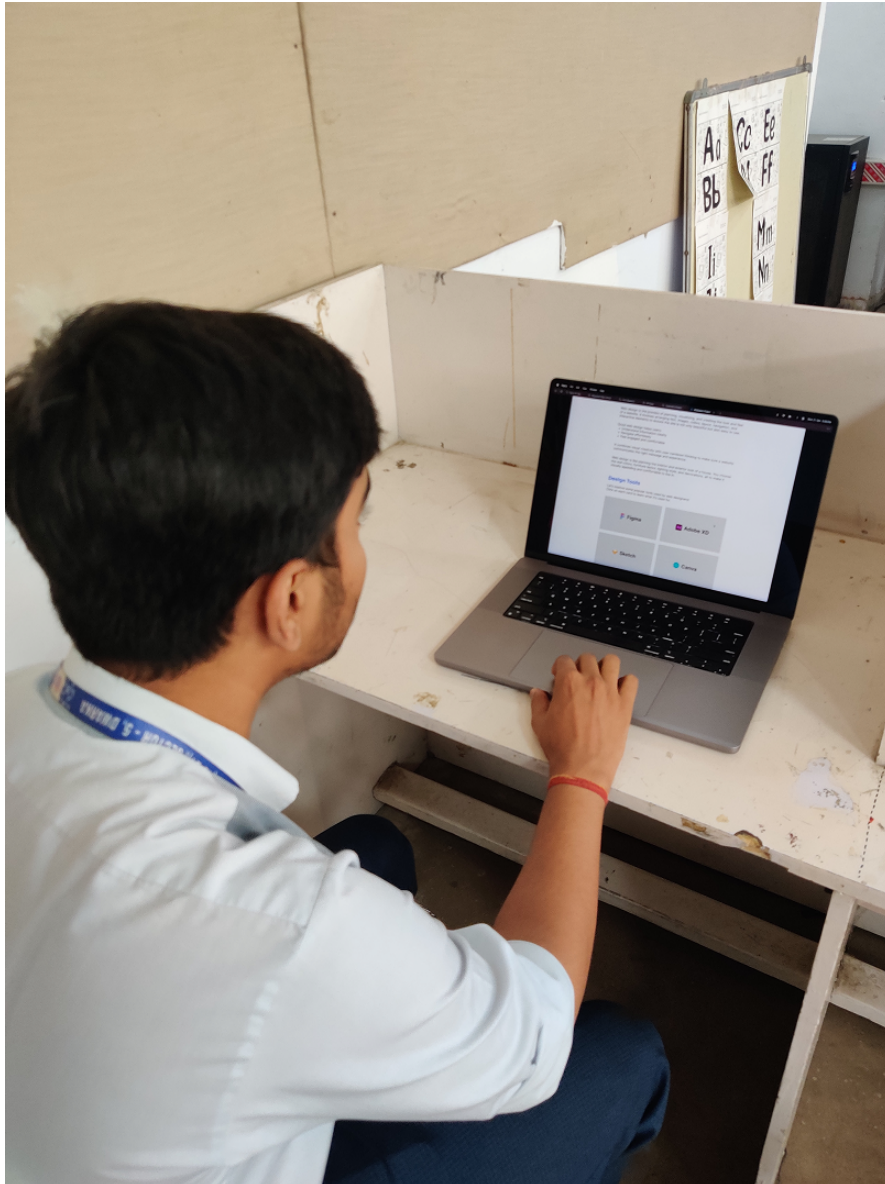
Figure 8.1: User testing 1

Figure 8.2: User testing 2
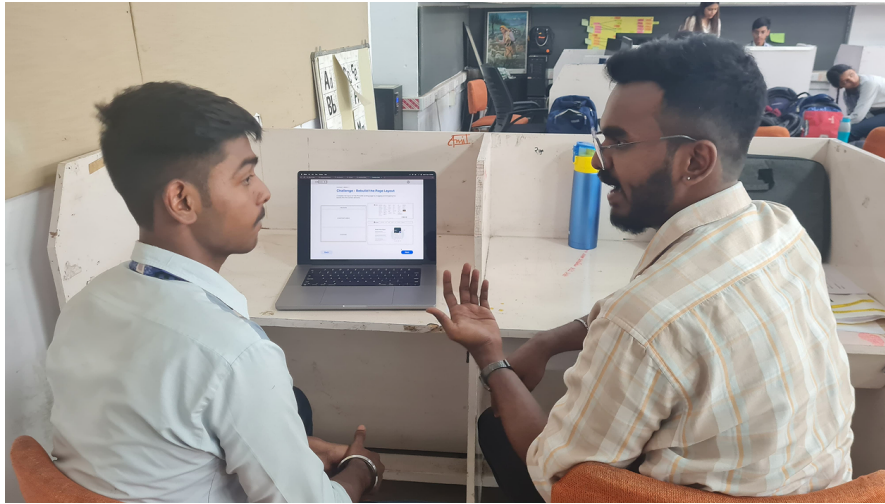

Figure 8.3: User testing 3

Method Summary:

- Conducted **1:1 moderated sessions** with each student

- Introduced the context briefly, then allowed users to **explore independently**

- Students navigated **Module 1 screens**, including a theory introduction and interactive drag-and-drop activity

- Provided **minimal verbal assistance**, intervening only when users were clearly stuck

- Observed **user behavior**, confusion points, and verbal reactions

- Gathered **verbal feedback** post-session

The primary intention was to identify friction points in navigation, clarity, and interaction without overexplaining the prototype.

8.3   Observed User Behaviour & Patterns

User behaviour revealed interesting insights into how the target audience naturally approaches digital content:

- **Visual-first engagement**: Most students skipped long paragraphs and looked directly at images, buttons, or icons. They relied heavily on visual cues rather than textual instructions.

- **Skimming tendency**: When given a screen with theory and interaction, students skimmed the screen quickly and sometimes missed instructions placed at the top.

- **Interaction hesitation**: In drag-and-drop tasks, some students hesitated before taking action, unsure of what was expected, even though textual guidance was present.

These behavioural patterns affirmed the need to design visually intuitive, instruction-light interfaces that rely on icons, animations, and context cues rather than dense instructions.

8.4   User Feedback

Feedback was collected during and after the sessions through open-ended questions. While the overall reaction to the platform was positive, particularly for the interactive components, students offered clear and constructive suggestions.

Key Feedback Themes:

- "The screen looks like a PDF... it feels like reading a document."

- "Use more icons or pictures instead of long text."

- "The drag-and-drop part was fun... but I was not sure if I did it right."

- "Can we have more games or challenges than reading?"

- "The colours are not very attractive... maybe make it brighter."

- "Please add more animations or movement - it looks static."

Summarised Suggestions:

Table 8.1: Student Feedback and Design Implications

Feedback Area	Student Input	Design Implication
Visual Design	"Looks like a PDF"	Enhance layout hierarchy, add visual diversity
Instruction Clarity	"Not sure what to do"	Use icons, labels, and visual cues in addition to text
Engagement Level	"More activities, fewer words"	Reduce static theory, prioritize hands-on tasks
Content Delivery	"Use analogies to explain"	Incorporate relatable examples and storytelling
Aesthetic Appeal	"Use more colours"	Refine color palette for vibrancy and consistency
Micro-interactions	"Add more motion/animations"	Introduce subtle feedback cues (hover, drag, progress pulses)

This feedback reflects a clear preference for highly interactive, visual-first, and challenge-oriented content, supporting the insights uncovered during the Define phase.

8.5 Design Adjustments Based on Testing

Based on user feedback and observations, the following changes were prioritised for future iterations:

- Reorganise text-heavy screens into **modular blocks** with icons and infographics

- Incorporate **micro-interactions** to improve engagement and provide visual feedback (e.g., button states, animations)

- Move **instructions closer to interaction areas** to prevent skimming errors

- Replace theory paragraphs with **story-based or analogy-driven explanations**

- Revise the **colour palette** to make the interface feel more vibrant and playful

- Introduce **immediate feedback** (e.g., success ticks or confetti after completing a drag-and-drop)

Chapter 9

FINAL DESIGNS

This chapter presents the final high-fidelity designs of the platform, refined based on insights from usability testing. The design iteration focused on improving visual clarity, user engagement, instruction comprehension, and emotional appeal, especially for younger learners. Feedback from students in the test phase guided the transformation of the prototype into a more intuitive, interactive, and visually engaging platform for learning web design.

The final design reflects a careful balance between practical learning needs and aesthetically pleasing interface design, with an emphasis on motivating users through clear structure, micro-interactions, and hands-on challenges.
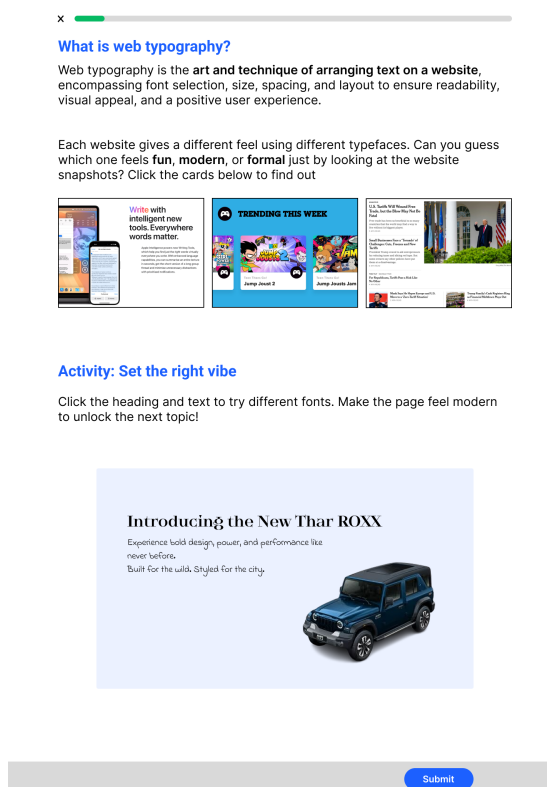

Figure 9.1: Final designs 1

Explore more

Do you know the difference between typeface and font?
Let's break it down with a simple example:

- **Typeface is like a music album** - it has a unique style and identity.
- **Font is like a song in that album** - a specific version of that style (like bold or italic).

Let's see if you got it. Tap the names that are typefaces - Green means right!

Roboto Bold		
	Inter	
		Georgia

Activity: Font scavenger hunt

Use the CSS Peeper Chrome extension to find the fonts used in the heading and body text of the hero section on mulearn.org, then type them below.

Not sure how to use it? Click here for a quick tutorial on how to install and use CSS Peeper.

Submit

Figure 9.2: Final designs 2

Font pairing

Font pairing is **the art of combining two or more fonts** to create a harmonious, readable, and visually appealing design. Some fonts work well together, some don't.

Look at the examples below. Can you tell which font pair looks better? Tap to choose!

Activity: Make a good font pair

The news snippet below looks a bit off. The fonts don't match well. **Drag and drop fonts** from the list to fix the heading and body text. Your goal is to make the design clean, readable, and fitting for a news website.
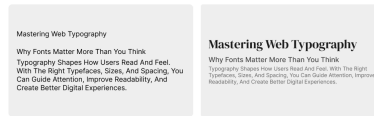
	Georgia Bold
	Verdana Bold
	Georgia
	Verdana

Submit

Figure 9.3: Final designs 3

50

Building text hierarchy

Text hierarchy is the **visual organisation of text** to establish the order of importance, improving readability and user experience by guiding the eye and making it easier to scan and digest information

Two versions of a content section are shown below. One has strong text hierarchy, the other doesn't. Tap the one that's easier to read and feels well-structured

Mastering Web Typography

Why Fonts Matter More Than You Think
Typography Shapes How Users Read And Feel. With The Right Typefaces, Sizes, And Spacing, You Can Guide Attention, Improve Readability, And Create Better Digital Experiences.

Mastering Web Typography

Why Fonts Matter More Than You Think
Typography Shapes How Users Read And Feel. With The Right Typefaces, Sizes, And Spacing, You Can Guide Attention, Improve Readability, And Create Better Digital Experiences.

Text hierarchy makes content easier to read and understand. By changing **size**, **weight**, **colour**, **spacing**, and **style**, you guide the reader's eye and highlight what's important.

Activity: Fix the 'About Me' page

This 'About Me' section needs help with its text hierarchy. Use the sliders to adjust text size, text weight, and margin spacing. Try to make the layout clear and easy to read.

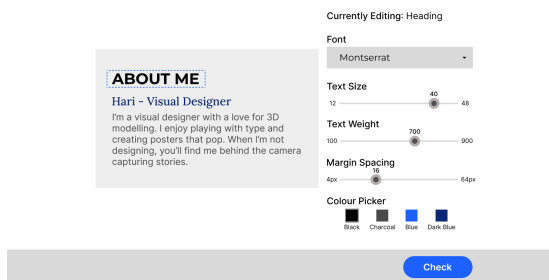Click on the text you want to change, adjust the sliders, and hit the Check button below the activity to get feedback.

Currently Editing: Heading

Font
Montserrat ▾

Text Size
12   40   48

Text Weight
100   700   900

Margin Spacing
4px   16   64px

Colour Picker
Black Charcoal Blue Dark Blue

ABOUT ME

Hari - Visual Designer

I'm a visual designer with a love for 3D modelling. I enjoy playing with type and creating posters that pop. When I'm not designing, you'll find me behind the camera capturing stories.

Check

Figure 9.4: Final designs 4

Web typography - Do's & Don'ts

Typography on the web isn't just about picking pretty fonts. It's about ensuring **clarity**, **consistency**, and **good user experience**. Let's wrap up everything you've learned so far with some simple rules that can help your designs stand out.

Typography Principles to Follow:

- **Legibility is key**: Choose fonts that are easy to read across screen sizes.
- **Use a clear text hierarchy**: Make important content stand out using size, weight, and spacing.
- **Limit your font choices**: Stick to 2–3 fonts max to keep things consistent.
- **Ensure enough contrast**: Text should be easy to read against the background.
- **Test across devices**: What looks good on desktop may not work on mobile.
- **Keep line length readable**: Ideal is around 50–75 characters per line.
- **Use font pairing wisely**: Fonts should complement each other, not clash.

Activity: Sort the Typography Rules

Drag each statement below into the correct column – Do or Don't. Think about what helps or harms readability and user experience.

Do's	Don'ts

Use consistent spacing between lines and paragraphs.

Use too many fonts in one design.

Keep a maximum of 2–3 typefaces in a design.

Write full paragraphs in ALL CAPS.

Make headings clearly larger than body text.

Choose super-thin fonts on light backgrounds.

Maintain enough contrast between text and background.

Overuse decorative fonts in body text.

Use web-safe fonts or load custom fonts properly.

Make everything bold or everything the same size.

Submit

Figure 9.5: Final designs 5

Chapter 10

CONCLUSION AND FUTURE SCOPE

This graduation project set out to reimagine the experience of learning web design for school-age learners by addressing the limitations of existing online education platforms. Through a structured design process, spanning research, ideation, prototyping, and testing, the project aimed to create a platform that is not only educational but also engaging, intuitive, and aligned with the way young learners think and interact.

10.1   Project Summary

The project began by identifying key challenges faced by learners in current online design education environments, such as passive content delivery, low interactivity, and poor visual engagement. The **Discover** phase included secondary research on global learning platforms (Coursera, UXcel, IxDF, etc.) and a literature review highlighting pedagogical trends in digital education. Primary research surveys and interviews with students and educators, provided direct insights into learner frustrations, needs, and expectations.

These findings were synthesised in the **Define** phase, where empathy maps, user personas, and journey maps helped distil core problem areas. A refined problem statement and a series of 'How Might We' questions guided the ideation of practical solutions.

In the **Ideate** phase, mind mapping and brainstorming led to a wide range of ideas, which were prioritised using the MoSCoW method. A curriculum outline, information architecture, and user flow were developed to structure the learning experience, leading to the first visual representations of the platform.

The **Prototype** phase translated ideas into tangible interface designs, starting from paper sketches to high-fidelity wireframes. These prototypes were then tested in the **Test** phase with students at Dr. B. R. Ambedkar School of Social Sciences. Their feedback informed critical design refinements in layout, instruction clarity, and visual appeal. The final result was a youth-friendly, gamified, hands-on learning experience tailored for web design education.

10.2 Key Learnings

This project offered a deep and multi-faceted learning experience in the areas of design thinking, UX research, interface prototyping, and interaction design. Key takeaways include:

- **Empathy is central to design**: Understanding user behaviour, emotion, and context is crucial in shaping meaningful solutions.

- **Research must drive design**: Insights from real users challenge assumptions and help ground the project in reality.

- **Iterative design is powerful**: Each prototype version revealed new opportunities for improvement.

- **Testing reveals the unexpected**: Observing users interact with even static designs offers invaluable clarity.

- **Balance is the key**: A successful learning platform must combine structure, flexibility, engagement, and real-world value.

10.3 Impact & Value

The platform concept developed in this project addresses real and pressing gaps in design education, especially for younger learners in India. By focusing on practical design tasks, challenge-based learning, and visual engagement, the solution aligns with the goals of NEP 2020 and the growing demand for creative digital skills among school students.

The proposed learning model is scalable, inclusive, and adaptable to other creative disciplines beyond web design. It also fosters early-stage portfolio development, encouraging self-expression and digital literacy from a young age.

10.4 Future Scope

While the current outcome is a conceptual and visual prototype, future stages of this project could include:

- **Functional MVP development** using platforms like Webflow or Lovable

- **Extended usability testing** with a larger and more diverse user base

- **Admin dashboard** for tracking and giving feedback on student submissions

- **Partnerships with schools** for pilot implementation

- **Localisation and accessibility** enhancements for regional languages and mobile-first users

These next steps would move the platform from a design concept to an educational product with real-world impact.

10.5   Final Reflection

This project reaffirmed the importance of designing for real users with real constraints and not simply for functionality. It showcased how thoughtful design rooted in empathy, research, and iteration can make learning more accessible, joyful, and empowering. The process was not just about creating screens but about crafting an experience that enables young learners to discover their creative potential and confidently navigate the digital world.

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