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PRACTICAL PLAYBOOK • LEARNING LIBRARY

Build Your Own Evidence Observatory with AI

A practical Grey Matters playbook for collecting observations, checking interpretations and learning what changes over time.

Human-led. AI-enabled.

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Start with an interest, not an information system

Perhaps you keep noticing different birds in the garden. Perhaps you want to understand local rainfall, compare competing claims about a long-term investment, or make sense of old family photographs and letters. Any of those could become an enjoyable investigation with AI.

The aim of this guide is not to build a miniature research institute. It is to help you create a small, useful record that becomes more informative each time you add to it. We call that an **evidence observatory**: a place to keep observations and sources, separate them from your interpretation, see the current picture and revise it when something new arrives.

You can start with paper, a spreadsheet and an AI conversation. You do not need a database or an elaborate dashboard. A simple working record that you understand and can trust is better than a clever system you cannot maintain.

The approach grew from the Grey Matters Research Observatory and Library, described in the companion case study, **From Curiosity to a Living Evidence Observatory**. That project examined scientific claims; yours might concern anything worth watching carefully. The method is an invitation to experiment, not a universally tested standard.

Our running example: what visits the garden?

Let's imagine somebody wants to learn which birds visit their garden, how sightings vary over four weeks and which apparent changes deserve a closer look. This is an **illustrative exercise**, not a record of actual wildlife observations.

The intended result is modest: a dated observation sheet, a short source and uncertainty record, a one-page summary and a way to add future observations without rewriting the past. By the end, the reader should know what was seen, what remains uncertain and what the observations **cannot** establish.

We'll follow the birds all the way through so the guide remains usable rather than becoming a catalogue of unrelated projects. But as we go, we'll show how the same steps could help somebody record rainfall, compare company reports, follow astronomical observations or investigate family history. Each subject will need its own sensible measurements and safeguards.

A bird seen more frequently this week does not prove that the local population has increased. Perhaps the weather was different, the feeder was filled, the observer spent longer watching, or the birds were simply easier to notice. Those alternatives are part of the learning, not an inconvenience to be edited out.

1. Choose a question narrow enough to observe

Start with something answerable using the time and information you actually have. 'How is nature changing?' is fascinating but far too broad for a first project. 'Which birds visit this garden during short observation sessions this month?' is something a person can record.

Decide what the result is for. Is it a hobby record? A family learning project? An initial basis for deeper research? The answer changes how carefully you need to collect and verify the data. Don't promise scientific certainty from an informal observation exercise.

A weather enthusiast might instead ask, 'How much rain fell on days when I took a reading this month?' Someone watching the night sky could ask, 'Which objects did I manage to observe under different sky conditions?' A person comparing investments might ask how a particular financial measure changed across published reports — while recognising that interpreting investments has higher stakes than a hobby log.

Copy and adapt — define the question

> I want to investigate [subject] because [why it interests me]. Help me turn it into one question I could explore over [period]. Suggest what I can realistically observe, what might confuse the results and what I should not claim from this amount of evidence. Use plain English and ask me questions before proposing a complex system.

Human decision: Choose the question and what success would look like. AI can suggest a method; it cannot decide what matters to you.

2. Agree what you will record before you begin

For the garden example, try a short session of 15 minutes on as many days as practical, keeping the time reasonably consistent. Note when you miss a day rather than silently filling the gap. Record the effort as well as the sightings, because uneven observation time can create misleading trends.

Different interests need different fields. An astronomy log might record telescope or camera settings and cloud cover; a home weather log should include units, instrument location and missed days. For company accounts, record the reporting period, currency, accounting definition and original filing. Without that context, even an accurate number can mislead.

One observation sheet might use these columns:

Field	Example or purpose
Date and session time	3 November, 08:30–08:45
Observation effort	15 minutes; if missed, record 'not observed'
What was seen	Species, or 'bird not confidently identified'
Count	Number seen during that session, not an estimate of total population
Conditions	Rain, visibility, feeder changes or other useful context
Source	Direct sighting, photograph or a report from somebody else
Confidence	Confident / uncertain, with a short reason
Original note	What was actually observed, without interpretation

Keep personally sensitive locations and identifying information out of anything you intend to share publicly. If other people contribute, record their permission to reuse their material.

Copy and adapt — build the observation sheet

> Create a simple observation table for [my question]. It must distinguish what was observed from what I later think it means. Include date, source, effort or coverage, uncertainty and relevant conditions. Keep it usable in an ordinary spreadsheet. Explain each column in one sentence and identify anything unnecessary for a small project.

Human decision: Confirm that you can fill in the record consistently. If the table feels like homework, simplify it.

3. Preserve the original observation, then add interpretation

Treat an observation as a record of what happened, not a verdict about why it happened. 'Three small birds at the feeder' is a useful record even if the species is uncertain. 'Bird numbers are recovering' is an interpretation, and it needs much more evidence.

A photograph, notebook entry or original document should remain available after AI has summarised it. Never let an AI summary silently replace the source. If an identification is corrected later, add the correction and retain the original note, with its date.

The distinction is especially important in other subjects. A company's published financial statement is a source. An analyst's interpretation is not the same thing. A weather-station reading and a neighbour's recollection are different kinds of observations. An old family letter may establish what someone wrote, not whether every event described occurred exactly as written.

Copy and adapt — separate observation and inference

> Here are my original notes: [paste or attach]. Make two sections: (1) observations or quoted source information, and (2) interpretations or possibilities. Do not fill missing measurements, invent sources or upgrade uncertain identifications. List anything that needs checking. Keep my original notes unchanged.

Human decision: Read the source yourself where practical. Correct AI transcription or interpretation errors before accepting the summary.

4. Keep one source record and a separate question record

When projects grow, it becomes tempting to store every new article as another piece of support. But several reports may all be describing the same underlying observation. Counting them as independent confirmations would exaggerate the evidence.

For a family-history project, two relatives recalling the same family story may or may not be independent accounts. For financial research, five commentators quoting one annual report do not make five independent datasets. The question isn't how many links you have collected; it is how many distinct observations, records or arguments are actually there.

Use two small sheets or sections. The **source record** identifies where each observation, article, image or document came from and whether it is original, repeated or uncertain. The **question record** contains your current conclusion, supporting and opposing evidence, uncertainties and what would justify revisiting it.

You don't need elaborate codes. A simple source reference such as S01, S02 and S03 is enough, provided you can find the original again. If one source bears on several questions, refer to the same source rather than creating pretend extra evidence.

Copy and adapt — organise the evidence

> Help me organise these sources for [question]. Give each original item a stable short reference. Flag possible duplicates, derivative summaries and sources whose credibility is uncertain. For each source, state which part of my question it informs and whether it supports, contradicts or merely provides context. Do not count a repeated report as independent confirmation.

Human decision: Check the links and the claimed source identities. AI can miss duplication or misdescribe an article.

5. Ask what the evidence actually shows

After four weeks, ask AI to help make a first summary. Start with the basics: how many sessions were recorded, what was identified, how much observation time was covered and where information is missing. Only then look for apparent differences between weeks.

For example, an increase from two sightings to six may look impressive. If the second week included more observation sessions, a newly stocked feeder or better visibility, the difference could tell us more about the conditions than about the birds. We should say so.

The same trap appears elsewhere. An astronomy log with more sightings in October than September may reflect more clear nights or a longer observing session. A weather comparison can change after moving the rain gauge. A financial chart can appear to improve simply because the periods or measures were changed. Before drawing a conclusion, ask whether you're comparing like with like.

A helpful Observatory presents different things separately: what happened, how sure we are, how we currently interpret it and what we should check next. That is more useful than a beautifully coloured graph that encourages the wrong conclusion.

Copy and adapt — challenge the pattern

> Using this observation sheet, summarise what was recorded. Show missing sessions and differences in observation effort. Identify any apparent patterns, then give the strongest ordinary alternative explanations. Separate confirmed observations, tentative interpretations and things the data cannot tell us. Suggest one small next observation that would help.

Human decision: Approve the wording of the conclusion, including its limits. If the result doesn't support a trend, 'not enough information yet' is a good outcome.

6. Present one useful page, not an impressive dashboard

Your first 'Observatory' can be a single page. Give it a title and an update date. Show the question, a compact table or simple chart, the most useful observations, important uncertainties, and the next thing you plan to watch. Add a link or clear reference back to the original records.

For the garden project, a practical one-page summary might say: 'Over four weeks, 14 short sessions were completed. Five kinds of birds were confidently identified; two sightings remain uncertain. The most frequent visitor in our sessions was [species], but observation effort varied, so no wider population trend is inferred.' Those numbers are **illustrative placeholders**, not measured results.

In other projects, the one-page result could be a monthly rainfall table with missing days clearly marked; an observation diary showing which stars or planets were actually seen; or a family-history timeline with unverified accounts labelled as such. A finance research page might track sources and unanswered questions, but it should never masquerade as personalised financial advice.

The purpose of the summary is to help somebody understand and question your findings. If a family member can't tell what was measured and what was inferred, the presentation needs work.

Copy and adapt — make the one-page view

> Turn my verified observation sheet and current assessment into a one-page reader summary. Include the question, observation period, coverage or missing data, the clearest findings, limitations, and one useful next step. Distinguish observations from interpretation. Do not make the findings sound stronger just to produce a more interesting page.

Human decision: Check the page yourself. If sharing it, remove personal information and confirm permission to use any photographs or other people's contributions.

7. Update without erasing what you thought before

This is the step that turns a one-off report into something living. Save the first approved summary as Version 1 with its date. When new evidence arrives, keep the old record, append the new observation and write a short note: what changed, why did it change, and what did **not** change?

Be particularly careful about three different events. You might gather **more observations** without changing your conclusion. You might discover **better-quality evidence** and become more confident. Or you might **change the question or observation method**, which means the old and new results aren't directly comparable. These should not all be shown as an upward or downward trend.

For example, if you changed from a handheld rain gauge to a different sensor, preserve that change in the method note. If you began observing from a darker sky location, don't treat a larger number of visible objects as proof that the sky itself changed. And if a company restated a financial figure, keep both the old published figure and the correction so a future comparison can be understood.

In Grey Matters, one deeper review increased the care devoted to a proposition without strengthening the evidence for it. The same principle applies here: more work is not automatically more support.

Copy and adapt — update the record

> Compare my previous dated summary with these new observations. Keep the original summary unchanged. Tell me separately: (1) what new data was added, (2) whether the conclusion should change, (3) whether the method or scope has changed, and (4) what uncertainty remains. Draft an update note for my approval. Do not treat a more detailed review as proof that the original conclusion is stronger.

Human decision: Accept, amend or reject the update. The AI may propose a revised conclusion; it should not quietly rewrite your history.

A starter project record you can copy

> MY OBSERVATORY: [short name]
> QUESTION: [what I am trying to find out]
> WHY IT MATTERS: [my interest or intended use]
> WHAT I WILL RECORD: [minimum useful fields]
> HOW I WILL COLLECT IT: [method, period, frequency]
> ORIGINAL SOURCES: [where notes/photos/documents are kept]
> UNCERTAINTIES: [known limits and alternative explanations]
> CURRENT SUMMARY: [dated conclusion and its limits]
> WHAT WOULD CHANGE MY MIND: [new observation or credible source]
> NEXT REVIEW: [date or practical trigger]
> MY DECISION: [what I accept, amend or leave unresolved]
> VERSION HISTORY: [Version 1 date; later changes with reasons]

A few safeguards that matter

Most hobby projects need light structure, not formal approval ceremonies. Extra care becomes important when other people will rely on a conclusion, when the information is private, when a finding could affect money or safety, or when the work might be published as research. AI-generated summaries

can be useful; they are not independent validation. Two AI assistants agreeing does not settle a disputed fact, and an AI role labelled 'specialist' is not a qualified human specialist.

For consequential claims, check the original sources and seek appropriate qualified help. Ask permission before sharing other people's records. Do not expose precise locations of vulnerable wildlife or sensitive household information merely because a map would look attractive. Keep backups of the actual observations, not just the polished summary.

A practical stopping rule helps too. If you are spending more time maintaining the spreadsheet than noticing what interested you in the first place, you've probably overbuilt the project. Simplify it. You can always add depth when a genuine question requires it.

The George Test: could somebody else use it?

Before calling the first version finished, ask an interested friend to look at it without explaining the project in advance. Can they find the question, see what was actually recorded, understand your conclusion and notice its limits? Can they tell what new evidence would change it? If not, improve the explanation rather than adding another chart.

Then try a second four-week cycle, or revisit the project when the season changes. A living observatory earns its value through honest comparison over time, not through the number of files it contains.

What you've made

If you've followed the example, you now have an observation register, a source record, a dated summary and a simple method for adding new information without erasing previous conclusions. It won't make you an ornithologist, statistician or research scientist. It can, however, make a personal investigation more disciplined, more transparent and considerably more interesting.

The same modest approach can be adapted to weather measurements, family history, local planning issues, financial research or a collection of astronomical observations. The fields and checks will differ, and some subjects require far stronger expertise or safeguards, but the underlying questions remain useful: What did we observe? Where did it come from? What do we think it means? What could be wrong? What has genuinely changed?

For the lived Grey Matters experience that led to this approach, read the companion case study, **From Curiosity to a Living Evidence Observatory**. You can use either document on its own.

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Start with what matters to you. Let the structure grow only when the work needs it.