

Academic AI Workspace - HW2 Design Document

Product Description

Academic AI Workspace is our idea for a university-wide platform that centralizes all course management systems (think: Canvas, Ed, email) while providing AI assistance for every student and faculty member. We would have a dashboard showing all participation requirements, deadlines, and office hours across courses, as well as with professor-approved AI templates that ensure everyone works within the same ethical guidelines and has access to the same tools.

Business Model: University site licensing included in student technology fees, ensuring universal access regardless of individual financial situation.

User Journey Maps

User Journey 1: The Overwhelmed Junior (Alex, CS + Math double major, part-time tutor)

Week 3 - The Breaking Point

- Monday 11 PM: Realizes missed Ed discussion requirement for Algorithm Design (worth 5% of participation grade) because it was mentioned only in lecture, not on Canvas
- Tuesday: Spends 45 minutes trying to find when Math professor's office hours are (Canvas says "see Ed", Ed says "check email", email from 3 weeks ago says "Tuesdays 2-3pm")
- Tuesday afternoon: Has scheduling conflicts - CS section at 2pm, Math OH at 2pm, tutoring job at 3pm. Chooses tutoring (needs money), misses both academic opportunities
- Wednesday: Gets email about "updated AI policy" for Physics - now 4th different policy to track. Anxiety about whether last homework submission violated new rules
- Thursday: Discovers classmate used AI to create beautiful visualization for Data Structures, got praised. Alex didn't know this was allowed, did everything manually
- Friday: Participation warning from professor - has attended every class but missed Canvas discussion posts (different from Ed posts)

Week 4 - Discovery

- Professor mentions the new university AI workspace tool in class
- Alex signs up through university portal (included in technology fees)
- Initial setup: Tool automatically pulls in all 5 courses from Canvas via university SSO
- First relief: Dashboard shows ALL participation requirements across courses in one view
- Creates alert: "Remind me 2 days before any discussion post is due"

Week 5-8 - Transformation

- Scheduling breakthrough: "Find office hours that work with my tutoring schedule" - tool identifies Professor Chen's Friday 4pm slot (not advertised, had to email)
- AI access: Uses professor's "proof template" for Real Analysis - same capabilities that a wealthy classmate was using privately with Claude
- Using AI for schoolwork: Creates interactive graph visualization, shares on Ed, gets pinned by professor
- Policy clarity: Tool shows green checkmark - "This usage is compliant with Math 301 AI policy"
- Participation tracking: Weekly dashboard - "3/5 Ed posts complete, 2/2 Canvas discussions done, In-class participation: on track"

Finals Week

- Study group coordination: Tool finds 2-hour window when 4 classmates are free, books library room
- Reviews semester: 15% less time on logistics, grades improved from B+ average to A-average
- Shares custom workflows with next semester's students

User Journey 2: The Innovative Professor (Dr. Sarah Chen, Physics)

Pre-Semester - The Frustration

- Previous semester disaster: Caught 12 students using ChatGPT differently, no consistent policy to apply
- Access concern: Noticed wealthy students had better homework visualizations (using paid AI tools)
- Time drain: Spent hours writing AI policy, students still confused
- Office hours problem: Only 3-4 students ever show up, despite 40 struggling with quantum mechanics

Week 1 - The Pilot

- IT department mentions new AI workspace pilot program
- Attends faculty workshop, sees demo
- Key realization: Can create guided AI templates that teach HER methodology
- Builds first template: "Quantum wave function visualizer with Dr. Chen's method"
- Posts to class: "Everyone now has access to same AI tools - here's how we'll use them"

Week 2-4 - The Experiment

- Students start using templates for homework
- Transparency win: Can see when students use AI heavily vs. lightly (auto-flagging feature)
- Creates "Office Hours Optimizer" - students can book slots that work with their schedules
- Office hours attendance jumps from 4 to 15 students per week

Mid-Semester - The Transformation

- Participation shift: Canvas discussions go from 40% participating to 85%
- Students creating study guides for each other using AI workspace
- Grading efficiency: AI flags submissions needing closer review, saves 3 hours/week
- Other professors start asking about her "secret"

End of Semester - The Victory

- Course evaluations: Best in 10 years of teaching
- Pass rate: 75% (up from 40%)
- Student comment: "Finally AI policies that made sense and felt fair"
- Next semester: 20% increase in enrollment as word spreads

User Journey 3: The Time-Strapped Graduate TA (Maya, PhD Candidate in Economics)

Pre-Semester – Overload Setting In

- Balancing: Teaches two discussion sections, grades 60 undergrad papers per week, and is writing her own dissertation
- Logistics chaos: Needs to coordinate grading with two other TAs, each using slightly different rubrics stored in different Google Docs
- Student confusion: Gets 20+ emails/week asking, "Am I allowed to use ChatGPT on problem sets?" because policies differ by professor

Week 2 – Discovery

- Department chair rolls out Academic AI Workspace for TAs as part of a new pilot
- Maya logs in and sees all her courses and grading duties in one place
- Key relief: AI Workspace automatically syncs professor-approved rubrics into one standardized grading template

Weeks 3-6 – Transformation

- Grading accelerator: Workspace AI pre-flags essays with potential plagiarism or unclear logic, so she only spends time on edge cases
- Student support: Instead of answering endless emails, she enables an "AI FAQ assistant" with professor-approved answers to common policy questions
- Coordination: Workspace suggests meeting slots when all three TAs are available to meet and discuss standardized methods of grading papers, replacing endless email chains
- Policy guardrails: When reviewing a student draft, the workspace shows a red banner if the draft violates the professor's AI policy (e.g., excessive generation vs. guided brainstorming)

Mid-Semester – The Payoff

- Grading time cut by 30% – now 6 hours instead of 9 each week

- Office hours more effective: Students arrive prepared, since they've already run drafts through the professor's "AI feedback template"
- Student feedback improves: "This TA actually has time to give thoughtful comments"
- Maya realizes she can use saved time to focus on dissertation writing (adds 4–5 productive hours back per week)
- Department asks her to give a workshop on "How TAs can use AI ethically for grading and feedback"

User Journey 4: The In-Season Student Athlete (Liam, CS1060 junior; road trips Wed–Sun)

Pre-Semester — Pain Points

- Travel wipes out labs, office hours, and team meetings.
- Hotel Wi-Fi is flaky; can't pull large starter repos or run Node locally.
- Asynchronous group work devolves into "who's doing what?"
- Confusion about what AI help is allowed during timed away-game windows.

Week 1 — Onboarding & Setup

- Logs into Academic AI Workspace via SSO; Canvas sync pulls deadlines.
- Connects Athletics calendar → Travel-aware planner flags scheduling conflicts ("Lab 2 overlaps with away-game; propose early window Fri 9–11am").
- Takes the AI policy primer; unlocks policy-aware helpers that require a brief "why I used this" reflection.

Weeks 2–5 — Staying on Pace from the Road

- Before flights, uses a pre-fetch feature to download mini-examples, rubric tips, and sample solutions for just the next part of the assignment.
- On hotel Wi-Fi, opens low-bandwidth Git Lite: commit templates + zip upload if git push stalls.
- Daily Recap feature summarizes lecture changes, forum answers, and teammate PRs.

Midterm Project — Teaming Asynchronously

- Role Cards split work into time-boxed "portable" tasks (≤ 90 min, runnable on phone/laptop) with explicit inputs/outputs.
- Kanban auto-syncs with teammates' availability; the system proposes swaps if Liam's bus departs early.
- Guardrailed Code Assist suggests snippets that reference course patterns; flagged blocks require an in-line rationale tied to policy.
- PRs receive rubric-aligned feedback (accessibility, responsiveness, error states). Liam batch-applies quick fixes from his phone.

Weeks 9–12 — Catch-Up & Coaching

- Smart Catch-up compiles missed lectures and threads by topic
- Office Hours Optimizer creates two rotating windows that fit athlete blocks; books virtual drop-ins with recorded summaries.
- The workspace nudges, “Two regrade requests pending >48h” Liam submits clarifications with auto-attached test runs.

Finals Week — Outcomes

- Missed-deadline risk reduced via conflict prompts + early windows; late submissions drop sharply.
- Fewer merge scrambles: task boundaries + Kanban swaps keep contributions balanced.
- Zero AI policy incidents post-primer; reflections improve code rationale in PRs.

Market Analysis: Why This Doesn't Exist Yet

Policy Chaos Period: Universities are in regulatory paralysis

- Pre-2023: AI banned outright or ignored
- 2023-2024: Panic phase - "Faculty members take lead on AI syllabus policies" with each professor creating different rules (Duke Chronicle, Sept 2023)
- Result: Faculty Focus study finds professors "revise policies each semester" as AI evolves, leading to confusion
- Washington Post (Aug 2023): "College professors worry that ChatGPT will bring chaos to campus"
- No enforcement mechanism exists - honor system doesn't work

Technical Convergence Just Happened

- MCP (Model Context Protocol) servers: Released November 2024 by Anthropic as "open standard for connecting AI assistants to data sources"
- Claude/GPT-4 capabilities: Only recently capable of understanding academic context and generating visualizations
- OAuth maturity: Canvas LTI 1.3 Platform Storage API became fully available August 19, 2023
- Canvas updated OIDC Auth domain to sso.canvaslms.com in 2023 for security alignment
- Visualization libraries: D3.js + AI code generation = instant interactive content (wasn't reliable until 2024)

Institutional Inertia + Permission Barriers

- EdTech procurement cycles: "Sales cycles to schools can take up to 18 months" often exceeding startup runway (EdSurge research)

- IT departments just recovering from pandemic emergency deployments
- Legal/compliance teams: DOJ's new Title II ADA rule (2024) requires WCAG 2.1 AA compliance by April 2026-2027
- 14,000 web accessibility lawsuits filed 2017-2022, with higher education as common target
- No one could get OAuth access without proving academic trust

The Equity Crisis Just Became Visible

- ChatGPT Plus (\$20/month) created two-tier system - Pew Research (Jan 2025): 84% of teens in \$75k+ households know ChatGPT vs 67% in <\$30k households
- Black and Hispanic teens (31% each) more likely than White teens (22%) to use ChatGPT for schoolwork (Pew, 2025)
- OpenAI now offering student discounts (March-May 2025) to address accessibility concerns
- Stanford Center for Racial Justice (June 2024): "AI algorithms may exacerbate racial disparities in education"
- Pressure from federal initiatives: \$1.25 billion Digital Equity Competitive Grant Program opened 2024

Existing Products Aren't Pivoting Fast Enough

- Canvas: Locked into LMS architecture, can't become student workspace
- Notion: Consumer product, only 20 AI responses free for students before paywall
- Chegg: Market cap collapsed from \$14 billion (Feb 2021) to \$191 million (Nov 2024) - 99% decline after ChatGPT
- GitHub Copilot Education: Now limited to 300 requests/month, then \$0.04 per additional request

Why Now Is The Moment

- Professors actively seeking solutions - Duke, Stanford, MIT all launching AI teaching initiatives in 2024
- Students demanding fairness - OpenAI's student discount program (2025) responding to equity demands
- Universities have massive "AI initiatives" budgets: SUNY's \$275M Empire AI, UAlbany's \$200M AI Plus, Indiana's \$60M AI center (all 2024)
- Technical infrastructure finally ready: MCP (Nov 2024) + Canvas LTI 1.3 (Aug 2023) + mature AI models

Stakeholder Analysis

Primary Stakeholders

Students (Users)

- Values: Fair access, clear expectations, reduced anxiety, academic success
- Motivations: Manage overwhelming workload, avoid policy violations, compete fairly
- Behaviors: Share successful workflows, adopt tools quickly if they reduce stress
- Tensions: Want maximum AI help vs need to demonstrate learning

Professors (Users)

- Values: Pedagogical excellence, student engagement, staying relevant
- Motivations: Become the "favorite professor," improve learning outcomes, publish about AI in education
- Behaviors: Create AI templates, configure course policies, share successes publicly
- Tensions: Want innovation vs need to maintain standards
- Note: Professors are both users (creating templates, configuring policies) and champions (driving adoption)

Universities (Customers)

- Values: Academic integrity, measurable outcomes, risk mitigation, competitive advantage
- Motivations: Increase retention rates, manage AI chaos, attract students, reduce support costs
- Behaviors: Slow decisions, require extensive pilots, need compliance guarantees
- Tensions: Want cutting-edge offerings vs fear of cheating scandals

Secondary Stakeholders

Traditional Professors (Skeptics)

- Values: Academic rigor, proven methods, fairness, subject mastery
- Motivations: Protect educational quality, avoid being replaced, maintain authority
- Behaviors: Resist initially, convert when see peer success, need extensive support
- Tensions: Fear obsolescence vs recognition that change is inevitable

IT Departments (Implementers)

- Values: Security, stability, standardization, supportability
- Motivations: Reduce support tickets, avoid security breaches, simplify infrastructure
- Behaviors: Extensive vetting, prefer established vendors, incremental rollouts
- Tensions: Users want features vs IT wants security

TAs/Graduate Instructors

- Values: Efficiency, helping students learn, reducing repetitive work
- Motivations: Focus on research, provide quality support, manage time
- Behaviors: Quick adoption if saves time, provide feedback, train students
- Tensions: Want to help vs limited time/resources

Parents (Influencers)

- Values: ROI on tuition, child's success, fair opportunity
- Motivations: Ensure child graduates, justify education costs, reduce stress
- Behaviors: Pressure universities for equity, willing to pay for advantage

- Tensions: Want child to succeed vs concerns about "cheating"

Value Tensions Matrix

Student vs Professor: Students want maximum AI assistance; professors want to ensure learning happens

- Resolution: Transparent usage tracking + professor-defined guardrails

University vs Students: Universities want control; students want flexibility

- Resolution: Institutional license with customization options

Innovative vs Traditional Professors: Innovation vs standardization debate

- Resolution: Gradual adoption with department-level choices

IT vs Everyone: Security/stability vs features/speed

- Resolution: Phased rollout with extensive testing

Parents vs Universities: Demanding equity vs managing costs

- Resolution: Include in technology fees to ensure universal access