Promoting **Diversity of Opinion** in collaborative learning **enhances Student Learning** in conservation

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Today's Presentation

1

Context

The Spark

The Course

Research Question

2

My Study

Methodology

3

The Findings

Implications and Future Directions

The Spark

I HATE THE GROUP PROJECT!!!

"Michelle"

https://blog.nus.edu.sg/teachingconnections/2024/08/28/should-we-encourage-diversity-of-opinions-in-group-work/

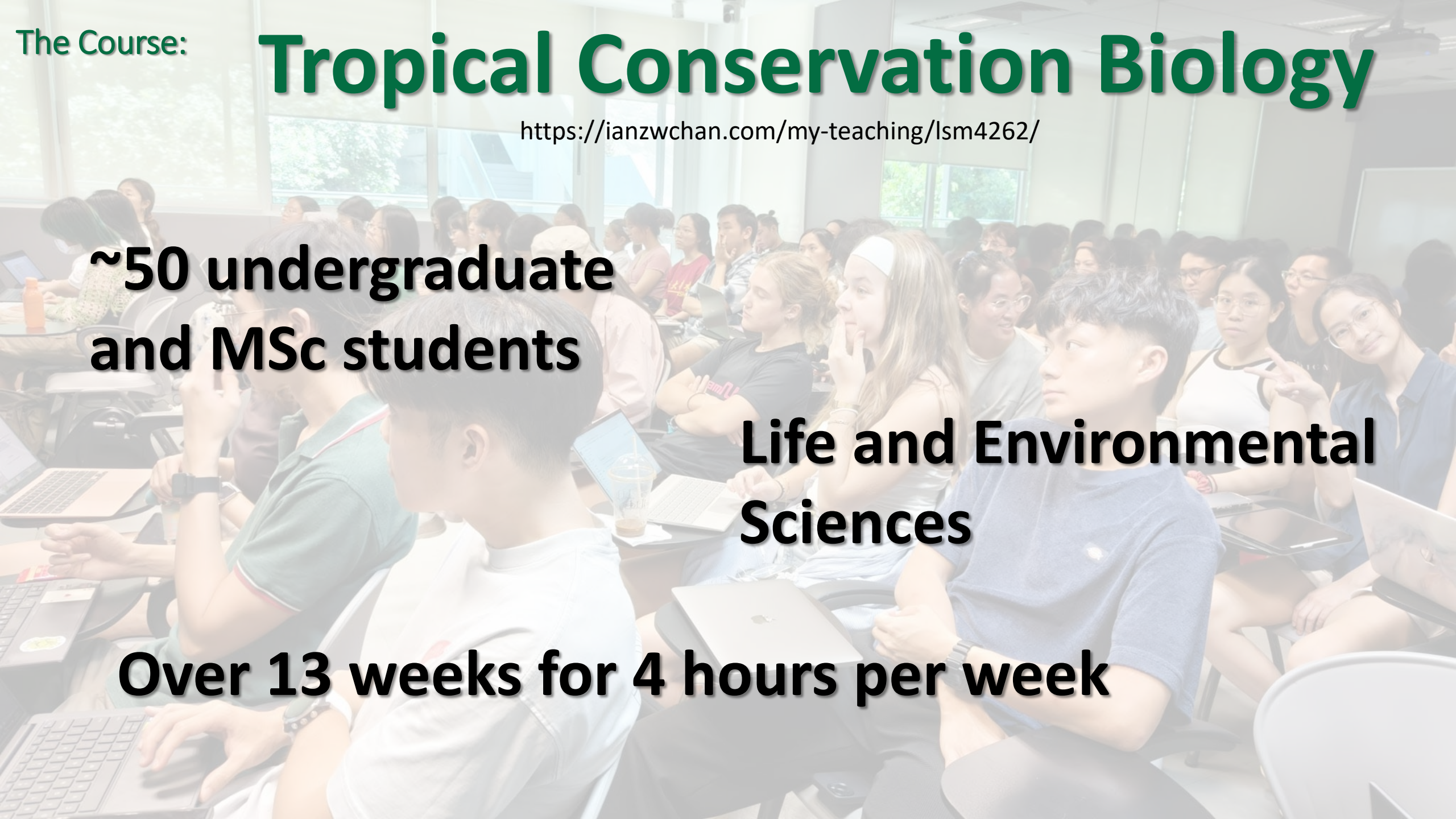
Listen on Spotify

https://open.spotify.com/episode/14W1ySaxhFyHyufGdwqCip

The Course:

Tropical Conservation Biology

https://ianzwchan.com/my-teaching/lsm4262/



~50 undergraduate and MSc students

Life and Environmental Sciences

Over 13 weeks for 4 hours per week

The last two northern white rhinoceroses on earth

© Gurcharan Roopra

© Jon Juarez / BioRescue

The first successful in-vitro fertilized embryo transfer to a southern white rhino surrogate mother

The Course: Tropical Conservation Biology

LO 1

Understand the main **Drivers** of biodiversity loss.

Climate change

© Wikicommons

Overexploitation

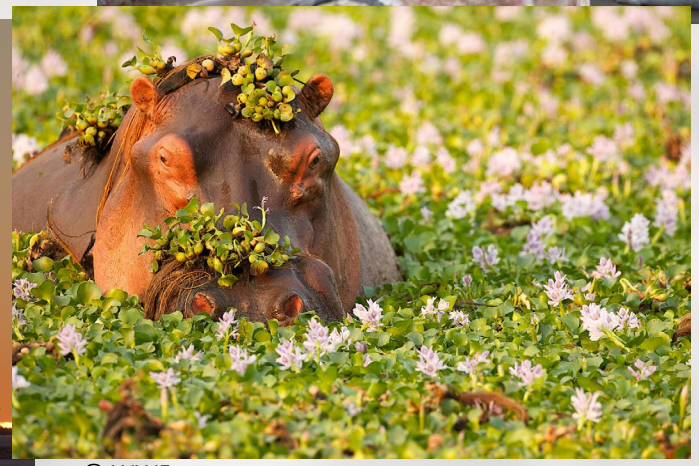
© Shark Foundation

Habitat loss

© Joe Raedle, Getty Images

Pollution

© Wikicommons



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Invasive Species

The Course: Tropical Conservation Biology

Understand the conservation **Solutions** that are in use today.

LO 2

Area-based Conservation

Species-based Conservation

Socioeconomics

The Course: Tropical Conservation Biology

LO 3 Able to **Holistically Analyse** complex conservation problems.

Case Study presentations

LO 4 Able to **Formulate and Communicate** opinions on conservation issues.

"A good Conservationist also needs to be a good conversationist"

The Course: Tropical Conservation Biology

Content Oriented

LO 1 Understand the main **Drivers** of biodiversity loss.

Understand the conservation **Solutions** that are in use today. LO 2

LO 3 Able to **Holistically Analyse** complex conservation problems.

Communication Oriented

Able to **Formulate and Communicate** opinions on conservation issues. LO 4

"A good Conservationist also needs to be a good conversationist"

The Course: Tropical Conservation Biology

A lot of “beneficial” **Collaborative learning** activities[1,2,3]

Case Studies

Roundtable Discussions

Debates

But learning effectiveness amongst groups was **very variable**[4]

- How can I, as an educator, better **manage the process**

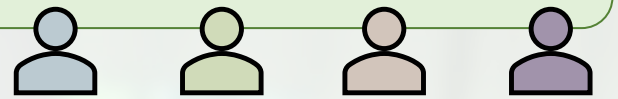
Research Question

Specifically, in the context of my Tropical Conservation Biology course (which involves many collaborative learning activities)…

Would **encouraging diversity of opinion** in student groups **enhance student learning?**

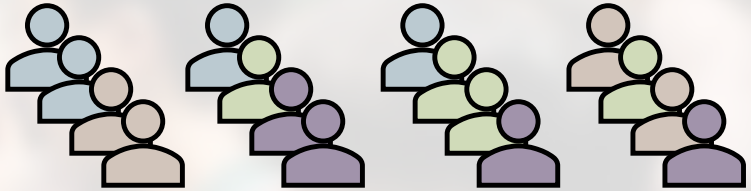
The Study

Students do a survey[5] that assigns them into one of **4 categories** based on their views on conservation



Students form groups to take part in the Learning Activities

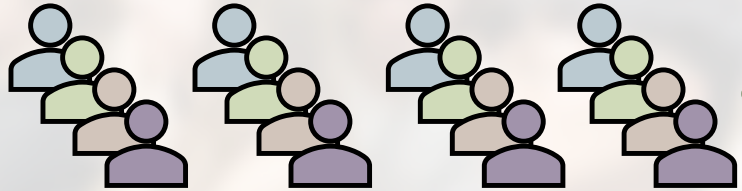
Control Group



Students formed their own groups without restrictions

Aug-Dec 2022, n = 42

vs.



"Diversity Treatment"

Students formed their own groups but **all 4 categories must be represented**

Aug-Dec 2023, n = 45

I assess students' mastery of the 4 Learning Outcomes through…

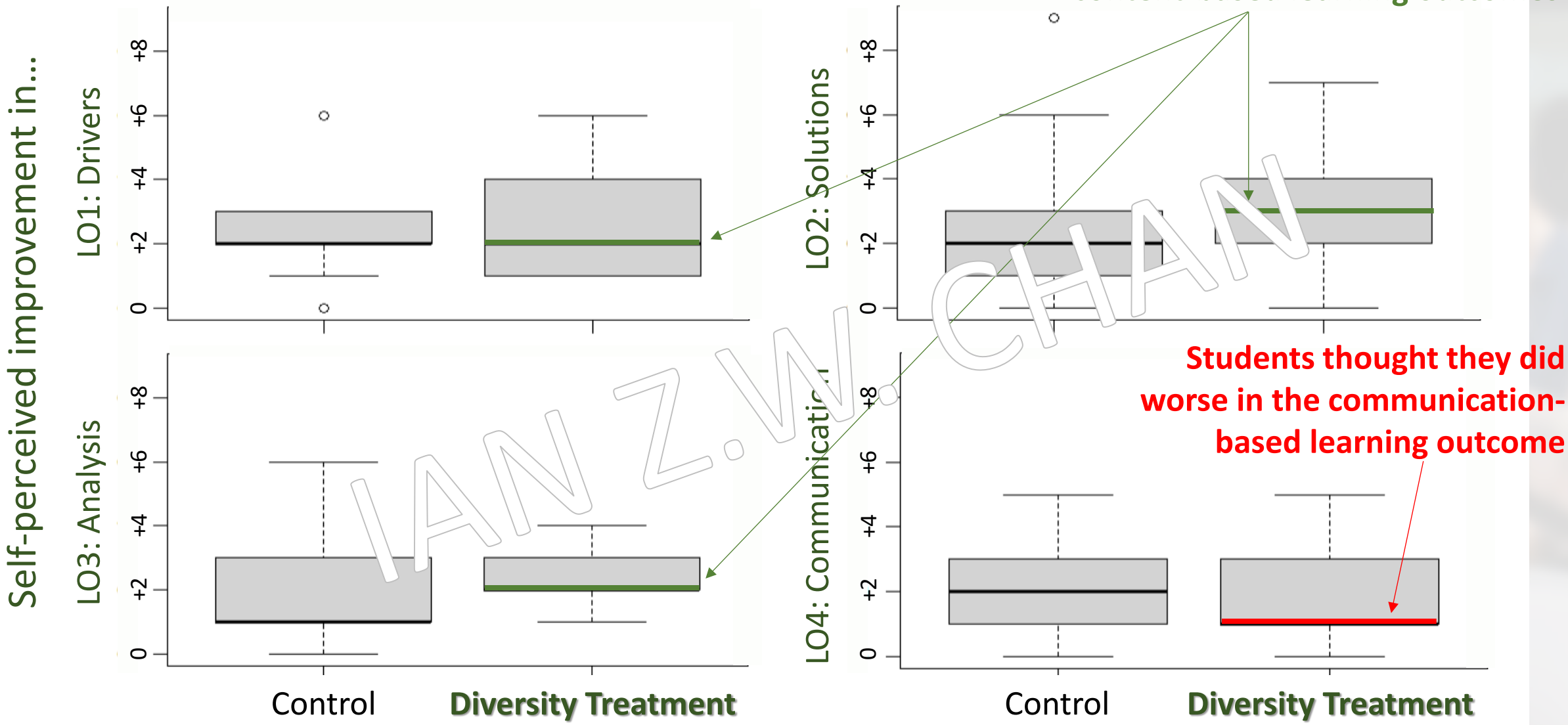
1) Self-reported learning in a **Post-course Survey**

2) My **Graded Assessment** in a Final Essay with purpose-designed rubrics

The Results

No significant difference in **self-reported** learning

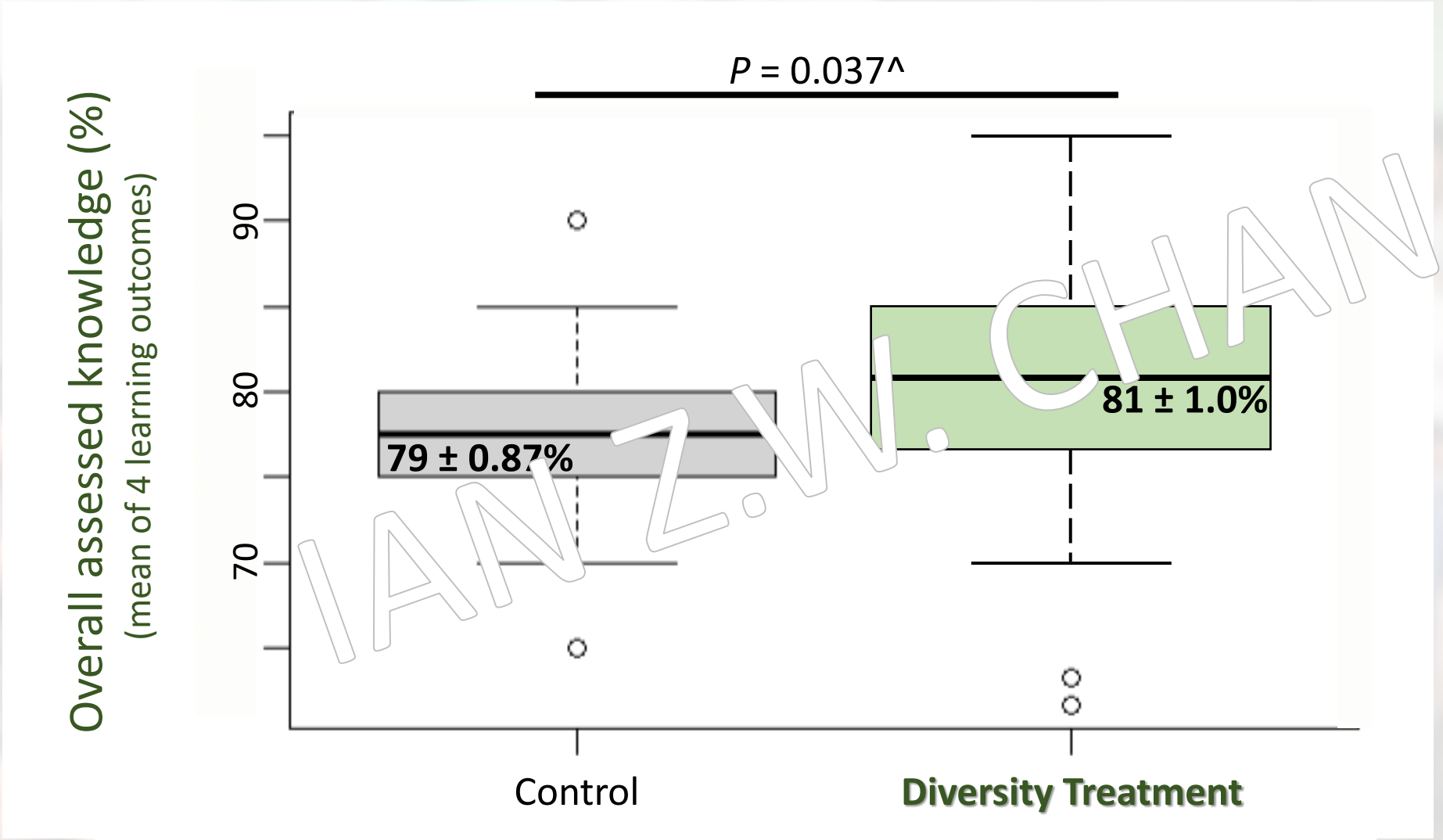
Students thought they did better in content-based learning outcomes



Students thought they did worse in the communication-based learning outcome

The Results

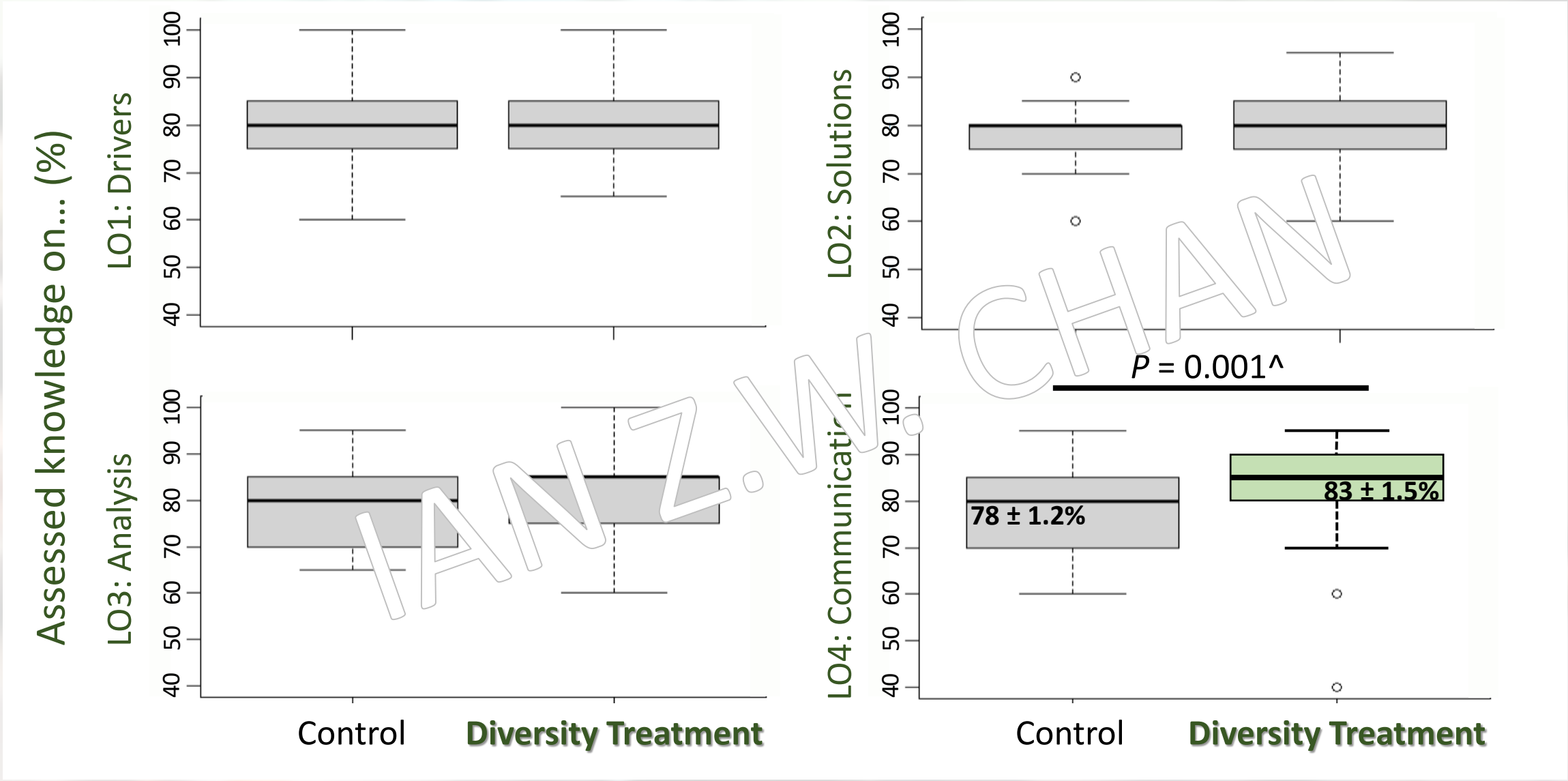
The “Diversity Treatment” **performed better overall** in assessed learning…



^ Mann-Whitney U-test, corrected for multiple comparisons

The Results

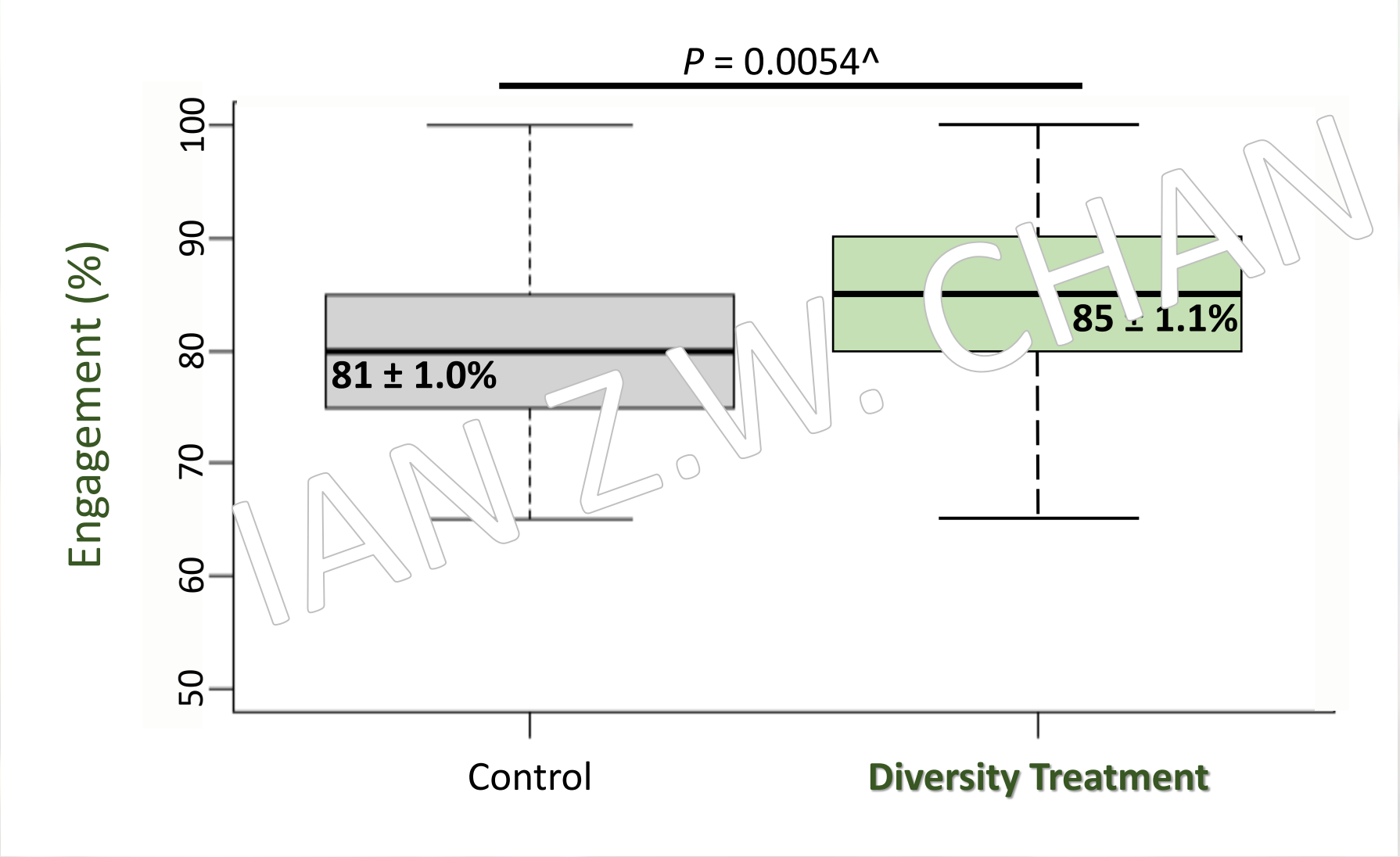
This is driven by **better performance in LO4** (Communication)



^ Mann-Whitney U-test, corrected for multiple comparisons

The Results

Students in the “Diversity Treatment” were also **more engaged**



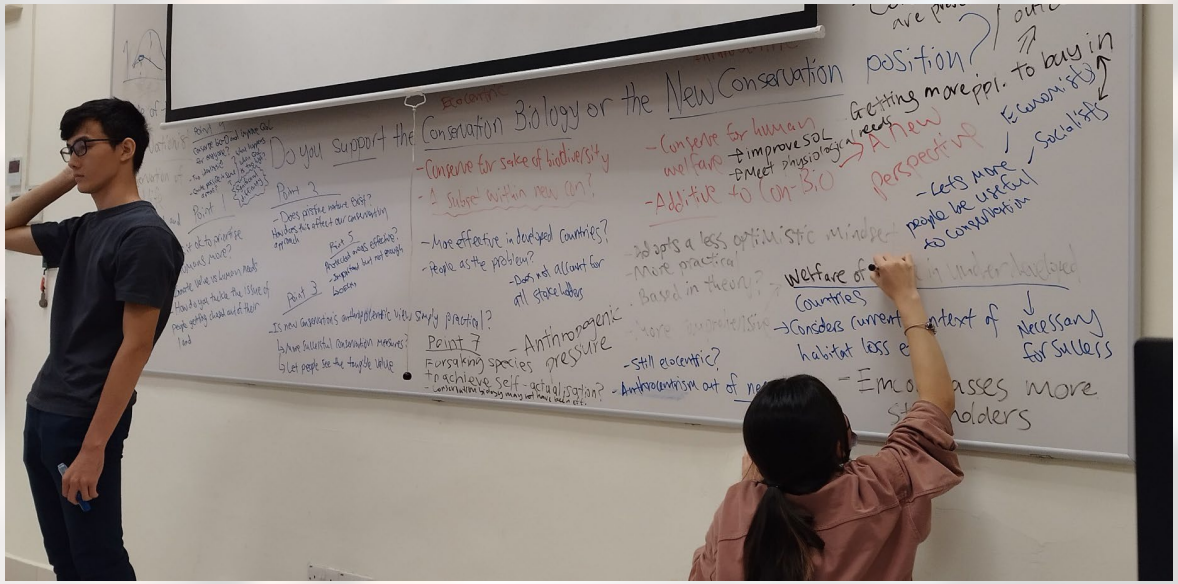
^ Mann-Whitney U-test, corrected for multiple comparisons

My thoughts on the Results…

Creating groups with **diverse opinions enhanced learning**!

Students in more diverse groups were **better engaged** during the learning activities:

- Bringing different viewpoints together produced more fruitful discussion



Student-led regulation in the Roundtable Discussion

More creative Case Study presentations

My thoughts on the Results…

The approach's effectiveness was **learning outcome-dependent**: it enhanced only the communication-oriented outcome (LO4)

- Need to intentionally create mechanisms to translate better communication to improved performance in other types of learning outcomes

- Increased diversity of opinion also created other effects: e.g. increased likelihood of conflict

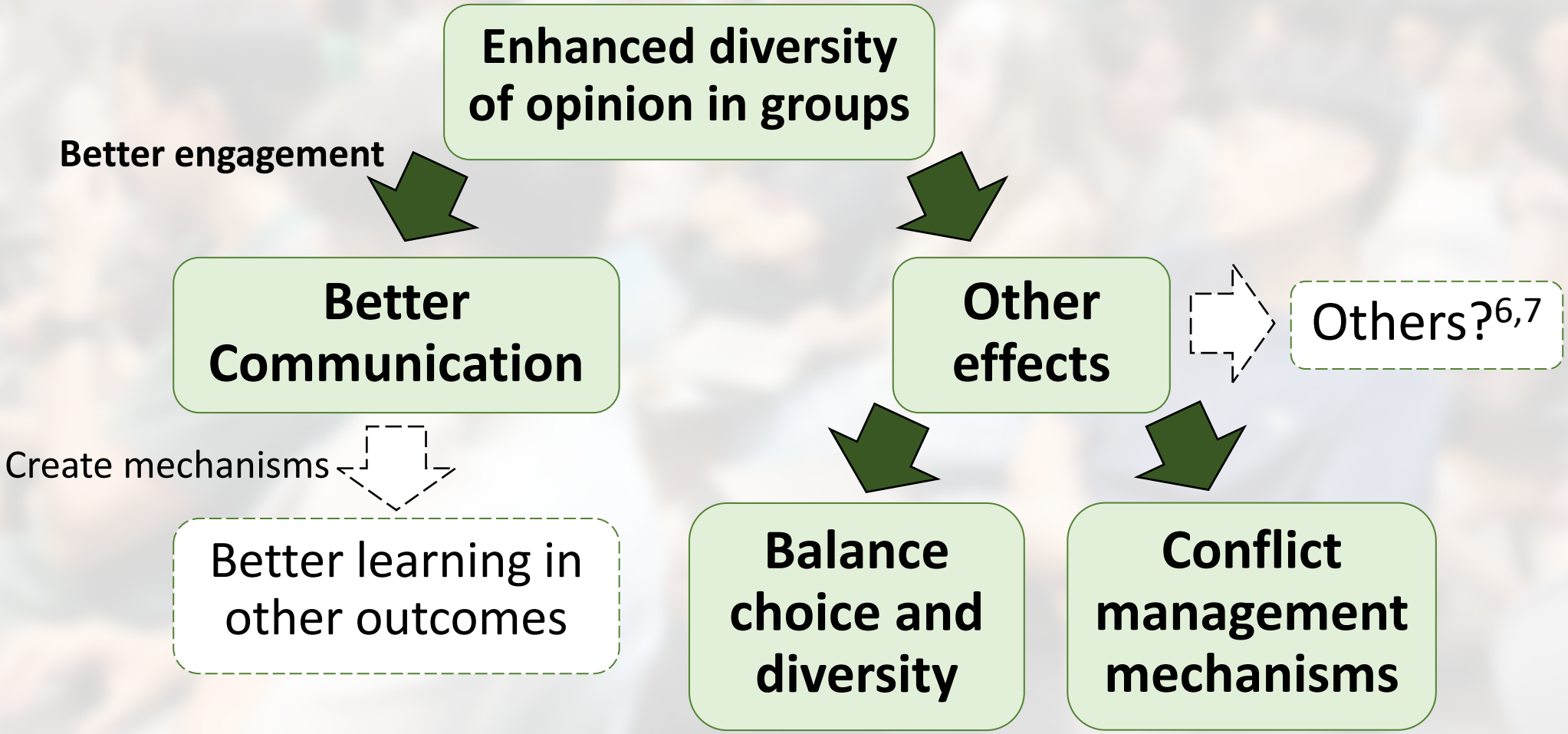
The approach's effectiveness was **group-dependent**

- Groups with more choice of members did better: ensure balance between enforced diversity and freedom of choice

- Groups who were more open to conflict management did better: create conflict management mechanisms

Diversity of opinion does enhance learning

BUT it is important to manage the process



One final (somewhat related) thought

Students don’t know best!

- Students in the “Diversity Treatment” felt that they had learned the content better and learned communication more poorly: but it turned out to be the opposite!

- There’s a difference between feeling like they’ve learnt and actual learning

Reflection Question:

How can you facilitate the exchange of diverse opinions in your classrooms?

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