GEBZE
TEKNİK ÜNİVERSİTESİ

Understanding users, work and context

Lecture 3 · Week 3

CSE566 · Mehmet Göktürk

Begin with the goal, not the device

"I want to get across town in the shortest time."

A vehicle is already a solution. First investigate the destination, constraints and meaning of "shortest".



The activity beyond the screen



A catalogue search is one part of obtaining a usable book. Where does the difficulty actually occur?

Turn a brief into an answerable question

Brief: “Build a better library app.”

Question: “What do people do when a listed copy cannot be found, and what information do they need to recover?”

An answer could justify changes to information, assistance or service procedures—not necessarily a new app.

What would the evidence let you decide?

Uncertainty	Evidence to seek	Possible decision
Information away from the terminal	Notes, saved records, shelf visits	Support continuity
Where recovery stalls	Returns, handoffs, unresolved outcomes	Clarify assistance
Whether location is understood	Interpretation of labels and codes	Revise terminology

A request is evidence—but not a requirement

Question: A participant asks for an app. What belongs in the findings?

Worked answer: preserve the request as a report, investigate the situation behind it, and compare ways to meet the underlying need.

Do not convert one person’s requested feature into a universal requirement.

Define the success boundary

Is success finding a title, reaching a shelf, borrowing a copy, or obtaining suitable reading material?

The boundary changes which people, activities and outcomes you need to investigate.

A successful catalogue search can be followed by an unsuccessful borrowing episode.

Users and stakeholders



Which parts of the same service can the student, librarian and support technician explain?

Recruitment for informative differences



Choose contrasts relevant to the research question. Use the four cases to plan recruitment.

Lead users make unmet needs visible

Klemmer's equipment-carrying example makes a practical need concrete: moving several devices together.

A workaround can generate research questions. It does not prove that the same solution suits everyone.



Scott Klemmer · Additional Needfinding Strategies

Extreme users are not the whole population

Very heavy and very infrequent use can reveal different constraints. Neither represents everyone between them.

Qualitative recruitment can deliberately seek informative variation without supporting prevalence estimates.

Record whom you reached, whom you missed and what those limits mean.

A phone-based solution can exclude people

Question: What is wrong with “all students must use a phone to find books”?

Worked answer: access, ability and willingness have not been established. One observed strategy should not become a compulsory workflow.

Consent throughout the study



Agreement can change during a visit. Pause collection when the participant asks or private material appears.

Research relationships affect the account

A student approached by an instructor or an employee recruited by a supervisor may feel pressure to agree.

Make participation voluntary in practice, not only in the information sheet.

Explain that the study concerns the service, not the participant's ability; examine how your expectations shape questions.

Research data handling



Keep the identity key separate. Specify access and retention before collecting identifiable material.

Observe work where it happens

A woodland advice visit involves movement, conversation and recording materials. An office screen captures only part of that work.

The published case combined shadowing with later interviews and journey mapping.



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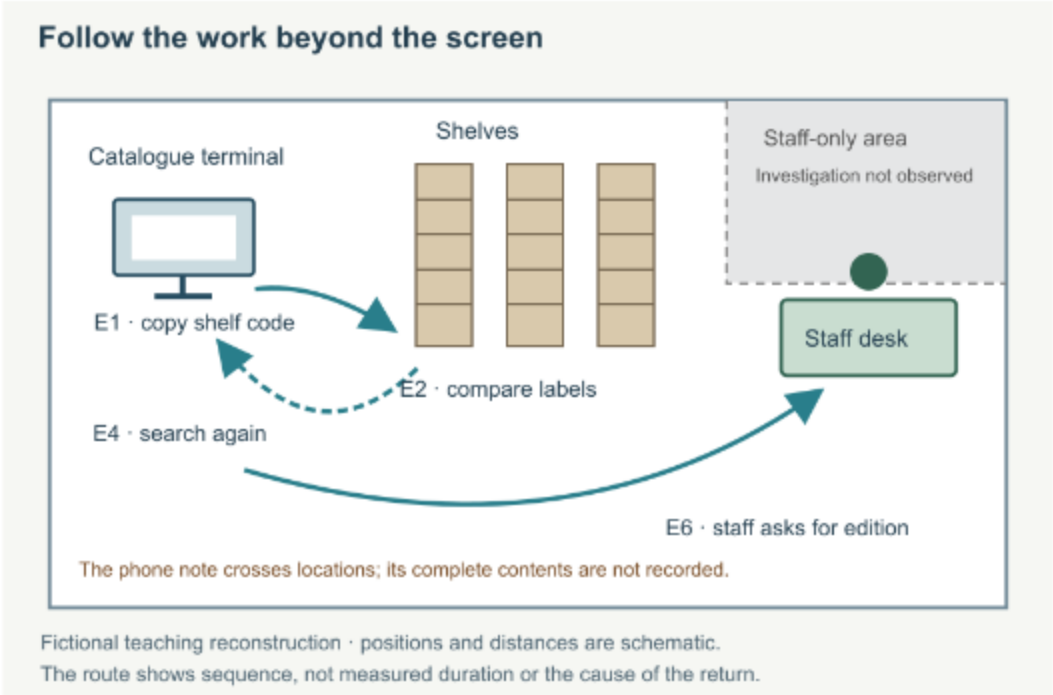
Choose the episode boundary

For missing-book recovery, follow selection, the shelf visit, help-seeking and the outcome—including stopping.

Record what lies outside your view, such as staff investigation behind the desk.

A visit focused only on the catalogue would omit the breakdown that motivates the inquiry.

Follow information across places



E1: an item is selected and the shelf code is copied. E2: the note is compared with shelf labels.

E4: the search is repeated. E6: staff ask for title and edition.

The map represents sequence, not measured distances or duration.

Observe activities, artifacts and relationships

Activities: what happens, in what order and under what conditions?

Artifacts: what is read, carried, written or consulted?

Relationships: who supplies information, authorizes action or helps recover?

Prepare a focused observation guide

Look for	Record a concrete instance
Trigger and goal	What starts the episode?
Actions and artifacts	What is done and what is consulted?
Handoff or workaround	Who becomes involved; what adapts the process?
Outcome and coverage	What happened; what could not be observed?

Contextual inquiry



Observe the work in its setting. Ask the participant about a concrete action or artifact at a suitable pause.

Ask at a natural pause

“You checked the label and moved to the next shelf. What were you looking for?”

The prompt anchors a question to an action without supplying its cause.

Continuous questioning can prevent the work from unfolding; note when a question changes the activity.

When should you intervene?

Situation	Research response
Unfamiliar but routine action	Note it; ask at a suitable pause
Participant seeks help from you	Follow the agreed intervention procedure; record your action
Distress or essential work at risk	Do not prolong the difficulty for the study
Private material enters view	Pause or redirect recording as agreed

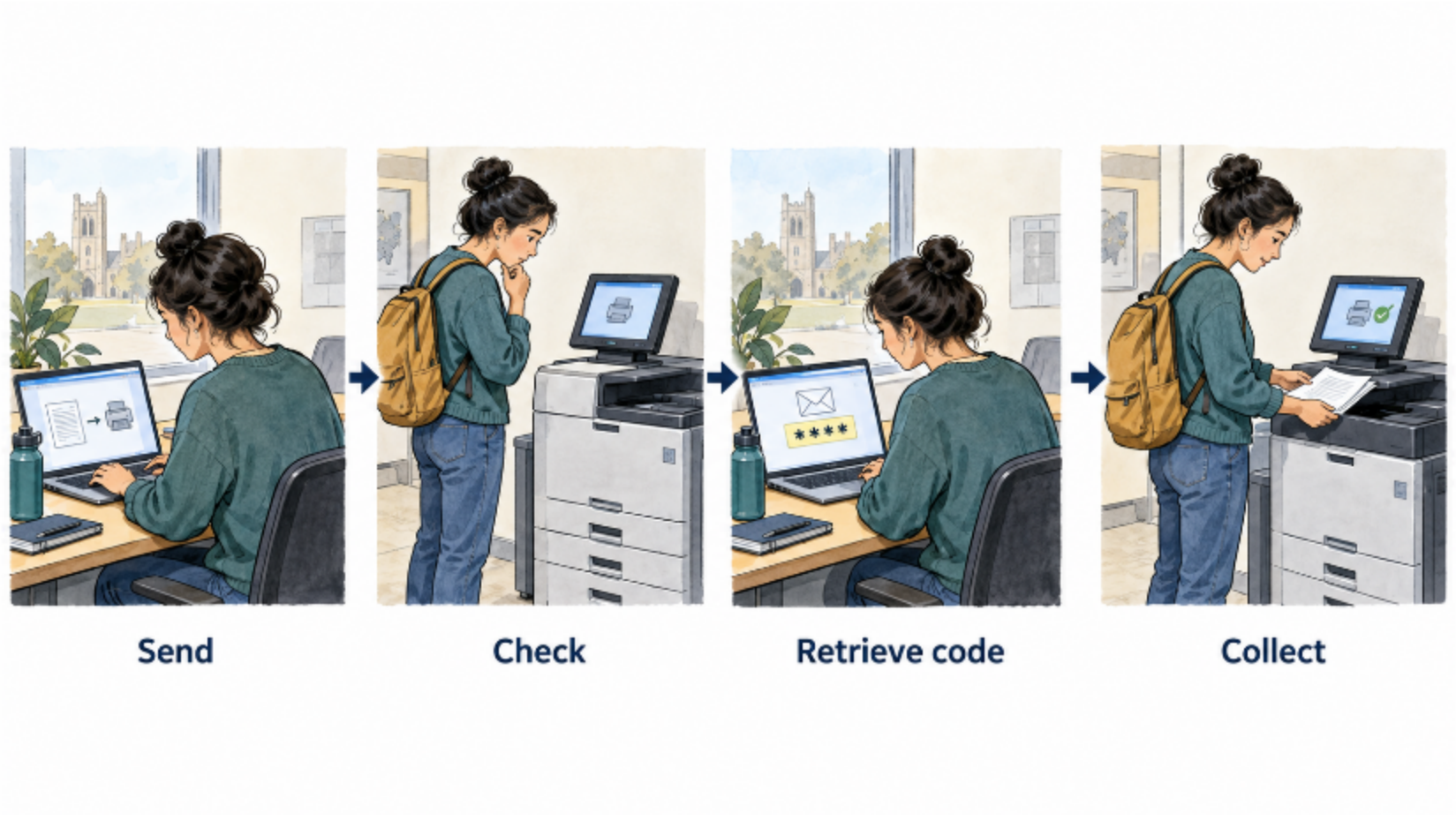
The observer is part of the situation

Researcher instructions, equipment and presence can change what happens.

Distinguish spontaneous activity from prompted demonstrations and think-aloud accounts.

Think-aloud adds work; it may interfere with concentration, conversation or a fast sequence.

A printing episode across places



Returning to the desk can be part of recovery. What would you miss by watching only the printer screen?

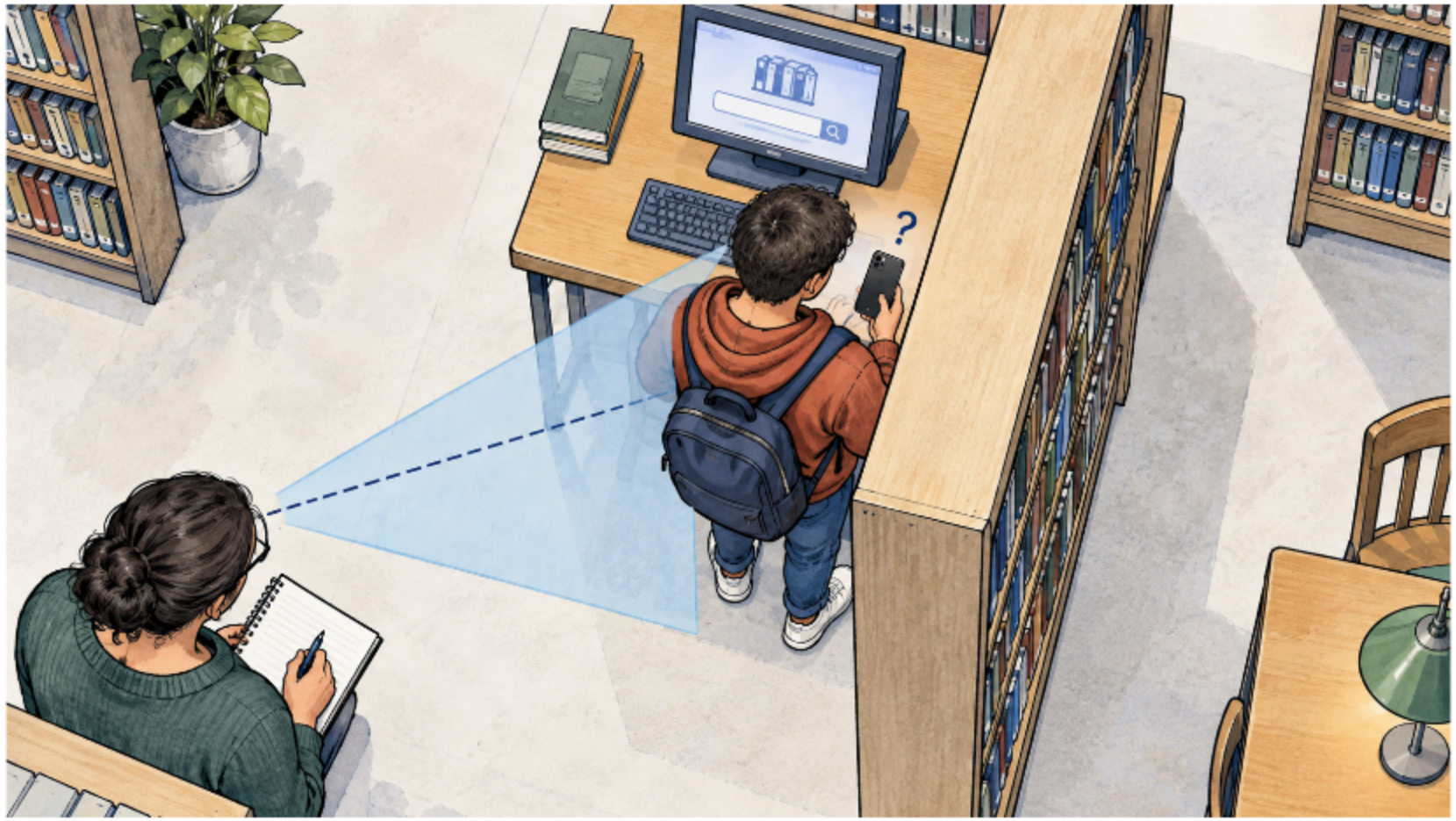
An observation is not an explanation

Statement	Status
E1: copies a shelf code into a phone note	Recorded action
E3: says a particular edition is required	Participant report
The student has a memory problem	Unsupported interpretation
Item context may matter during recovery	Provisional interpretation

Read the field notebook

Record	What is recorded	What remains open
E1	Selects title; copies shelf code	What other information was retained?
E2	Compares note; searches nearby shelves	Why is the item not found?
E4	Returns and repeats search	What prompted the return?
E6	Staff asks for title and edition	How did the investigation end?

The limits of an observation



You can record visible phone use. You cannot infer what is on a screen that you cannot see.

Field notes and later interpretation



Keep captured actions separate from later explanations. Preserve uncertainty and unanswered questions.

A broad report is not direct observation

Question: A manager says “students never read instructions.” Is that an observation?

Worked answer: it is a stakeholder report containing a generalization. Seek concrete episodes and observe how instructions are encountered.

Unread instructions may be hidden, irrelevant at that moment or unnecessary for experienced users.

Compare explanations before settling on one

Repeated search could mean the note omitted information, the person wanted updated availability, or the first search was misunderstood.

Ask what prompted the return and inspect the available information.

Seek an episode with a different outcome rather than collecting only confirming examples.

Debrief while the episode is still clear

Summarize the episode, propose competing explanations and identify a question that could distinguish them.

In a team, review records together before merging them. Differences may reflect viewpoint, timing or interpretation.

Preserve contradictory notes; confidence is not a reason to overwrite evidence.

Practice: annotate an episode

Use E1–E6: separate recorded actions, participant reports and your interpretations.

Mark a gap you cannot fill from the record and write a neutral follow-up question.

Worked answer: E4 establishes a repeated search, not its cause; ask what information the participant sought on returning.

Similar equipment, different research questions

A shared screen and a note-taker can support several methods. The instructions and purpose determine what the evidence means.

Observing an everyday episode differs from asking someone to complete a task in a prototype.



Choose evidence for the uncertainty

Question	Useful evidence	Limit
What happens in practice?	Observation	Intent is not directly visible
How is it explained?	Interview	Recall and social expectations
What happens occasionally?	Diary / follow-up	Burden and missing entries
Which events occurred?	System logs	Unrecorded work remains invisible

Structure the interview around uncertainties

A structured interview follows a stable procedure. A semi-structured guide combines prepared topics with follow-up.

An open conversation still requires preparation, listening and a purpose.

The goal is a concrete account—not finishing every question on the list.

Begin with a recent episode

“Tell me about the last time you could not collect your printout.”

Ask what triggered the task, what happened next, what information was used and how it ended.

Follow the participant’s vocabulary before introducing technical labels.

The setting and artifacts can anchor the account

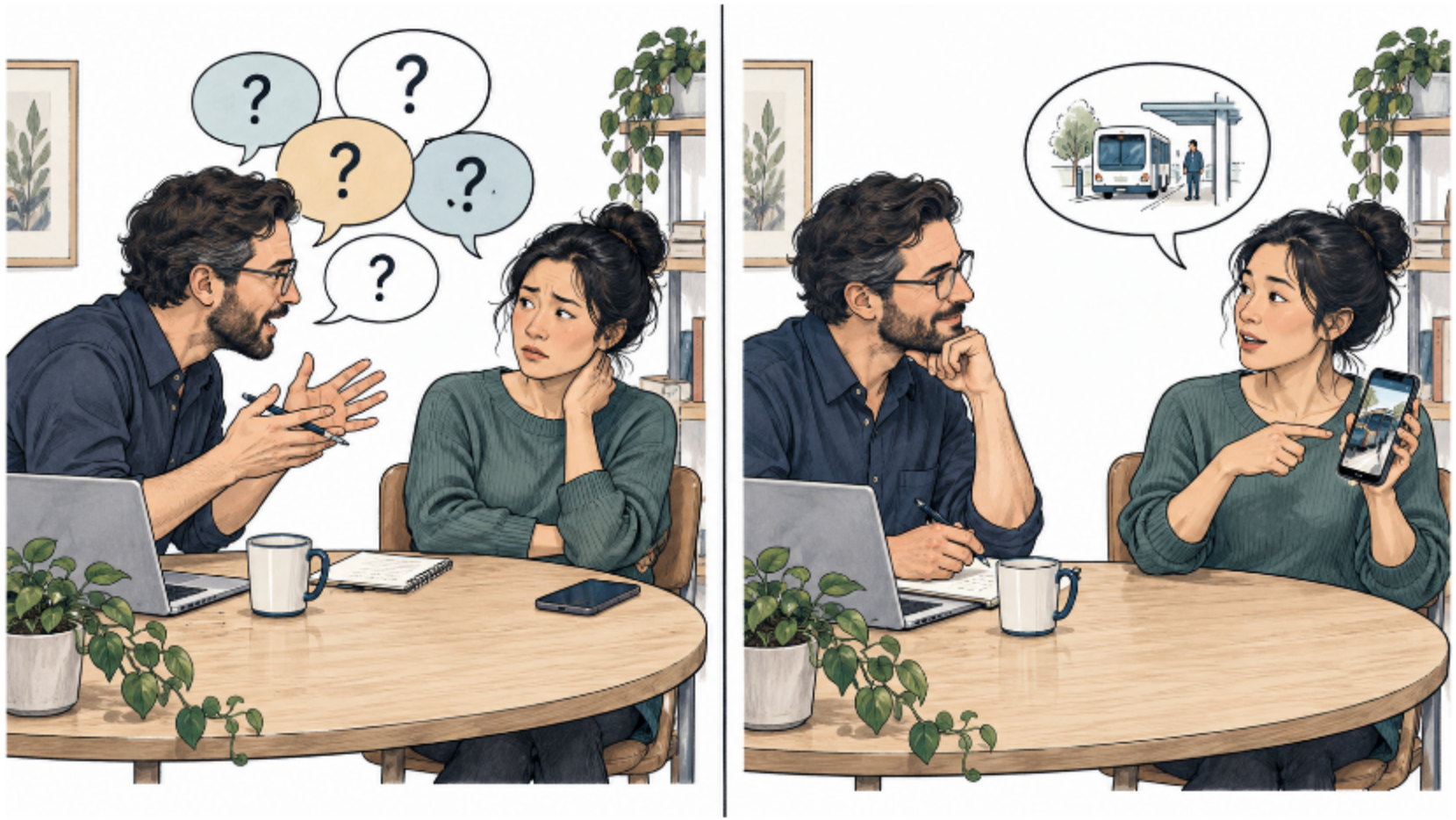
This published photograph shows an advice conversation around a kitchen table, not a staged research interview.

Notice the notebook and tablet. They suggest questions about recording and information use; the photograph cannot tell us what was said.



Barwick & Miller, 2023 · Crown copyright / OGL v3.0

Questioning and listening



Ask one question at a time. Give the participant room to describe a concrete episode in their own terms.

Recognize the leading question

Question	Assumption supplied
Would an app help you find books?	A particular solution
Why did you make that mistake?	Error and blame
Was the confusing screen frustrating?	Cause and emotion
Is accurate availability important?	Easy approval of a desirable property

Replace approval with a concrete account

Weak prompt	Better inquiry
Is the update useful?	Tell me about the last time you used it
Do you understand the catalogue?	Show me how you interpret this record
How often do problems occur?	What happened during your last two visits?
Why did you make that mistake?	What were you expecting at that point?

A probe can change the interpretation

Researcher	Tell me about the last printout you could not collect.
Participant	I sent it twice. Then I went back to my desk.
Leading probe	Was the confusing display why you gave up?
Neutral probe	What happened before you returned to your desk?
Participant	I needed the release code from the email. I came back.

The return to the desk is part of recovery.

What did the interviewer assume?

Question: Why is “Why did you give up?” a poor follow-up in the printing episode?

Worked answer: it presumes abandonment. Returning to the desk may be a recovery step. Ask about the sequence before assigning an outcome.

The neutral follow-up makes room for an explanation the researcher did not anticipate.

Listen for exceptions and contradictions

Ask for the most recent example when someone says “always” or “never”. Ask about successful episodes too.

“Earlier I saw you return to the catalogue. You describe usually going to staff. What was different that time?”

An inconsistency is a question to investigate, not proof of an unreliable participant.

Pilot the guide and close carefully

Check whether questions are understood and produce concrete accounts. Test recording, timing and transitions.

Close by checking important interpretations, asking what you missed and explaining the next steps.

Afterward, record deviations and questions that produced only vague agreement.

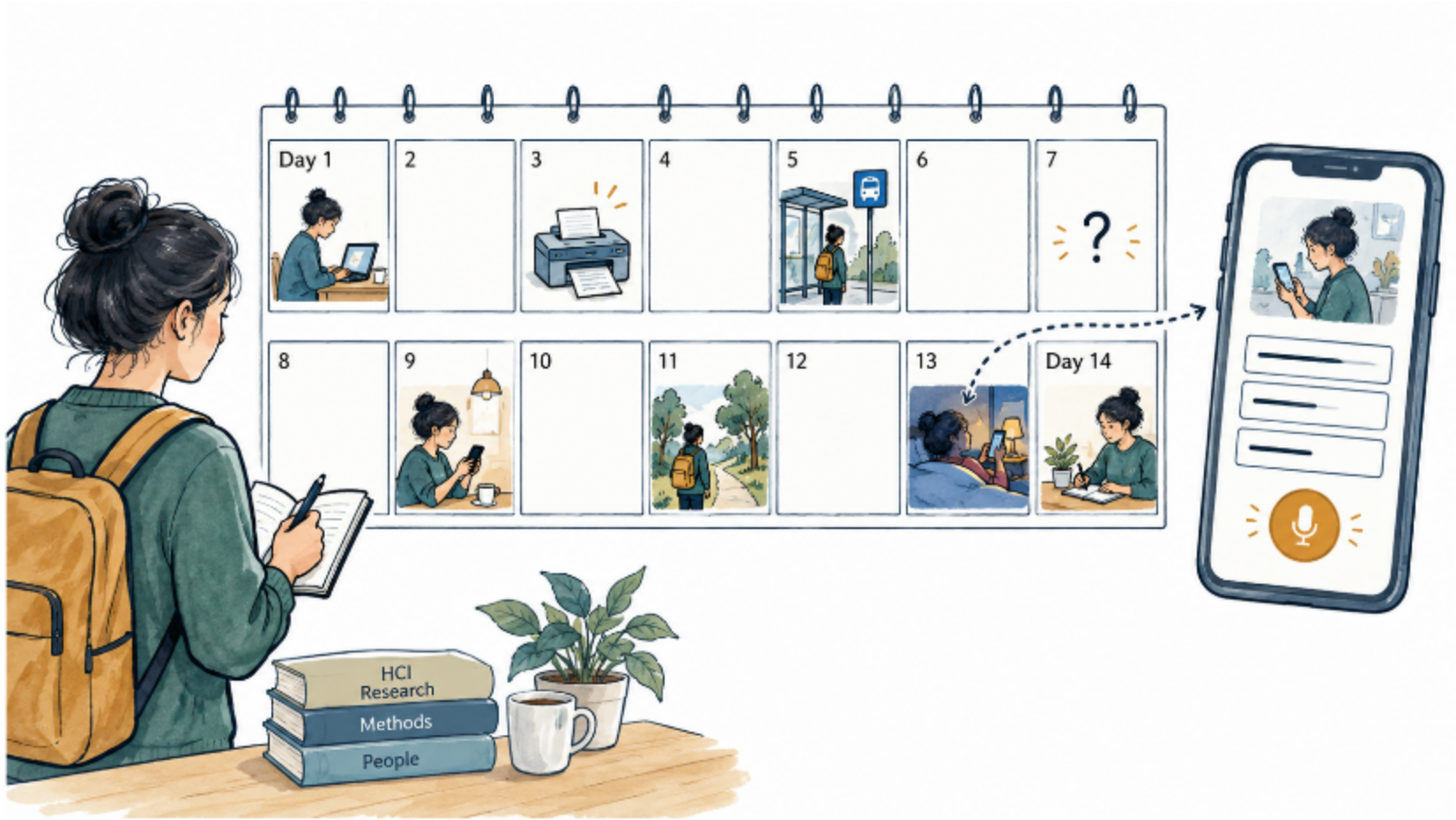
Pair practice: interview an episode

Describe a recent difficulty with a shared service that you are comfortable discussing.

The interviewer asks one opening question, then uses neutral probes; switch roles.

Debrief: identify one introduced assumption and rewrite that prompt. Classroom practice is not a research dataset.

A diary study over time

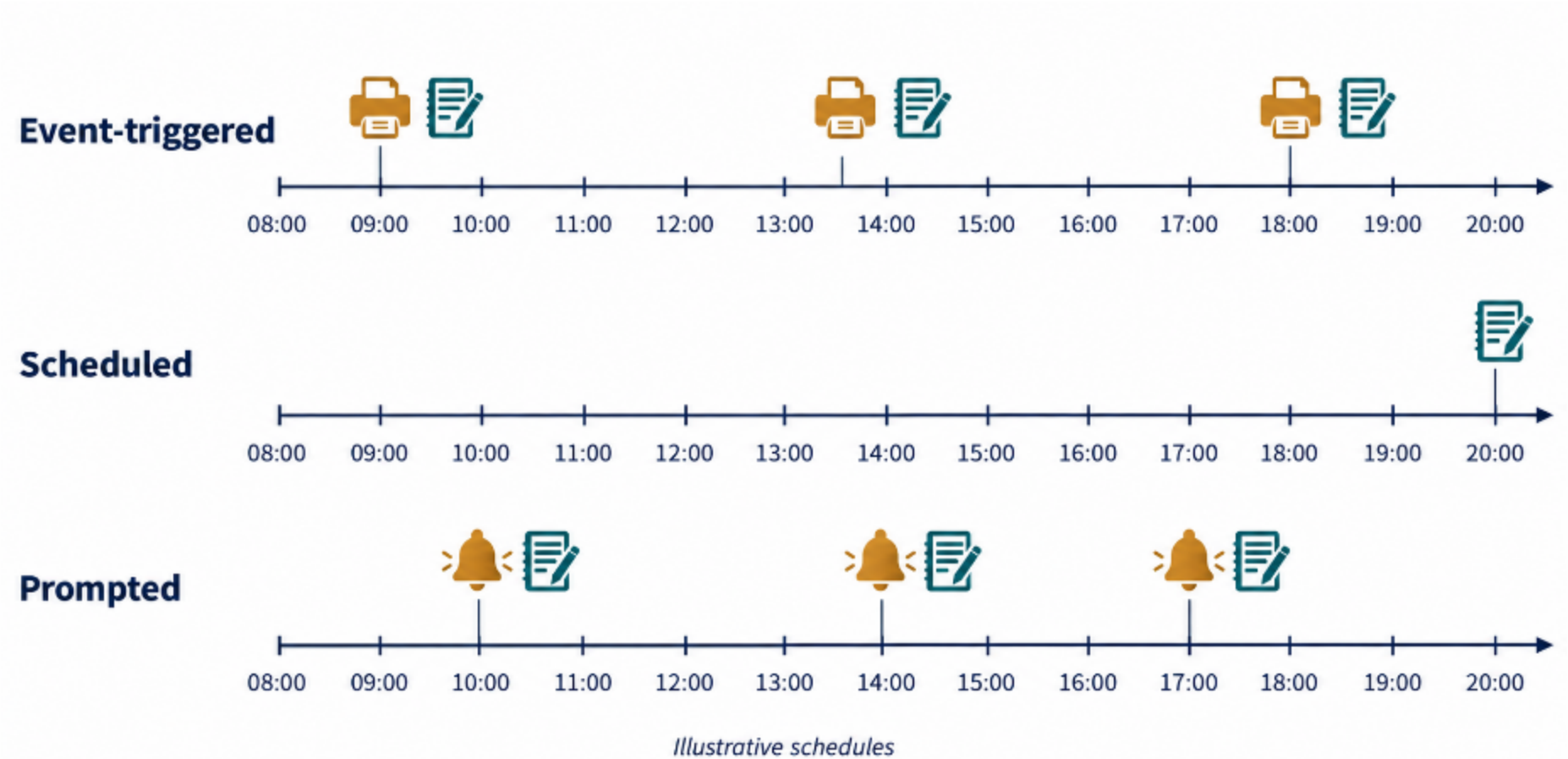


A longer window can capture occasional episodes. Missing entries still need explanation.

Design the diary entry

Field	Example
Goal and setting	Collect printout before class; shared printer
Trigger	Job did not appear at the release terminal
Action	Checked email for release code
Outcome	Returned and collected printout
Later explanation	Entry added after class; timing approximate

Diary and sampling schedules



Illustrative schedules

The recording trigger changes coverage, recall and interruption. Choose it to match the research question.

A missing entry is not a zero

Question: No diary entry was submitted yesterday. Can you conclude there was no problem?

Worked answer: no. The participant may have forgotten, been busy or found recording difficult. Ask about omissions without inventing missing events.

Pilot the research instrument as an interaction in its own right.

A screenshot needs an account

Karlson and colleagues paired captures of disrupted mobile tasks with later annotations and interviews.

The screenshot preserves visible state. Description, context and follow-up explain parts of the episode that pixels cannot establish.



Date: 6/19/2009 3:34 PM

Description: Facebook app is succeptible to network glitches where it can't post something. Usually if it fails it erases whatever content you were working on and forces user to start from scratch.

Follow-up: I had to wait for a few minutes to try again when I was in better coverage area. Barring that I'd have to wait until I got to a PC.

Context: Trying to change Facebook status while riding in a car with friend.

Frustration: 4

Karlson et al. · CHI 2010 · Figure 2

Examine the research design, not just its findings

The study recruited 12 iPhone and 12 Pocket PC users within a large software corporation and used a two-week capture period.

Lightweight capture reduced immediate effort; later annotation introduced recall limitations.

Participants, screenshots and retained analysis records are different units. This historical sample does not establish present-day usage.

Keep notes connected to episodes

Research notes can be arranged spatially to compare actions, constraints and explanations.

Each note needs a source and enough context to be understood. “Navigation bad” is an opinion; a repeated search is an inspectable event.

Example



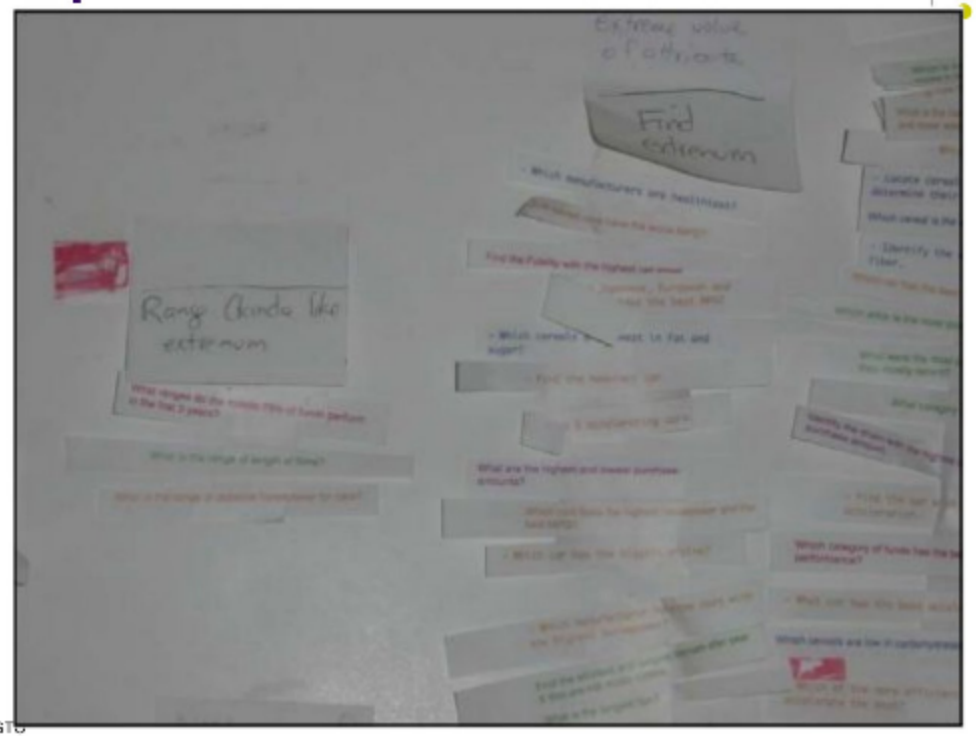
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Grouping is an interpretive act

Affinity grouping proposes relationships; labels should explain what the notes have in common.

Move notes when the interpretation changes. Keep a note that does not fit—it may expose a missing category or a contrary case.

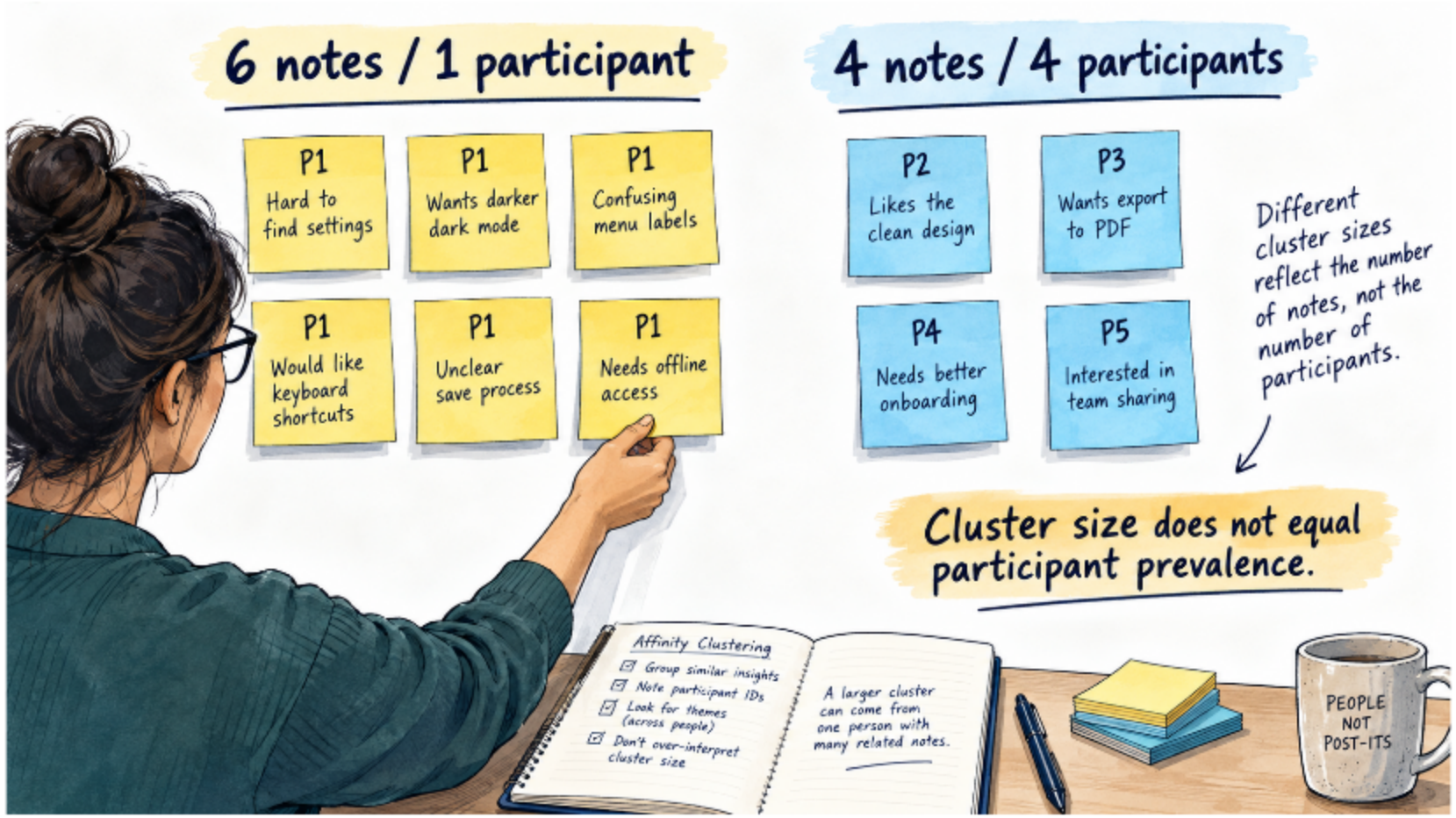
Example ..



From codes to an argued interpretation

Record	Descriptive code	Possible relationship
E1: copies shelf code	Copies location	Information across places
E4: repeats title search	Restarts search	Possible continuity problem
E6: staff asks for edition	Requests identity	Identity needed at handoff

Notes and participant counts



Which group contains more participants? Count contributors as well as notes.

Affinity analysis and card sorting differ

Researchers grouping evidence develop an interpretation. Participants sorting items reveal aspects of categorization.

Both may use cards, but the data and questions differ. Grouping research notes does not measure a preferred navigation structure.

Affinity diagram - from Card Sorting

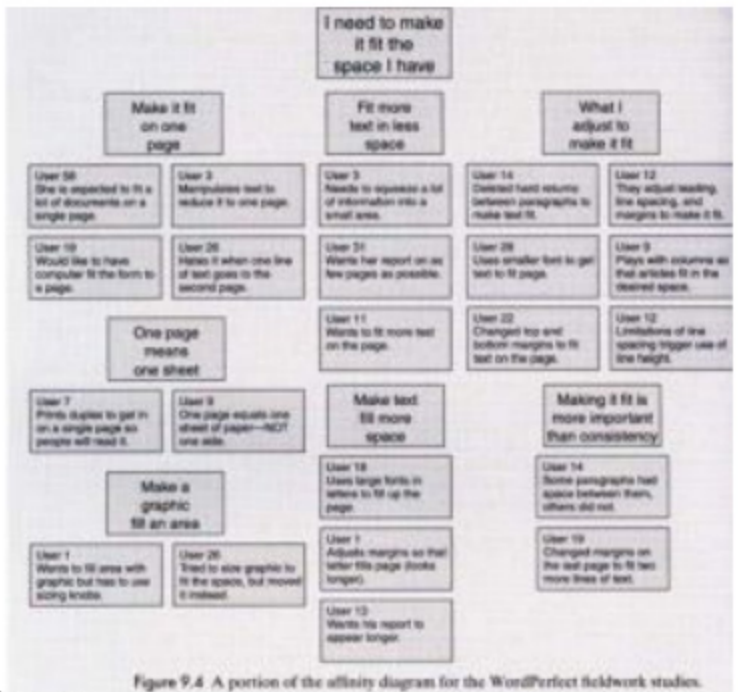


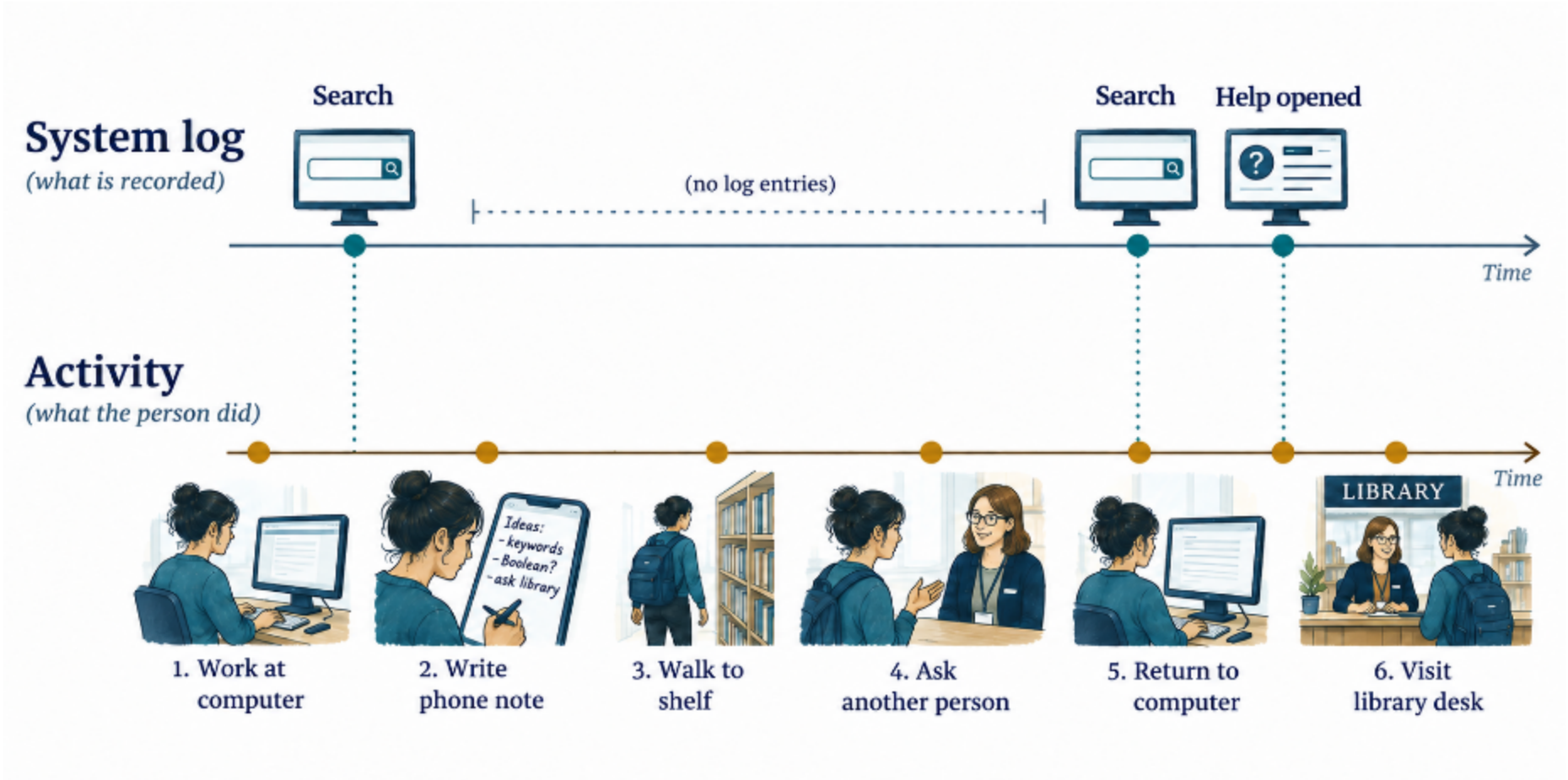
Figure 9.4 A portion of the affinity diagram for the WordPerfect fieldwork studies.

Cards are notes from interviews, focus groups, etc.

Tools support different analytical jobs

Tool	Contribution	Keep checking
BORIS	Code events in recordings	Definitions and context
Dovetail	Organize source-linked research material	Source support for an insight
HTA editors	Maintain task hierarchies and plans	Missing conditions and evidence

System logs and the surrounding activity



The log records selected digital events. Shelf visits and conversations need other evidence.

Represent people without inventing evidence

A scenario explains one concrete episode. A persona summarizes relevant patterns and constraints across research.

A fictional biography adds little unless its characteristics support a decision. Generated quotations are not participant evidence.

Participation goes beyond consultation when people can actually shape alternatives or priorities.

Separate intention from system responsibility

Essential Use Case Example

Get foreign currency

User's purpose	System responsibility
Identify self.	Validate user's identity. Display currencies available.
Select currency required.	Display exchange rate.
Enter amount of foreign currency required.	Calculate exchange (e.g. £ to $).
Confirm amount.	Request initiation of payment. Obtain authorisation for amount. Give money.
Take money and go.	

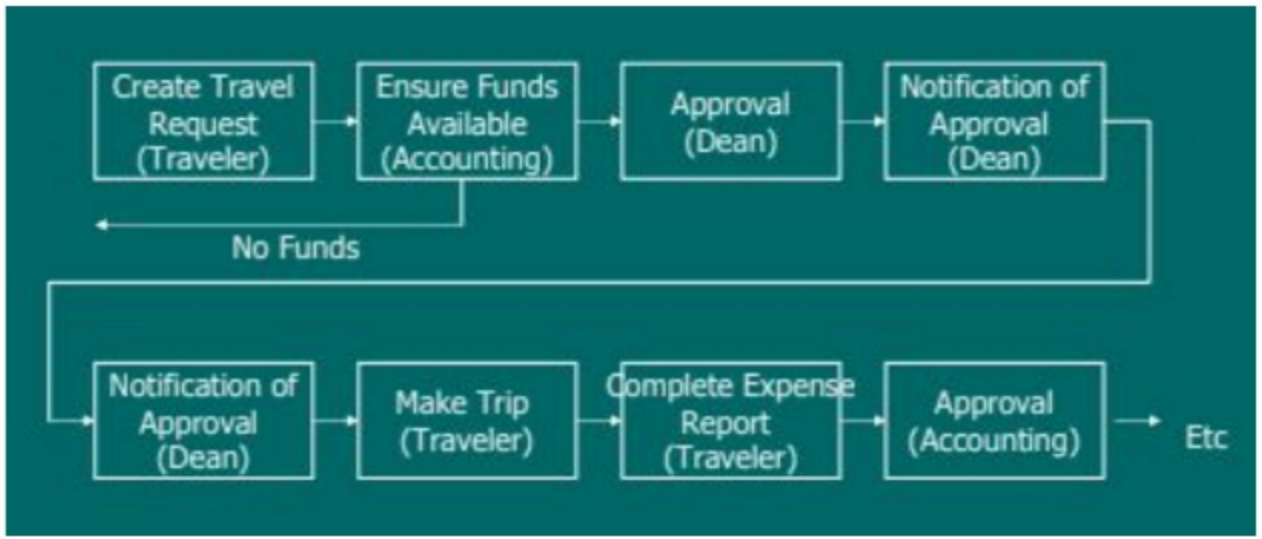
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The currency example pairs a person's purpose with the system's contribution.

An essential use case leaves room for different interface designs. It does not assign one screen to every intention.

Follow handoffs across roles

Workflow Example – document flow



A submitted request begins work for another person. Ask who receives what, how completion is recognized and what happens when information is incomplete.

In this travel example, faster submission alone would not remove a delay in approval.

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Use the representation that answers the question

Task Model – Schedule Meeting

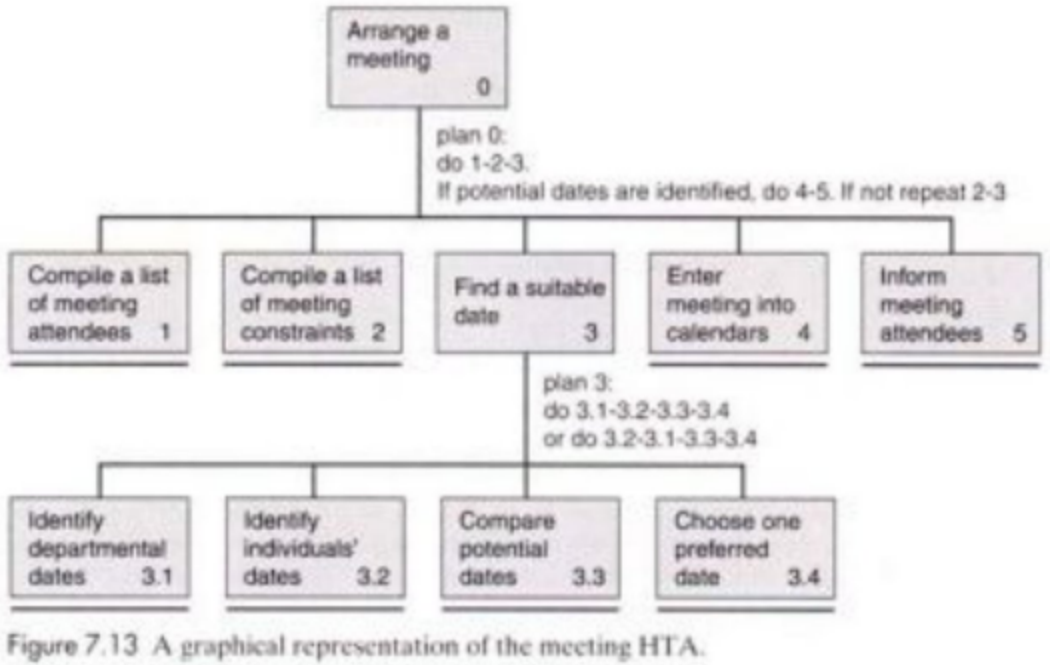


Figure 7.13 A graphical representation of the meeting HTA.

From Preece et.al.

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Scenarios expose the meaning of an episode; workflows expose handoffs; task hierarchies expose decomposition and plans.

Meeting coordination demonstrates dependencies and alternative sequences. No single representation shows every aspect of work.

Goals, tasks, subtasks and plans

A goal is an intended result. Tasks and subtasks describe the work that contributes to it.

A hierarchy decomposes work; plans specify ordering, conditions, choices and repetition.

Include physical, cognitive and communication work—not only clicks.

Borrow a book: read the hierarchy

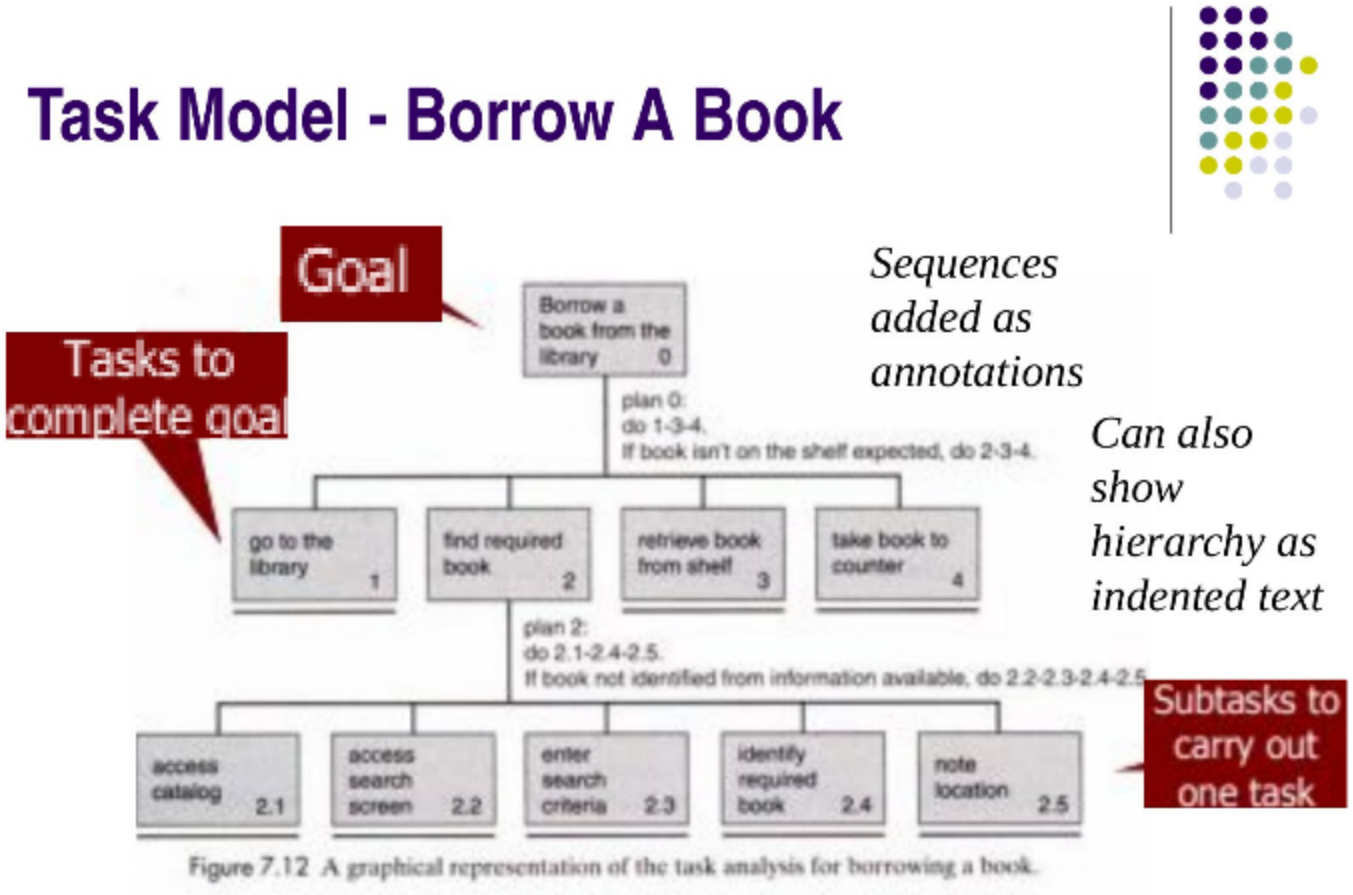


Figure 7.12 A graphical representation of the task analysis for borrowing a book.

The model contains library arrival, finding the required book, retrieving it and taking it to the counter.

Read the plans as well as the boxes; the drawing alone does not determine execution order.

The plans define different routes

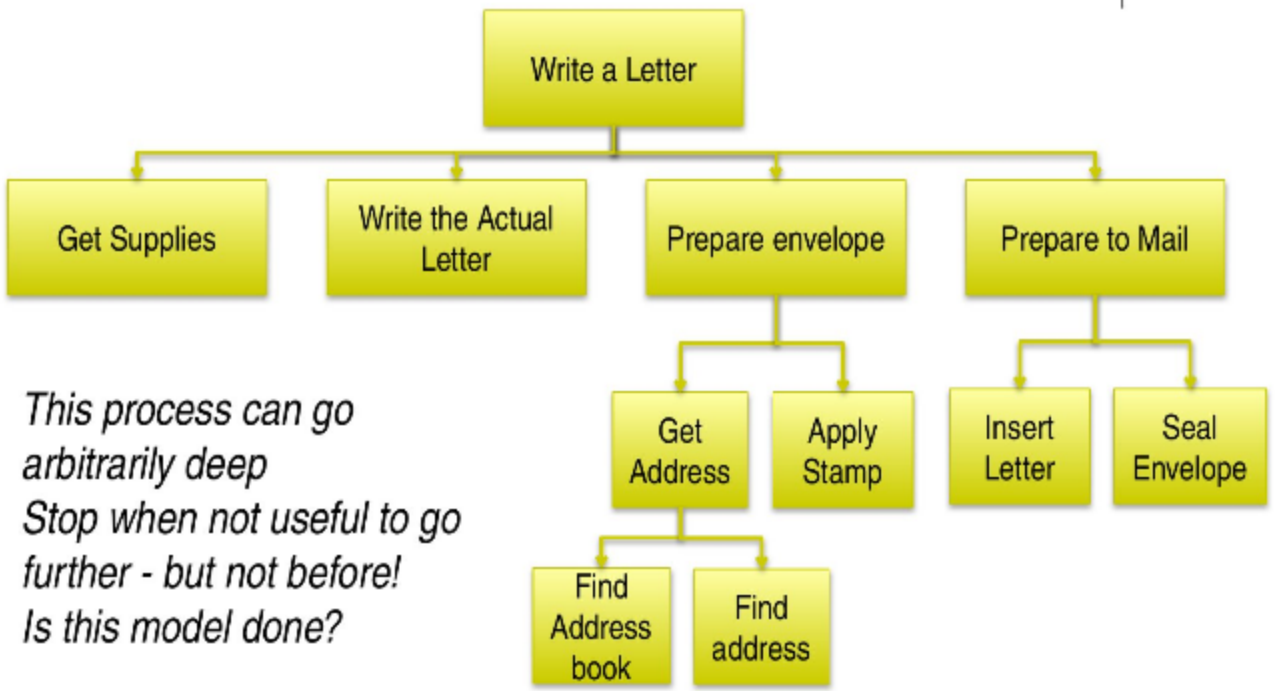
Plan 0: use 1–3–4 when the location is known; if the book is not at the expected shelf, use 2–3–4.

Plan 2: use 2.1–2.4–2.5 when available information identifies the book; otherwise search using 2.2–2.3–2.4–2.5.

Question: what happens if the item is still missing after the catalogue supplies a location?

Decompose only as far as useful

Task Model – Write a Letter



This process can go arbitrarily deep
Stop when not useful to go further - but not before!
Is this model done?

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Preparing an envelope includes obtaining an address; obtaining an address can be decomposed further.

Choose the stopping level for the research question. The tree does not by itself specify execution order.

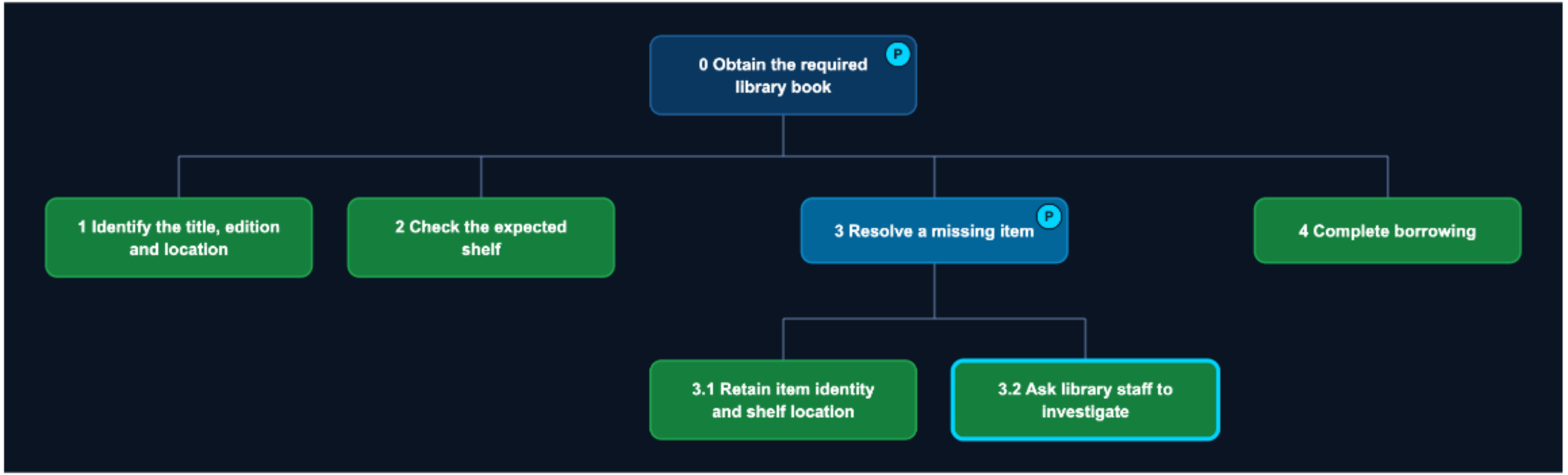
Extend the model when evidence reveals a gap

The missing-item episode motivates a recovery branch: preserve item context and investigate assistance.

Alternative editions and automatic reservations require further evidence about goals, availability and policy.

Model the unsuccessful or unresolved outcome explicitly; do not force every route to end in success.

Build a digital model—and retain its plans



The simplified library model adds a missing-item recovery task. Its numbering differs from the earlier example.

The exported image shows “P” markers. Full plan text must accompany it.

Plan the recovery and expose uncertainty

Plan	Candidate sequence
0	Do 1 then 2. If found, do 4; otherwise do 3. If recovered, do 4; otherwise stop unresolved.
3	Retain identity and location, then ask staff to investigate.
Open questions	Who confirms recovery? Can investigation finish later? Can the person stop?

AI can propose a model, not supply evidence

Ask for each task's parent, description, supporting record, evidence type and uncertainty. Separate observed actions from proposed support.

Question: should we accept "automatically reserve another edition"?

Worked answer: no record supports policy, consent or availability; E3 says the edition matters. Treat it as a question, not a requirement.

Keep the evidence-to-requirement chain visible

Step	Library example
Evidence	E1 copies location; E4 repeats search; E6 requests identity
Interpretation / need	Item context may be lost during recovery
Proposed requirement	Keep title, edition and location when opening assistance
Observable check	Recover the same record without re-entering the title

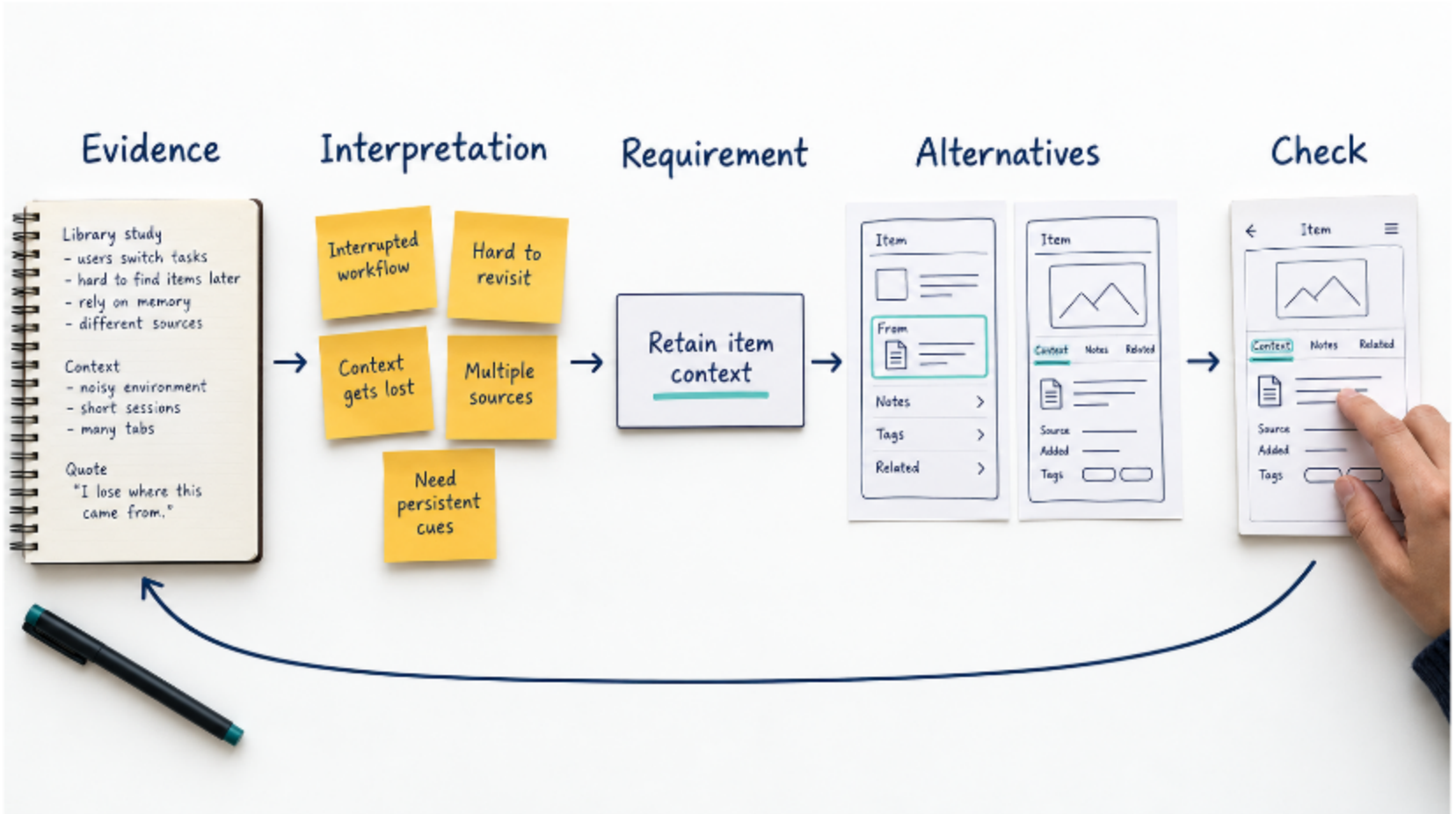
A requirement can change with new evidence

If the selected item already persists but is hard to find, the difficulty may concern visibility.

If users misunderstand “available”, keeping the record visible may not solve the problem.

State what would challenge the requirement. Do not invent a target percentage and call it a standard.

Evidence, requirements and design alternatives



Each transition requires judgment. Testing can change both the interpretation and the interface.

Two interfaces can support the same task

A · Assistance in item view

Selected title · required edition
Shelf location retained

Cannot find this item?

View assistance within this page

Item details remain visible

B · Dedicated assistance view

Selected title · required edition
Shelf location retained

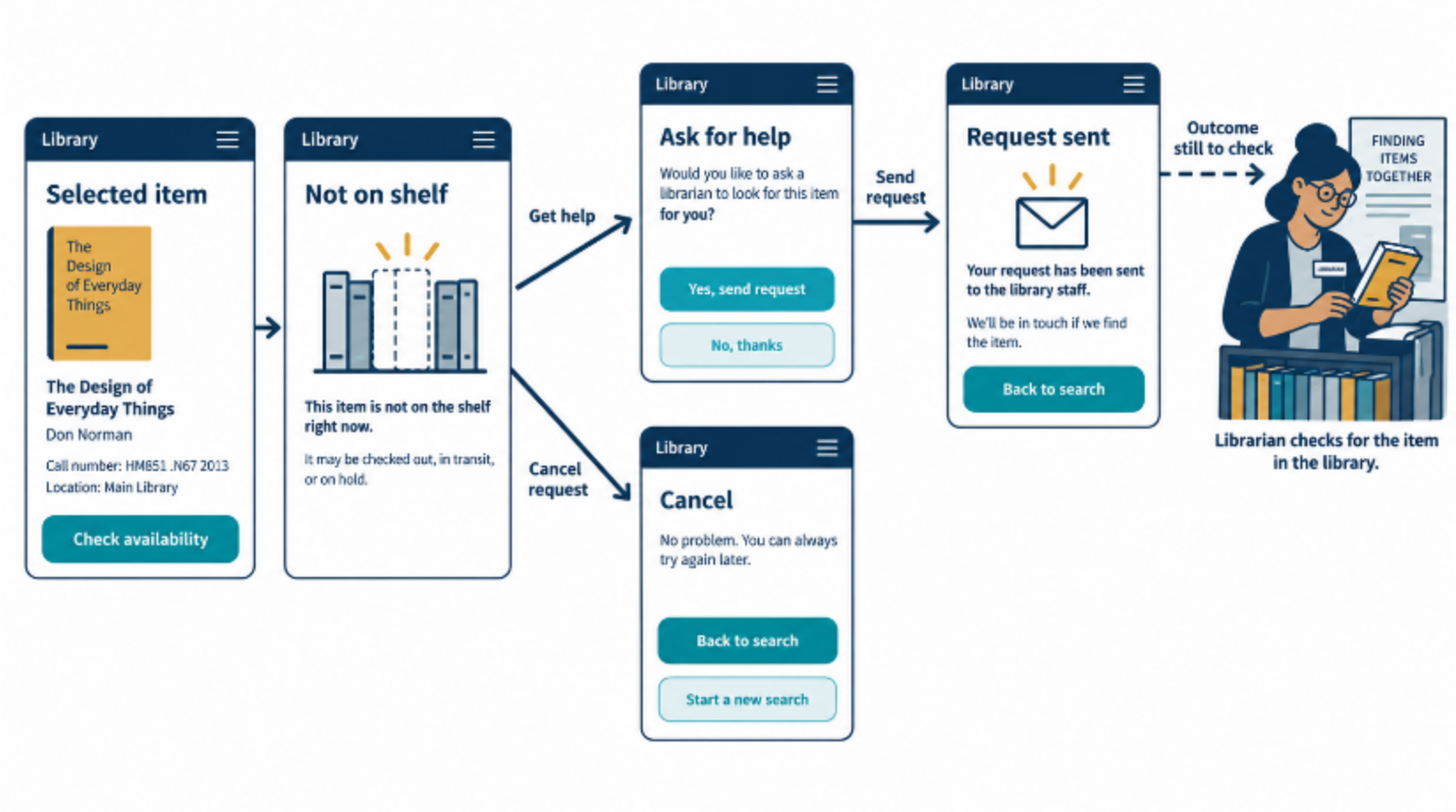
Assistance options and next steps

Continue to assistance

Return to selected item

Concept A keeps assistance within the item view. Concept B opens a dedicated assistance view with a persistent item summary.
Compare context, discoverability and room for guidance. Neither schematic has been evaluated.

Prototype states and outcomes



A sent request is an intermediate state. Check cancellation, recovery and the eventual service outcome.

Leave behind an account that can be challenged

Show who was studied, what mattered, what was recorded, how it was interpreted and why a design proposal follows.

Keep observations, reports, interpretations and proposals distinguishable.

The next design decision should be traceable to understanding of work—not merely to a polished diagram.