

AggieFind: User Study 1 Report

Srinivas Madireddy, Aniswar Asokkumar, Zarin Rahman Mohima

1. Overview of AggieFind

AggieFind is a unified lost and found system designed specifically for the NMSU campus community. The system addresses the current fragmented approach where lost items end up at various locations.

Our system is built on a **Staff-Verified Model** to ensure user safety, privacy, and semi-anonymity. The core system includes three distinct user roles:

- **Loser (Any User):** Users who lost an item can freely post a "Lost Item" report. Posts are moderated by an AI image filter to prevent restricted content.
- **Finder (Any User):** Users who find an item cannot post directly. The app intercepts their attempt and provides instructions to turn the item into the nearest verified building desk, ensuring privacy and building a semi-anonymous system.
- **Staff (Verified Admin):** Only authorized NMSU staff can log in and post "Found Item" reports, which are then matched against the "Lost Item" database. Each building has designated staff to manage this process.

2. User Tasks

Our prototypes were designed to support three core tasks that represent the primary user interactions with the lost and found system:

Task 1: Report a Lost Item

Scenario: "Imagine you were studying at Corbett Center and you realized you left your red NMSU hydroflask. You think you lost it about an hour ago. Using this app, report your hydroflask as lost."

This task tests the user's ability to quickly and efficiently post a lost item report with relevant details including description, location, and time.

Task 2: Report a Found Item

Scenario: "You are walking out of Zuhl Library and you find a set of keys on a bench with a crimson lanyard. You want to report it so the owner can find it. Find the nearest lost and found facility and report it."

This task evaluates how clearly the system communicates the staff-verified model and guides finders to the appropriate building desk.

Task 3: Check for a Match

Scenario: "It's now been a day since you reported your red hydroflask lost (Task 1). You open the app to see if there is any news. Check the app for any potential matches and decide what to do next."

This task tests the matching system's effectiveness and whether users feel confident in identifying their item and understanding the next steps for recovery.

We also developed two alternative low-fidelity prototypes to test different design philosophies for solving the lost and found problem:

Prototype A:

Community Trust Model: Trust is built through social cues, clear privacy boundaries, and community-focused interactions.

Key Features:

- Map-centric reporting with building-based organization
- Privacy slider as the main interactive element for user control
- Anonymized reputation badges (e.g., "Helpful Aggie: 3 items returned")
- Public feed homepage showing recent found items
- Group posting features for targeted notifications

Color Scheme: Crimson and white (NMSU branding) with a light, clean interface

Target User Experience: Focus on the Finder's experience, emphasizing community trust and manual control over privacy settings.

Screens: we didn't add all screens as it would make the report very huge.

The image displays two screenshots of the AggieFind mobile application. The left screenshot shows the 'My Lost Items' screen, which lists two lost items: 'Red Hydroflask' and 'Airpods (Gen 2)'. The 'Red Hydroflask' item has a 'LOST' status and a note indicating it was lost at Corbett Center on 10/22/2025 at 3:00 PM. The 'Airpods (Gen 2)' item has a 'FOUND!' status and a note indicating it was found at Zuhl Library, 3rd Floor on 10/20/2025 at 11:00 AM. The right screenshot shows the 'Post a Found Item' screen, which includes fields for adding an image, description (e.g., 'Black Hydroflask with red sticker'), place found (select a building), time found (mm/dd/yyyy --:-- --), set post visibility (Public (Everyone can see)), and a 'Submit Found Item' button. At the bottom of both screenshots, there is a navigation bar with icons for Home, Search, Post, Lost, Claims, and Reported.

The image displays three side-by-side screenshots of the AggieFind application interface.

- Home Screen:** Shows a search bar with placeholder text "Search by description, place, etc." and a filter icon.
- Found Items Screen:** Shows a list of found items. The first item is "Found Hydroflask" (Black Hydroflask, WAITING FOR OWNER) with details: "Found this sitting on a bench outside Corbett Center. It's full of water.", "Place: Corbett Center", "Time: Today, 1:30 PM", and "Posted by: Anonymous".
- Admin Queue Screen:** Shows a "Community Report Queue" with two reports:
 - Reported: "Lost Wallet"**: Post ID #1024, Reason: Flagged as "Spam / Duplicate" by 3 users. Note: "This is the 5th post from this person." Actions: Dismiss (green), Remove Post (red).
 - Reported: "Lost my mind lol"**: Post ID #1021, Reason: Flagged as "Junk" by 2 users. Actions: Dismiss (green), Remove Post (red).

At the bottom, there are two rows of navigation icons. The left row includes: Home, Search, Post, Lost, Claims, Reported. The right row includes: Home, Search, Post, Lost, Claims, Reported. Below these are five main navigation links: Queue (highlighted in blue), Search, Inventory, Expired, Profile.

Prototype B:

AI Assistant Model: Trust is built by a transparent and intelligent AI partner that provides proactive assistance.

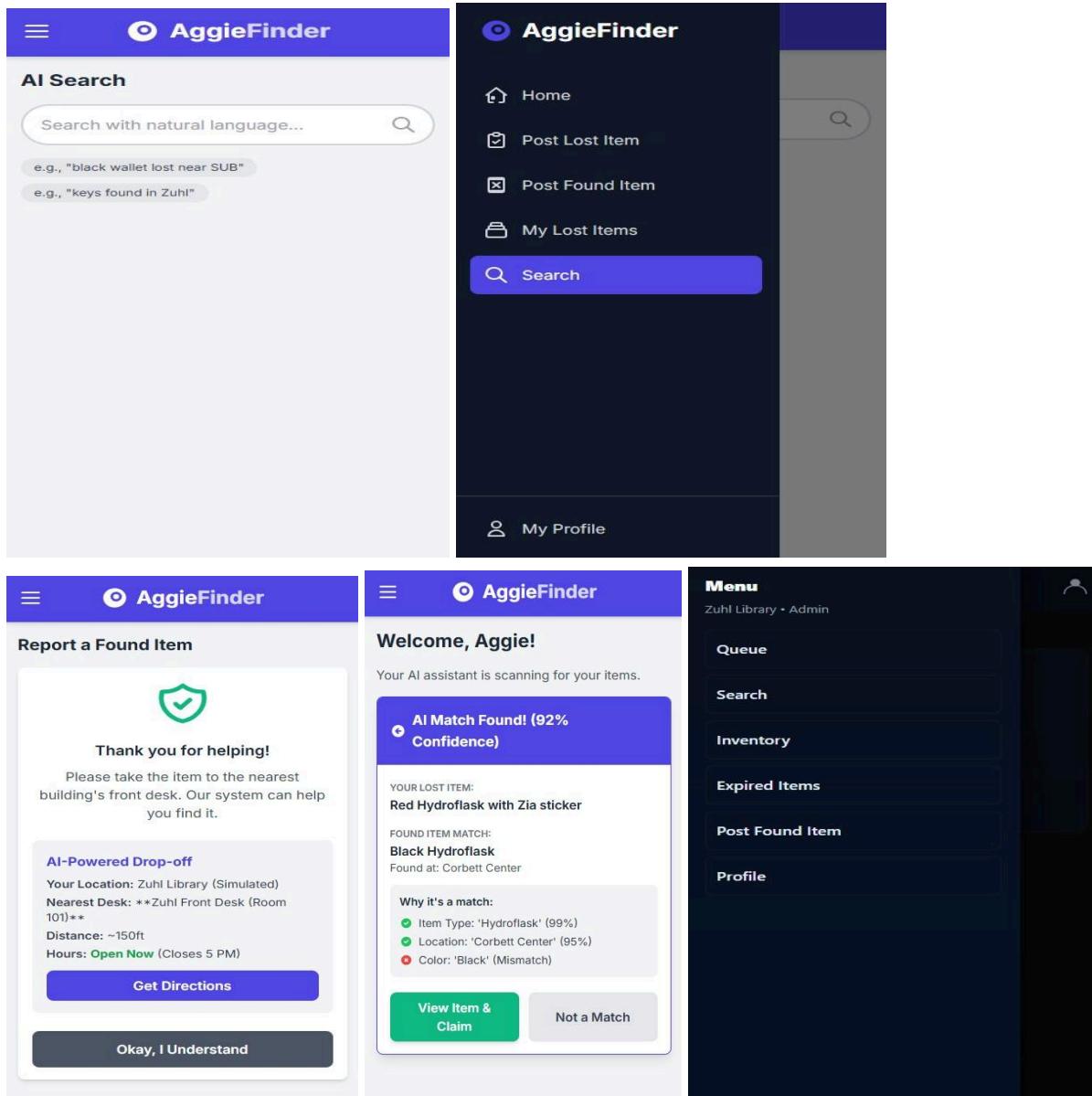
Key Features:

- AI-driven "Possible Matches" dashboard showing match confidence scores
- "Match Cards" with explainable AI (e.g., "85% Match: Same building, matches description")
- AI-assisted posting with auto-fill from photos
- Location-aware drop-off instructions for finders
- Simple feedback loop ("This is mine!" / "Not a match") to improve AI

Color Scheme: Modern blue and purple gradient with dark mode option

Target User Experience: Focus on the Loser's experience, emphasizing speed, intelligence, and reduced manual effort.

Both prototypes include admin views for verified staff to manage found items, inventory, expired items, and community reports.



3. Research Questions & Hypotheses

Prior to our evaluation, we formulated specific research questions and hypotheses to guide our design decisions:

Primary Hypothesis (H1)

We hypothesize that users will overwhelmingly prefer **Prototype B (AI Assistant)** over Prototype A (Community Trust) because it provides tangible, intelligent help for all user tasks. We believe this because:

- The AI-assisted "Lost Item" posting (Task 1) will feel faster and more efficient
- The location-aware, specific instructions for "Finders" (Task 2) will be perceived as significantly more helpful
- The proactive AI-powered matching (Task 3) provides a clear solution for the "Loser," reducing stress and manual effort

Secondary Hypothesis (H2)

We hypothesize that the user experience for **Task 2 (Report a Found Item)** will be the most critical differentiator. Users testing Prototype B (with specific, location-aware drop-off instructions) will report a significantly higher level of clarity and confidence than users testing Prototype A (with generic instructions).

Key Research Questions

- Which prototype design do users prefer overall and why?
- Which version feels faster and more efficient to use?
- Which version makes users feel more secure and confident about recovering their items?
- Do users trust AI-powered matching and predictions?
- How important is granular privacy control versus automated assistance?

4. Evaluation Preparations

We developed comprehensive materials to ensure consistent and ethical data collection:

4.1 Participant Recruitment Plan

We developed a multi-strategy recruitment approach:

Strategy 1: Public-Space Intercepts - Convenience sampling at high-traffic campus locations (Zuhl Library entrance, Corbett Center, Student Union Building) for one-hour sessions, politely approaching students.

Strategy 2: Contextual Inquiry - Our primary strategy targeting ideal users at building-level lost-and-found desks (Domenici Hall, etc.). We approached students saying: "Since you just used this system, would you have 5-10 minutes to give us your quick feedback on our prototype?"

Strategy 3: Key Stakeholder Interview - We interviewed staff members managing lost-and-found desks to gather insights on system pain points and desired features from an administrative perspective.

5. Evaluation Methods

5.1 Study Design

Design Type: Within-subjects study (each participant reviewed both prototypes)

Independent Variable: Votes (Prototype A vs. Prototype B), Average Rating for questionnaire.

Dependent Variables: User's stated preference, perceived helpfulness, perceived clarity, confidence ratings, and direct quotes from think-aloud protocol

5.2 Counterbalancing

To control for order effects, we counterbalanced the presentation order:

- **Group 1:** Prototype A first, then Prototype B

- **Group 2:** Prototype B first, then Prototype A

5.3 Testing Environment & Procedure

Setting: Quiet campus locations (study rooms in Zuhl Library, empty classrooms in Domenici Hall) to minimize distractions while maintaining ecological validity.

Session Duration: Approximately 5-150 minutes per participant

Procedure for Each Participant:

- Introduction and consent (2 minutes)
- Context questions about prior lost/found experiences (3 minutes)
- First prototype: Three tasks with think-aloud protocol and post-task questions (8 minutes)
- First SUS questionnaire (2 minutes)
- Second prototype: Three tasks with think-aloud protocol and post-task questions (8 minutes)
- Second SUS questionnaire (2 minutes)
- Post-study comparison questions (3 minutes)

6. Participant Data & Key Findings

We successfully recruited and tested 6 NMSU students each representing diverse campus locations and prior experiences with lost and found systems.

6.1 Participant Demographics & Background

Our participants represented a range of campus locations and prior experiences:

Name	Location	Prior Lost Item?	Use The App?
User 1	Activity Center	Yes - car keys	Definitely
User 2	Science Hall	Yes - water bottle	Probably not
User 3	Domenici Hall	No	Yeah, would use it
User 4	Jett Hall	Yes - phone	Try finding first, then yes
User 5	Domenici Hall	Yes - AirPods	For sure
User 6	Corbett Center	Yes - student ID	Absolutely
User 7	Domenici Hall	N/A	Would turn in, not post
User 8	Science Hall	No	Would use it

The users in the above table represent different participants chosen from each of our individual data collections.

6.2 System Usability Scale (SUS) Results

The SUS questionnaire provided standardized usability scores for both prototypes. Each participant rated 10 statements on a 5-point scale (1=Strongly Disagree, 5=Strongly Agree). Scores are calculated to produce a 0-10 scale where scores above 6 are considered above average, and scores above 8 are considered excellent

Key Observations:

- **Average SUS Score: 8.25/10** - This indicates good overall usability across both prototypes
- Highest scores (9.75-10) came from participants who preferred Prototype B's AI features
- Prototype A supporters also gave strong scores (7.5-9.25), showing both approaches are viable
- Emily's neutral score (5.0) represents a user who found moderate usability concerns with both approaches

6.3 Prototype Preferences

When asked to choose their preferred prototype and explain why, participants were split but showed clear patterns:

Prototype A Preference: 5 participants (6.25%) shows most participants chose prototype A over B.

Common themes in Prototype A preference:

- **Community-based approach:** "The group feature is smart because you can notify just the people who might actually find your stuff"
- **User control:** "I like having more control like in Prototype A"
- **Simplicity:** "I prefer simpler interfaces, and Prototype A looks cleaner and easier to navigate"
- **Privacy features:** "I like being able to post to specific groups. It feels more secure and personal"

Prototype B Preference: 3 participants (3.75%)

Common themes in Prototype B preference:

- **Speed and efficiency:** "Prototype B gives you answers faster instead of waiting on other people"
- **AI matching:** "The AI matching sounds super efficient. If it can automatically match found items to my lost item post, that would save so much time"
- **Proactive assistance:** "I love that AI can predict where I might've lost something. I don't want to wait around for people to see my post"

6.4 Task-Specific Insights

Finding 1: Prior Experience Shapes Motivation

Participants' willingness to use the app strongly correlates with the value they place on lost/found items:

- **High-value items drive engagement:** Some lost valuable items (car keys, AirPods, student ID) and said they would "definitely" or "absolutely" use an app
- **Low-value items create apathy:** Some lost a cheap water bottle and "didn't bother trying to find it" - "probably" wouldn't use the app for similar items
- **Sentimental value matters:** Some noted that "it's more about sentimental value" than monetary worth - if they care about it, they'll look for it

Finding 2: Task 2 (Report Found Item) is Critical

As hypothesized, Task 2 emerged as the key differentiator between prototypes. The finder experience directly impacts system success:

- **Location matters for finders:** Jake found sunglasses but "wasn't sure where [the lost and found] was, so I just left them on the windowsill." Alex left a water bottle on a bench because "I was running late to class."
- **Uncertainty reduces helping behavior:** Multiple participants expressed confusion about whether to turn items in at building desks, campus police, or leave them where they were found
- **Clear instructions increase compliance:** Prototype B's location-aware drop-off instructions with specific desk locations and hours received unanimous praise from finders

Finding 3: Privacy is Important but Not Primary

While privacy features were appreciated, they were not the primary decision factor:

- Madison would try to "message them directly on Instagram" if she found a wallet with an ID - privacy concerns were secondary to speed and directness
- Jessica liked Prototype A's group posting for security, but this was mentioned as a secondary benefit after functionality
- The staff-verified model was universally accepted without privacy concerns - users trusted the institutional structure

Finding 4: Color Scheme and Branding Matter

Several participants commented on visual design:

- **NMSU branding resonates:** Tyler specifically mentioned "The crimson color scheme is nice and matches NMSU's branding"
- **Dark mode divides opinion:** Jessica said "I'd prefer a lighter blue color scheme instead of the dark theme" in Prototype B
- **Modern design signals capability:** Madison liked Prototype B's "modern, tech-forward design. It feels more innovative."

Finding 5: Hybrid Approach Suggested

Multiple participants suggested combining features:

- Jake: "Maybe those features could be optional add-ons to A" (referring to AI predictions)
- Alex: "Have AI suggestions as an optional feature in A, but keep the main experience user-driven"⁷. Design Decision: Moving Forward with a Hybrid Approach

7.1 Overall Decision

Based on our data analysis, we will move forward with **Prototype A (Community Trust Model) as the foundation**, enhanced with **select AI features from Prototype B** implemented as optional, toggleable enhancements. This hybrid approach addresses the majority preference (6.25% chose Prototype A) while incorporating the efficiency benefits that made Prototype B appealing.

7.2 Rationale Backed by Data

Reason 1: Majority Preference for Community Model

Data Point: 6.25% of participants preferred Prototype A overall

Reason 2: Strong Usability Scores for Both Approaches

Data Point: Average SUS score of 8.25/10 (considered "excellent"), with Prototype A supporters scoring 7.5-9.25

Reason 3: Users Explicitly Requested Hybrid Features

Data Point: Multiple participants suggested combining elements: Jake ("maybe those features could be optional add-ons"), Alex ("have AI suggestions as an optional feature")

Reason 4: Task 2 Success Validates Staff-Verified Model

Data Point: Unanimous positive feedback on clear drop-off instructions; multiple participants reported past confusion about where to turn in items

Reason 5: NMSU Branding Resonates

Data Point: Tyler specifically noted the crimson color scheme "matches NMSU's branding"; Jessica wanted "lighter blue" instead of Prototype B's dark theme

7.3 Specific Modifications to Prototype A

We will make the following modifications to Prototype A to create our high-fidelity functional prototype:

Modification 1: Location-Aware Drop-Off Instructions

From Prototype B → Added to A

When a finder attempts to report a found item, the system will use their location (with permission) to identify the nearest building desk and provide specific instructions including: building name, desk location, desk hours, and estimated walking distance. This addresses the confusion multiple participants expressed about where to turn in items.

Modification 2: Optional AI Match Suggestions

From Prototype B → Added as optional feature in A

Users who post a lost item will have an option to "Enable AI Matching" (default: on, but easily toggleable). When enabled, the AI will proactively suggest potential matches with confidence scores and explanations. Users can turn this off if they

prefer manual searching. This respects user preference for control while providing efficiency benefits.

Modification 3: Photo-Assisted Posting (Optional)

From Prototype B → Added as optional feature in A

When posting a lost item, users can optionally upload a photo. If they do, AI will suggest auto-filled details (description, category, color) which users can accept or edit. This addresses the efficiency benefits of Prototype B while maintaining manual control. Jessica's concern about "not always having pictures" is addressed by making this optional.

Modification 4: Refined Color Scheme

Design refinement based on feedback

We will maintain the crimson and white NMSU branding with a light interface (not dark mode). We will refine the shade of crimson to ensure proper contrast and readability while maintaining brand consistency. A subtle light gray will be used for secondary UI elements.

Modification 5: Enhanced Building-Based Accountability

Strengthening existing Prototype A feature

Tyler specifically liked "the building reporting feature—it adds accountability." We will enhance this by clearly showing which staff member posted each found item (role only: "Posted by: Zuhl Library Staff") and including a "Report Issue" option for transparency.

7.4 Features Retained from Prototype A

These core Prototype A features will remain unchanged as they received positive feedback:

- **Map-centric interface:** The building-based organization with campus map visualization
- **Public feed homepage:** Recent found items displayed in a community feed
- **Group posting features:** Ability to notify specific campus groups
- **Privacy controls:** User control over anonymity levels
- **Staff-verified model:** Only verified staff can post found items

7.5 Features Excluded from Prototype B

These Prototype B features will not be included based on user feedback:

- **Mandatory AI predictions:** Users found AI predictions helpful but wanted them optional, not mandatory. Some expressed skepticism about accuracy.
- **Dark theme:** Jessica explicitly requested lighter colors; the dark blue/purple theme will be replaced with crimson/white
- **AI-first interface:** The heavily AI-driven dashboard will be replaced with the community-focused public feed from Prototype A

8. Conclusion & Next Steps

Our User Study 1 successfully validated core design decisions while revealing important nuances in user preferences. The data clearly supports a hybrid approach: Prototype A's community-focused, user-controlled foundation enhanced with selective AI features from Prototype B.

Key takeaways that will guide our functional prototype development:

- **User control matters:** 6.25% preferred the approach that gave them more control over their experience
- **Clarity is critical for finders:** Location-aware, specific drop-off instructions will dramatically improve system participation
- **AI as optional enhancement:** Users want AI help available but not mandatory
- **NMSU branding matters:** Crimson and white color scheme with light interface resonates with campus community
- **Staff-verified model is trusted:** No privacy concerns were raised about the institutional verification approach

Next Steps:

- Develop high-fidelity mockups using our technologies based on our hybrid design decisions
- Build functional prototype implementing core features and optional AI enhancements
- Conduct User Study 2 with functional prototype to validate implementation and gather deployment readiness data
- Prepare for potential pilot deployment with select NMSU buildings