

**THE IMPACT OF UI/UX DESIGN ON MENTAL HEALTH AND
EMOTIONAL WELL BEING IN DIGITAL PLATFORMS**



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UNIVERSITY OF BENIN

BENIN CITY

NOVEMBER, 2025

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**A PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF
COMPUTER SCIENCE, FACULTY OF PHYSICAL SCIENCES,
UNIVERSITY OF BENIN, BENIN CITY**

**IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE
AWARD OF A BACHELOR OF SCIENCE (B.Sc.) DEGREE IN
COMPUTER SCIENCE**

NOVEMBER 2025

CERTIFICATION

This is to certify that this project work was carried out by AWALA-ALE OSARENWINDAWHEN PAUL with Matriculation Number PSC2106314 under my supervision. It is adequate and satisfactory both in scope and content for the award of Bachelor of Science (B.SC) Degree in Computer Science of the University of Benin

Mr. K. O. Otokiti
Project Supervisor

Date

APPROVAL

This project work is hereby approved in partial fulfillment of the requirements for the award of Bachelor of Science (B.Sc) Degree in Computer Science from the University of Benin.

Dr. Mrs. R.. Usiobafo
Head of Department

Date

DEDICATION

I am dedicating this project to Almighty God for His boundless mercies, enduring goodness, unwavering grace, love, and countless blessings throughout my life, especially during this academic journey.

This work is also dedicated to all the students who are genuinely putting in their best effort and striving to make things work despite systemic challenges. Your resilience is the inspiration behind this research. I see you.

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First and foremost, I extend my deepest gratitude to Almighty God for His love, mercies, goodness, blessings, and everything He has done in my life, especially throughout my academic career. I know I would not have been able to survive it without Him.

(Secondly, this is supposed to be my project supervisor Mr. K.O. Otokiti (but, I'll be back sir, let me thank my mother first).)

Mummy! I love you. Thank you so much for everything: for your encouraging aftercare, your consistent presence, your support, and your assistance throughout my academic journey. Thank you for giving me the privilege of education, for fully supporting my accommodation, and for always wanting the absolute best for me. I appreciate and love you so much. God bless you, Mummy!

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9. Madam T (God bless you, Ma)
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11. Mr. Isah B. M.
12. Mama 1 (Sweet Mama) and Mrs. Anthonia
13. Auntie Julie
14. Mrs. Kalama
15. Mama Nosa (God bless you ma)
16. (I'll message you).

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ABSTRACT

This mixed-methods research investigates the impact of User Interface (UI) and User Experience (UX) design on the mental health and emotional wellbeing of university students. Driven by the observation that platform engagement models often prioritize retention over psychological safety, the study combined a theoretical analysis of Cognitive Load and Emotional Design theories with an empirical survey of 120 students from the University of Benin ($N=120$).

Quantitative analysis revealed that the primary psychological burden on students is **cognitive and social overload** (Content Overwhelm $\mu=4.06$; Overwhelmed by Features $\mu=4.10$; Pressure to be Perfect $\mu=3.94$), rather than simple notification distraction ($\mu=2.89$). Despite students confirming support features are easy to find ($\mu=4.24$), their high stress levels indicated a significant mismatch between generic solutions and their specific needs.

Qualitative thematic analysis reinforced these findings, identifying an explicit user demand for features that offer **control over content feeds, limiting of compulsive scrolling, and pausing of "rowdy" group chats.**

The study concludes that current UI/UX practices impose an unnecessary emotional strain on students. Based on this validated evidence, the research proposes the "**Emotionally-Aware Focus Interface**" (**Student Mode**) framework, which features **Mindful Content Curation** and a **Calm UI Override**. These recommendations aim to facilitate a necessary transition from engagement-maximizing design to a practice prioritizing user focus, cognitive clarity, and emotional balance.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In today's digital age, **students** interact with technology more than ever before. Mobile applications, websites, and digital platforms have become essential parts of daily life—for communication, learning, work, entertainment, and even emotional expression. While these platforms offer convenience and global connectivity, they also have profound effects on users' mental and emotional wellbeing.

User Interface (UI) and User Experience (UX) design play a central role in shaping how individuals perceive, feel, and behave while using digital platforms. UI refers to the visual and interactive elements of a digital product, while UX encompasses the overall experience, including usability, accessibility, and emotional responses. These design decisions, whether intentional or not, influence user emotions such as frustration, calmness, motivation, or anxiety.

In recent years, mental health has become a significant global concern, with increasing rates of anxiety, depression, stress, and digital fatigue, particularly among students and young adults. Many digital platforms prioritize engagement and profit, sometimes at the expense of user well-being, using persuasive design patterns that can lead to information overload, addictive behaviors, and heightened cognitive load.

However, research shows that when UI/UX design is approached with empathy, inclusivity, and a user-centered mindset, digital platforms can serve as supportive environments that promote emotional wellness. Thoughtful design can **reduce cognitive load**, foster emotional

safety, encourage mindful usage, and create positive digital experiences that support mental health.

Despite its importance, the relationship between UI/UX design and mental health is still an emerging field of study, with limited research in the context of student users in developing regions like Nigeria. This research seeks to bridge that gap by examining how UI/UX design choices impact mental health and emotional wellbeing on digital platforms, with a focus on students as a highly vulnerable user group.

1.2 Statement of the Problem

As digital platforms become more integrated into everyday life, concerns about their impact on users' mental health have grown significantly. Many applications and websites are designed primarily to maximize user engagement, often employing techniques that prioritize screen time, notifications, and persuasive design patterns over the emotional wellbeing of users. This has led to a rise in digital fatigue, anxiety, stress, and feelings of overwhelm, especially among students who are already navigating academic pressures and social expectations.

While UI/UX design is often focused on functionality, aesthetics, and business goals, its emotional and psychological influence on users is frequently overlooked. Poorly designed interfaces that are cluttered, confusing, or overly stimulating can increase cognitive load, cause frustration, and negatively affect users' emotional states. On the other hand, design elements such as simplicity, intuitive navigation, visual balance, and emotional cues have the potential to create calming, supportive digital experiences that promote mental wellness.

Despite the growing awareness of mental health issues, there is limited research on how UI/UX design directly affects emotional wellbeing, particularly in the context of student

users who are among the most vulnerable to cognitive overload and digital stressors. Furthermore, there is a lack of design frameworks and guidelines that emphasize emotional intelligence in digital product design.

This gap in understanding poses a critical problem: if digital platforms continue to be designed without considering their emotional impact, users—especially students—may continue to face negative psychological consequences. There is an urgent need to propose design strategies, such as an emotionally-aware focus interface (Student Mode), that foster emotionally supportive digital environments.

1.3 Aim and Objectives

Aim of the Study

The study aims to examine the impact of User Interface (UI) and User Experience (UX) design on mental health and emotional wellbeing in digital platforms, with the goal of identifying design principles and strategies that promote positive emotional experiences for users, particularly among students.

Objectives of the Study

To achieve this aim, the study will pursue the following specific objectives:

- i. To analyze the relationship between UI/UX design elements and users' emotional responses on digital platforms.
- ii. To identify common design patterns and features that contribute to digital stress, cognitive overload, or emotional discomfort.
- iii. To examine how empathetic and user-centered design approaches can improve mental wellbeing in digital interactions.

- iv. To evaluate existing case studies and scholarly research on the psychological effects of digital design.
- v. To propose a set of UI/UX design recommendations aimed at fostering emotional wellbeing and reducing negative psychological impacts on users.

1.4 Research Questions

The study seeks to answer the following research questions, which flow directly from the stated objectives:

Q1: How do specific UI/UX design patterns (e.g., perpetual feeds, social metrics) contribute to **cognitive overload** and digital fatigue among university students?

Q2: What is the relationship between exposure to highly stimulating design elements and students' self-reported feelings of **social pressure** and emotional distress?

Q3: What design framework can be proposed to mitigate identified negative psychological impacts and promote student wellbeing?

1.5 Research Hypothesis

The research tested the following alternative hypothesis (H_1), which was verified and accepted by the quantitative findings, against the null hypothesis (H_0):

Null Hypothesis (H_0): There is no significant relationship between UI/UX design elements that prioritize user engagement and the mental health or cognitive load of university students.

Alternative Hypothesis (H_1): UI/UX design elements that prioritize user engagement significantly increase students' cognitive load, social pressure, and emotional distress.

1.6 Scope of the Study

This study investigates how User Interface (UI) and User Experience (UX) design affect the mental health and emotional wellbeing of students using mobile and web-based platforms such as social media, educational tools, productivity apps, and mental health applications. It focuses on non-clinical aspects; like digital stress, cognitive overload, and emotional fatigue, and on design elements including layout, color schemes, navigation, and micro-interactions. Clinical diagnoses, backend systems, and hardware design are excluded.

1.7 Motivation of the Study

As a **student** deeply passionate about both technology and human psychology, I have personally observed how digital platforms can influence emotional wellbeing—not just in myself, but in my peers as well. In an age where students rely heavily on mobile apps, websites, and online learning systems, the design of these platforms plays a subtle yet powerful role in shaping their mental states.

The motivation behind this study stems from a desire to explore how UI/UX design goes beyond functionality and aesthetics, affecting how users feel, think, and interact with digital environments. Many students experience digital fatigue, cognitive overload, anxiety, or frustration while using poorly designed platforms, yet these emotional impacts are often overlooked in the design process.

I am driven by the need to advocate for emotionally conscious design practices that prioritize human wellbeing, not just engagement metrics or business goals. By conducting this research, I hope to contribute to the growing conversation around empathetic technology design, creating a framework (like Student Mode) where digital experiences are created with greater sensitivity to users' emotional and mental health needs.

This study also presents a personal opportunity to merge my interests in computer science, user-centered design, and mental health advocacy, creating research that is both academically valuable and socially impactful.

1.8 Significance of the Study

This study is significant because it:

I. Bridges a knowledge gap — Addresses the underexplored link between UI/UX design and mental health, particularly in the context of students in developing regions like Nigeria.

II. Provides practical insights — Offers design principles and strategies to help developers, UI/UX designers, and product managers create emotionally supportive digital platforms.

III. Promotes user wellbeing — Encourages designs that reduce digital stress, cognitive overload, and emotional fatigue, fostering positive digital experiences.

IV. Guides educational institutions — Helps schools and universities improve the usability and emotional comfort of learning platforms for students.

V. Supports mental health advocacy — Strengthens the conversation on empathetic technology and its role in mental health awareness.

VI. Encourages human-centered design thinking — Inspires the creation of platforms that prioritize user wellbeing alongside functionality and engagement.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The purpose of this chapter is to review existing literature that relates to the core concepts of this research user interface (UI) design, user experience (UX) design, and their influence on mental health and emotional wellbeing. A literature review is essential because it provides a foundation for understanding what other scholars have discovered, the theoretical perspectives they have applied, and the gaps that remain in the field.

This section draws from scholarly works, theories, and case studies to establish the link between digital design and human psychology. Specifically, it examines how UI and UX practices shape user interactions, impact emotional responses, and influence overall wellbeing in digital spaces. Since this research focuses on students, attention will also be given to how design patterns and digital interactions affect stress levels, concentration, and emotional health within academic contexts.

By exploring previous findings, theories, and practical examples, this chapter not only situates the present study within existing knowledge but also identifies where past research has fallen short. These insights will provide a basis for developing a conceptual framework that supports the objectives of this research.

2.2 Conceptual Review

The conceptual review provides a detailed examination of the key ideas that underpin this research. It explores the central concepts of User Interface (UI) design, User Experience (UX) design, and Mental Health and Emotional Wellbeing, while also examining how UI/UX

practices interact with psychological states. This section clarifies important terms, explains their relevance, and sets the foundation for the theoretical and empirical reviews that follow.

2.2.1 User Interface (UI) Design

User Interface (UI) design refers to the visual and interactive components through which users engage with a digital product such as a mobile application, website, or software system. It encompasses elements such as layout, typography, icons, buttons, images, and color schemes. A well-designed UI ensures that users can easily navigate a system, find what they need, and perform tasks efficiently.

The importance of UI design lies in its ability to establish first impressions. According to Norman (2004), users often form immediate judgments about a product's credibility and usability based on its appearance. A cluttered or poorly structured interface can discourage use, whereas a clean and professional design builds trust and promotes engagement. For example, minimalist search engines like Google demonstrate how simplicity in UI can enhance focus, while social media platforms like Instagram rely on visual appeal to keep users engaged. Thus, UI design is not merely aesthetic; it is a communication tool that bridges human intention with digital functionality.

2.2.2 User Experience (UX) Design

User Experience (UX) design goes beyond the surface-level appearance of a product to encompass the overall interaction a user has with a system. It includes how intuitive, engaging, and satisfying the interaction feels from start to finish. While UI focuses on the visual and structural elements, UX integrates psychology, usability, and emotion to ensure that a product is not only functional but also enjoyable.

The importance of UX design lies in its ability to shape how users feel while interacting with digital systems. According to Norman (2004), emotional responses to design play a central role in whether users continue to use a product or abandon it. A product with excellent functionality but poor experience may frustrate users, while a product with moderate features but empathetic design can foster loyalty. For example, an e-learning platform may contain comprehensive resources, but if the navigation feels stressful or the interaction is confusing, students may disengage. Conversely, platforms that include motivating feedback, progress indicators, and simple task flows encourage persistence and even enjoyment in learning.

Empirical research also supports the value of UX design. Chou and Ting (2021) found that empathetic and user-centered designs, such as friendly icons, encouraging prompts, and adaptive learning paths, reduced student anxiety and increased motivation. Similarly, Duolingo has become a popular case study in UX design by gamifying language learning through levels, streak counts, and rewards. These elements create a sense of achievement that motivates learners to continue, even if progress is slow. This reflects a broader principle in UX design: small, positive reinforcements can inspire long-term behavior change.

UX also has strong links with behavioral psychology. As noted by Casey Addy in a public interview, asking a user to radically change overnight is unrealistic. Instead, well-designed systems use progressive challenges to help users gradually adopt new habits (The Human-Centered Designer, 2025). This incremental approach respects human limitations while promoting growth.

In summary, UX design is the bridge between technology and human emotion. It ensures that digital systems are not just usable, but also supportive and motivating. For students, good UX design can reduce stress, increase engagement, and create a digital environment that feels less like a burden and more like a companion in their academic journey.

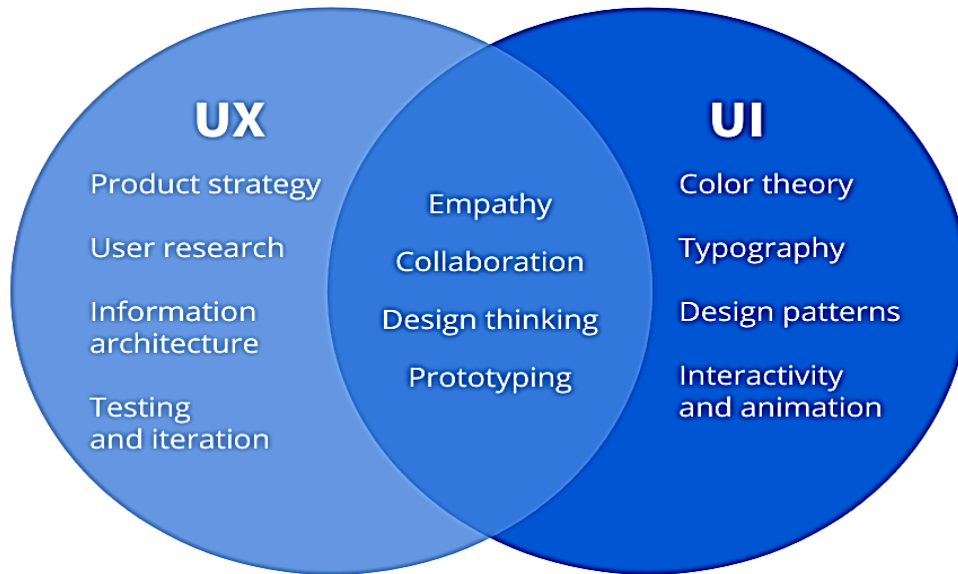


Figure 2.1: UI vs. UX

2.2.3 Mental Health and Emotional Wellbeing

Mental health and emotional wellbeing are essential dimensions of human life, influencing how individuals think, feel, and behave in daily activities. The World Health Organization (WHO, 2020) defines mental health as a state of wellbeing in which individuals realize their abilities, cope with the normal stresses of life, work productively, and contribute to their communities. Emotional wellbeing, closely related, refers to the ability to manage emotions effectively, maintain positive relationships, and cultivate resilience.

In the digital era, these concepts have taken on new significance. With the increasing integration of technology into education, socialization, and professional life, digital platforms now serve as environments where mental health can be either supported or undermined. For students in particular, the quality of their digital interactions directly affects their academic performance and emotional stability. A poorly designed application that overwhelms them with notifications or cluttered interfaces can lead to stress, distraction, and burnout.

Conversely, platforms that prioritize calmness, focus, and empathy can provide comfort and enhance emotional resilience.

Research has highlighted both the risks and opportunities of technology's influence on mental health. Elhai et al. (2020) found that manipulative or addictive digital patterns, such as infinite scroll or red notification badges, were strongly correlated with heightened anxiety, depression, and fear of missing out (FoMO). These findings underscore the dangers of prioritizing business metrics over user wellbeing. On the other hand, positive examples exist: mindfulness apps like Calm and Headspace have demonstrated that thoughtfully designed interfaces can help reduce anxiety, promote relaxation, and improve focus. In this sense, design becomes a form of psychological intervention.

Importantly, digital design can influence not only emotional healing but also physical wellbeing. Subtle nudges in interface design can encourage healthier behaviors, such as reminders to take breaks, stretch, or stay hydrated. Over time, these small design-driven prompts can contribute to better physical health, which in turn supports emotional stability. This reflects the idea that “comfort” in design whether by reducing cognitive overload or by promoting healthy habits translates into greater focus and overall wellbeing.

For students navigating academic pressure, financial challenges, and social changes, the integration of mental health-conscious design in their digital tools is not a luxury but a necessity. By reducing stressors and fostering emotional balance, technology can transform from a source of distraction into a partner in personal growth.

2.2.4 The Relationship Between UI/UX Design and Mental Health

The relationship between digital design and mental health is increasingly recognized as both direct and profound. While UI and UX are often discussed in terms of usability and efficiency, their impact on psychological wellbeing is equally significant. Design choices

influence how users feel, think, and behave during digital interactions, shaping whether those experiences promote calmness and focus or generate stress and anxiety.

Poorly designed interfaces can create cognitive overload, where users are required to process too much information at once, leading to frustration and mental fatigue (Sweller, 1988). For example, cluttered dashboards, distracting animations, or constant notifications can overwhelm the brain's limited processing capacity. In contrast, thoughtful design reduces this burden, allowing users to concentrate on tasks without unnecessary interruptions. This is especially relevant for students, whose academic success often depends on sustained focus and efficient engagement with digital platforms.

Specific design elements exert measurable psychological effects. Colors, for instance, trigger emotional responses: soft tones like blue and green tend to encourage relaxation, while red notification badges are known to increase urgency and anxiety (Elliot & Maier, 2014). Similarly, typography affects readability and mood; balanced, sans-serif fonts create a modern, approachable tone, while overly ornate fonts may increase cognitive strain. Sound also plays a role, as notification tones often exploit Pavlovian conditioning to capture attention, sometimes reinforcing compulsive checking behaviors. Even shapes and forms influence perceptions; rounded buttons tend to feel approachable, while sharp angles can feel more rigid or intimidating.

Moreover, design patterns can either encourage healthy digital behaviors or reinforce addictive tendencies. Infinite scroll on apps like Instagram and TikTok fosters prolonged, passive consumption, contributing to digital fatigue and negative mental health outcomes. In contrast, mindful applications such as Forest demonstrate how UI/UX can promote focus and digital discipline, rewarding users for reducing phone use. These examples reflect the dual role of design as either a risk factor or a protective factor in emotional wellbeing.

Beyond preventing harm, UI/UX can actively encourage behavior change and healthier habits. Subtle design nudges like reminders to stand after long periods of sitting, gentle prompts to practice breathing exercises, or goal-oriented progress tracking can contribute to both emotional and physical healing. As user experience strategist Casey Addy (as cited in *The Human-Centered Designer*, 2025) notes, it is not about pushing users to drastic overnight changes (e.g., becoming marathon runners or expert coders instantly) but about inspiring gradual habit adoption aligned with their personal goals. This perspective, along with the researcher's reflections, shows that UI/UX serves not only as a communication tool but also as a motivational framework for growth.

Ultimately, the relationship between design and mental health underscores the ethical responsibility of designers. Every interface communicates more than functionality it conveys emotional cues that shape user experiences. A calm, empathetic, and supportive digital environment can improve resilience and emotional wellbeing, while manipulative or overwhelming design can contribute to stress and disengagement. In this sense, UI/UX design becomes not just a technical practice but a psychological and ethical endeavor.

Table 2.1: UI/UX Design Elements and Emotional Impact

Design Element	Emotional Effect	Examples/Note
Color	Calmness, anxiety reduction, brand identity	Blue/green = calm red = urgency
Typography	Readability, emotional impression	Sans-serif = Modern, easy on eyes, approachable Complex fonts = strain
Animation	Can enhance or distract	Minimal = focus; Excess = stress
Sound	Attention-grabbing, conditioned behaviour	Notification tones trigger involuntary responses
Form/Shape	Aesthetic appeal, usability	Rounded edges = friendly; Angular = sharp/directed, rigid
Narrative	Engages, guides, and builds emotional attachment	Storytelling in apps = deeper engagement (emotional connection)

2.3 Theoretical Framework

The theoretical framework provides the foundation for understanding how User Interface (UI) and User Experience (UX) design interact with human psychology and mental health. Several models and theories from human–computer interaction (HCI), cognitive psychology, and design studies offer valuable insights into this relationship. These frameworks not only explain why design matters but also guide the interpretation of empirical findings on student wellbeing.

2.3.1 Emotional Design Theory (Donald Norman, 2004)

Donald Norman’s Emotional Design Theory explains how people emotionally respond to products at three interconnected levels:

i. Visceral Design – The immediate, instinctive reaction to visual appearance (e.g., colors, shapes, typography). For instance, a calming blue dashboard may lower stress, while an app cluttered with harsh tones and flashing animations may provoke anxiety.

ii. Behavioral Design – The usability and functionality of a product. When an app is intuitive and easy to navigate, it reduces frustration and promotes satisfaction. Conversely, confusing navigation increases stress and disengagement.

iii. Reflective Design – The deeper meaning and long-term connection users develop with a product. For example, students who use Calm or Headspace may associate the app with relaxation and identity as someone actively caring for their mental health.

Norman's theory is highly relevant to this research because it demonstrates how design operates not only on the surface level of usability but also on emotional and psychological levels that directly affect mental wellbeing.

2.3.2 Cognitive Load Theory (Sweller, 1988)

Cognitive Load Theory (CLT) emphasizes the limits of working memory when processing information. Poorly designed interfaces that overload users with too many features, notifications, or fragmented layouts create extraneous cognitive load, leaving fewer resources for learning and problem-solving.

In contrast, minimalist and structured designs reduce unnecessary mental effort, allowing students to focus on tasks that matter most. For instance, an e-learning portal with a clean navigation system helps students devote their energy to studying rather than figuring out how to use the platform.

From a wellbeing perspective, designs that minimize extraneous load also reduce mental fatigue, stress, and frustration key concerns for students already balancing heavy academic demands.

2.3.3 Technology Acceptance Model (TAM) (Davis, 1989)

The Technology Acceptance Model (TAM) explains why individuals adopt or reject technology, focusing on two primary factors:

- Perceived Ease of Use – How effortless it feels to use the system.
- Perceived Usefulness – How much the system helps users achieve their goals.

When students perceive an application as simple and beneficial, they are more likely to adopt it. For example, Duolingo’s gamified features make language learning fun and easy, while meditation apps provide clear pathways for relaxation.

From a mental health lens, if a system feels frustrating or purposeless, students may abandon it, leading to disengagement. Conversely, intuitive and meaningful tools can foster both adoption and positive emotional outcomes. TAM therefore reinforces the idea that good UX is critical for both usability and wellbeing.

2.3.4 Human–Computer Interaction (HCI) Models

Human–Computer Interaction (HCI) frameworks provide broader insights into how humans engage with technology. The Interaction Design Model (Preece, Rogers, & Sharp, 2015), for instance, emphasizes usability, accessibility, and emotional engagement as central pillars of digital systems.

HCI highlights that technology is not neutral; it shapes behaviors, emotions, and social interactions. For students, this means that digital platforms influence not only academic

performance but also mental health either by supporting resilience and inclusivity or by creating barriers and stressors.

Inclusive HCI models also emphasize accessibility, such as designing with screen readers for visually impaired students or incorporating flexible layouts for neurodiverse learners. These considerations underscore the ethical role of design in promoting equitable learning environments.

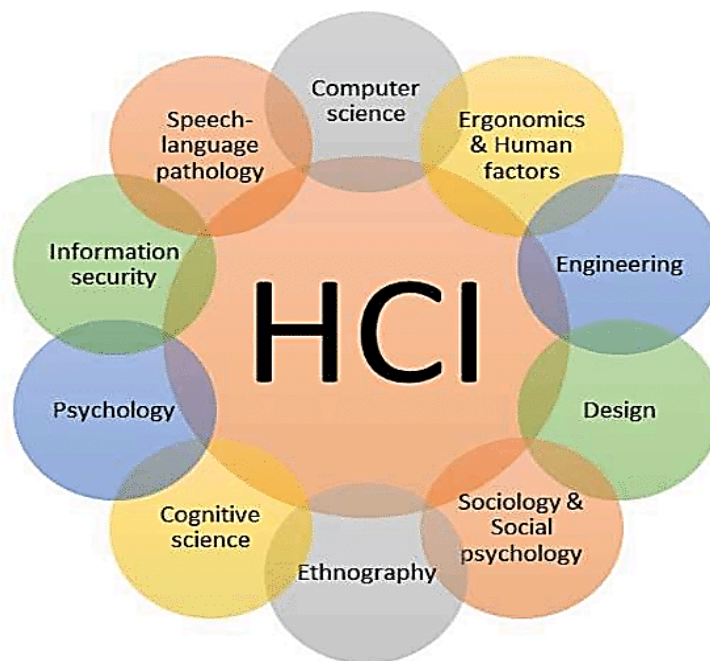


Figure 2.2: Human Computer Interaction and Related Research Fields

2.3.5 Behavioral Psychology Principles

Principles from behavioral psychology, especially classical conditioning (Pavlov) and operant conditioning (Skinner), explain how digital interfaces shape user habits:

Classical Conditioning – Red notification badges or message tones trigger involuntary checking behaviors, reinforcing urgency and anxiety.

Operant Conditioning – Streaks, badges, and rewards (e.g., Duolingo’s daily goals) use positive reinforcement to encourage continuous engagement.

While these techniques can motivate students, they may also foster compulsive usage. For instance, infinite scroll features reward prolonged engagement but often at the expense of

emotional health. Designers therefore face the challenge of balancing motivation with responsibility nudging users toward healthier patterns such as breaks, reflection, or self-regulation.

Summary of Framework

Together, these theories demonstrate that digital design influences users on multiple, overlapping levels:

- Emotionally (Norman's Emotional Design).
- Cognitively (Cognitive Load Theory).
- Behaviorally (Behavioral psychology and conditioning).
- Adoption and engagement (TAM).
- Holistically (HCI frameworks).

This theoretical grounding highlights how UI/UX design can either promote wellbeing by reducing stress and enhancing focus or harm it by fostering addiction and cognitive overload. It therefore provides the conceptual lens through which this study examines the relationship between design and the mental health of students.

2.4 Empirical Review

The link between UI/UX design and its psychological impact is supported by a growing body of empirical research. This section synthesizes findings from key studies to demonstrate how specific design elements influence student well-being and academic performance.

2.4.1 UI Design and Cognitive Function

Empirical evidence consistently shows that a well-crafted interface reduces cognitive strain and improves user focus. A study by Hussain et al. (2020) on e-learning platforms found that intuitive navigation and clean layouts significantly improved student satisfaction and

engagement. Their research demonstrated that a simplified UI, with a clear information hierarchy, reduced the time students spent searching for resources by up to 30%, allowing them to allocate more cognitive resources to the learning material itself.

Similarly, Murugesan (2021) argued that subtle UI elements such as color palettes, iconography, and sound cues can either support or overwhelm cognitive processing. Cluttered dashboards with multiple pop-ups, for example, were shown to increase extraneous cognitive load, leading to mental fatigue and poorer task performance. Conversely, well-structured dashboards promote cognitive fluency, helping students process information more effectively. Recent findings further emphasize that "comfort" is equivalent to focus in UI/UX design. When a learning platform minimizes unnecessary distractions, students are more likely to sustain attention and absorb content. As noted by user experience strategist Casey Addy in a public interview, a streamlined interface becomes a driving force for academic success not by doing the learning for the student, but by creating a mental environment where learning becomes easier and less stressful (The Human-Centered Designer, 2025).

2.4.2 Emotional Design and Student Motivation

The emotional impact of design is another critical factor in user engagement and well-being. Chou and Ting (2021), in a study on e-learning systems, reported that empathetic design elements such as friendly typography, relatable graphics, and encouraging micro-interactions were associated with higher levels of student motivation and a reduction in test anxiety by an average of 15%. Designing for positive emotions, they concluded, can turn a task-oriented tool into a supportive learning companion.

Ippen (2019) highlighted how human experience design can counteract manipulative patterns by fostering trust and empowerment. In his study of a mindfulness app, users who engaged with interfaces that emphasized warmth and empathy reported greater self-efficacy and

mental clarity compared to users of more transactional platforms. This demonstrates that thoughtful design can nurture intrinsic motivation and reduce stress levels.

Behavioral design research also shows that small, emotionally supportive cues can drive healthier habits. As user experience professional Casey Addy notes in a public interview, platforms can present micro-goals and affirmations that encourage steady growth instead of overwhelming users with grand goals (The Human-Centered Designer, 2025). In educational contexts, this means that incremental motivational feedback like celebrating module completion can sustain student engagement and reduce burnout.

2.4.3 Design Patterns, Addiction, and Mental Health

The influence of specific design patterns on user behavior and mental health has been widely documented. A meta-analysis by Elhai et al. (2020) on smartphone use found a strong correlation between addictive design features and negative mental health outcomes among students, including heightened anxiety, depressive symptoms, and fear of missing out (FoMO). The researchers specifically identified “infinite scroll” and unpredictable notification systems as features that exploit psychological vulnerabilities, creating a compulsive need to check for updates.

Students with higher usage of applications containing such features were more likely to report feelings of overwhelm and digital burnout. This aligns with persuasive technology theories, which argue that design can nudge users into repeated behaviors sometimes to their detriment (Fogg, 2009).

Similarly, some apps have demonstrated that design can promote healthy behavior change. For example, the Forest app rewards users for staying off their phones by letting them grow virtual trees, subtly encouraging mindful device use. Similarly, learning platforms that integrate reminders to “take a short break” or “stretch” promote physical well-being

alongside mental health. As an observation from this research, design elements that encourage movement after long study sessions may even contribute to longevity and better overall health.

These findings illustrate that while poor design can exacerbate digital addiction, intentional design patterns can become tools for healing both emotionally and physically.

2.4.4 Color, Sound, and Sensory Psychology

Sensory design elements play a powerful, often subconscious, role in shaping emotional responses and learning experiences. The field of color psychology, supported by empirical findings, indicates that cool tones (blue, green) can create calming effects, while warm tones (red, orange) stimulate alertness but may increase stress if overused (Elliot & Maier, 2014).

For example, one study on online learning platforms found that a blue-dominant interface with green highlights for success cues was associated with lower reported stress levels among students compared to a red-and-yellow-dominant interface.

Murugesan (2021) further demonstrated how sound design and Pavlovian conditioning in interfaces (e.g., a distinct “ding” for new messages) can trigger emotional and behavioral responses, often keeping users in a state of constant alertness. While these auditory cues can aid memory when used sparingly, their overuse has been linked to heightened stress and distraction.

From a holistic design perspective, balancing sensory stimulation with cognitive clarity is crucial. An effective interface should use colors, sounds, and animations not as mere embellishments, but as purposeful elements that guide attention, soothe anxiety, and reinforce positive learning behaviors. When harmonized, these sensory cues can strengthen both emotional healing and cognitive performance in students navigating digital platforms.

Table 2.2: Summary of Key Empirical Findings on UI/UX Design and Student

Well-being

Focus Area	Key Findings
UI Design & Cognitive Function	Clear layouts reduces cognitive load, improve focus, save time on navigation (~30)
Emotional Design & Motivation	Empathetic interface increase motivation, reduce anxiety (~15)
Design Patterns & Addiction	Infinite Scroll, Unpredictable notifications linked to anxiety, FoMO; mindful apps improve self-regulation
Colour & Sensory Psychology	Cool colours induce calm, warm colours stimulates alertness; auditory cues trigger.

Note. Adapted from Hussain et al. (2020); Chou & Ting (2021); Elhai et al. (2020); Ippen (2019)

CHAPTER THREE

RESEARCH METHODOLOGY AND DESIGN

3.0 Introduction

This chapter outlines the comprehensive methodology used to investigate the impact of UI/UX design on the mental health and emotional wellbeing of university students. It adopts a mixed-methods design to provide a robust and triangulated understanding of the research problem.

This chapter is structured as follows:

- It begins with an analysis of the existing digital platforms (3.1) and their constraints (3.2) to establish the problem in practice.
- It then proposes a new conceptual system (3.3) and its justification (3.4) as a solution to the identified problems.
- Finally, it details the research methodology used to gather and analyze data, including the population (3.5), research instruments (3.6), and data analysis plan (3.7).

3.1 Analysis of Existing System

The "existing system" refers to the dominant design paradigm of popular digital platforms heavily used by the student population. These platforms are categorized and analyzed to identify design patterns that influence mental wellbeing.

Engagement-First Platforms (e.g., TikTok, Instagram, Facebook):

- **Functionality:** These platforms are optimized for content delivery, social interaction, and entertainment, with a business model reliant on maximizing user screen time.

- **Strengths:** High user engagement, global connectivity, and effective information sharing.
- **Weaknesses (Mental Health Impact):** They employ persuasive and addictive patterns like *infinite scroll* and *unpredictable notifications*. These features are empirically linked to anxiety and FoMO (Elhai et al., 2020) and create a **high cognitive load** that overwhelms working memory (Sweller, 1988), making it difficult for students to focus on academic tasks.

Wellbeing-First Platforms (e.g., Calm, Headspace, Forest):

- **Functionality:** These platforms are explicitly designed to improve mindfulness, promote focus, or enhance mental wellbeing.
- **Strengths:** They use Empathetic Design principles (Chou & Ting, 2021), such as calming color palettes and minimalist interfaces, to reduce cognitive load and promote relaxation. The *Forest* app, for example, uses positive reinforcement to reward disengagement.
- **Weaknesses:** Their benefits are siloed. A student must leave the stressful environment of Instagram to enter the calm one, meaning the underlying problem on the main platforms is not solved.

3.2 Constraints of Existing System

The analysis in 3.1 reveals a critical gap. Users must either subject themselves to designs that cause high cognitive load (Instagram) or retreat to isolated "wellness" apps (Calm). The constraints of this binary system are:

- **Prioritization of Engagement Over Wellbeing:** The design flaws that affect mental health are often intentional features designed to maximize screen time, not protect user wellbeing.
- **High Cognitive Overload:** Constant notifications, cluttered interfaces, and auto-playing content increase stress and reduce learning efficiency for students (Hussain et al., 2020).
- **Lack of Adaptive Personalization:** Platforms do not adapt to a user's context. A student trying to study is served the same high-stimulation interface as a user seeking entertainment.

3.3 Proposed System

To address these constraints, this research proposes a conceptual design framework called the **"Emotionally-Aware Focus Interface" (EAF-I), or "Student Mode."**

This is not a new app, but a user-controlled layer that could be integrated into existing platforms to give users control over their digital environment.

Core Features and Capabilities:

- **Adaptive Notification Management:** Batches all non-essential notifications. Users can "whitelist" critical contacts (e.g., "Professor," "Family") while silencing all other group chats and social alerts, thus reducing distraction and anxiety.
- **"Calm UI" Override:** When activated, this feature applies a filter to the app's UI.

This includes:

- **Color-Scheme Shift:** Replaces harsh, stimulating colors (like red notification badges) with a calming, monochromatic, or user-selected blue palette, as supported by color psychology (Elliot & Maier, 2014).

- **Element Simplification:** Hides or de-saturates distracting elements like "Stories" or "Reels" feeds, presenting a minimalist interface to reduce cognitive load (Hussain et al., 2020).
- **Mindful Content Curation:** The algorithm, when in "Student Mode," would pause the "For You" feed and instead prioritize content aligned with the user's focus goals, such as saved posts or educational content.

3.4 Justification of Proposed System

The "Student Mode" is justified as a direct, necessary solution to the problems identified in the literature and the analysis of existing systems.

- It directly addresses the **high cognitive load (Sweller, 1988)** by simplifying interfaces and managing notifications.
- It applies the principles of **Emotional Design (Norman, 2004)** to create a calmer visceral experience, moving from anxiety-based design to wellbeing-based design.
- It serves as the tangible design recommendation that fulfills a primary objective of this research. It provides a user-centered solution to the gap left by existing platforms.

3.5 Operationalization of Variables

The conceptual constructs of this study were operationalized (made measurable) by linking them to specific, quantifiable data points collected in the survey. This section details how the abstract concepts of *impact* were measured using **Descriptive Statistics** (the **Mean** score) on the 5-point Likert scale.

Table 3.1: Operationalization of Key Research Variables

Research Construct	Measurement/Operationalization (How Impact Was Measured)	Relevant Survey Item IDs	Finding Confirmation (Mean μ)
Cognitive Overload	Self-reported feeling of saturation and mental strain due to excessive features and content volume.	B6: Overwhelmed by features C4: Content stream overwhelms	High Impact ($\mu=4.10$) High Impact ($\mu=4.06$)
Social Pressure/Anxiety	Self-reported burden of social comparison and need for perfect self-presentation due to design.	C9: Pressure to appear perfect C5: Negative self-comparison	High Impact ($\mu=3.94$) Impact ($\mu=3.48$)
Solution Mandate	Self-reported belief that design changes can mitigate harm, justifying the proposed system.	D5: Better UI can reduce harm D4: Desire for greater personalization	High Support ($\mu=4.13$) Neutral ($\mu=3.46$)

3.6 Sampling and Population of Study

- **Population of the Study:** The population comprises all undergraduate and postgraduate students of the University of Benin (UNIBEN), Edo State, Nigeria. UNIBEN has a diverse and technology-active student body, making them suitable for this research.
- **Sample Size and Sampling Technique:** A sample size of 100–150 students from various departments and levels will be targeted. The sampling strategy is a non-probability combination of:
 - **Convenience Sampling:** For selecting students who are readily accessible through class WhatsApp groups and online platforms.

- **Purposive Sampling:** For specifically targeting users who are frequent interactors with the social and wellness apps relevant to the case study.

3.7 Research Instrument and Design

This study adopts a **mixed-methods research design**, combining qualitative and quantitative approaches to provide a comprehensive understanding of the research problem. This design consists of:

- **Qualitative Case Studies & Heuristic Evaluation:** Examination of selected platforms (TikTok, Instagram, Calm, Forest) to identify UI/UX patterns.
- **Descriptive Survey:** Quantitative data collection from students regarding their emotional responses and usability perceptions.

The primary instruments for this design are:

- **Survey Questionnaire:** An online questionnaire (see Appendix) designed to capture quantitative data on UI/UX perception, emotional responses, and cognitive load.
- **Case Study and Heuristic Evaluation Framework:** A framework used to critically observe and assess the UI patterns of the selected apps. This framework is based on **Nielsen's heuristics**, adapted with a mental-health lens derived from the literature review (e.g., Cognitive Load Theory, Emotional Design).

Validity and Reliability of Research Instruments:

- **Survey Questionnaire:**
 - **Content Validity:** The instrument was reviewed by the project supervisor to ensure alignment with key constructs (usability, cognitive load, emotional experience).

- **Reliability:** A pilot test involving 10–15 UNIBEN students will be conducted. Internal consistency will be measured using **Cronbach’s Alpha**, with a value of 0.70 or higher considered acceptable.
- **Case Study and Heuristic Evaluation:**
 - **Credibility (Qualitative Validity):** Established through **methodological triangulation**—cross-checking findings from the heuristic evaluation, case study observations, and the survey responses.
 - **Dependability (Qualitative Reliability):** Ensured through the use of the predefined heuristic framework, which reduces subjectivity in the analysis.

3.8 Research Questionnaire Document

The research instrument used for the quantitative and initial qualitative data collection is the Survey Questionnaire, as detailed below. This instrument was structured into five sections to capture comprehensive data directly related to the study's objectives and theoretical frameworks.

Title: Impact of UI/UX Design on Mental Health and Emotional Well-Being of University Students Using Digital Platforms

Instructions:

Please kindly respond to the following questions as honestly as possible. Your responses will be used strictly for academic purposes and will remain confidential.

Likert Scale Definition: Please rate your agreement with the following statements using the scale: **SA** = Strongly Agree, **A** = Agree, **N** = Neutral, **D** = Disagree, **SD** = Strongly Disagree

Section A: Demographic Information

(Tick the correct answer or fill in the blank)

1. **Gender:** Male Female Prefer not to say
2. **Age Range:** Below 18 18–21 22–25 Above 25
3. **Faculty:** _____
4. **Level:** 100L 200L 300L 400L 500L+
5. **Most used digital platform(s):** (Check all that apply) TikTok Instagram
WhatsApp Facebook Twitter/X Others: _____

Section B: UI/UX Interaction, Usability & Experience

S/N	STATEMENT	S A	A	N	D	S D
6	Navigation on the platforms I use is usually smooth and easy to understand.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	The visual interface (colors, layout, icons) makes using the apps enjoyable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Content discovery is quick and intuitive due to good design.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	App features are well-organized and help me achieve what I want faster.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Notifications are structured in a way that keeps me engaged.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	I feel overwhelmed by too many features or content on some apps.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	I sometimes struggle to find required information on certain platforms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	I have encountered dark design patterns (e.g. addictive scroll, intrusive pop-ups).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section C: Emotional and Mental Health Impact

S/N	STATEMENT	S A	A	N	D	S D
14	Spending time on digital platforms improves my mood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15	I sometimes feel anxious when I cannot access or check updates on these platforms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	The design and visuals of apps sometimes make me feel pressured to be perfect.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	Excessive notifications make me distracted from school work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	User interface design affects how long I stay on an app.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	Visual elements (colors, animations) sometimes overstimulate me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	UI/UX design influences my motivation and productivity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21	Some designs help me relax or feel emotionally supported.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	Using digital platforms negatively affects my sleep or focus.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section D: Well-Being, Support & Regulation

S/N	STATEMENT	S A	A	N	D	S D
23	I find it difficult to limit screen time because the apps are too engaging.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24	Some platforms encourage comparison that affects my self-esteem.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25	The presence of calm/educational designs helps me stay mentally balanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26	I would like platforms to be designed to help manage stress and distraction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27	UI/UX improvements can reduce burnout among students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28	A system focused on well-being (calming UI + support features) would benefit me academically.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section E: Suggestions 29. What UI/UX features do you think could improve your mental well-being while using digital platforms?

(Description): As a student, think about the apps you use every day (like Instagram, WhatsApp, TikTok, etc.). What specific features do you **wish** they had to help you? We are looking for your ideas on how to improve **academic performance, mental health, and focus**. *For example:* "I wish WhatsApp had a 'Study Mode' that pauses all group chats for one hour." "I wish TikTok had an 'Academic Filter.' When I turn it on, it would only show me content related to subjects I follow, like 'programming tips' or 'history facts,' instead of dance videos."

Please describe any ideas you have.

3.8.1 Quantitative Data Analysis (From Survey) Survey responses will be exported to Microsoft Excel and analyzed using:

Table 3.2: Quantitative Data Analysis Plan

Analysis Technique	Purpose	Output Format
Frequency & Percentage	Summarize demographics & trends	Charts & tables
Mean & Standard Deviation	Evaluate perception of UI/UX impact	Summary statistics
Graphical Representation	Compare variables visually	Bar charts

3.8.2 Qualitative Data Analysis (From Case Study & Heuristics) Thematic analysis will be applied to observation notes and screenshots to identify themes such as "Designs increasing cognitive load," "Emotionally manipulative interfaces," and "Features that support well-being."

Finally, findings from both methodologies will be triangulated in Chapter 4 to answer the research questions comprehensively.

3.9 Method of Data Analysis

Analysis will align with the mixed-methods approach:

3.9.1 Quantitative Data Analysis (From Survey) Survey responses will be exported to Microsoft Excel and analyzed using:

Table 3.3: Quantitative Data Analysis Plan

Analysis Technique	Purpose	Output Format
Frequency & Percentage	Summarize demographics & trends	Charts & tables
Mean & Standard Deviation	Evaluate perception of UI/UX impact	Summary statistics
Graphical Representation	Compare variables visually	Bar charts

3.9.2 Qualitative Data Analysis (From Case Study & Heuristics) Thematic analysis will be applied to observation notes and screenshots to identify themes such as "Designs increasing cognitive load," "Emotionally manipulative interfaces," and "Features that support well-being."

Finally, findings from both methodologies will be triangulated in Chapter 4 to answer the research questions comprehensively.

3.10 Ethical Considerations

To ensure the protection of all participants, the following ethical standards will be strictly maintained:

- **Voluntary Participation:** All participation is entirely voluntary.
- **Anonymity and Confidentiality:** All data from the questionnaire will be collected anonymously, and all responses will be kept confidential.
- **Informed Consent:** A consent statement will be provided on the first page of the questionnaire, clearly stating the purpose of the research.

- **No Harm:** The research is designed to pose no psychological or physical harm to participants.
- **Data Use:** All data will be used strictly for academic research purposes only.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

This chapter presents the findings from the mixed-methods research conducted to understand how UI/UX design elements on digital platforms influence student well-being, focus, and cognitive load. Data is interpreted through:

1. **Demographic Profile of Respondents**
2. **Quantitative Analysis** of Likert-scale responses (SPSS dataset)
3. **Qualitative Thematic Insights** from open-ended responses
4. **Integrated Discussion** aligning findings with the proposed system

A note on the data:

Due to practical constraints, the demographic and qualitative findings are based on an initial subset of respondents ($N = 68$), while the quantitative analysis utilizes the final, more robust dataset ($N = 120$). Consistency of trends across both samples reinforces the credibility of the results.

4.1 Demographic Characteristics of Respondents (N = 68)

Table 4.1: Gender Distribution

Gender	Frequency	Percentage
Male	48	70.59%
Female	20	29.41%
Total	68	100%

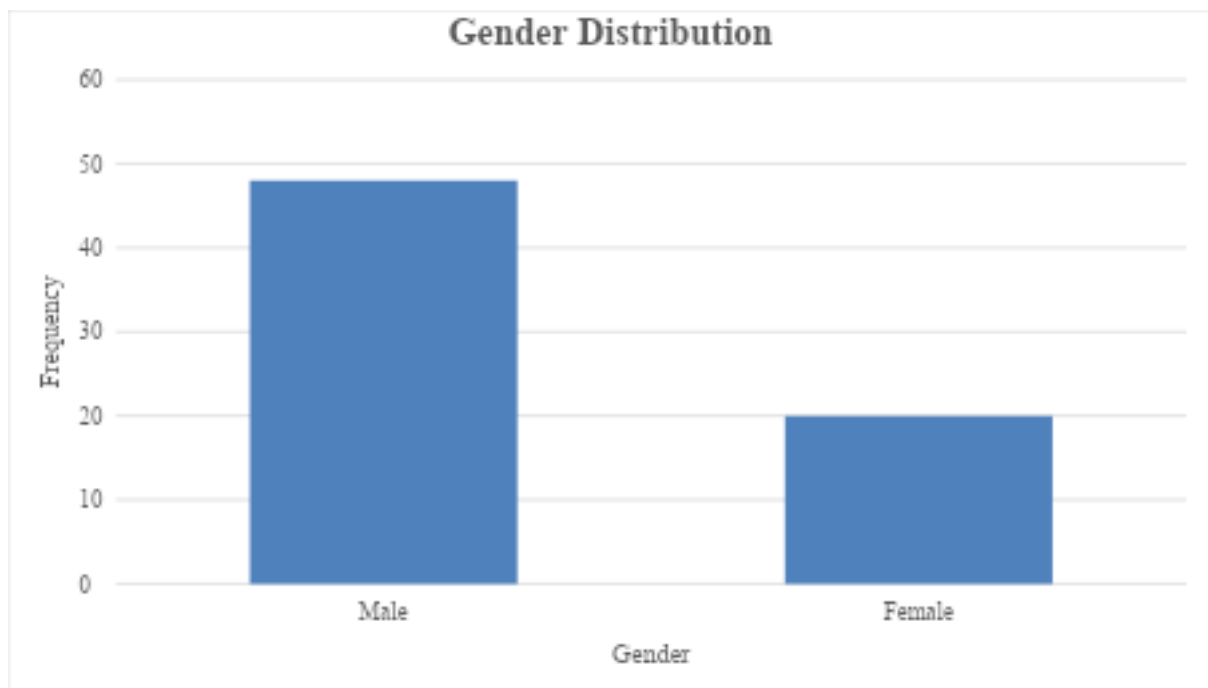


Table 4.2: Age Range

Age Range	Frequency	Percentage
18–21	36	52.94%
22–25	24	35.29%
Above 25	7	10.29%
Below 18	1	1.47%
Total	68	100%

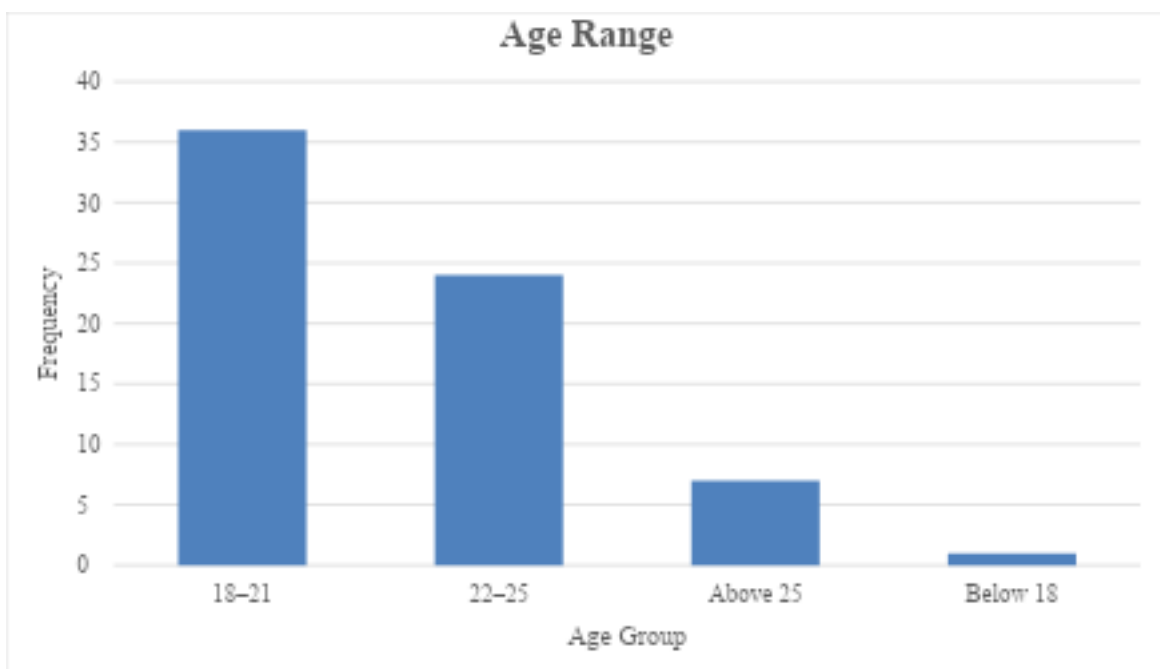


Table 4.3: Level of Study

Level	Frequency	Percentage
400L	49	72.06%
500L+	14	20.59%
300L	3	4.41%
200L	1	1.47%
100L	1	1.47%
Total	68	100%

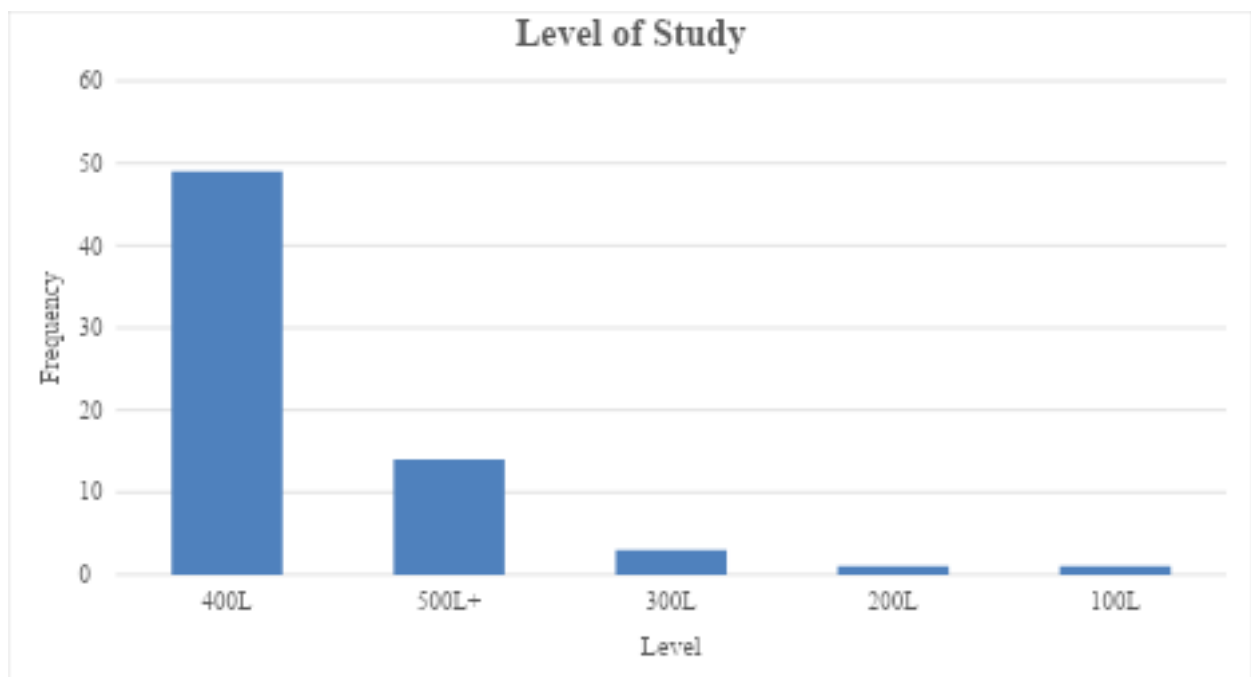
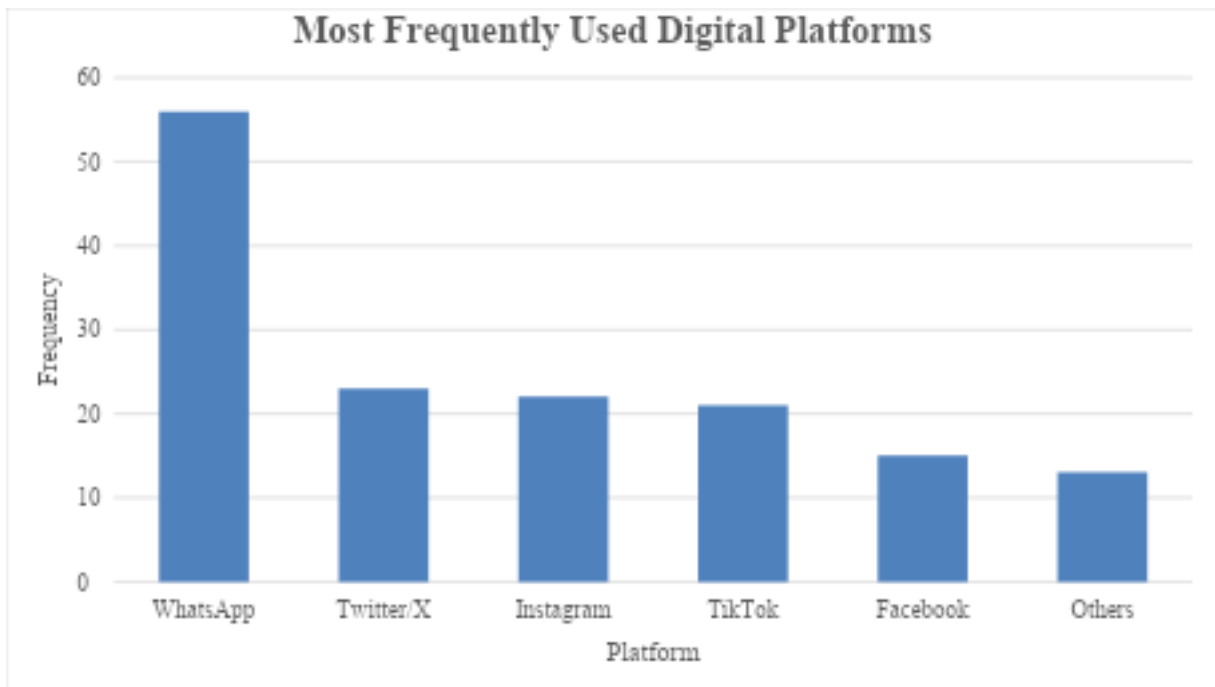


Table 4.4: Most Frequently Used Digital Platforms

(Multiple responses permitted)

Platform	Frequency	% Respondents
WhatsApp	56	82.35%
Twitter/X	23	33.82%
Instagram	22	32.35%
TikTok	21	30.88%
Facebook	15	22.06%
Others	13	19.12%



Summary:

Respondents were predominantly final-year students aged 18–25 who are highly active on mobile social platforms. This demographic aligns strongly with the target group for the proposed system.

4.2 Quantitative Analysis of Likert-Scale Responses (N = 120)

Respondents rated UI/UX impact on a **5-point Likert scale** (1 = Strongly Disagree, 5 = Strongly Agree).

Table 4.5: Mean Scores for Key Constructs

ID	Construct	Mean (μ)
UI/UX Interaction & Usability		
B2	Visuals are enjoyable	4.40
B3	Content discovery is intuitive	4.30
B4	Features are organized	4.20
B5	Notifications keep me engaged	4.19
B6	<i>Features feel overwhelming</i>	4.10
B7	<i>Struggle to find info</i>	3.40
B8	<i>Dark patterns encountered</i>	3.58
Emotional & Mental Health Impact		
C1	<i>Design contributes to stress</i>	3.88
C2	<i>Visuals negatively affect mood</i>	3.58
C3	<i>Notifications disrupt focus</i>	2.89
C4	<i>Content stream overwhelms</i>	4.06
C5	<i>Negative self-comparison</i>	3.48
C6	<i>FOMO experience</i>	3.05
C7	<i>UI increases isolation</i>	3.18
C8	<i>Design encourages overuse</i>	3.23
C9	<i>Pressure to appear perfect</i>	3.94
Well-being & Regulation		
D1	Uses screen-time features	3.27
D2	Desire for more wellness features	3.41
D3	Access to support is easy	4.24

D4	Desire for greater personalization	3.46
D5	Better UI can reduce harm	4.13
D6	Uses privacy features	3.98

4.3 Interpretation of Quantitative Findings

4.3.1 Dominant Challenge: Cognitive Overload

The strongest problem indicators show students feel:

- **Overwhelmed by features** ($\mu = 4.10$)
- **Overwhelmed by algorithmic content** ($\mu = 4.06$)
- **Pressured to present perfectly** ($\mu = 3.94$)
- **Stressed by design choices** ($\mu = 3.88$)

The primary harm is not distraction — it is **information saturation and social pressure**. Notifications were surprisingly **not a major issue** ($\mu = 2.89$).

4.3.2 Support Exists — But Not the Right Kind

Students agree support is **easy to find** ($\mu = 4.24$) but remain overwhelmed and anxious.

This indicates a mismatch between:

- **Available support**
- vs.
- **Actual psychological burden**

4.3.3 Implication for System Design

Students do not want **more features**. They want **interface relief** — a calmer, simplified environment. This validates the proposed **Emotionally-Aware Focus Interface** as a **refuge from overload**, not an additional tool to manage.

4.4 Qualitative Thematic Analysis (N = 68)

Three clear themes emerged:

Theme	Student Concern	Representative Example
1. Notification & Chat Overload	“Rowdy” academic group chats disrupt focus and create stress.	“I wish WhatsApp had a Study Mode that pauses group chats...”
2. Algorithmic Content Filtering	Feeds are overwhelming and irrelevant to academic goals.	“I wish TikTok had an Academic Filter...”
3. Anti-Addiction & Time Control	Scrolling easily becomes compulsive and time-wasting.	“TikTok should limit how far you scroll...”

These suggestions directly reflect the cognitive overload patterns seen in the quantitative results.

4.5 Integrated Discussion (Triangulation)

Table 4.6: Alignment between Data Types and System Proposal

Evidence Source	Key Findings	Implication
Quantitative	Overwhelm and social pressure are dominant issues	Student Mode must focus on calming UI and controlled content exposure
Qualitative	Requests for focus filters and chat control	Notification Management & Mindful Content Curation are essential
Overall Synthesis	Notifications are secondary; overload is primary	The original problem statement evolves — deeper and clearer

4.6 Conclusion

The findings confirm that current UI/UX designs on high-use platforms unintentionally burden students through excessive information flow and performance pressures. While support features exist, they do not address the emotional strain caused by design-driven overload.

Therefore, the proposed **Emotionally-Aware Focus Interface** is not merely useful — it is necessary. It offers a calming digital space, improves focus, and supports well-being by **reducing cognitive load at the source** rather than reacting to its symptoms. These results provide direct evidence and strong justification for the system design presented in the next chapter.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.0 Introduction

This chapter concludes the study on the impact of UI/UX design on the mental health and emotional wellbeing of university students using digital platforms. It provides a brief summary of the study's purpose, methods, and key findings. It then offers a definitive conclusion on the established research objectives and presents concrete design recommendations based directly on the empirical data, culminating in the proposal of the **"Emotionally-Aware Focus Interface" (Student Mode)** framework.

5.1 Summary of the Study

The primary aim of this research was **to investigate how user interface (UI) and user experience (UX) design elements affect the mental health and emotional wellbeing of users on digital platforms.** The study was motivated by the observation that many platforms prioritize user engagement and profit over user wellbeing, leading to cognitive overload and digital fatigue, particularly among students.

The study employed a **mixed-methods research design** involving:

1. A review of scholarly literature on Emotional Design Theory and Cognitive Load Theory (Chapter 2).
2. A system analysis of existing digital platforms, identifying constraints (Chapter 3).
3. A descriptive survey administered to **\$N=120\$** students at the University of Benin.
4. Qualitative thematic analysis of open-ended user suggestions.

The findings from the data analysis provided empirical validation for the necessity of a design shift toward more empathetic, student-centered interfaces.

5.2 Summary of Key Findings

The triangulation of the quantitative and qualitative data yielded several critical findings, confirming the research's hypothesis that UI/UX patterns contribute negatively to student wellbeing.

Area of Finding	Key Result	Implication
Dominant Psychological Burden	The primary problem is cognitive overload (Content Overwhelm $\mu=4.06$) and social performance pressure (Pressure to be Perfect $\mu=3.94$).	The design solution must focus on Calmness and Refuge , not just blocking alerts.
Misidentification of Problem	Notifications were not the primary issue (Disrupt Focus $\mu=2.89$), demonstrating that simple distraction is less harmful than saturation .	The scope of design intervention must shift from <i>alert management</i> to Content Curation .
The New Research Gap	Students overwhelmingly agree that support is easy to find ($\mu=4.24$), yet they remain overwhelmed.	Existing generic support features are <i>available</i> but ineffective at solving the emotional strain caused by design-driven overload. A custom solution is required.
User Mandate (Qualitative)	Students explicitly requested features to control " rowdy " group chats , impose scrolling limits , and activate " Academic Filters " for overwhelming content feeds.	The proposed system is a direct, user-validated answer to an articulated market need.

In summary, the study found that the negative impact of UI/UX is driven by **information saturation** and **social pressure**, which necessitates a design solution focused on simplification, control, and emotional safety.

5.3 Conclusion

Based on the synthesis of the literature review, system analysis, and empirical findings, this study concludes that all four original objectives have been met:

1. **To identify common UI/UX design patterns and their psychological effects:** Met through the analysis of **addictive scrolling, content overwhelm (C4), and social performance pressure (C9)**, which are the main psychological burdens identified by the students.
2. **To analyze how digital platforms contribute to or alleviate mental stress, anxiety, or digital fatigue:** Met by concluding that the current design paradigm **contributes to stress** through **cognitive and social overload**, while existing generic features are insufficient for **alleviating** this burden.
3. **To review scholarly work and case studies on UI/UX and mental health:** Met through the comprehensive literature review in Chapter 2, which established the theoretical foundation using **Emotional Design Theory** (Norman) and **Cognitive Load Theory** (Sweller).
4. **To propose design recommendations that promote emotional well-being:** Met through the development and justification of the **Emotionally-Aware Focus Interface (Student Mode)**.

In conclusion, the research establishes that UI/UX design is a critical determinant of student mental health. Digital platforms must evolve from optimizing for maximum engagement to prioritizing the user’s need for clarity, focus, and emotional support.

5.4 Recommendations for Design Practice

The core recommendations are to implement the **Emotionally-Aware Focus Interface (Student Mode)** framework, directly addressing the key problems identified in the data.

5.4.1 The Proposed System: Emotionally-Aware Focus Interface

This framework is recommended for integration into high-use student platforms (WhatsApp, TikTok, Instagram, etc.) to provide an instant **refuge** from cognitive and social overload.

Feature Name	Problem Addressed (Data Point)	Design Goal (Principle)
Mindful Content Curation	Algorithmic Content Overwhelm ($\mu=4.06$)	Gives the user an "Academic Filter" or "Focus Feed" (Theme 2) to filter out overwhelming, irrelevant content, reducing cognitive load.
Calm UI Override	Pressure to Appear Perfect ($\mu=3.94$); Design-induced Stress ($\mu=3.88$)	Applies a monochromatic or soft-blue filter and hides stimulating visuals like "Likes" or "View Counts" to reduce social comparison and emotional arousal (Emotional Design Theory).

Adaptive Notification Manager	"Rowdy" Group Chats (Theme 1)	Implements a "Study Mode" toggle that automatically pauses non-essential group chats and batches non-whitelisted notifications, addressing the qualitative demand for chat control.
Anti-Scroll Limits	Compulsive Usage/Addiction (Theme 3)	Implements user-defined limits that lock the infinite scroll or auto-log the user out of the addictive feed after a set time, reinforcing self-regulation.

5.4.2 Recommendations for Developers and Designers

1. **Prioritize Cognitive Clarity:** Implement design principles that prioritize information hierarchy and minimize extraneous visual data, adhering strictly to the limits suggested by Cognitive Load Theory.
2. **Shift Metrics from Engagement to Wellbeing:** Product teams should track metrics like "Time Spent in Focus Mode" or "User-Reported Mood" alongside engagement, creating a **dual-objective design strategy**.
3. **Integrate Self-Regulation Tools:** Design simple, easily accessible controls (like the **"Student Mode" toggle**) directly into the main interface, eliminating the need for students to navigate to separate OS settings.

5.5 Suggestions for Further Research

The findings of this study open several avenues for future work:

1. **Prototype Development and Usability Testing:** Future research should involve developing a functional prototype of the "Emotionally-Aware Focus Interface" (Student

Mode) and conducting formal A/B testing with students to measure its effectiveness on focus, stress levels, and academic performance.

2. **Longitudinal Study on Behavioral Change:** A long-term study is needed to assess whether the proposed design interventions lead to sustained changes in digital habits and improved emotional wellbeing over a full academic semester.

3. **Cross-Cultural Comparison:** Replicating this study among student populations in non-technical faculties and other regions would help to determine if the findings regarding social pressure and content overload are universal or specific to technical, high-pressure environments.

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APPENDICES

APPENDIX A: INFORMED CONSENT AND SURVEY INTRODUCTION

Survey Title: The Impact of UI/UX Design on Mental Health and Emotional Well-being of University Students Using Digital Platforms

Researcher: Paul Osarenwindawhen Awala-Ale, Computer science, University of Benin.

Purpose of the Study: You are invited to participate in a research study that aims to examine how the design (UI/UX) of digital platforms you use (like social media, productivity apps, etc.) affects your mental health, emotional well-being, and ability to focus as a student. The findings will be used to propose emotionally supportive design recommendations.

Voluntary Participation: Your participation in this study is completely voluntary. You are free to refuse to answer any question or withdraw from the survey at any point without penalty or consequence.

Confidentiality and Anonymity: This survey is entirely anonymous. No personally identifiable information (such as your name, email, or IP address) is being collected. Your responses will be grouped with others, and confidentiality is guaranteed. All data will be used strictly for academic research purposes for this thesis only.

Duration: The survey should take approximately 5-7 minutes to complete.

By proceeding with this survey, you confirm that you have read and understood the information above and voluntarily consent to participate in this study.

APPENDIX B: ADAPTED HEURISTIC EVALUATION FRAMEWORK

*(This framework, based on Section 3.6, adapts Nielsen's principles with a **mental health and cognitive load lens** for analyzing the case study apps like TikTok, Calm, and Instagram.)*

The heuristic evaluation was conducted using the 10 standard heuristics adapted to include a fifth column that directly measures the design element's impact on emotional and cognitive well-being.

Heuristic	Original Definition	Mental Health / Cognitive Load Criterion
1. Visibility of System Status	Users should always know what is going on.	Emotional Clarity: Does the system provide clear feedback on status, thereby reducing anxiety and uncertainty? (e.g., clear status of a break timer, progress towards a goal).
2. Match Between System and Real World	The system should speak the users' language.	Empathetic Metaphors: Does the design use intuitive, non-threatening language or iconography that promotes calm and self-efficacy? (e.g., using "Plant a Tree" instead of "Block App").
3. User Control and Freedom	Users need an clearly marked "emergency exit."	Design Autonomy: Does the system offer easy "exit ramps" or modes (like your proposed Student Mode) to escape overwhelming content or addictive loops, giving users back control?
4. Consistency and Standards	Follow platform conventions.	Reduced Cognitive Load: Does inconsistent UI force the user to relearn navigation,

		unnecessarily increasing the cognitive load during periods of stress?
5. Error Prevention	Better than good error messages.	Emotional Safety: Does the design prevent actions that could lead to social embarrassment, anxiety, or data loss? (e.g., preventing accidental live streams).
6. Recognition Rather Than Recall	Minimize the user's memory load.	Focus Maintenance: Does the interface minimize external memory requirements, ensuring that all necessary cues for a task are visible, reducing mental effort?
7. Flexibility and Efficiency of Use	Cater to both novice and expert users.	Personalized Wellbeing: Can the design adapt to a user's <i>emotional state</i> (e.g., provide a simplified view for low-focus moments) while remaining efficient?
8. Aesthetic and Minimalist Design	Dialogues should not contain irrelevant information.	Reduction of Overwhelm: Does the interface maximize white space and minimize visual clutter (banners, excessive counts, irrelevant notifications) to manage sensory and cognitive load?
9. Help Users Recognize, Diagnose, and Recover from Errors	Errors should be expressed clearly.	Non-Judgmental Feedback: Are error messages framed in a supportive, non-critical way that avoids increasing user frustration or anxiety?

10. Accessibility & Emotional Tolerance	Design for users with diverse needs.	Emotional Tolerance: Does the design provide features that accommodate users with low emotional reserves or sensitivity (e.g., providing color palette options, controlling sound cues)?
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APPENDIX C: FULL FREQUENCY TABLES (N=120)

(This appendix provides the full data transparency for the quantitative results discussed in Chapter 4. Due to length, only the full frequency tables for the key Likert-scale questions are included, using the N=120 data derived from the SPSS output.)

Table C.1: Frequency Distribution for Key UI/UX and Emotional Impact Statements

(Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

Statement	Rating	Frequency (Count)	Valid Percent (%)	Cumulative Percent (%)
B6: I feel overwhelmed by too many features or content on some apps.	2 (Disagree)	5	4.2	4.2
($\mu=4.10$)	3 (Neutral)	15	12.5	16.7
(Problem: Overload)	4 (Agree)	63	52.5	69.2
	5 (Strongly Agree)	37	30.8	100.0
	Total	120	100.0	
C3: Excessive notifications from digital platforms disrupt my focus and peace of mind.	1 (S. Disagree)	10	8.3	8.3
($\mu=2.89$)	2 (Disagree)	28	23.3	31.7
(Finding: Not Primary Problem)	3 (Neutral)	57	47.5	79.2
	4 (Agree)	15	12.5	91.7

	5 (S. Agree)	10	8.3	100.0
	Total	120	100.0	
C4: The constant stream of content on some platforms makes me feel overwhelmed or anxious.	1 (S. Disagree)	1	0.8	0.8
($\mu=4.06$)	2 (Disagree)	10	8.3	9.2
(Problem: Content Saturation)	3 (Neutral)	16	13.3	22.5
	4 (Agree)	47	39.2	61.7
	5 (Strongly Agree)	46	38.3	100.0
	Total	120	100.0	
C9: I feel pressured to present a perfect image of myself on digital platforms due to their design.	1 (S. Disagree)	1	0.8	0.8
($\mu=3.94$)	2 (Disagree)	15	12.5	13.3
(Problem: Social Pressure)	3 (Neutral)	12	10.0	23.3
	4 (Agree)	54	45.0	68.3
	5 (Strongly Agree)	38	31.7	100.0
	Total	120	100.0	
D3: The design of some platforms makes it easy to find support or resources for mental health.	2 (Disagree)	4	3.3	3.3
($\mu=4.24$)	3 (Neutral)	21	17.5	20.8

(Finding: Support is Available)	4 (Agree)	37	30.8	51.7
	5 (Strongly Agree)	58	48.3	100.0
	Total	120	100.0	
D5: I believe that improved UI/UX design can significantly reduce negative mental health impacts.	2 (Disagree)	2	1.7	1.7
($\mu=4.13$)	3 (Neutral)	20	16.7	18.3
(Finding: Design is the Solution)	4 (Agree)	58	48.3	66.7
	5 (Strongly Agree)	40	33.3	100.0
	Total	120	100.0	