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# Scenario-Based Teaching of Water-Stress Communication

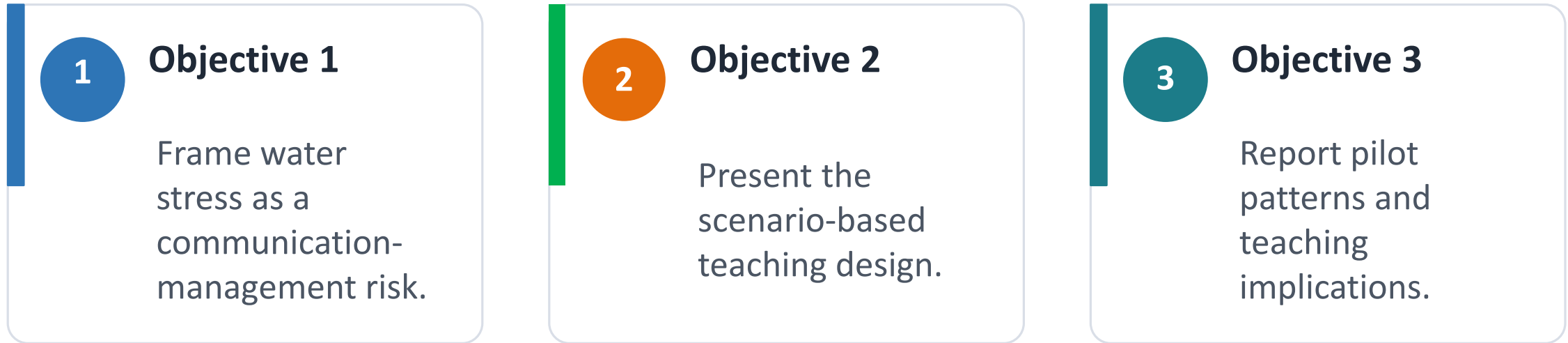
## Business Education | A Quasi-Experimental Study in Bulgaria

Teodor Daskalov • Neviana Krasteva • Aleksey Potebnya

Faculty of Economics and Business Administration  
Sofia University "St. Kliment Ohridski", Bulgaria

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## Talk flow



# Why this topic belongs in business education

## Low-salience risk

Students may not read water stress as a business issue.

## Governance task

Coordination, credibility and stakeholder choices matter early.

## Communication skill

Managers need actionable public guidance.

Core educational move

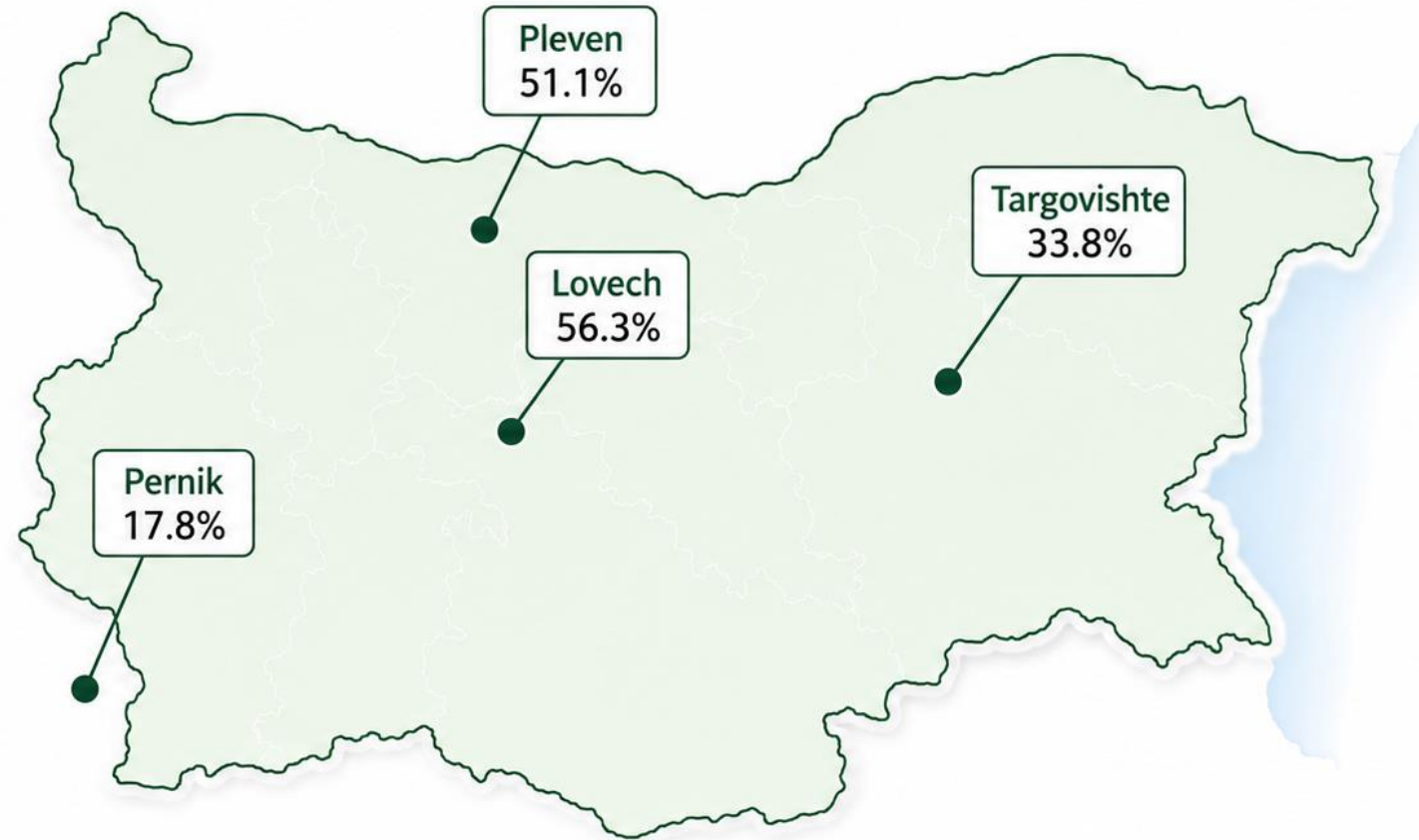
**Turn hidden sustainability risk into assessable managerial artefacts.**

# Bulgarian anchor: drought-related restrictions

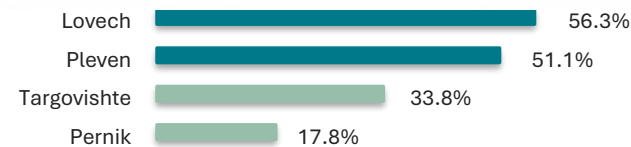
**N** **5.8%**  
population affected  
in 2024

**S** **5.0%**  
under seasonal  
regimes

**Y** **0.8%**  
under year-round  
regimes



Regional comparison



Source: NSI, 2026



## Definition used in the study

### Decision failure

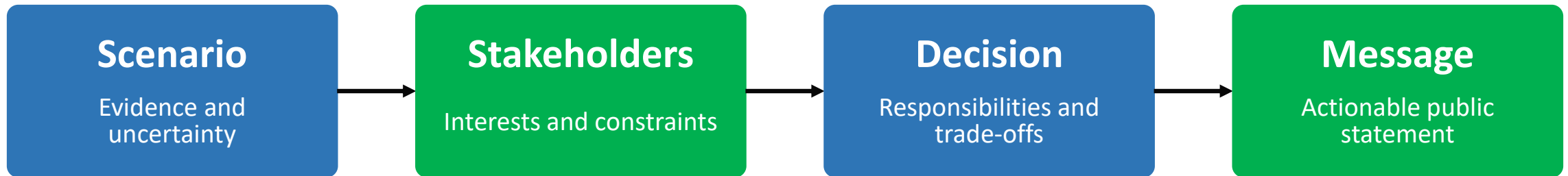
Stakeholders are not coordinated; roles stay unclear.



### Communication failure

Trust weakens; public guidance becomes vague or late.

**Communication = governance, not only PR.**



**Assessment targets artefacts, not impressions.**

# Design at a glance

**N = 30**

fourth-year students

**6 teams**

five students each

**4 sessions**

about 90 minutes

**24 protocols**

R1-scored corpus

## Two intact sections

No random assignment; cautious quasi-experimental framing.

## Repeated traces

Team-session protocols are repeated traces, not independent cases.

# Two teaching conditions

## Comparison group

Active debate-based case learning

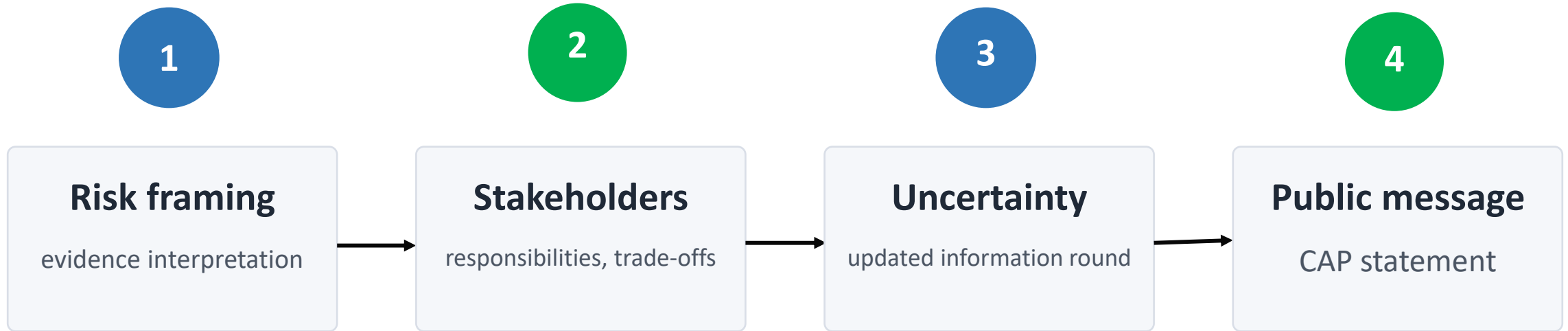
- opposing viewpoints
- written decision package
- rebuttal + decision map

## Intervention group

Augmented scenario sequence

- stakeholder role cards
- timed checkpoints
- information updates
- message map + CAP statement

# Four-session instructional timeline



Each session generated team artefacts for protocol-level scoring.

Competency	Artefact	Assessment focus
Evidence-aware deliberation	protocol + rebuttals	argument + evidence
Stakeholder coordination	stakeholder analysis	interests + roles
Decision coherence	decision map	feasibility + trade-offs
Risk communication	message map + CAP	clarity + actionability

**Constructive alignment makes competence observable.**



# Two primary outcomes

## O1 Discussion quality

Argument quality

Evidence use

Stakeholder reasoning

Decision coherence

## O2 Applied communication

Clarity

Actionability

Transparency

Trust-preserving framing

Decision-message  
alignment

Each criterion: 0 - 4 analytic rubric

# Analysis status: deliberately cautious

## Reportable corpus

24 anonymized R1-scored team-session protocols.

## Grouping

12 comparison and 12 intervention protocols.

## Purpose

Diagnostic description, not effect estimation.

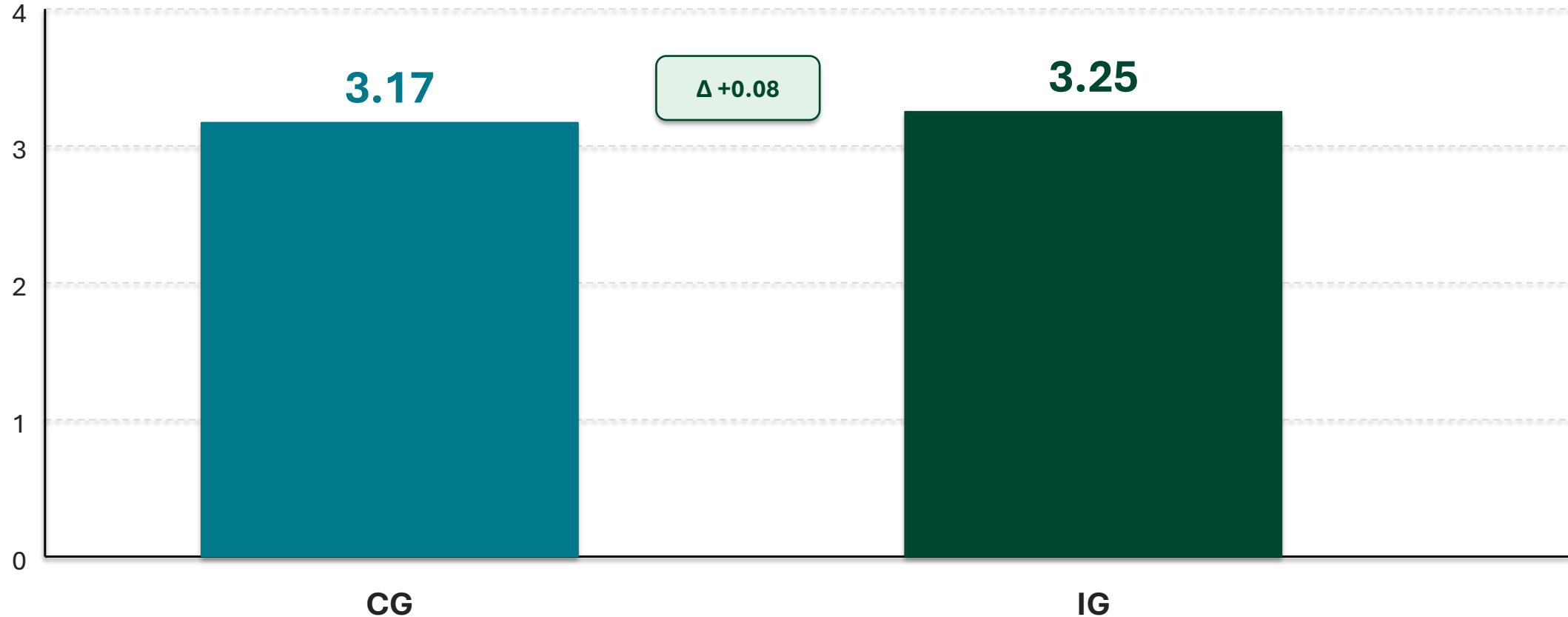
**No causal claim is made.**

Single preliminary rater; non-blinded; repeated team traces.

# Result 1: discussion quality was high

## O1 Discussion quality, 0–4 scale

Mean score (0–4)

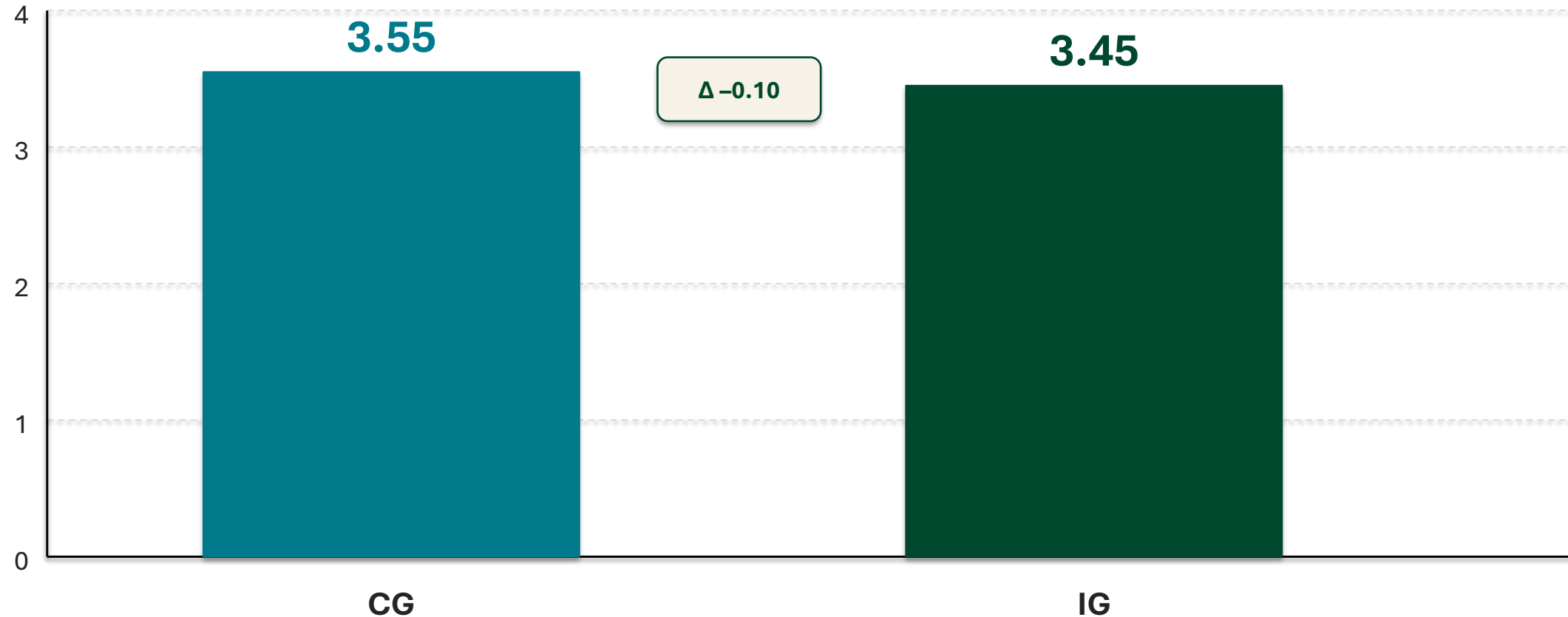


Both conditions produced robust deliberation; IG was only slightly higher.

# Result 2: applied communication was mixed

## O2 Applied risk-communication competence, 0–4 scale

Mean score (0–4)

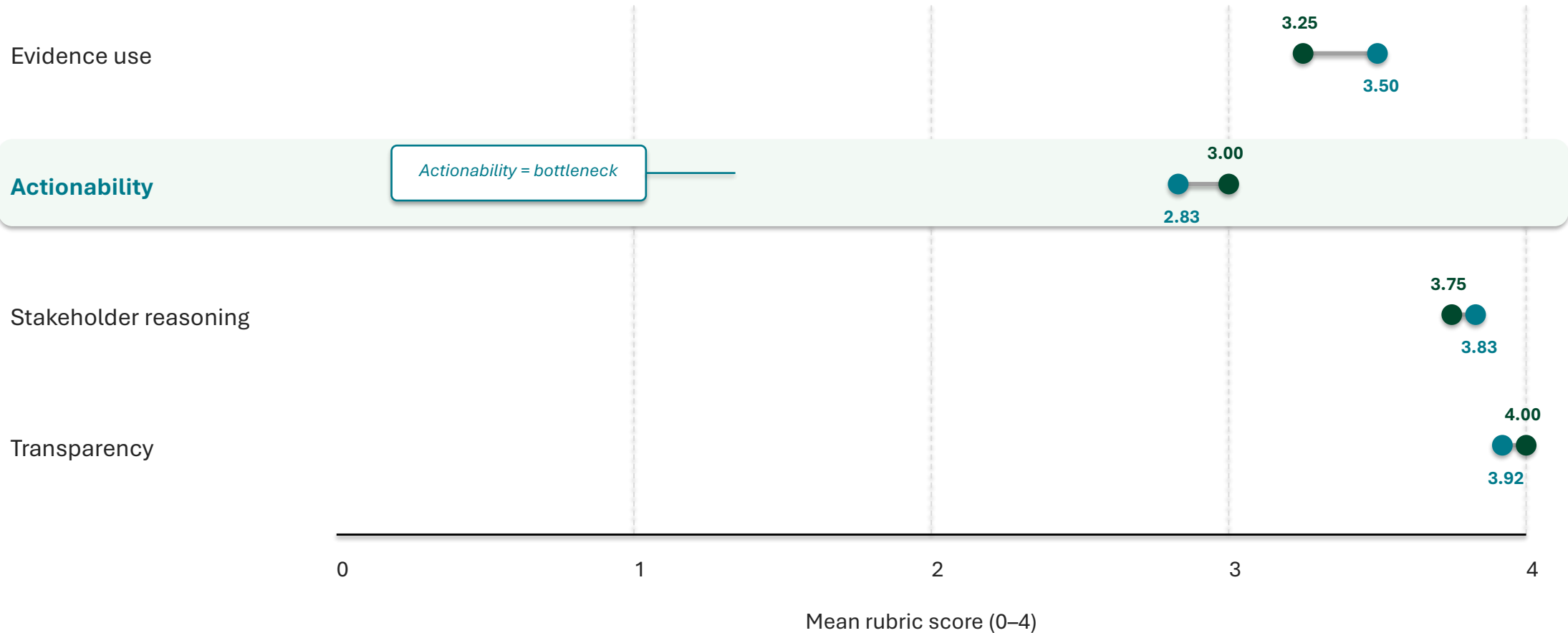


Structured communication artefacts did not automatically improve O2.

# Criterion-level diagnostic pattern

Mean rubric scores, 0–4 scale

● CG Control Group    ● IG Intervention Group



# What actionability should require

## Micro-checklist for the next teaching iteration

### Actor

Who is responsible?

### Action

What must be done?

### Deadline

By when?

### Update channel

Where is the source of truth?

If one element is missing, revise the public statement.

# Answers to the research questions

## 1 RQ1

Discussion quality is high in both conditions, with a small descriptive IG advantage.

## 2 RQ2

Applied communication is mixed; no intervention advantage is claimed.

## 3 RQ3

Actionability is the clearest instructional bottleneck.

# Practical classroom implications

## Debate

surface assumptions

## Decision package

assign responsibilities

## Decision map

show trade-offs

## CAP statement

make guidance public

**Minimal infrastructure: worksheets, role cards, rubrics and short written artefacts.**

# Limitations and next steps

## Limitations

- Intact-group assignment
- Repeated team-level traces
- Protocol evidence only
- Single non-blinded preliminary rater

## Next steps

- Second independent rater
- Inter-rater reliability
- Baseline checks
- Delayed post-test
- Component analysis

The teaching design makes hidden sustainability risk assessable.

The R1 corpus shows strong discussion quality and mixed communication performance.

Actionability is the key teaching bottleneck.

A vibrant urban park scene featuring a wide canal in the foreground. The canal is bordered by lush greenery, including tall trees and flowering plants. A person is riding a bicycle on a paved path along the left bank. In the background, a city skyline with various buildings, including a prominent blue glass skyscraper, is visible under a bright blue sky with scattered white clouds. A small waterfall structure is visible on the right bank of the canal.

Thank you. Questions?

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