

Reverse-engineering III — Methods, Results, and evidence

Week 6 · 2105620 Research Communication Skills for Chemical Engineers

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TODAY

Two hours, and the last one before the examination

8 min

What the midterm covers, so we can stop thinking about it

20 min

Reporting and interpreting: where the line is

20 min

Activity 1 — report, or interpret?

10 min

Break

20 min

Six ways a figure misleads

25 min

Activity 2 — figure forensics

12 min

Debrief and close

24 SEPTEMBER TO 4 OCTOBER • WEEKS 1 TO 6 ONLY

The examination

Analysis of published work. Not recall of definitions.

What it asks you to be able to do

1

Name what an article type is for, and who reads it

2

Apply the authorship criteria and the AI policy to a case

3

Write a reproducible search, and read a gap out of a matrix

4

Reverse-outline a section and name a structural break

5

Tell an absence from a gap, and write an aim a result can settle

6

Separate reporting from interpretation, and find a distortion in a figure

Where the line is

The Results section reports what was observed. Everything else belongs somewhere else.

Could a machine with no knowledge
of chemistry have written this sentence
from the raw data?

If yes, it reports. If it needed a person to decide something, it interprets.

The four verbs that give it away

attributed to	Names a cause. Nothing was observed
indicating	An inference. Usually true, usually not measured here
confirming	The strongest verb available, and one micrograph does not earn it
excellent, superior, remarkable	Judgements. Excellent against what, reported by whom?

ACTIVITY 1 • 20 MINUTES • FIVE SENTENCES ON YOUR SHEET

Report, or interpret?

ACTIVITY 1

What to do

1

10 minutes alone.

Five sentences. Mark each: reports, interprets, or both

2

Where it interprets,

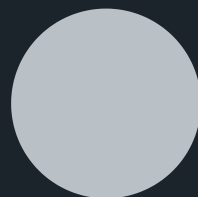
rewrite it so the Results can keep it, or say where it should move

3

5 minutes in pairs.

Compare. One of the five splits the room every year

BREAK · BACK AT THE TIME ON THE BOARD



Six ways a figure misleads

None of these looks like a mistake. Every one of them is a default setting somebody failed to override.

IN ROUGHLY THE ORDER YOU WILL MEET THEM

The six

Truncated axis	A bar chart not starting at zero. A 2 % difference fills the panel
Dual axes	Two quantities, two scales chosen by hand. Any two curves can be made to agree
No uncertainty	No error bars, no n. The difference may be inside the scatter
Selective range	The measurement continued. The axis did not
False resolution	A smooth curve through four points, with a feature labelled between them
Image reuse	The same micrograph, rotated, in two panels. This one ends careers

Two of them, side by side

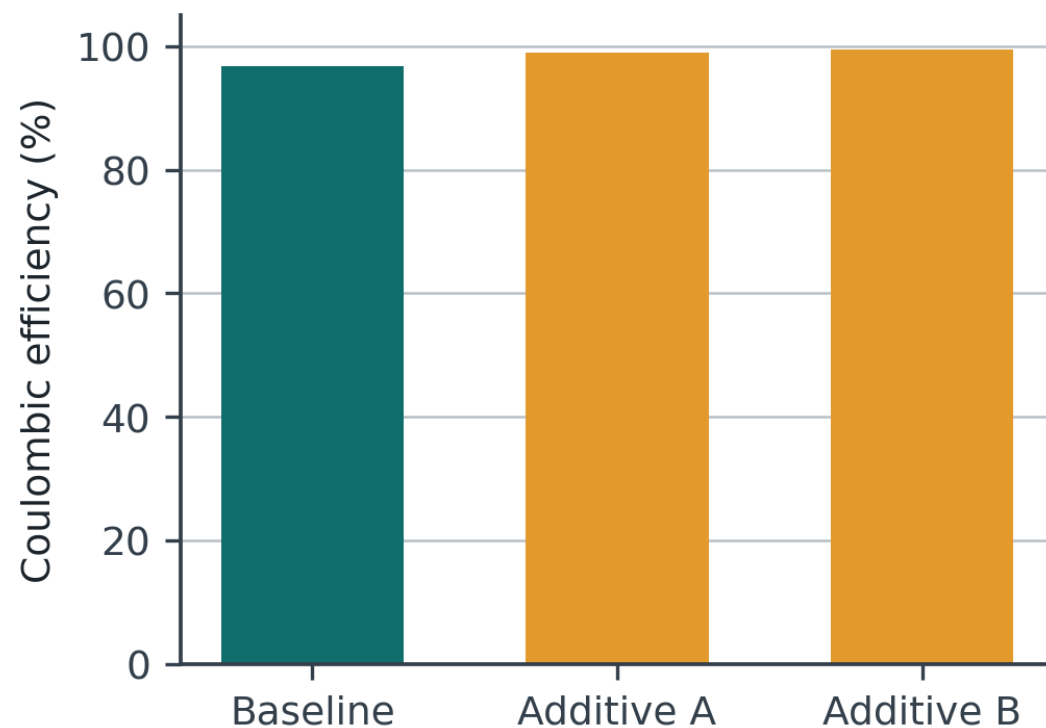
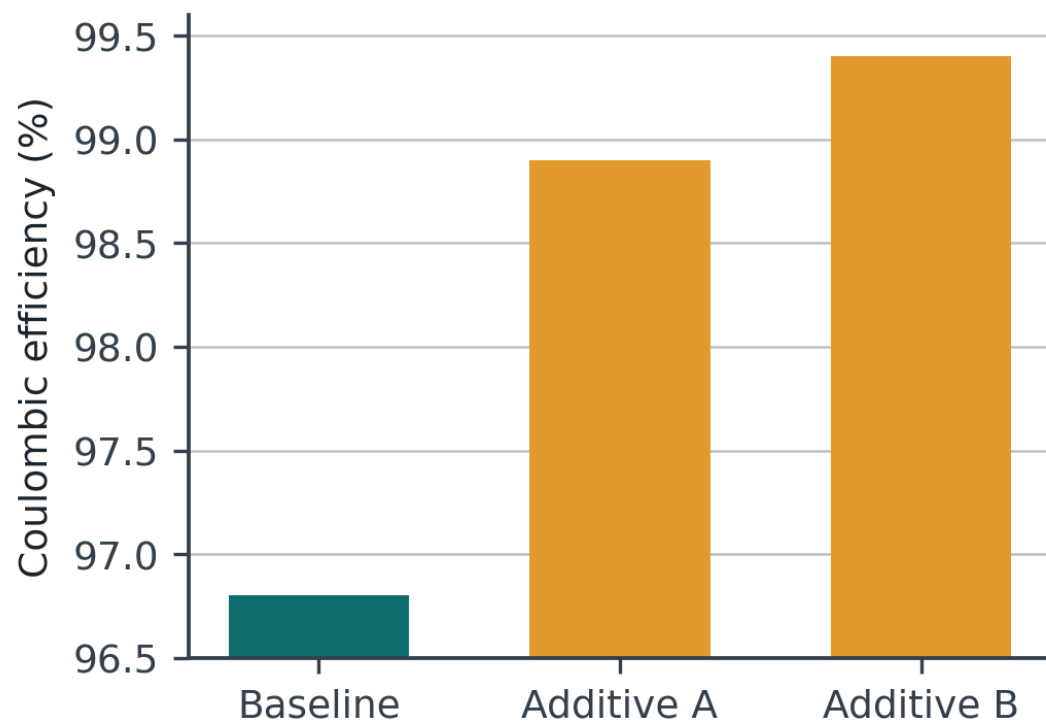


Figure forensics

Figure forensics

What to do

1

Five figures on your sheet.

Each contains one distortion

2

For each, two answers.

What is wrong · what a reader would wrongly conclude because of it

3

Then the three questions

at the end. The third one is the one that matters

What you found

1

Axis starts at 96.5 %. A 2.6-point difference fills the panel

2

Twin axes, right one inverted, ranges chosen so the curves overlay

3

No error bars and no n. The difference sits inside the scatter

4

Measured to 900 cycles, plotted to 500. It fails at 520

5

Four measured points, a smooth curve, an optimum labelled between two of them

Have you drawn any of
these five yourself?

I have. Twice.

Before the examination

- **The evidence map**
- **Assignment 1 and the Week 4 outline**
- **Week 7 is Prof. Supareak**

is due before Week 7, which is next week. Start from the four rows you already have come back to you before the examination period
— the manuscript blueprint. Bring the three sentences and the aim from last week

BEFORE YOU GO · 45 SECONDS

How was today?

Five questions. Anonymous — no name, no email, no login.

The fourth question is the one I actually use.

The two most common answers open next week's session.

oxidized-challenge-ed9.notion.site



Scan now — I will wait