EPFL

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3T PLAY

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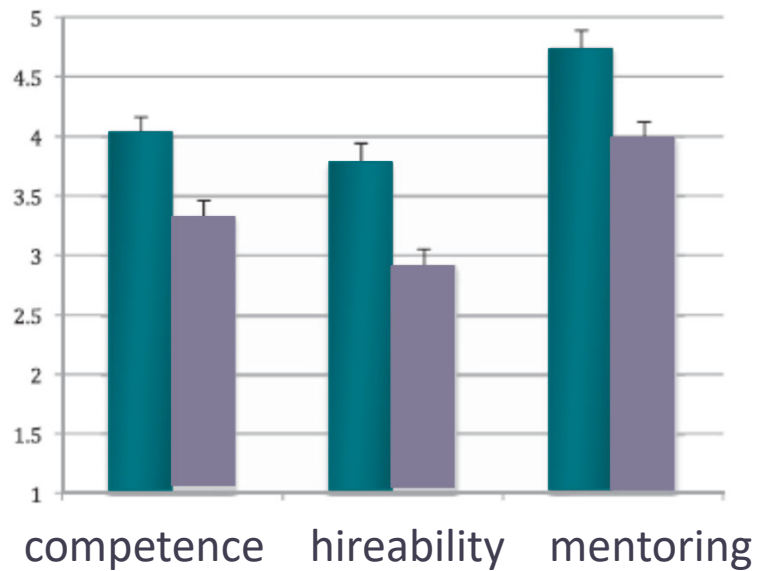
Project Skills for Students

bias and decision-making

23.09.2023

Isaac, S., Kotluk, N. & Tormey, R. Educating Engineering Students to Address Bias and Discrimination Within Their Project Teams. Sci Eng Ethics 29, 6 (2023). https://doi.org/10.1007/s11948-022-00426-w

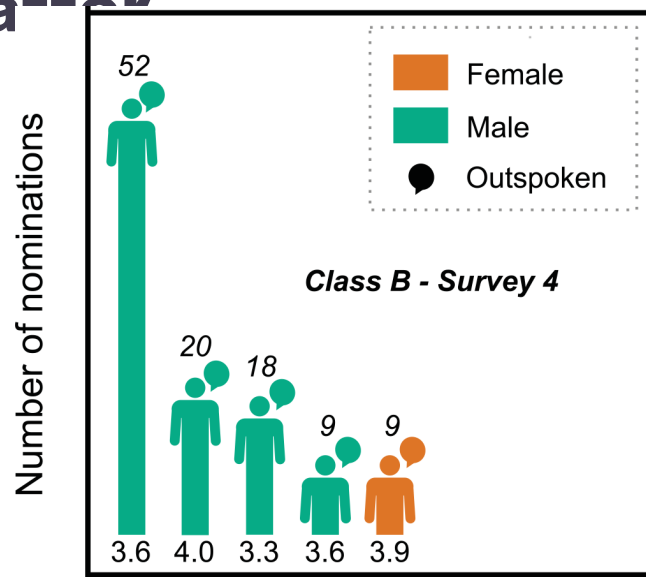## "John" and "Jennifer" applied for a lab manager job.

Moss-Racusin et al. "Science faculty's subtle gender biases favor male students." *PNAS* 2012: 16474-16479.

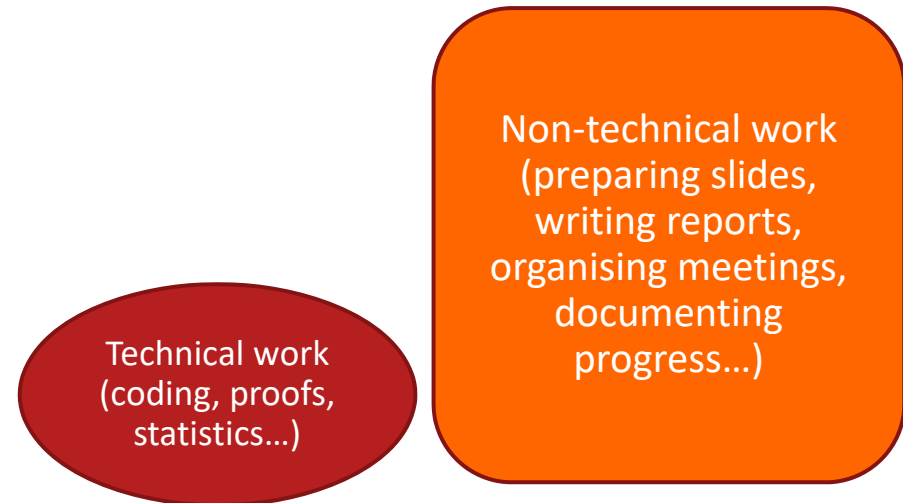## Male engineering students less likely to see bias.

Marsden et al. "Diversity-Related Differences in Students' Perceptions of an Industrial Engineering Program." *International journal of engineering education* 2016: (32) 230-245.

Male students seen by peers to master subject matter

Class B - Survey 4

Number of nominations

Legend:
- Female
- Male
- Outspoken

Nominations	Performance
52	3.6
20	4.0
18	3.3
9	3.6
9	3.9

▸ Male students significantly more likely to nominate other males (controlled for performance and outspokenness)

Grunspan, et.al., (2016). *PLOS ONE*, https://doi.org/10.1371/journal.pone.0148405

Female EPFL students more likely to work on non-technical aspects of projects

Technical work (coding, proofs, statistics…)

Non-technical work (preparing slides, writing reports, organising meetings, documenting progress…)

Aeby et.al., (2019). The Impact of Gender on Engineering Students' Group Work Experiences. *International Journal of Engineering Education*, 35(3), 756-765.

Milkman, K. L., Akinola, M., & Chugh, D. (2012). Temporal Distance and Discrimination: An Audit Study in Academia. Psychological Science, 23(7), 710–717. https://doi.org/10.1177/0956797611434539

Hoffman et al. *Racial bias in pain assessment,* PNAS April 2016, 113 (16) 4296-4301.

Photo by freestocks.org

Goldin + Rouse. "Orchestrating Impartiality: The Impact of" Blind" Auditions on Female Musicians." *The American Economic Review* 90.4 (2000): 715-741.

Photo by Samuel Sianipar, Unsplash

How can we reduce unintentional bias? How can we invoke system 2 when making decisions?

- Alone: Thinking back to the 3 stories I have told, what are 1-2 common features of the conditions which reduced bias?
  - Pain medication
  - Auditioning for the orchestra
  - Meeting a student

- Plenum: List together on the board

Strategies for collaborative work jigsaw activity

You have been assigned one of the following topics

- *Diverse Teams I*
- *Diverse Teams II*

- *Tasks & Teammates*
- *Communication & Meetings*

1. Read your pages.
2. **Thinking about teamwork**, write down the key points that you would share with someone who hasn't read the document.
3. Discuss your answers with your neighbors.

Team Project Jigsaw

1. Each of you have read one of the following topics – take turns giving your new team mates a 2-3' summary

- *Diverse Teams I*
- *Diverse Teams II*

- *Tasks & Teammates*
- *Communication & Meetings*

Marble Maze

Activity

Marble Maze

In your teams, use the box of Gravitrax on the table to build the fastest marble run that crosses at least 16 white tiles and uses no more than 16 (black or gray) lifts.
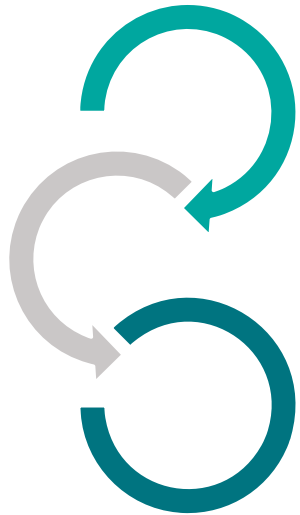
You are competing against the other teams.

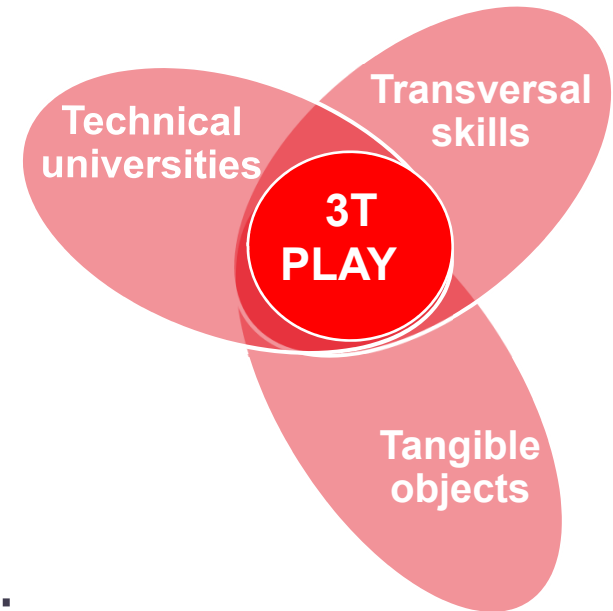You have **12'** to complete your construction.

Team debriefing

Activity

# Meta moment - 3T approach to teaching transversal skills

- focused on SKILLS
- mini experiential learning
- iterative, short feedback loops
- low-stakes, fail-forward

Technical universities

Transversal skills

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Tangible objects

Tormey & Isaac. (2022). *Facilitating Experiential Learning in Higher Education Teaching and Supervising in Labs, Fieldwork, Studios and Projects*. Routledge. https://doi.org/10.4324/9781003107606

3T approach to teaching transversal skills

Isaac, Petringa, Jalali, Tormey + Dehler-Zufferey. 2023.

Technical universities

Transversal skills

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Tangible objects
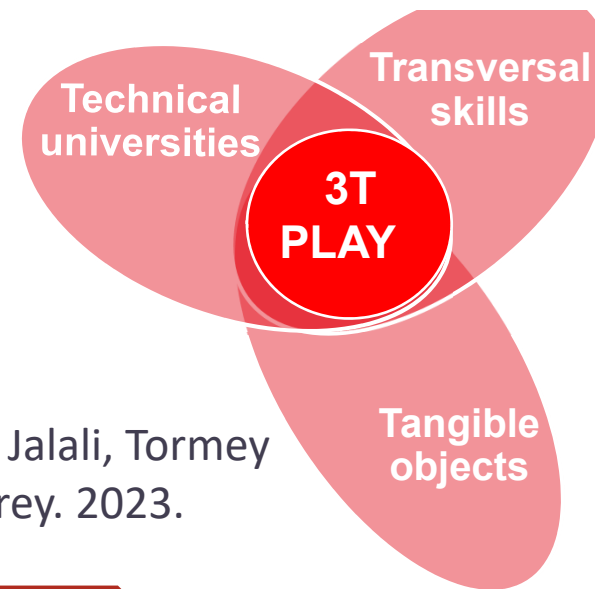
KNOWING models + strategies	LEARNING *by* DOING	LEARNING *from* DOING
Definitions, relevance, asociated tools + strategies	Experiential learning that showcases skills' importance and how to apply strategies (low risk, rapid feedback, iterations, reduced cogntive load)	Meta-moment reflection that promotes transfer of skills to next project, situation.

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Final reflection

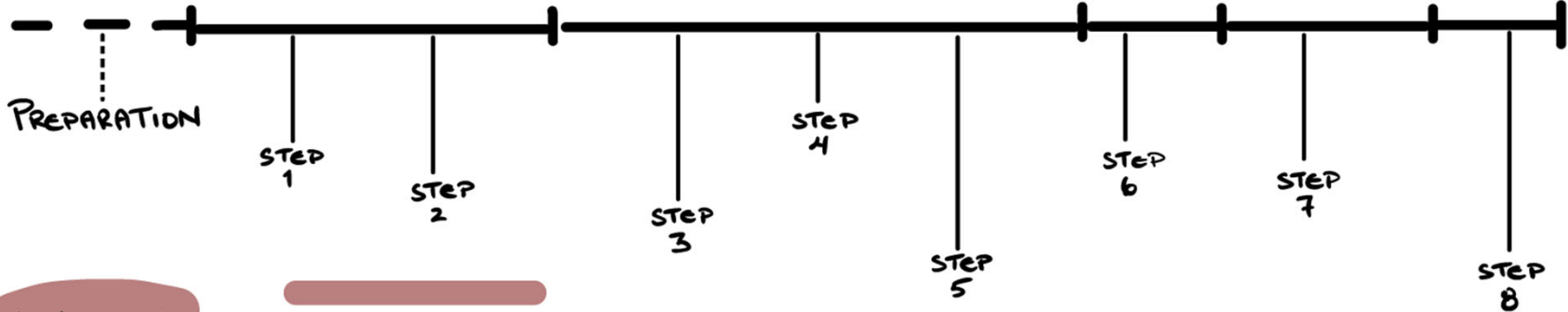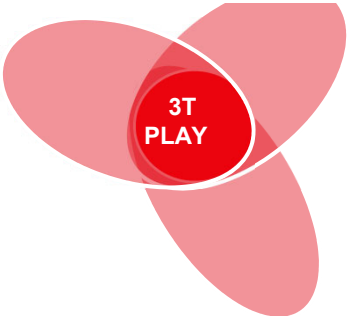| KNOWING models + strategies	LEARNING *by* DOING	LEARNING *from* DOING
1. Assign a function to each activity of today's workshop.		
2. What was most relevant for you? What did they enable you to learn or clarify?		

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Book of activity guides in Fall 2024
but we love beta testers ☺

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PREPARATION

STEP 1

STEP 2

STEP 3

STEP 4

STEP 5

STEP 6

STEP 7

STEP 8

KNOWING
concepts + tools

DOING
applying, feeling

LEARNING from DOING
reflecting on + for action

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