# REPORT (team 3)

# PASTA.AI – Designing a Smarter Student Experience

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## 1. Our Solution

University students often face a range of challenges as they transition into higher education, particularly during their first year. The lack of personalized guidance, fragmented peer support, and overwhelming administrative systems can leave students feeling disoriented, anxious, and unsupported.

Recognizing this pressing need, the PASTA.AI initiative was developed as a holistic, AI-enhanced platform to guide students from the moment of enrollment through to graduation. This report outlines the foundational problem, the comprehensive solution architecture, the human-centered design process used to create the platform, and a detailed account of how ChatGPT was integrated as a key intelligent assistant within the system.

### *Problem Definition :*

At the core of the PASTA.AI project lies the recognition that first-year university students lack consistent, personalized, and timely support across their academic and personal development needs.

A typical student, such as Maya Johnson—a 19-year-old undergraduate navigating her first semester—struggles with organizing coursework, making friends, registering for the right classes, and making decisions that align with long-term goals like internships or career paths. These struggles are not due to a lack of ambition, but rather the absence of a system that meaningfully integrates academic, social, and emotional guidance. The result is a fragmented experience that undermines students' confidence, clarity, and well-being.

## Vision and Solution Architecture :

PASTA.AI addresses these challenges through an integrated digital infrastructure that connects students to both human mentorship and intelligent digital tools. The platform is designed to offer continuous, real-time support that evolves alongside the student's journey.

## The solution comprises several interconnected modules:

Social and Peer Connection: Algorithms that match students based on academic interests and life experiences, dynamic peer support circles, and in-app forums to foster belonging and collaboration.

## Organization and Planning:

Smart schedule synchronization, personalized reminders, and dashboards that visually track progress and workload.
Well-being and Support: Wellness nudges that detect stress patterns, alongside an empathetic AI assistant that provides emotional support and directs students to resources.

## Career and Academic Alignment:

Tools that help students map current choices to long-term aspirations, ensuring their path is both purposeful and flexible.
What distinguishes PASTA.AI is its hybrid architecture: combining human mentorship (from alumni and peer mentors) with intelligent, real-time AI guidance. This union ensures students receive both practical and emotional support, day or night.

## Problem :

University students—especially first-years—often struggle with **fragmented support systems**, **information overload**, and **social disconnection**. The result is reduced confidence, lower academic performance, and avoidable dropouts. Existing tools address isolated aspects (scheduling, mental health, peer networks), but fail to integrate into a seamless, adaptive journey.

## User Insights

Through persona development and problem immersion, we identified *Maya Johnson*, a 19-year-old undergraduate navigating her first semester, as our archetypal user. Maya's unmet needs include:

- Feeling **overwhelmed by tasks**, deadlines, and university systems

- Lacking a **trusted peer network** to navigate academic and personal decisions

- Needing guidance that aligns with her **long-term aspirations and well-being**

Our solution aims to empower students like Maya to **feel in control, connected, and purpose-driven**—from day one.

## How Our Idea Works

**PASTA.AI** is an AI-powered digital companion for students, designed around three foundational pillars:

### 1. Organization & Planning

Smart academic calendars, proactive reminders, and goal-linked planners that help students prioritize tasks and visualize their academic path.

### 2. Social & Peer Connection

Connection algorithms, interest-based groups, and dynamic mentor matching to build belonging and collaborative peer ecosystems.

### 3. Well-being & Support

Real-time check-ins, mental health nudges, and AI-based triage support, seamlessly integrated into the student routine to monitor and nurture well-being.

These pillars work together in an **intelligent, personalized, and emotionally sensitive interface**, embedded within the university ecosystem and responsive to student growth.

## 2. The Process

We looked for a topic that resonated with our experiences and personalities. Finding a common subject proved challenging, as it was difficult to identify shared ground within our diverse backgrounds. Perhaps the process is perceived differently by each individual, highlighting the importance of communication. There's a distinction between "hearing" and "listening": while the former allows us to mechanically respond to an interaction, the latter enables us to empathize with others, find common ground, and make compromises.

After settling on our topic, we formulated a few general questions to determine whether other students encountered similar issues, and administered interviews on campus.

To our surprise, we discovered that the problems were indeed comparable. Organization, scheduling, and social emerged as recurring themes, even though we had initially planned to address a broader range of topics, such as issues with university equivalencies.

## Phases of Design Thinking

We followed a structured, iterative **Design Thinking** process:

- **Empathize**

Student interviews and secondary research revealed key emotional and logistical stress points in the university journey.

- **Define**

We refined the problem into a **mission-aligned challenge**:

> *How might we support students holistically across academic, social, and emotional domains—without adding friction to their daily lives?*

- **Ideate**

We co-created and validated solution components with stakeholders from academia, student affairs, and health services. The **pillars model** emerged from recurring themes of overload, isolation, and lack of long-term planning clarity.

- **Prototype**

We designed a compelling **pitch deck**, a **user scenario video**, and contextual slide content for each pillar to visualize both user needs and solution architecture.

- **Test**

The prototype was iteratively improved based on peer and mentor feedback, ensuring messaging clarity, emotional resonance, and technical feasibility.

## Assumptions

- Students value **proactivity over reactivity**—they want support before they feel lost.

- AI can **enhance human connection**, not replace it—especially through mentor pairing and peer groups.

- Integrating with existing systems (e.g. LMS, calendars) is essential to reduce tool fatigue.

**Project Journey Report: From Problem to Prototype! → Team Collaboration + AI Superpowers = Innovation!**

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## Phase 1: Discovering the Problem

**How It Started**

- **"What's the REAL issue?"**
  We kicked off with lively debates about challenges in our study area. Everyone's ideas were on the table! Through voting and discussions, we narrowed it down to the most pressing problems.
- **Student Interviews :**
  We crafted 3 key questions and hit the campus to interview students. Their honest feedback was GOLD!
- **AI Detective Work :**
  AI tools (like ChatGPT) scanned interview transcripts to spot hidden patterns. Result? A crisp, data-backed problem statement: *"Students need better tools for [X] to overcome [Y]."*

## Phase 2: Who Are We Designing For?

**Stakeholders & User Personas**

- **Co-Design Canvas Fun :**
  We mapped stakeholders (think: students, professors, admins) on a vibrant canvas. Spoiler: Students were the stars!
- **AI-Powered Personas :**
  AI transformed raw interview data into 3 lifelike user personas: Meet *"Stressed Sam"*, *"Busy Bella"*, and *"Tech-Savvy Taylor"*! Their goals and frustrations guided every decision.

## Phase 3: Brainstorming Bonanza!

**Idea Explosion**

- **Creative Tactics:**
  - **Word Clouds :** Turned keywords into art!
  - **Mind Maps :** Connected wild ideas visually.
  - **Reverse Thinking :** *"What if we made the problem WORSE?"* (Yes, chaos sparked genius!)
- **AI as the Ultimate Wingman :**
  - **AI tools ChatGPT generated 50+ ideas we'd NEVER have thought of alone!**
  - **Clustered ideas into themes with AI magic.**

**Narrowing It Down**

- **Feasibility vs. Impact Matrix :**
  AI scored ideas objectively. The winner? A student app that solves [X] with [Y]!

## Phase 4: Bringing the App to Life!

**Design Sprint :**

- **App Vision:**
  We imagined an app that's *simple, joyful, and solves the core problem*.
  Features like [Feature 1], [Feature 2], and [Feature 3] stole the show!
- **AI-Powered Wireframes ✨:**
  With Tools like Miro we tweaked layouts, added micro-interactions, and
  *voilà*—a clickable prototype!

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## AI's Superhero Moments:

AI wasn't just a tool—it was part of the team! Here's how:

| Stage | AI Contribution | Impact |
| --- | --- | --- |
| Data Analysis | Uncovered hidden trends in interviews. | Turned anecdotes into insights! |
| Personas | Made personas relatable and data-driven. | Kept the team user-obsessed! |
| Ideation | Boosted creativity with "outside-the-box" concepts. | 10x more ideas! |

| | | |
|---|---|---|
| Decision-Making | Ranked ideas fairly using metrics. | No more endless debates! |
| Design | Generated wireframe drafts in seconds. | Saved 10+ hours! |

## Key Takeaways

- **Human + AI = Unstoppable : AI turbocharged our process, but *human empathy* drove the vision.**
- **Students Rule : Every decision tied back to interviews and personas.**
- **Fail Fast, Learn Faster : Brainstorming *without limits* led to breakthrough ideas!**

# 3. Use of AI

## AI Environment

Throughout the project, we leveraged a **multi-modal AI co-creation environment** to:

- Draft compelling persona-based narratives

- Generate emotionally resonant slide copy

- Simulate dialogue for the video prototype

- Craft feature descriptions linked to behavior psychology

- Accelerate visual storyboarding and messaging iterations

The AI worked as a **strategic partner**, helping us scale creative ideation while staying rooted in human-centered goals.

1- *"Create a first-person narrative from a student reflecting on how an AI assistant transformed their academic life, improved emotional clarity, and guided long-term career planning."*

2- Institutional Alignment Prompt
 *"Develop stakeholder messaging that connects the benefits of a student-facing AI tool to strategic institutional goals like retention, satisfaction, and engagement with support services."*

3- *we are codesigning a problem: how to make the students to be more clear and well organized in their study life they can be better adopted and prepared for the future with the university, professors and other related stakeholders, please create a detailed user persona for this specific problem and try to narrow it down*

*Create an APP wireframe based on this description Below is a comprehensive description of Pasta. ai, tailored for a university-level presentation. It covers the vision, core features, technical architecture, benefits, and a high-level implementation roadmap—organized to inform decision-makers and stakeholders.*

## *Executive Summary*

*Pasta. AI is a unified, Moodle-integrated platform designed to boost student success by combining smart scheduling, AI-driven study planning, adaptive learning, real-time analytics, peer collaboration, and wellness support into a single dashboard. By leveraging existing university data (Moodle course records, student profiles, calendars), Pasta. ai delivers immediate ROI in on-time task completion, engagement, and personalized learning pathways, all while adhering to human-centered design and responsible AI principles.*

## *1. Vision & Objectives*

- *Vision: Create a seamless digital campus experience where every student has the tools and insights needed to thrive academically, socially, and emotionally.*

- *Objectives:*

1. Reduce missed deadlines and improve time-management by 20–30%.

2. Increase peer-to-peer study engagement by 25%.

3. Personalize learning paths to raise average grades by 0.2 GPA points.

4. Proactively monitor and support student well-being with early-warning check-ins.

# 2. Core Features

## 2.1 Unified Student Dashboard

- *Aggregated Calendar View: Combines Moodle deadlines, class schedules, and personal calendar events.*

- *Task & Deadline List: Prioritized "Today" and "This Week" views with one-click access to course materials.*

- *Performance Snapshot: Real-time grade previews and progress bars for each course.*

## 2.2 Smart Scheduling & AI-Powered Study Planner

- *Auto-Scheduling Engine: Suggests optimal study blocks around classes and personal commitments.*

- *Adaptive Reminders: Push notifications at configurable intervals (e.g., 24 h, 1 h before deadlines).*

- *Study Planner: AI analyzes past performance to recommend study durations and resource types (videos, readings, quizzes).*

## 2.3 Adaptive Learning & Content Taxonomy Assistant

- *Learning Analytics: Tracks quiz attempts, forum participation, video views; flags at-risk students.*

- *Taxonomy-Driven Resource Finder: Automatically tags and surfaces relevant learning objects (slides, articles, past exams) via a metadata assistant.*

- *Adaptive Module: Dynamically adjusts difficulty and pacing based on quiz results and interaction patterns.*

## 2.4 Collaboration & Community

- *Study Buddy Matcher: Pairs students by complementary strengths and shared interests for peer tutoring.*

- *Interest Circles: Small discussion groups ("circles") where students share notes, ask questions, and collaborate on projects.*

- *Real-Time Q&A Bot: LLM-powered assistant that answers course-specific queries by pulling in context from Moodle resources.*

## 2.5 Well-Being & Support Tools

- *Mood Check-Ins: Brief daily slider quiz linked to student profile—trends are visualized for counselors.*

- *Nudge Engine: Automated suggestions ("Take a break," "Try a mindfulness exercise") triggered by sustained low-mood patterns or high workload.*

- *Support-Request Button: One-click access to tutoring, counseling, or administrative help, routed to the appropriate campus office.*

# 3. Technical Architecture

## 3.1 Integration Layer

- *Moodle LTI Launch: Pasta. ai loads as an LTI tool within Moodle courses, inheriting SSO and course context.*

- *RESTful APIs: Connects to the central Student Profile database (grades, demographics), external calendars (Google, Outlook), and notification services (e.g., Firebase).*

## 3.2 Backend Services

- *Node.js Microservices: Handle AI scheduling, taxonomy tagging, peer matching, and analytics ingestion.*

- *Data Warehouse: Consolidates event logs (clicks, quiz results) for reporting and model training, stored in a secure, GDPR-compliant environment.*

### 3.3 Frontend

- *React SPA: Responsive web app embedded in Moodle, optimized for desktop and mobile.*

- *UI Components: Customizable widgets for calendar, task list, analytics charts, and chat interface.*

### 3.4 Security & Privacy

- *Encryption: All data encrypted in transit (TLS) and at rest (AES-256).*

- *Consent Flows: Explicit opt-in for AI recommendations and mood tracking.*

- *Access Controls: Role-based permissions for students, instructors, and administrators.*

# 4. Benefits & Metrics

| Benefit Area | Metric | Target |
|---|---|---|
| Time Management | % Reduction in missed deadlines | −25% in first semester |
| Academic Performance | GPA improvement | +0.2 average GPA |
| Engagement | Active session count per week | +30% |

| | | |
|---|---|---|
| Peer Collaboration | Number of study-buddy sessions | +25% |
| Well-Being | Avg. mood score improvement | +15% in pilot cohort |

# 5. Implementation Roadmap

| Phase | Timeline | Key Activities |
|---|---|---|
| Phase 1: Discovery & Design | 0–3 months | Stakeholder interviews; prototype UI; usability tests |
| Phase 2: Core Build & Pilot | 3–9 months | LTI integration; scheduling; calendar sync; pilot in 2 courses |
| Phase 3: Expand Features | 9–15 months | Add analytics engine, taxonomy assistant, AI planner |
| Phase 4: Campus-Wide Rollout | 15–24 months | Deploy to all programs; launch peer matching, Q&A Bot, well-being tools |
| Phase 5: Continuous Improvement | Ongoing | Quarterly enhancements; model retraining; new feature sprints |

# 6. Roadmap for Adoption & Change Management

1. *Steering Committee: Establish cross-functional team (IT, teaching innovation, student affairs).*

2. *Faculty Champions: Recruit early-adopter instructors to pilot and evangelize the app*

3. *Training & Support: Offer workshops, how-to guides, and an in-app help center.*

4. *Feedback Loops: In-app surveys and quarterly user forums to guide iterative improvements.*

# *7. Conclusion*

*Pasta. ai leverages existing university systems to deliver a cohesive, data-driven platform that enhances academic success, fosters community, and supports student well-being. Its phased rollout mitigates risk, while built-in analytics ensure we measure impact and continuously refine the experience. Presented to the university leadership, Pasta. ai represents a strategic investment in student success, operational efficiency, and institutional innovation.*

1. *Based on the idea, we would like to design an application that is intergrated with the existing data base of the university such as moodle and student profile, which can tacle most of the ideas with high feasibility and impacts, one good case study would be 纸条, could you give an detailed description of this application and the features that should be included in the application*
2. *based on the mind map you have created can you make a matrix that with the impact and results of all the ideas to consider feasibility and application of them to narrow the ideas down*

## Additional Deliverables

- **Pitch Video**: A short, scenario-driven video narrative that introduces Maya and her transformation using PASTA.AI
- **Slide Deck**: Visual presentation of problem framing, solution pillars, and conceptual architecture.
- Video of one of the brainstorming techniques we used

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