

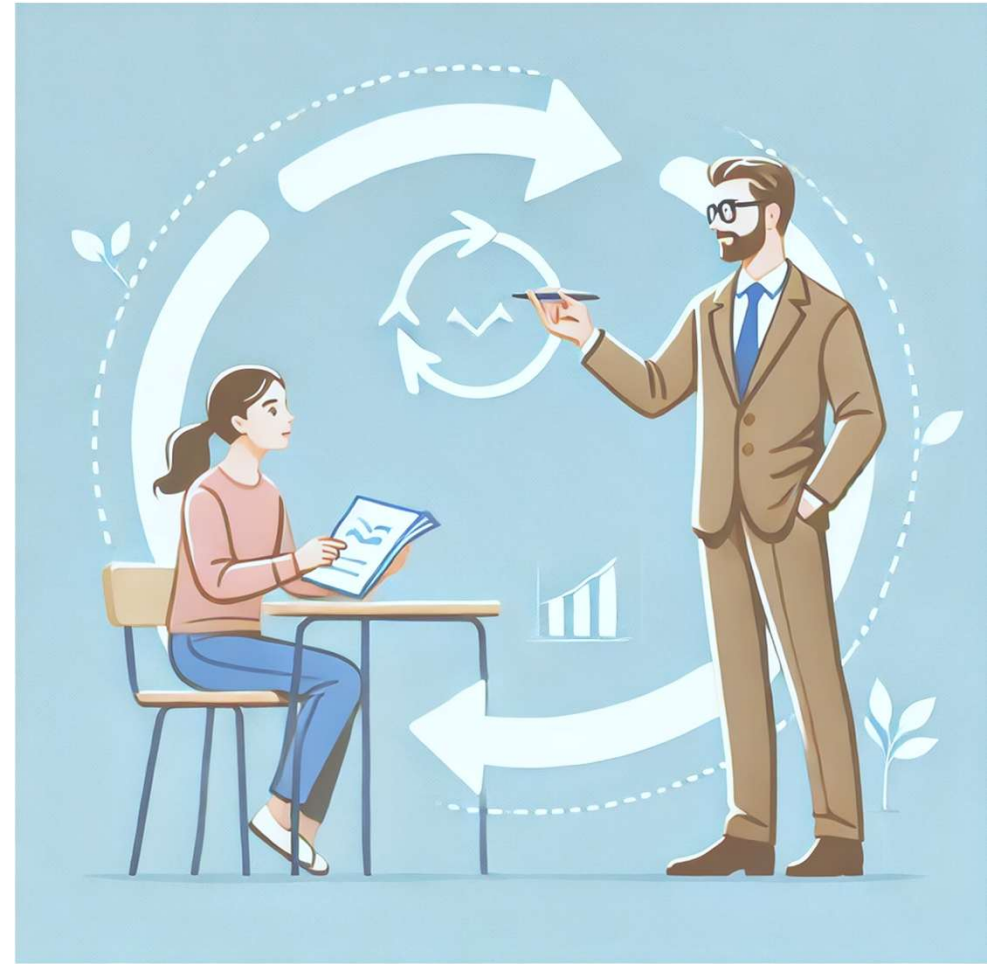
The Same Content,
Different Verdict:
How Provider Identity
Shapes Student
Evaluations of AI and
Human Feedback

Tanya Nazaretsky



Nazaretsky, Mejia-Domenzain, Swamy, Frej, Käser. (2026).
**Who Gives Feedback Matters: Student Biases Towards
Human and AI-Generated Formative Feedback**, *Journal of
Computer Assisted Learning*

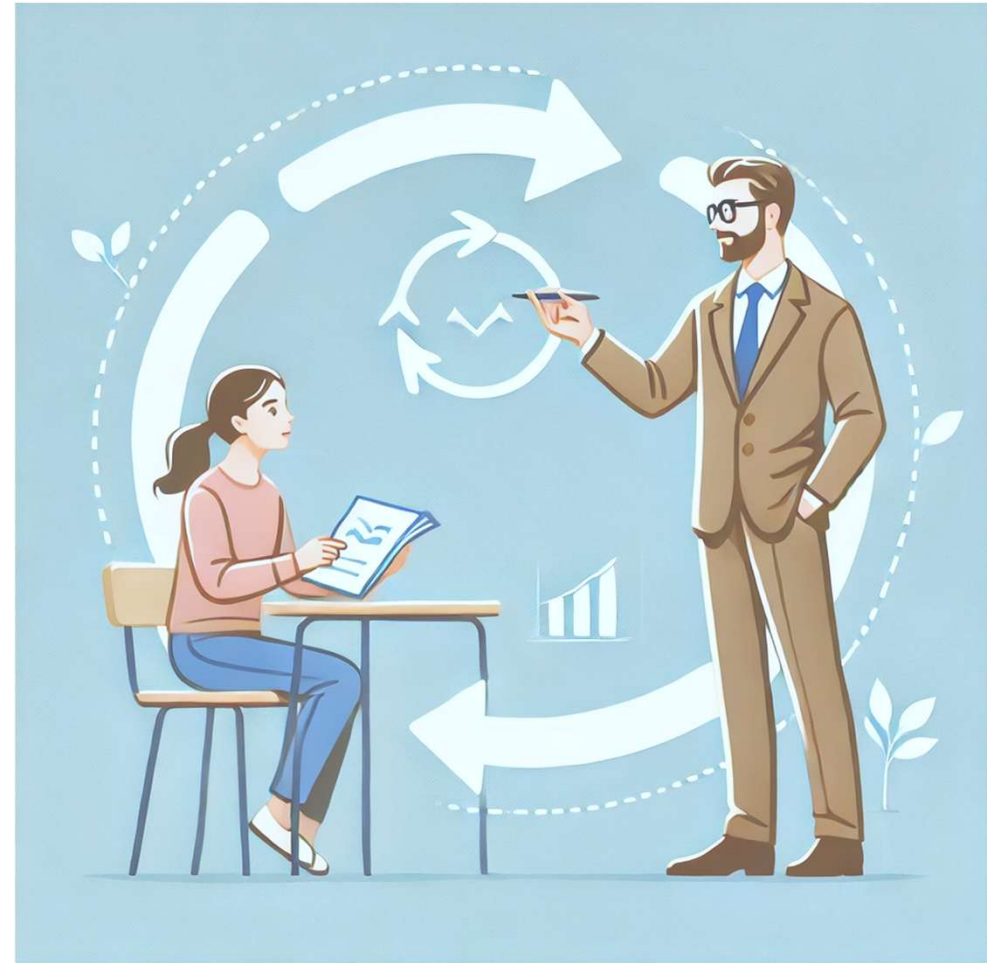
Research Motivation



*Hattie (2015); **Carless & Winstone (2023); Boud & Molloy (2013); ***Cavalcanti, et al. (2021); Yan, et al. (2024)

Research Motivation

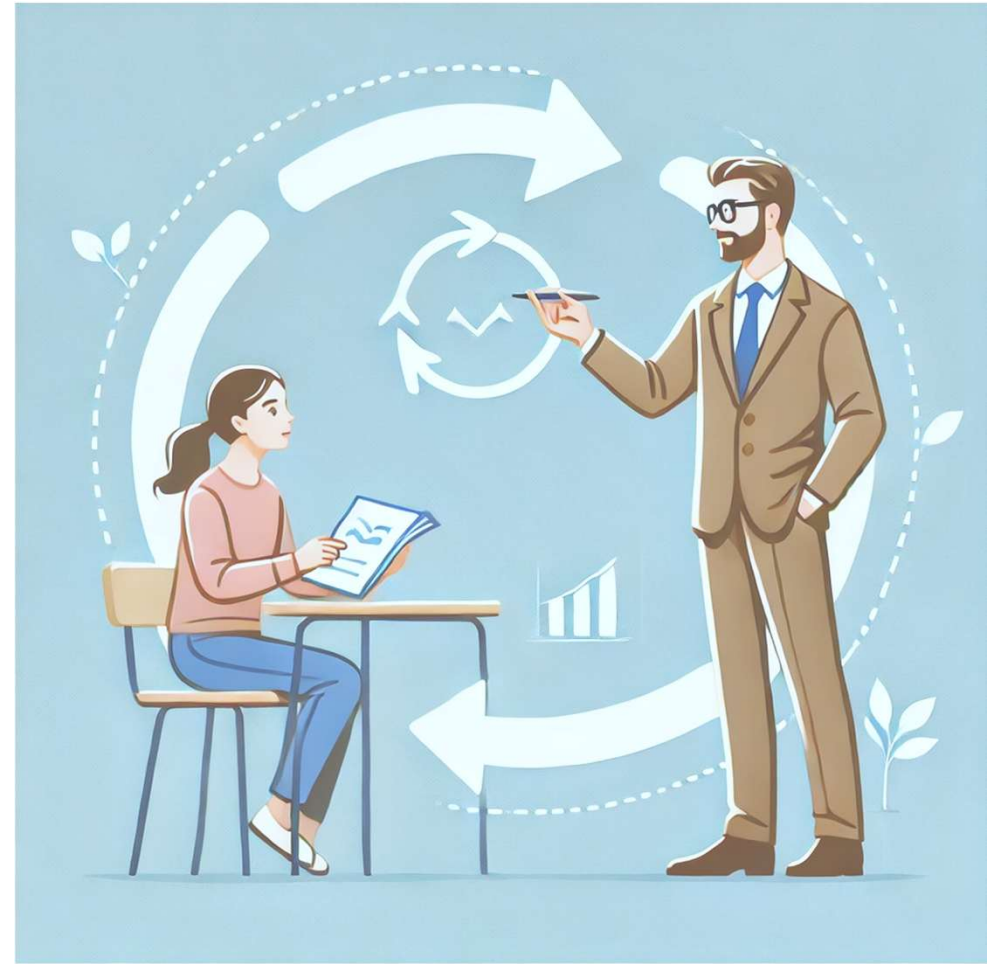
- Feedback is one of the most critical parts of the learning process*
- But it is rare in higher education**



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Research Motivation

- Feedback is one of the most critical parts of the learning process*
- But it is rare in higher education**
- Generative AI can assist to automate feedback provision***
- Most research focuses on technological challenges rather than social and emotional factors



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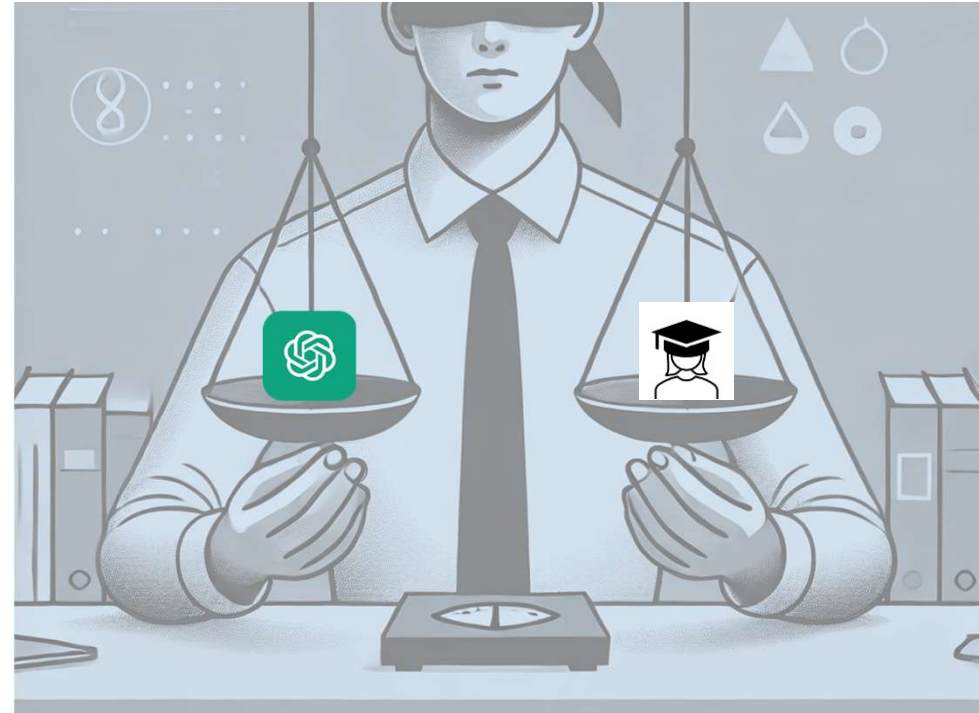


Little is known about students' perceptions of AI-generated feedback

*Hattie (2015); **Carless & Winstone (2023); Boud & Molloy (2013); ***Cavalcanti, et al. (2021); Yan, et al. (2024)

Research Questions

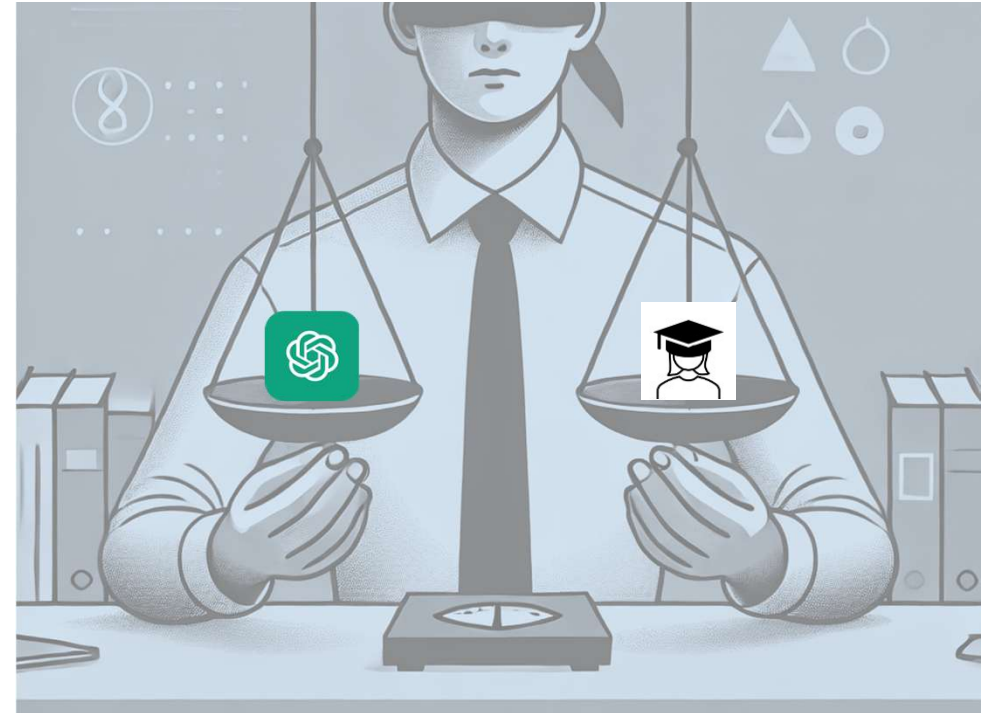
How does transparency about the identity of feedback providers influence students' perceptions of feedback content?



Research Questions

How does transparency about the identity of feedback providers influence students' perceptions of feedback content?

RQ1 Can students distinguish between AI and human feedback?

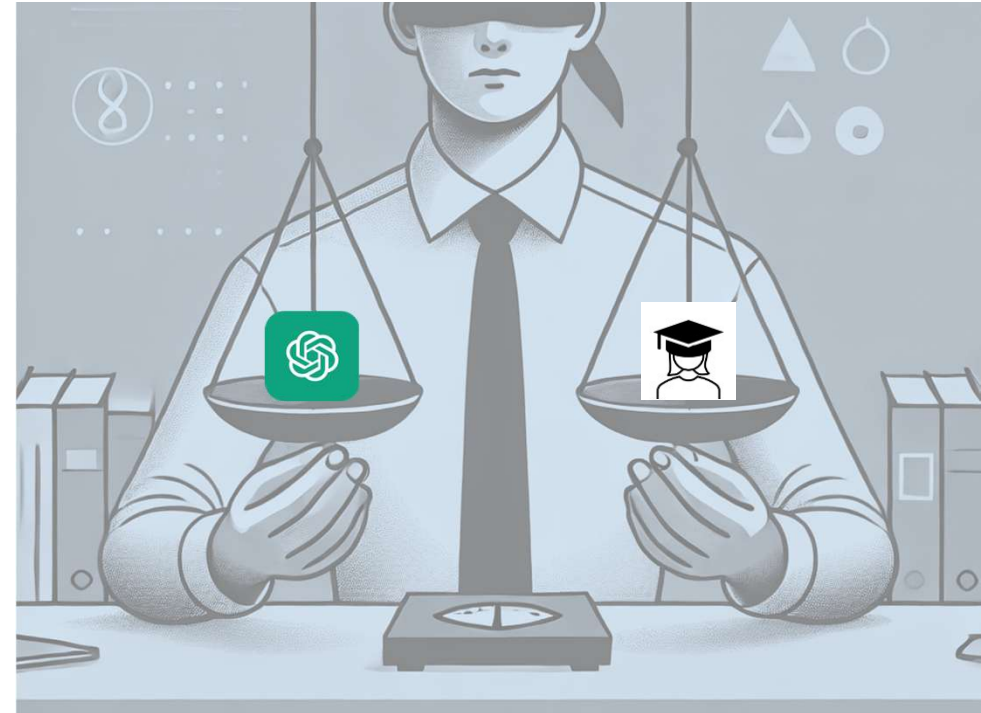


Research Questions

How does transparency about the identity of feedback providers influence students' perceptions of feedback content?

RQ1 Can students distinguish between AI and human feedback?

RQ2 How do the students' perceptions of the same feedback content change after revealing the feedback provider's identity?



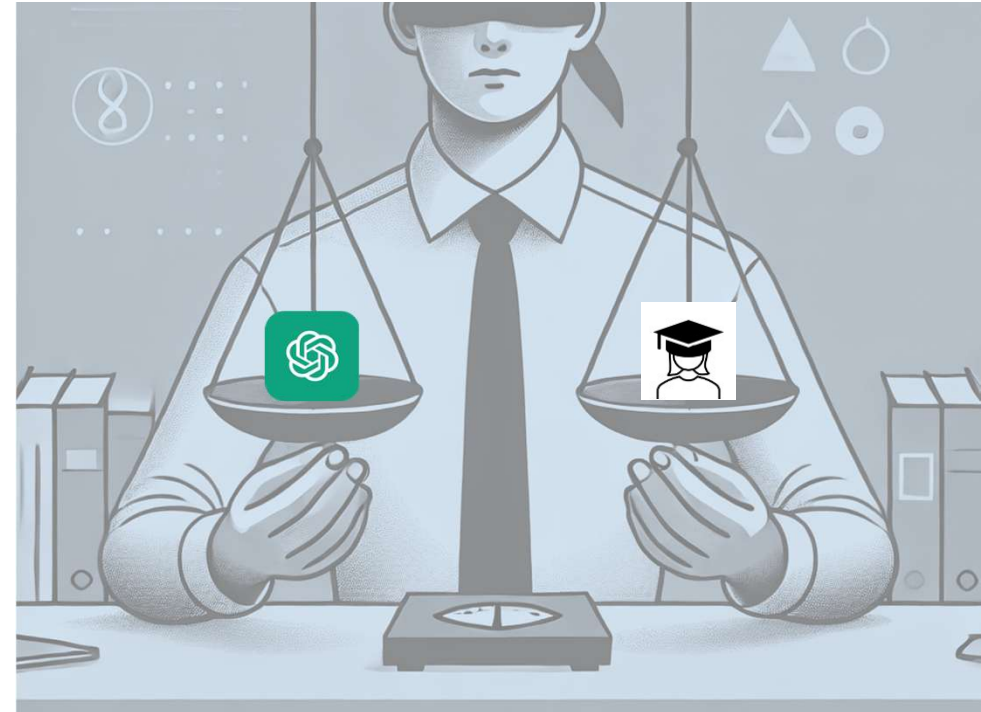
Research Questions

How does transparency about the identity of feedback providers influence students' perceptions of feedback content?

RQ1 Can students distinguish between AI and human feedback?

RQ2 How do the students' perceptions of the same feedback content change after revealing the feedback provider's identity?

RQ3 Do students hold a negative bias towards AI as a feedback provider?



Population

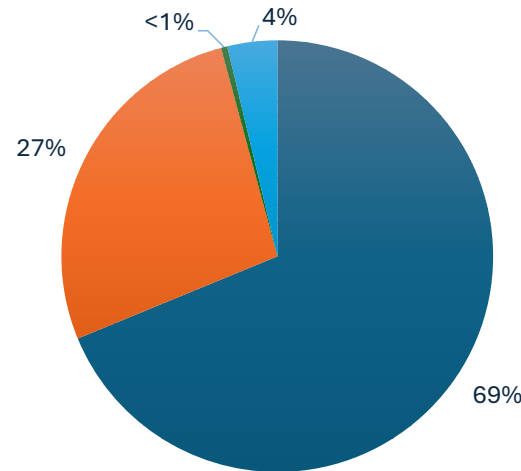
457 students
5 EPFL courses

Course	Field of Study	Level	Participants
[ICC] Discrete Mathematics	Mathematics, Physics	BA (1 year)	66
[AICC] Information Theory	Computer Science	BA (1 year)	187
[MA] Mathematical Analysis	Mechanical Engineering	BA (1 year)	28
[ASE] Applied Software Engineering	Life Sciences Engineering	BA (2 year)	70
[ADA] Applied Data Analysis	STEM Multiple	MA (1 year)	106

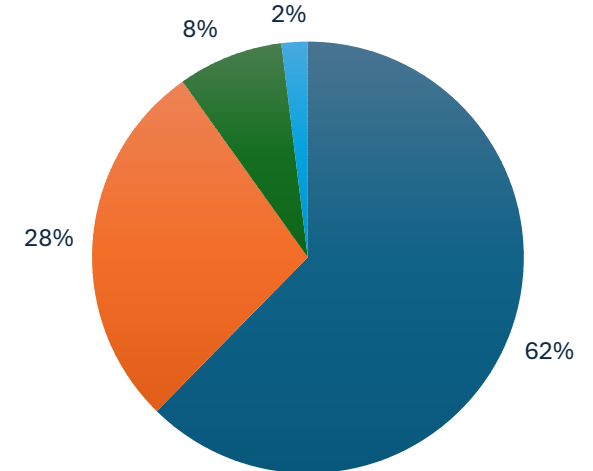
Population

457 students
5 EPFL courses

■ Male ■ Female ■ Non-binary ■ Other



■ 18-20 ■ 21-23 ■ 24-26 ■ >26



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Research Outline

Research Outline

A

457 Student
Responses

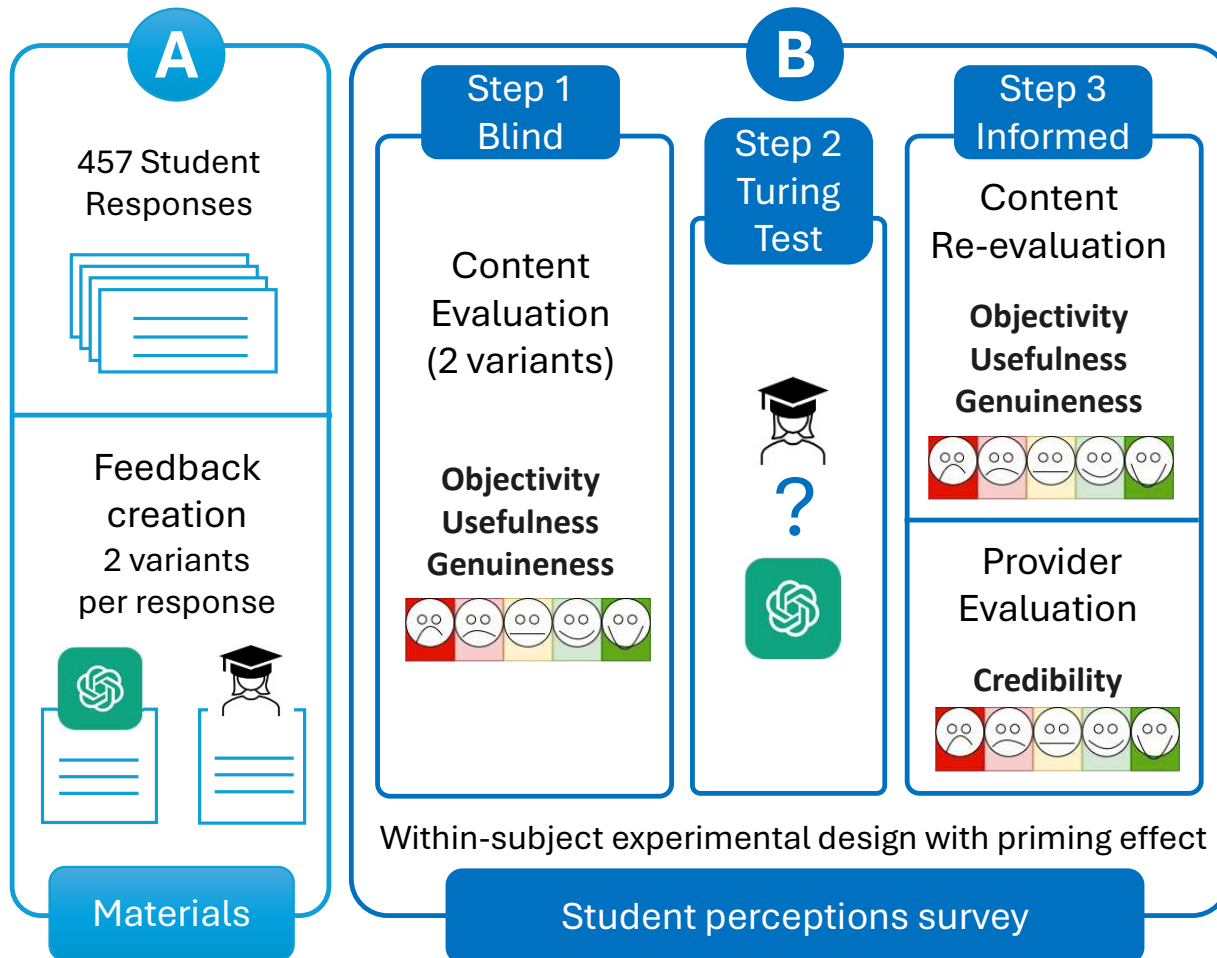


Feedback
creation
2 variants
per response

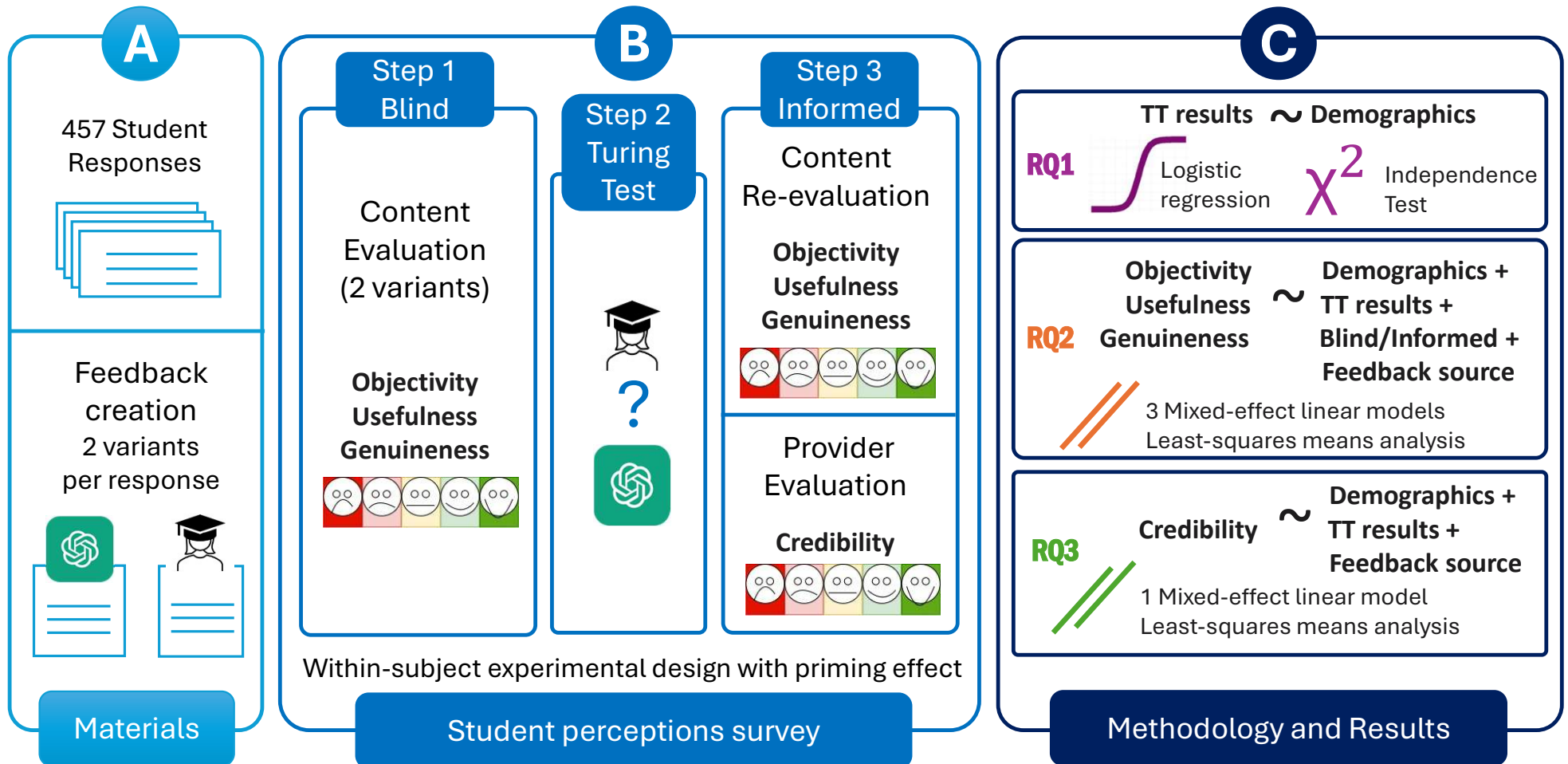


Materials

Research Outline



Research Outline



Data Collection

- 457 authentic responses to open-ended tasks
- One task per course

Course	Task
ICC	C++ project
AICC	Logical reasoning task
MA	Calculus proof
ASE	Python project
ADA	Statistical inference task

Data Collection

- 457 authentic responses to open-ended tasks
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Course	Task
ICC	C++ project
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AICC Task

Let x be a real number. Prove that if x^2 is irrational, then x is irrational using:

- a proof by contraposition
- a proof by contradiction

Detail the two proofs in a way that shows that you understand the difference between a proof by contraposition and a proof by contradiction.

AICC Student Response

1. CONTRAPOSITION

- x is rational $\rightarrow x^2$ is rational [Premise]
- $x = p/q$ and p, q are integers and $q \neq 0$ [Definition]
- $x^2 = p^2/q^2$ [Algebra]
- Therefore, assuming that the square of an integer is an integer, x^2 is rational [Definition]

2. CONTRADICTION

- Let's assume that x^2 is rational and x irrational [Premise]
- $x^2 = p/q$ and p, q are integers and $q \neq 0$ [Definition]
- $x = r/s$ such as $r^2 = p$ and $s^2 = q$
- There are r and s which are integers and verify the equation: for example $q = 4$ and $p = 4$ [Counterexample]
- The demonstration is false so for x irrational, x^2 must be irrational

Feedback Generation

Feedback Generation



OpenAI GPT4 API prompt

You are an excellent instructor teaching a course called [COURSE].

You gave to the students the following assignment: [ASSIGNMENT].

The correct solution is: [SOLUTION]

The student submission was: [ANSWER]

Please evaluate the student's answer and provide elaborated formative feedback.

Please follow the following instructions:

- The feedback should be addressed directly to the student as is.*
- The feedback should be no more than [X] lines.*

Feedback Generation



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Original teaching teams

Course	Task	# Human Graders
ICC	C++ project	8
AICC	Logical reasoning task	9
MA	Calculus proof	1
ASE	Python project	17
ADA	Statistical inference task	3

Feedback Generation



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- For MA, ASE, and ADA courses
 - Routine formative feedback as is
- For ICC and AICC courses
 - Workshops aimed to train teams to create positive formative feedback focused on improvement areas

Feedback Example [AICC]

AICC Student Response

1. CONTRAPOSITION

- 1) x is rational $\rightarrow x^2$ is rational [Premise]
- 2) $x = p/q$ and p, q are integers and $q \neq 0$ [Definition]
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- 4) There are r and s which are integers and verify the equation: for example $q = 4$ and $p = 4$ [Counterexample]
- 5) The demonstration is false so for x irrational, x^2 must be irrational

Feedback 1

The contraposition is true but you have to review the contradiction. You have to know that proofing $p \rightarrow q$ by contradiction: we show that assuming p and not q leads to a contradiction.

Feedback 2

You've done a good job on the contraposition proof. However, for the contradiction part, you misunderstood the premise. You should assume x^2 is irrational and x is rational, then derive a contradiction from there. Also, step 4 is not clear and seems unnecessary; it's important to focus on deriving contradictions rather than counterexamples in this instance. Keep practicing your proof writing skills!

Feedback Example [AICC]

AICC Student Response

1. CONTRAPOSITION

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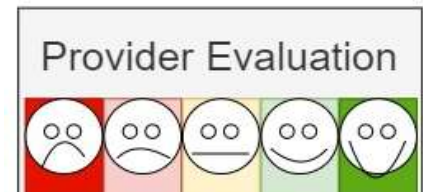
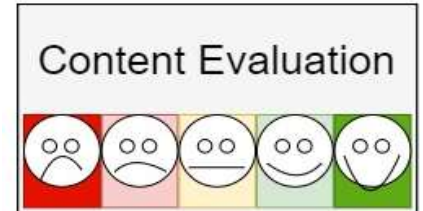


Feedback 2

You've done a good job on the contraposition proof. However, for the contradiction part, you misunderstood the premise. You should assume x^2 is irrational and x is rational, then derive a contradiction from there.

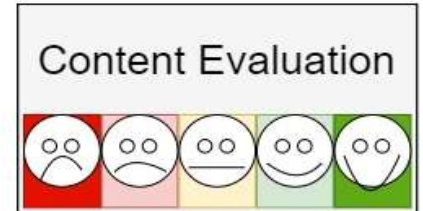
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Two Perceptions Instruments*

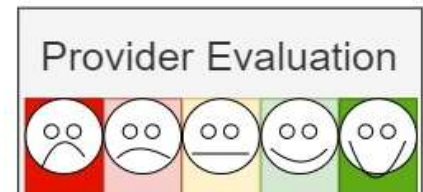


* Narciss (2013); Ilgen et al. (1979); Venkatesh et al. (2003); Hirunyasiri et al. (2023); Tormey (2021)

Two Perceptions Instruments*



To what extent do you associate this **feedback** with the following term?








To what extent do you associate this **feedback provider** with the following term?






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Two Perceptions Instruments*

To what extent do you associate this **feedback** with the following term?

	Content Evaluation				
					
Precise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Fair	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Factual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Relevant	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informative	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Applicable	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sincere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Authentic	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>






To what extent do you associate this **feedback provider** with the following term?






	Provider Evaluation				
					
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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To what extent do you associate this **feedback** with the following term?

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Objectivity	Precise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	Fair	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	Factual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	Relevant	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Informative	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Applicable	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Sincere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	Authentic	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>






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	Factual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Usefulness	Relevant	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Informative	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Applicable	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Sincere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
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	Applicable	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Genuineness	Sincere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
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Provider Evaluation					
					
					
					
					
					






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	Fair	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
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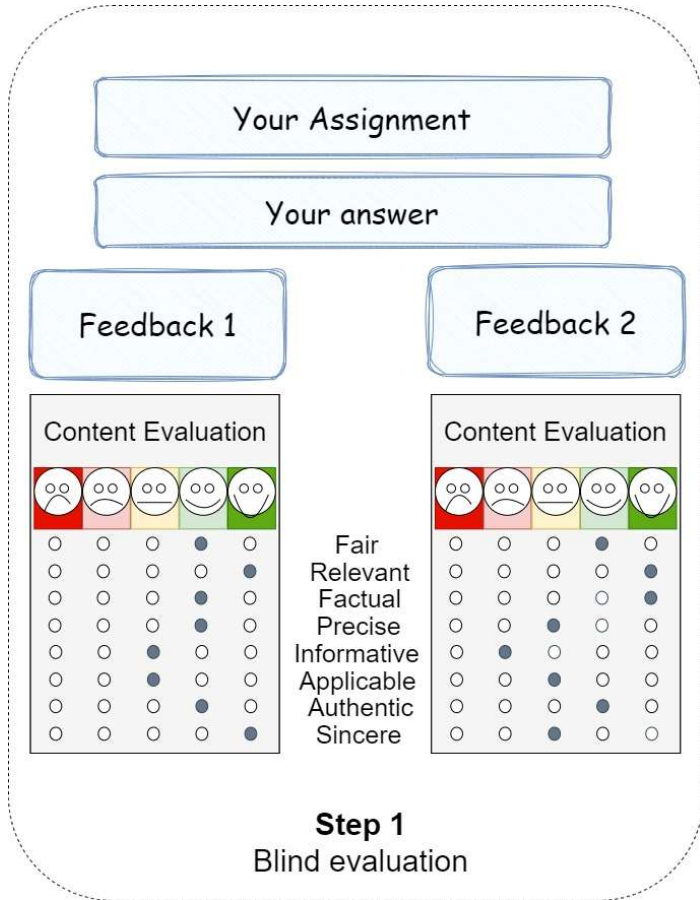
To what extent do you associate this **feedback provider** with the following term?

		Provider Evaluation				
						
Creditability	Trustworthy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	Reliable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	Ethical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

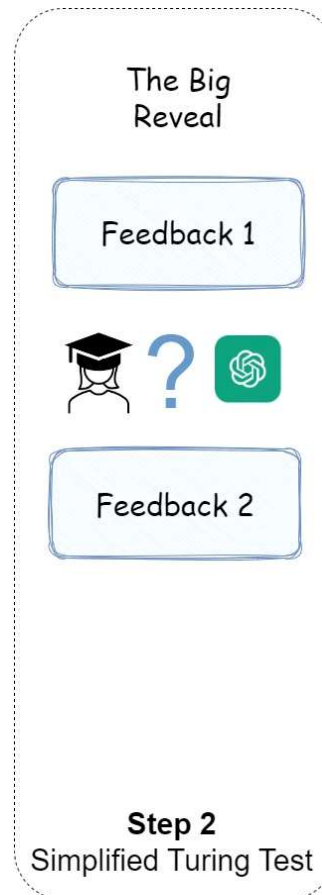
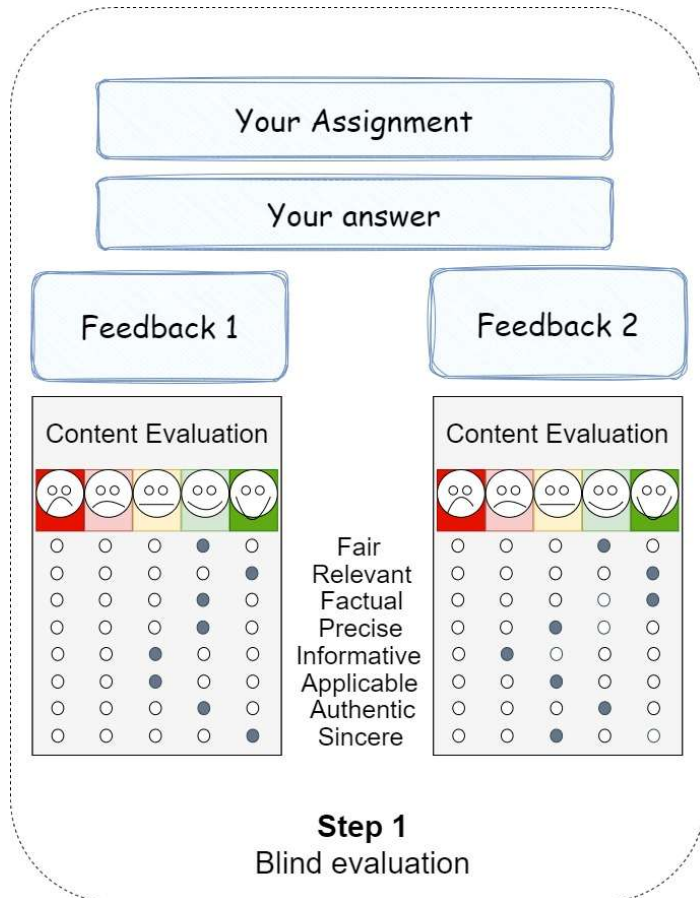
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Study Protocol

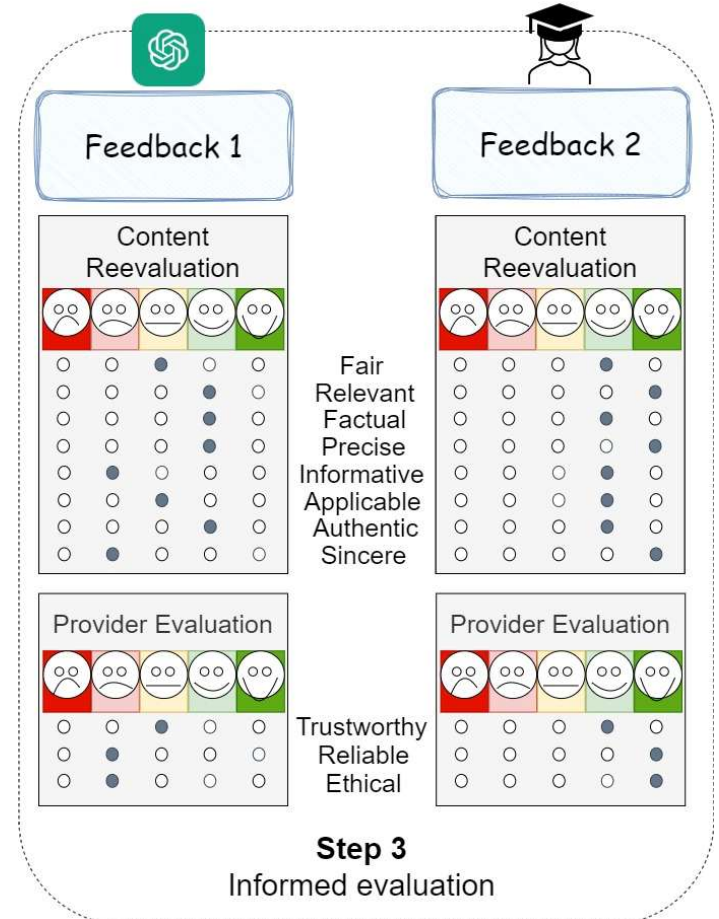
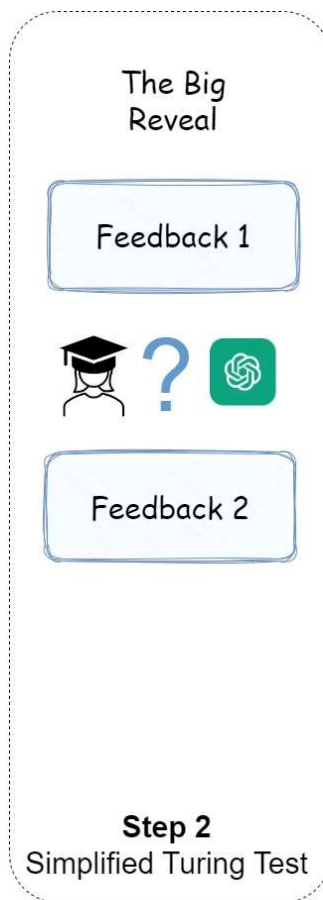
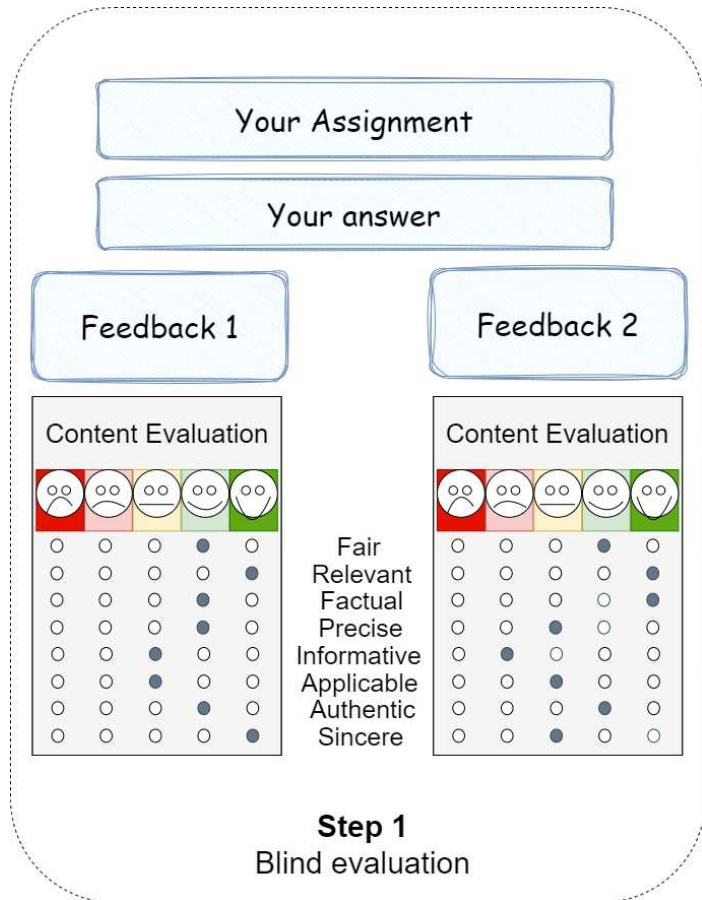
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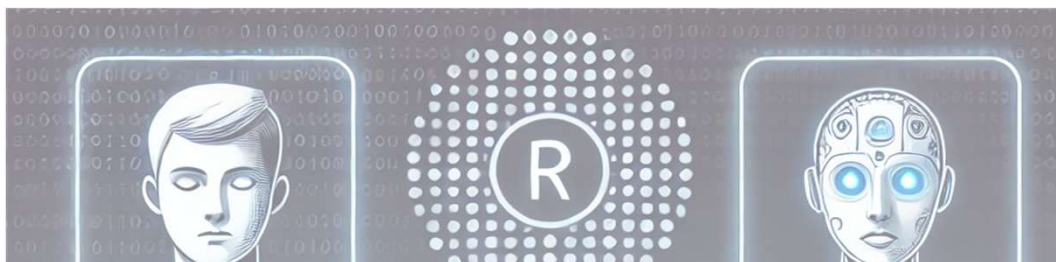
RQ1 Results

Can students **distinguish** between AI and human feedback?



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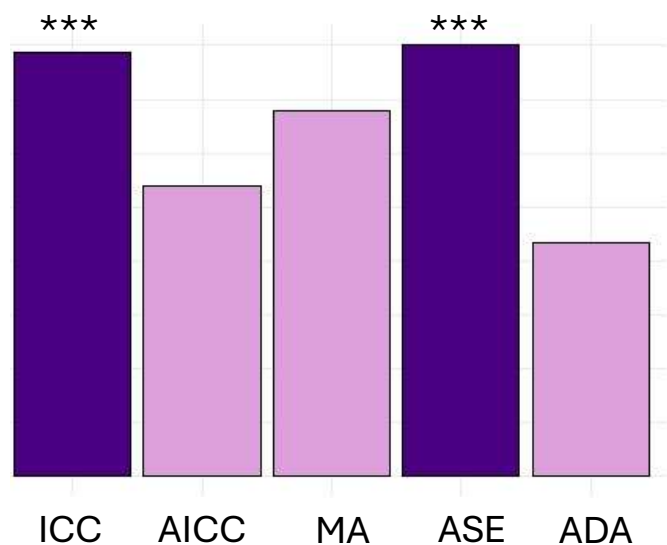
Students' ability to pass the Turing Test depended on the task/course, but not on age and gender



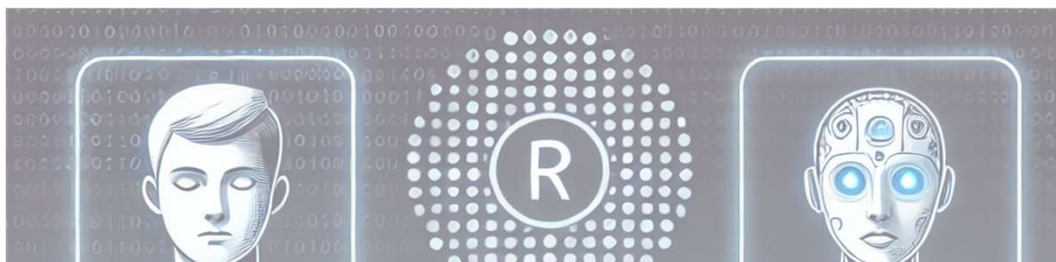
RQ1 Results

Can students **distinguish** between AI and human feedback?

Percentage of students passed the Turing Test by course



*** Significant (Chi-square independence test per course)



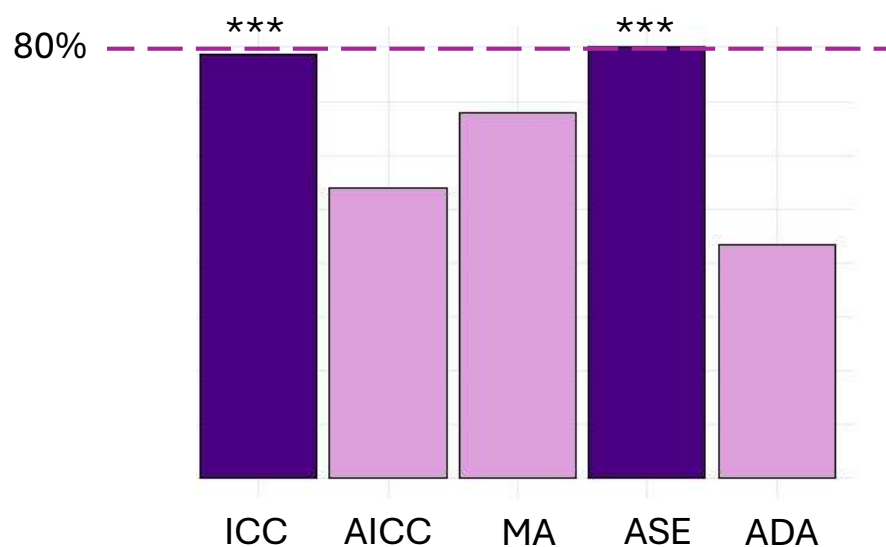
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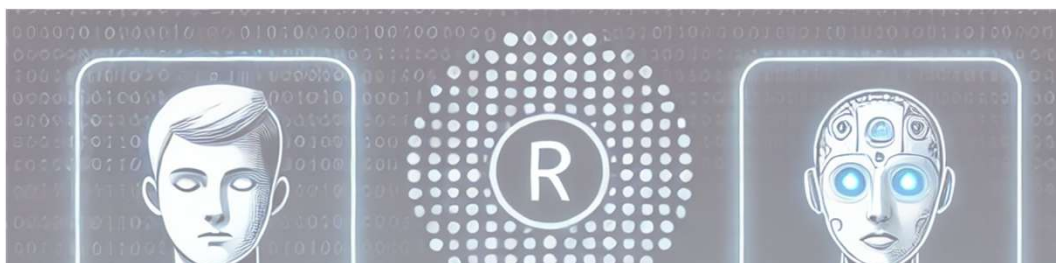
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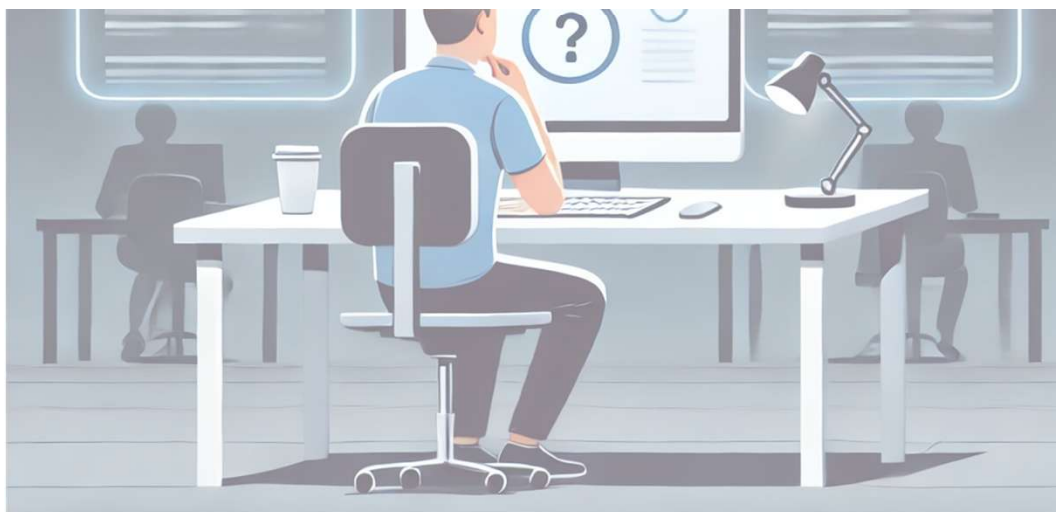
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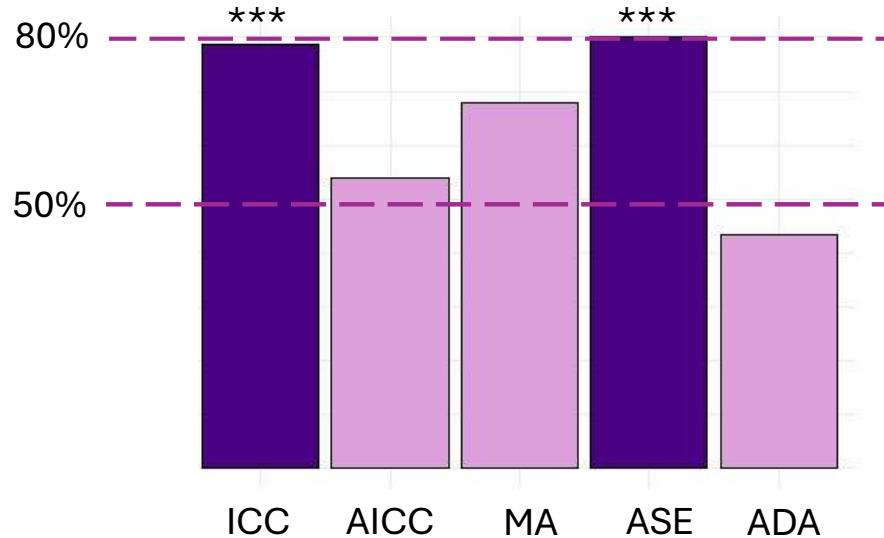
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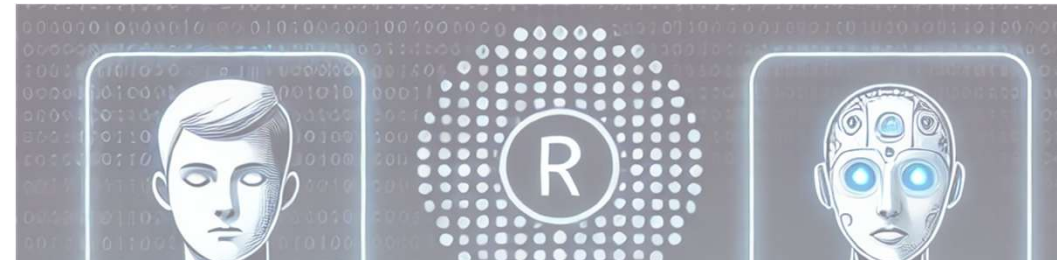
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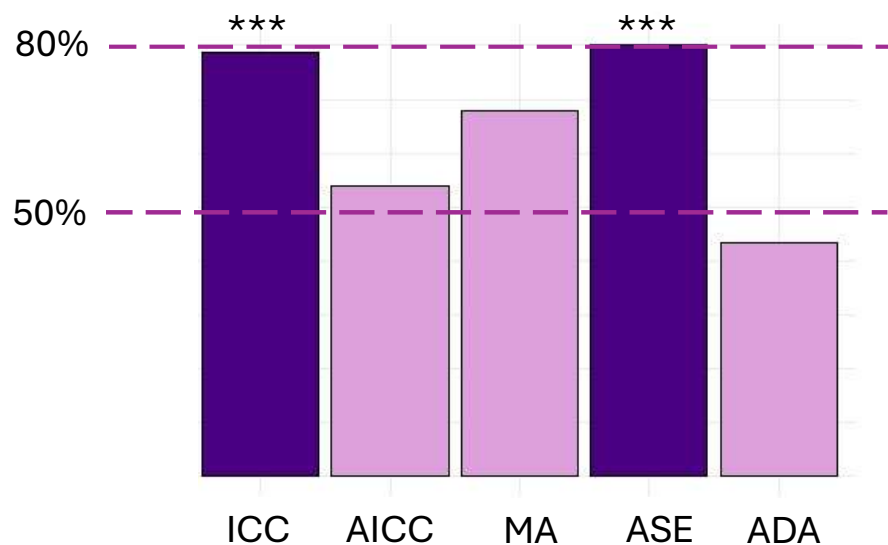
Students' ability to pass the Turing Test depended on the task/course, but not on age and gender



RQ1 Results

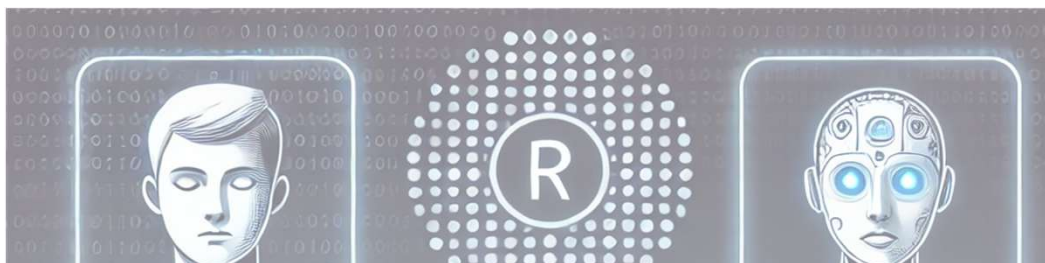
Can students **distinguish** between AI and human feedback?

Percentage of students passed the Turing Test by course

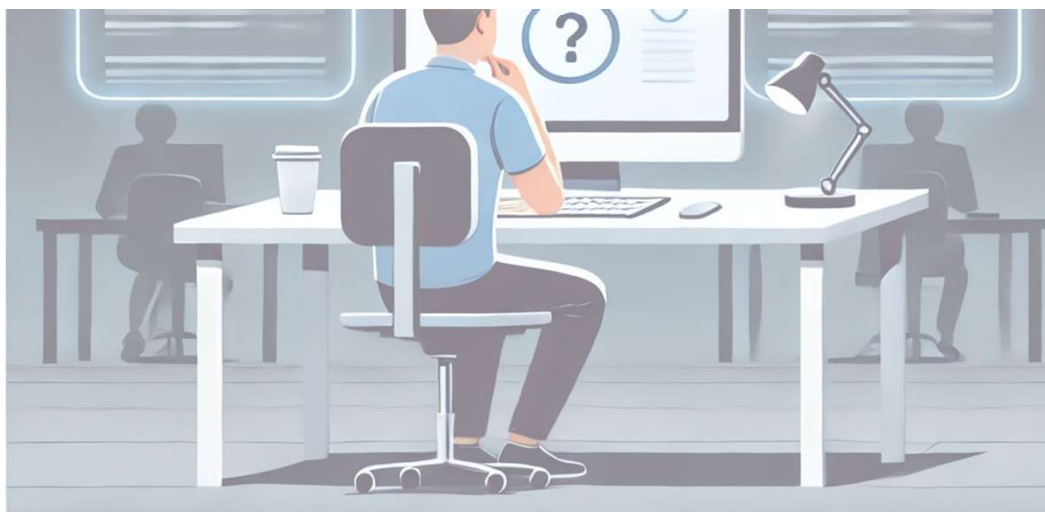


- ICC and ASE - large coding projects
- AICC, MA, ADA – short logical/coding tasks

*** Significant (Chi-square independence test per course)



Students' ability to pass the Turing Test depended on the task/course, but not on age and gender

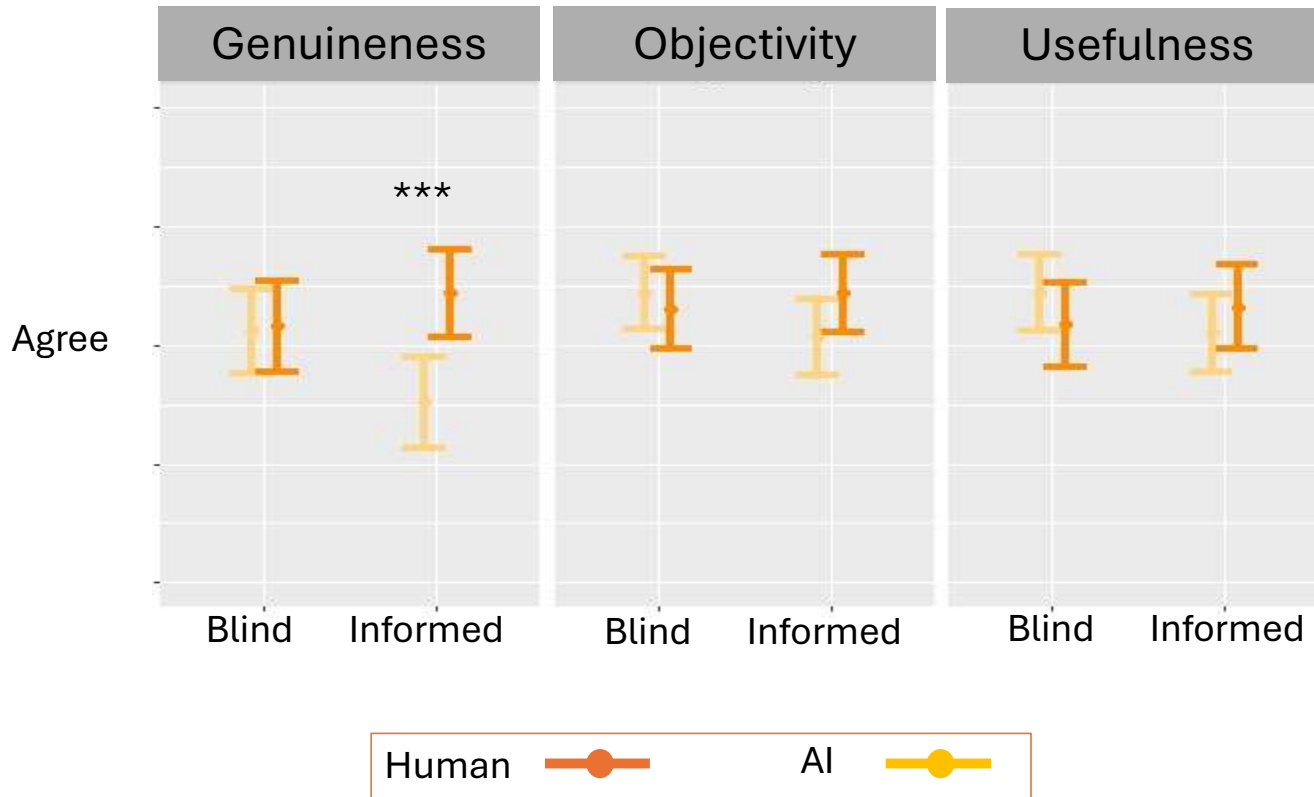


RQ2 Results

Do the students' perceptions of the same feedback content **change after revealing** the feedback provider's identity?

RQ2 Results

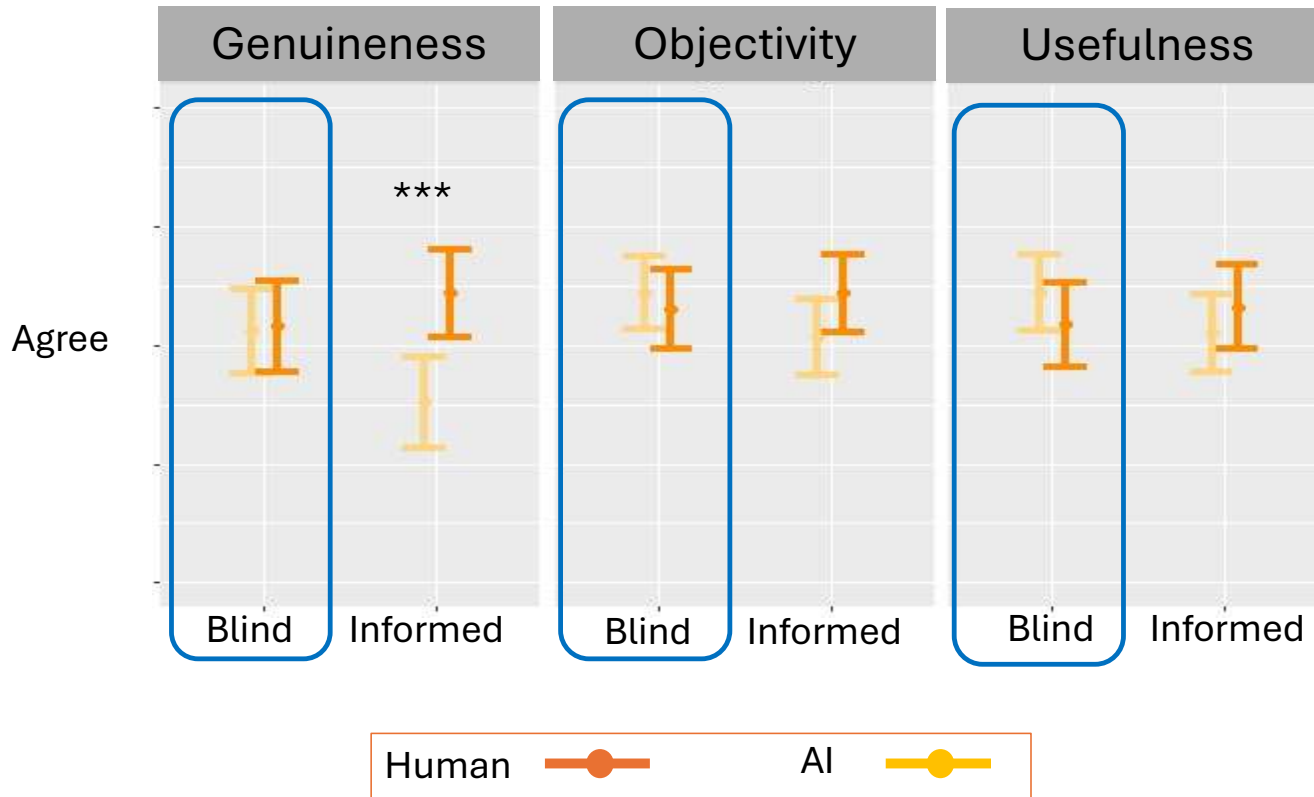
Do the students' perceptions of the same feedback content **change after revealing** the feedback provider's identity?



*** Significant differences (Mixed Linear Model with follow-up analysis of means per Dimension)

RQ2 Results

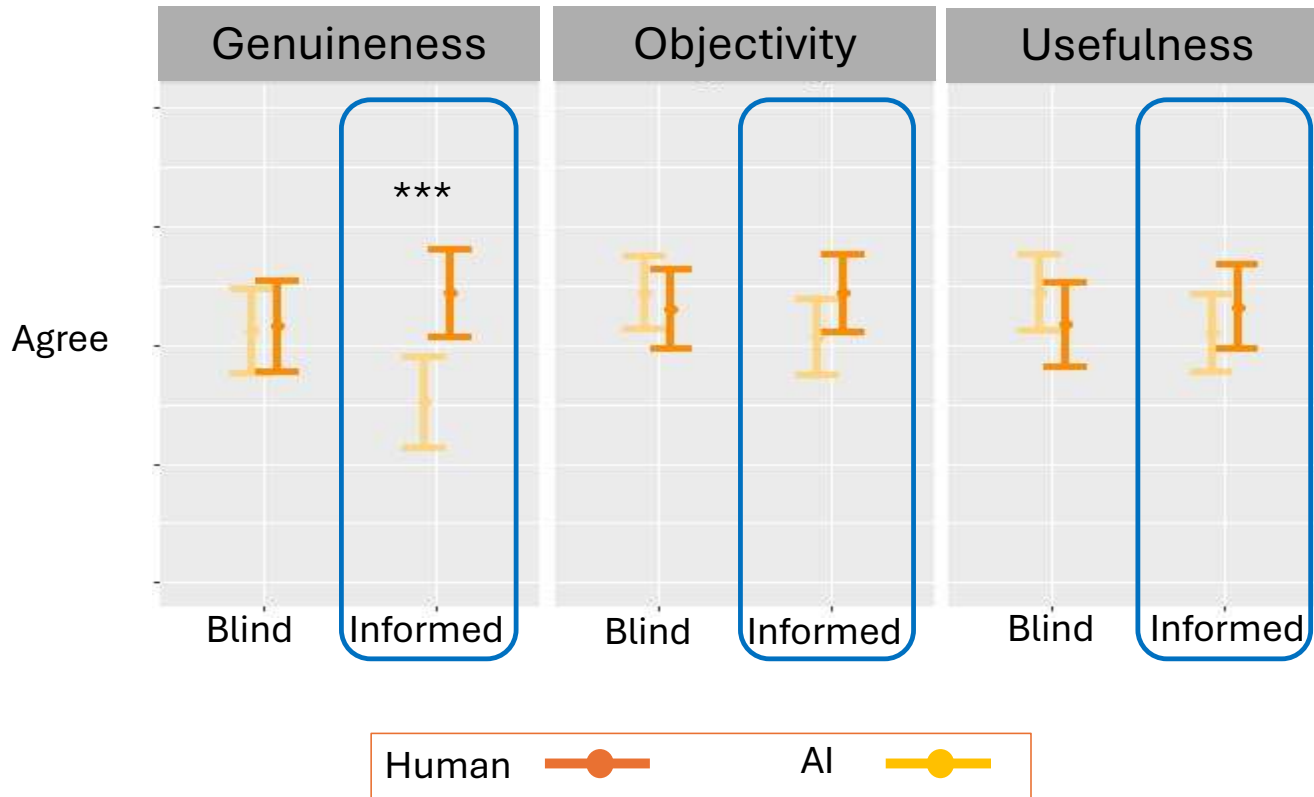
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RQ2 Results

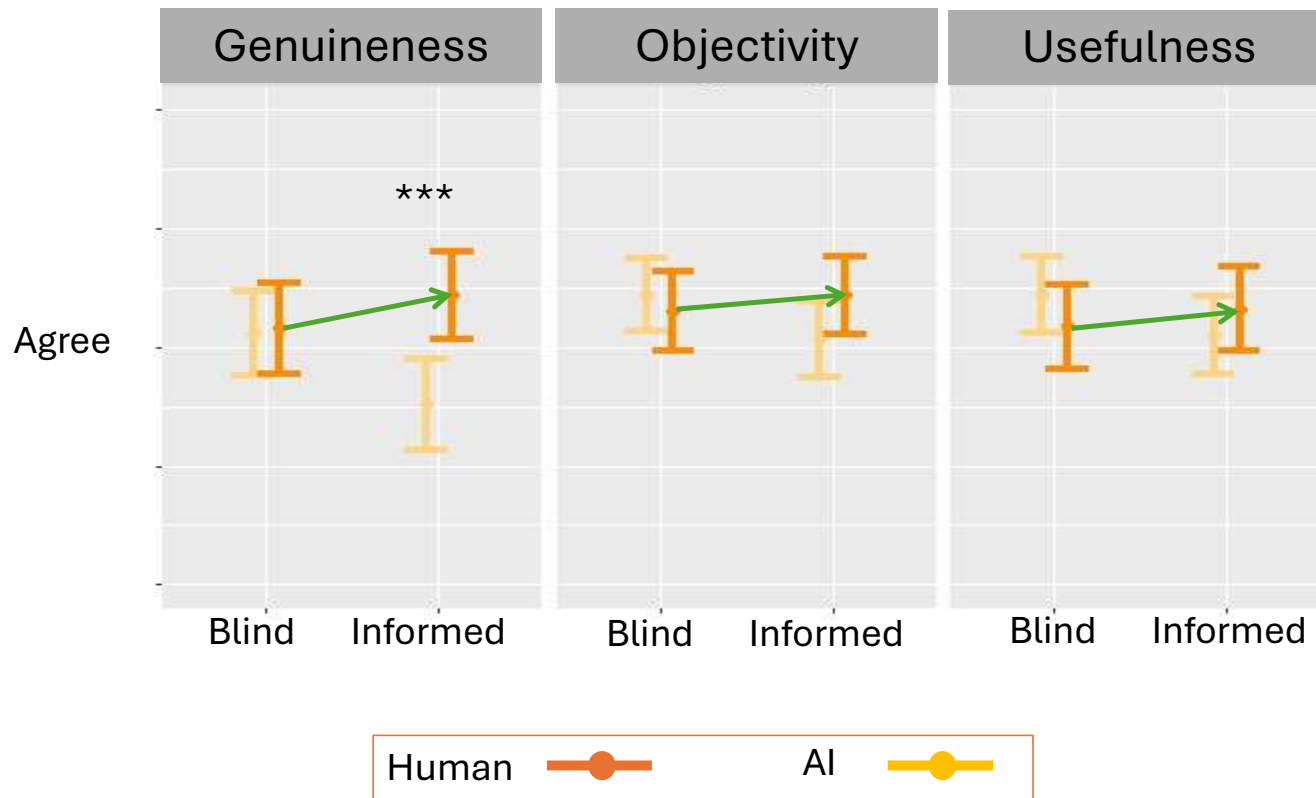
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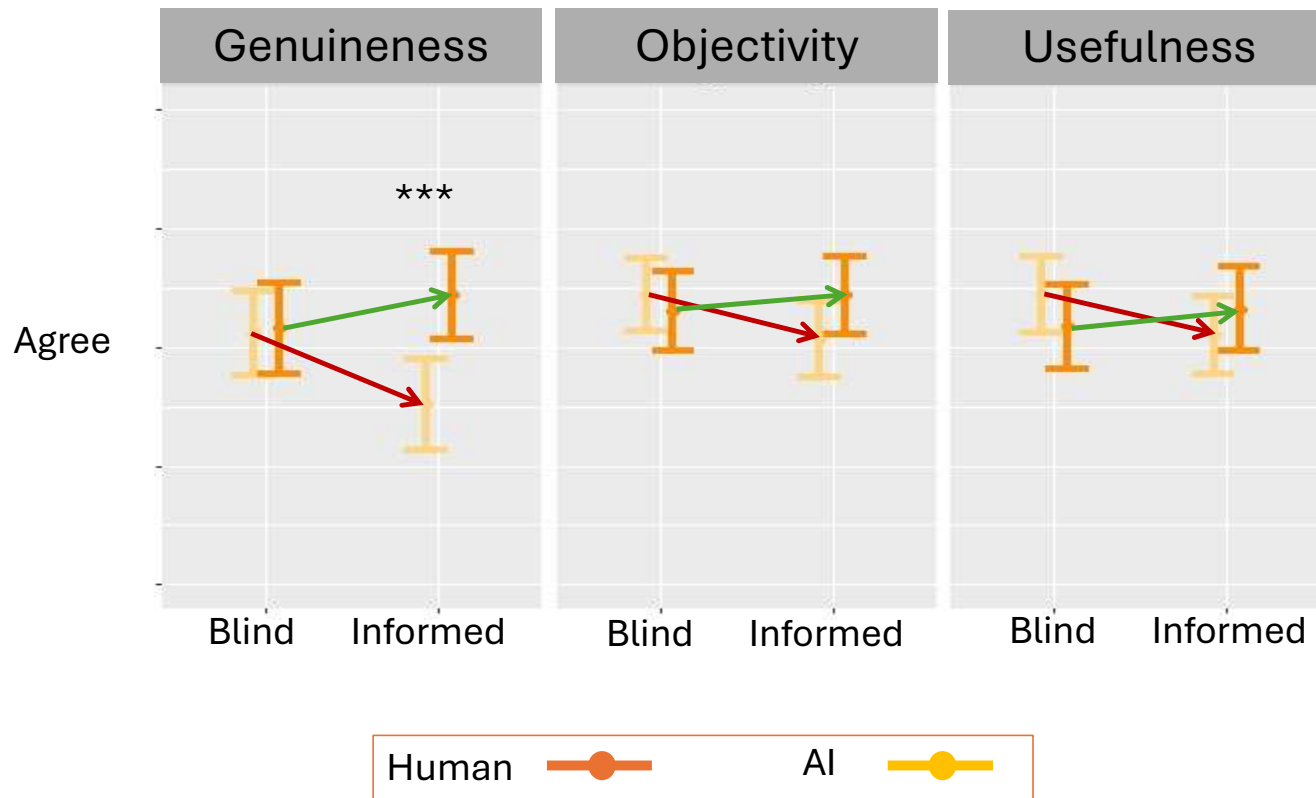


After revealing the feedback provider identity, students **increased human'** feedback scores

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Do the students' perceptions of the same feedback content **change after revealing** the feedback provider's identity?



After revealing the feedback provider identity, students **increased human'** feedback scores and **decreased AI'** feedback scores

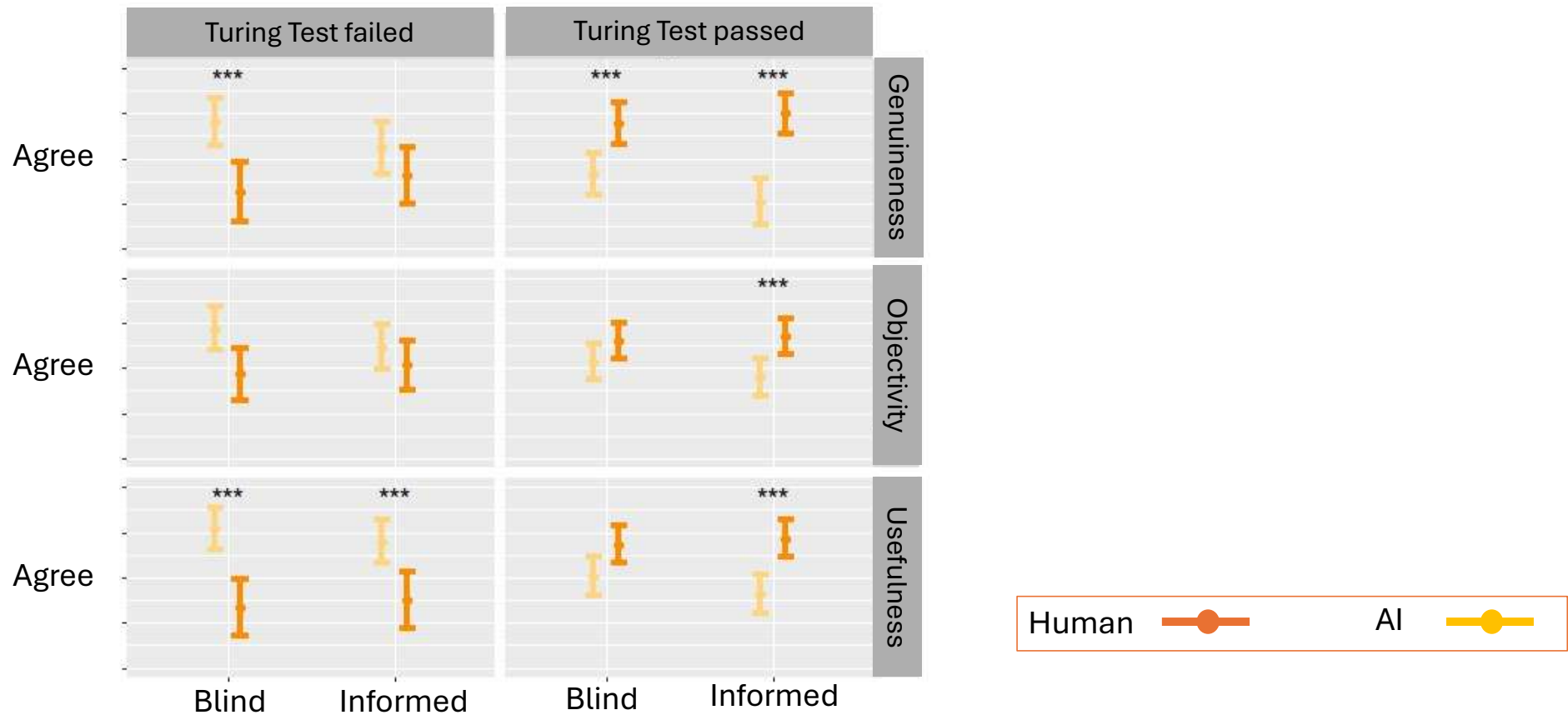
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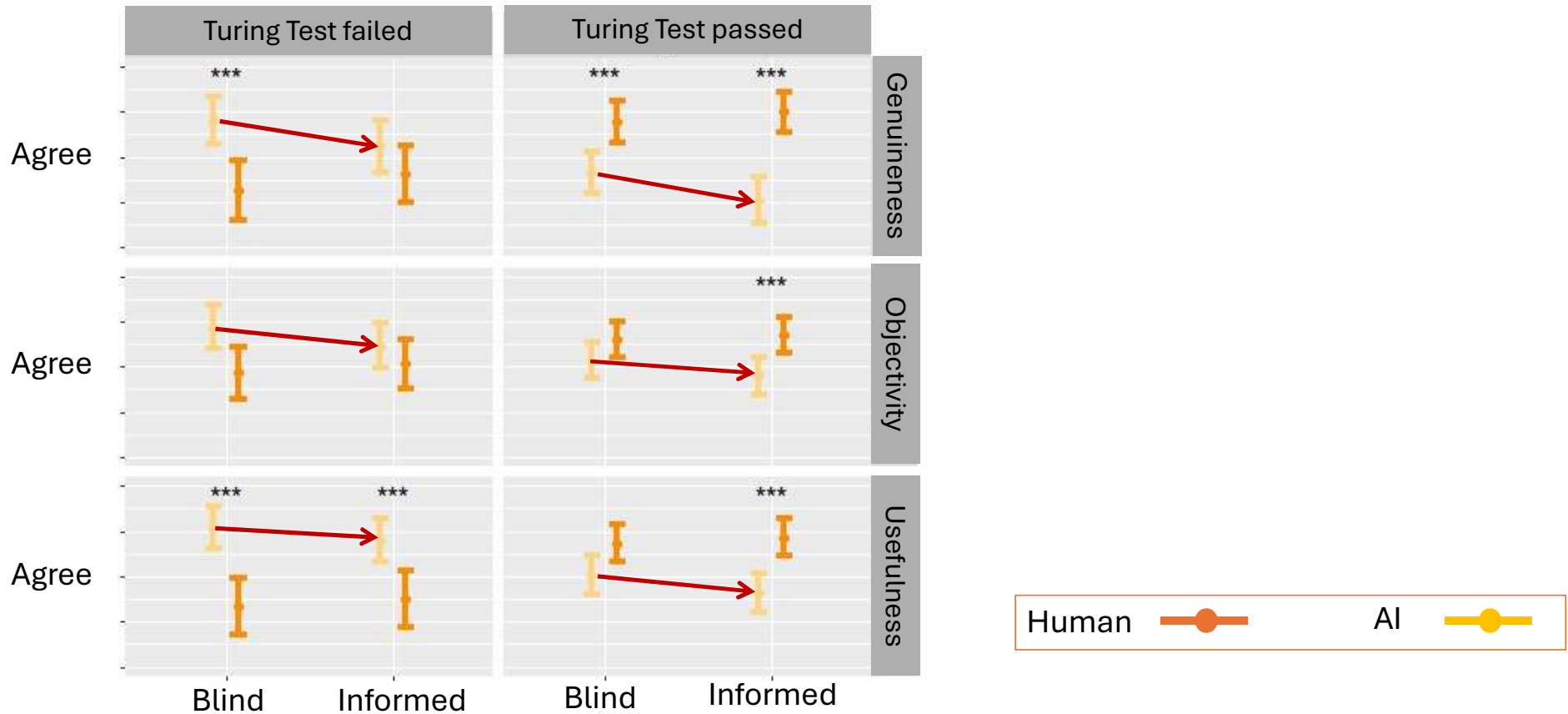
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*** Significant differences (Mixed Linear Model approach with follow-up analysis of means per Dimension)

RQ2 Results

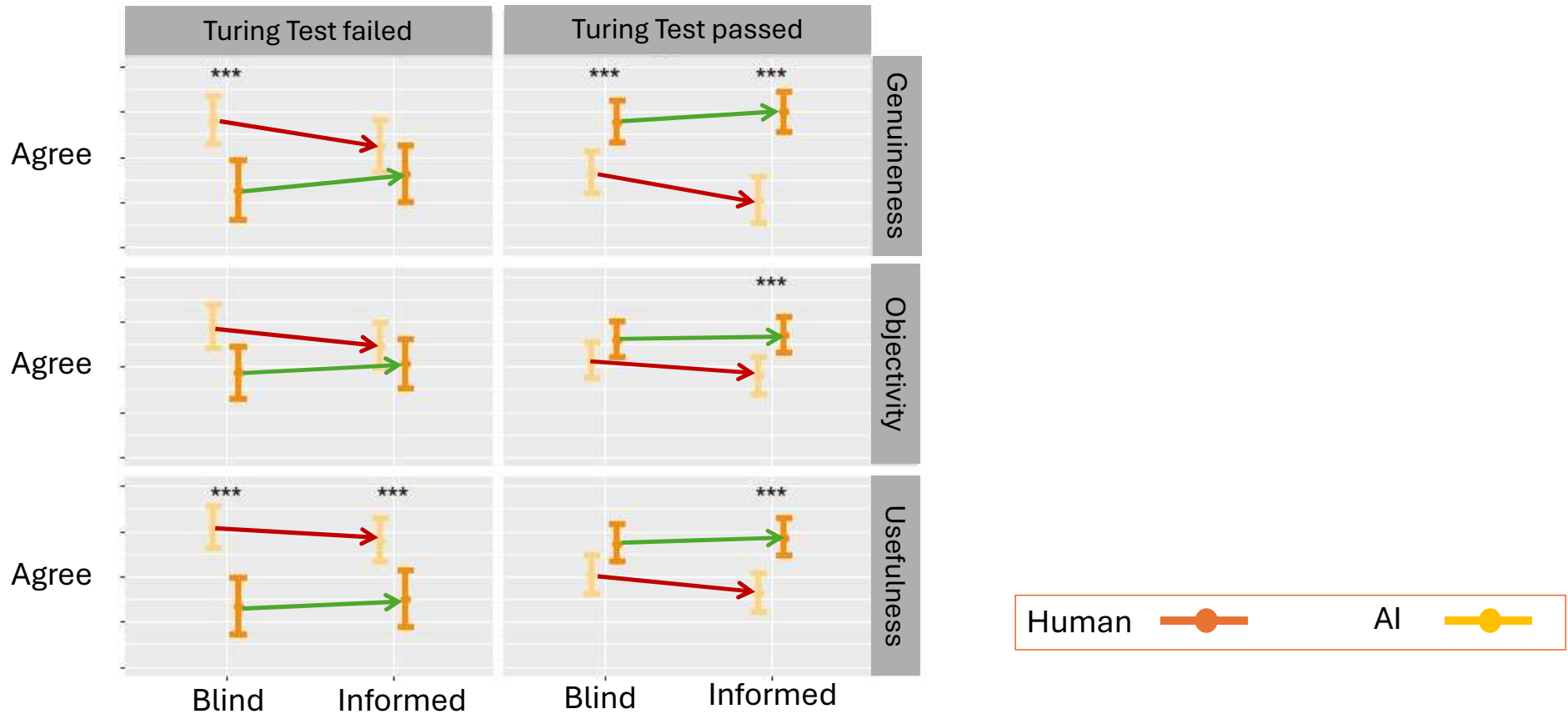
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*** Significant differences (Mixed Linear Model approach with follow-up analysis of means per Dimension)

RQ2 Results

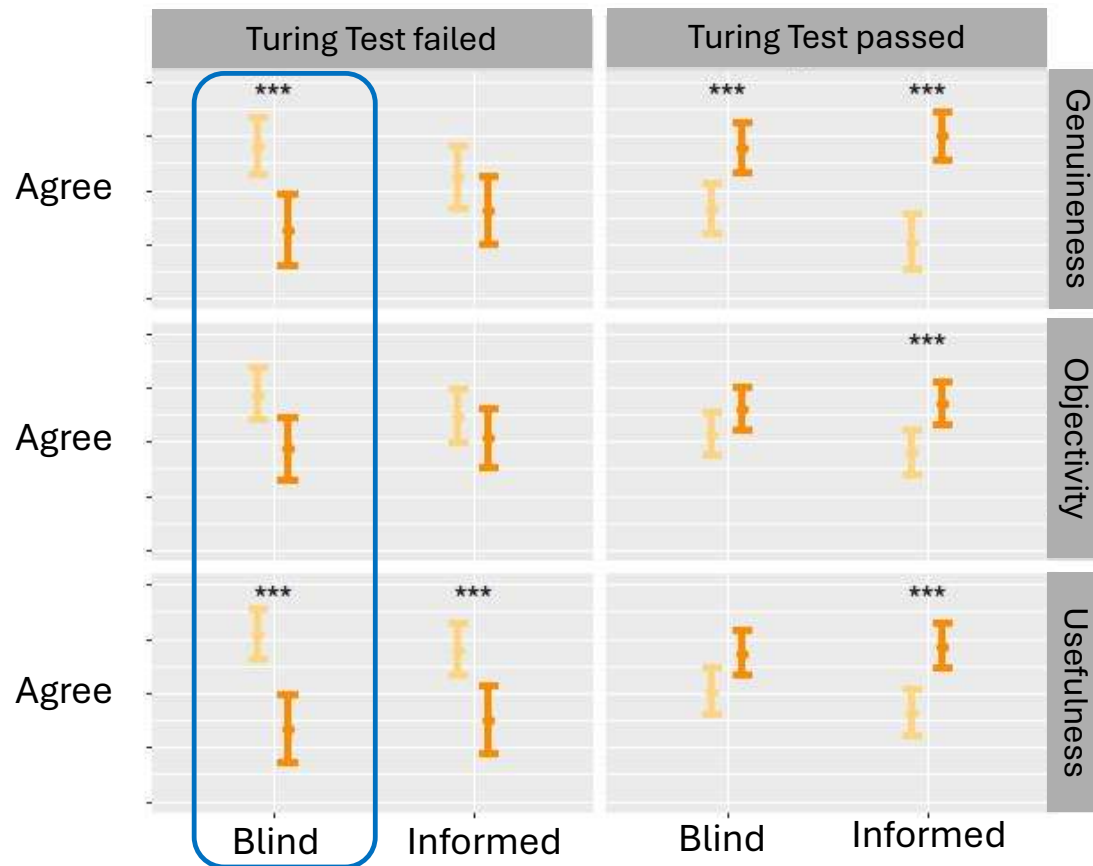
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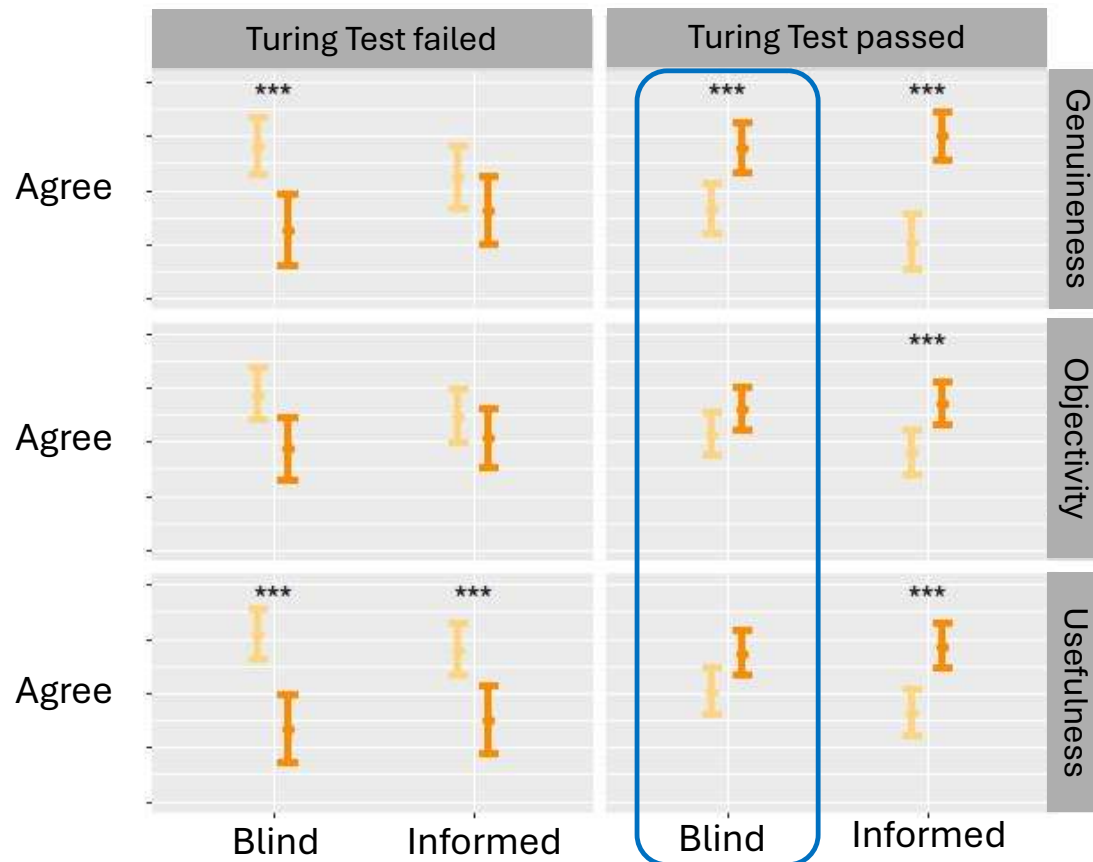
Students **failing** the Turing Test preferred **AI feedback**



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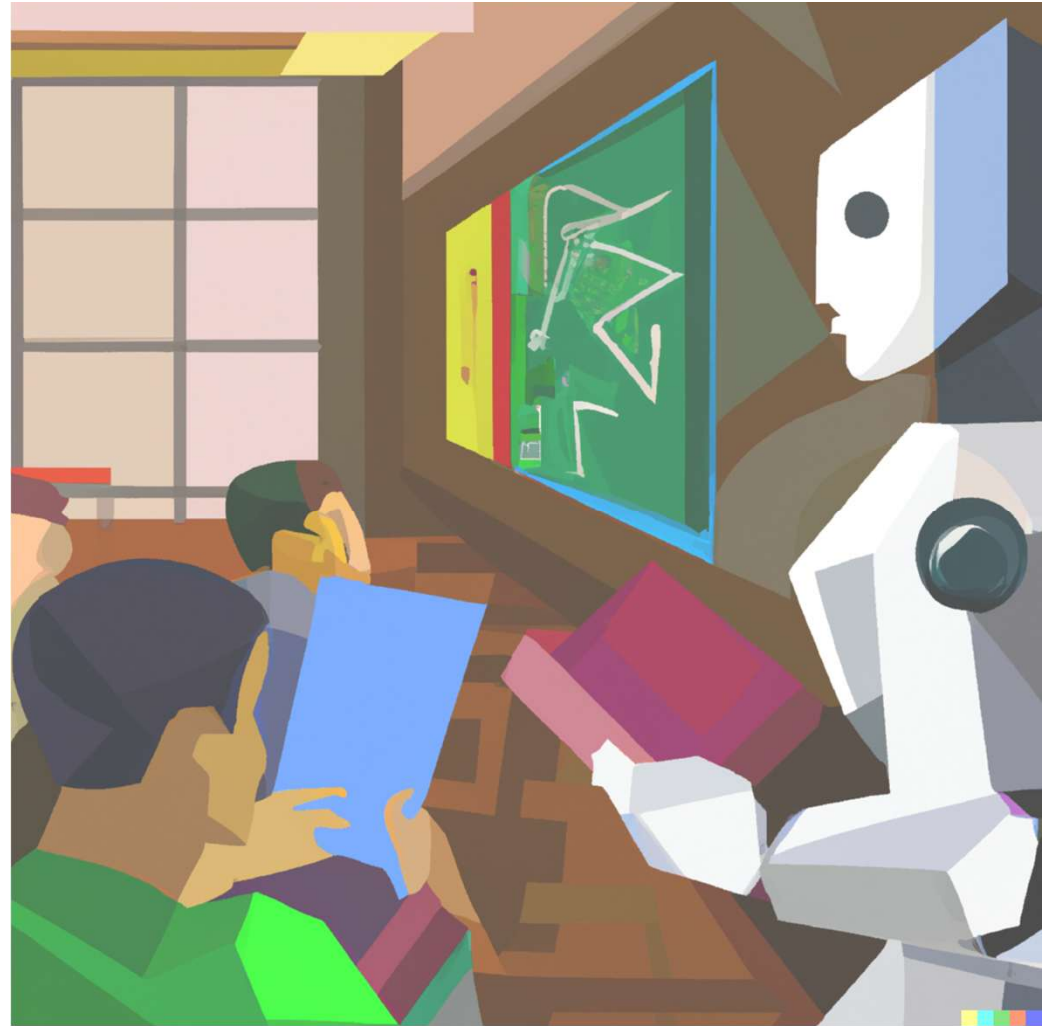
Students **passing** the Turing Test preferred **human feedback**

Human  AI 

*** Significant differences (Mixed Linear Model approach with follow-up analysis of means per Dimension)

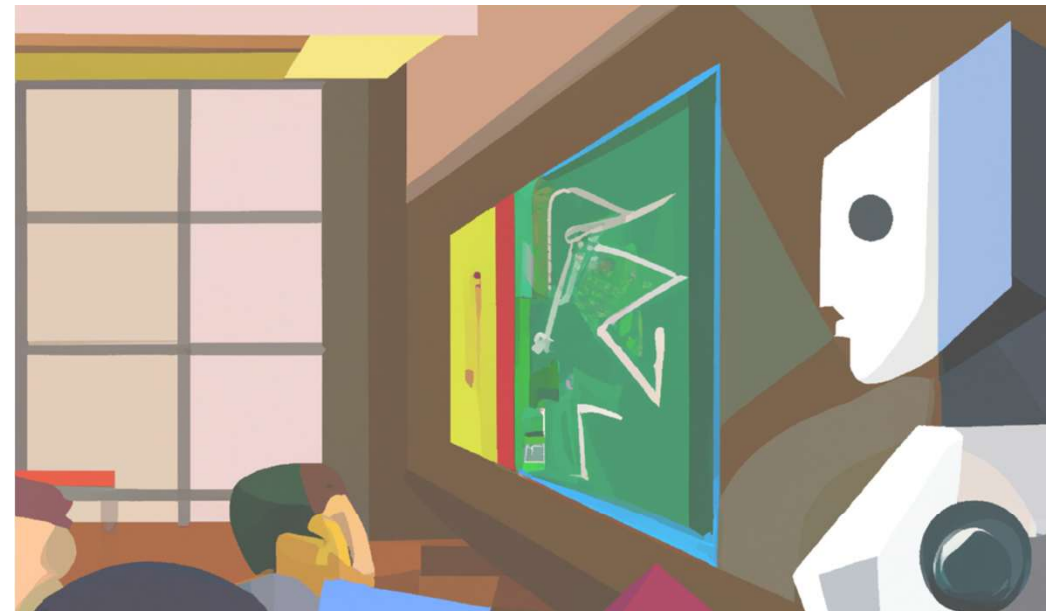
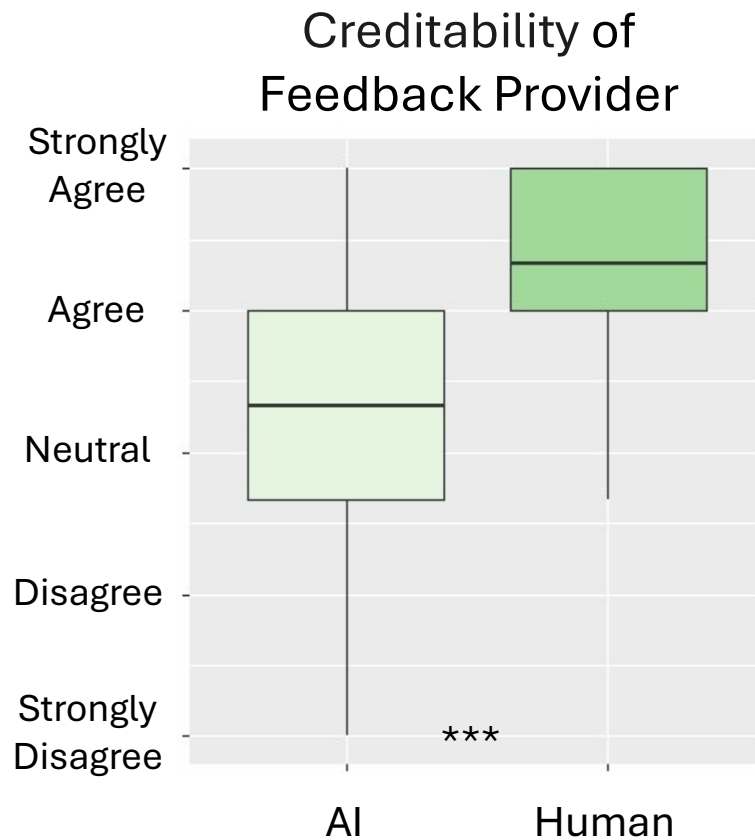
RQ3 Results

Do students hold a **negative bias** towards AI as a feedback provider?



RQ3 Results

Do students hold a **negative bias** towards AI as a feedback provider?



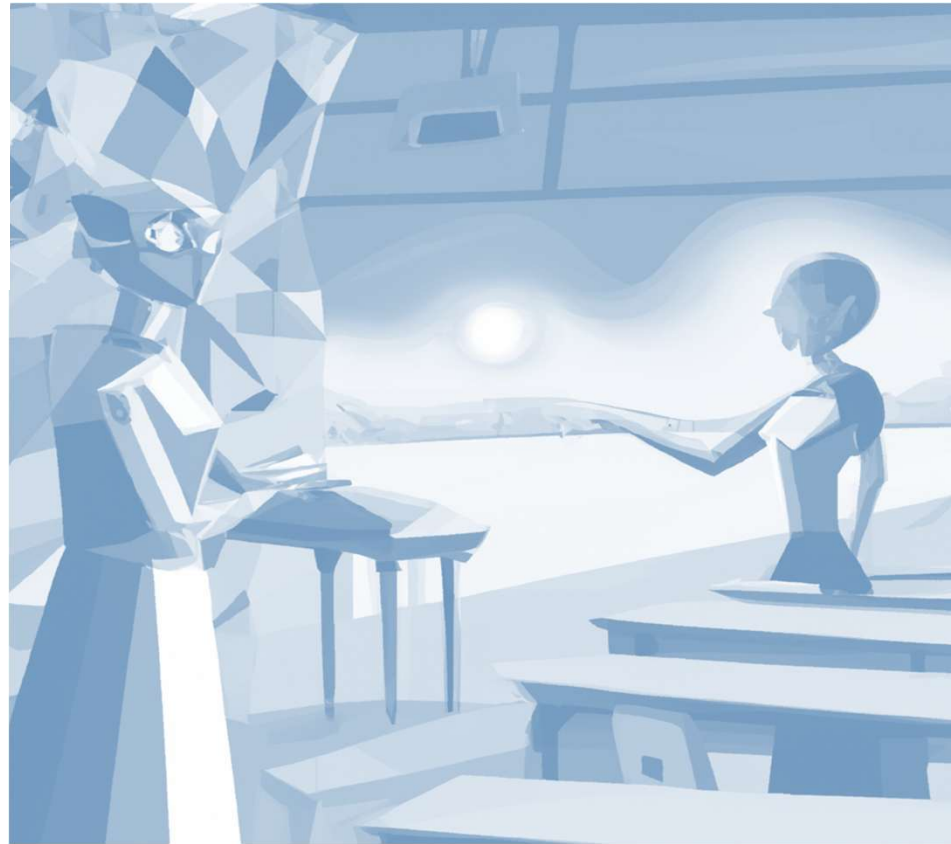
Students perceived humans as more creditable feedback providers



*** A substantial effect (Cohen's $d=0.88$, $p < .001$)

Conclusions

- Feedback provider identity disclosure influenced students' perceptions
 - Increase in scores for human feedback
 - Decrease in scores for AI feedback



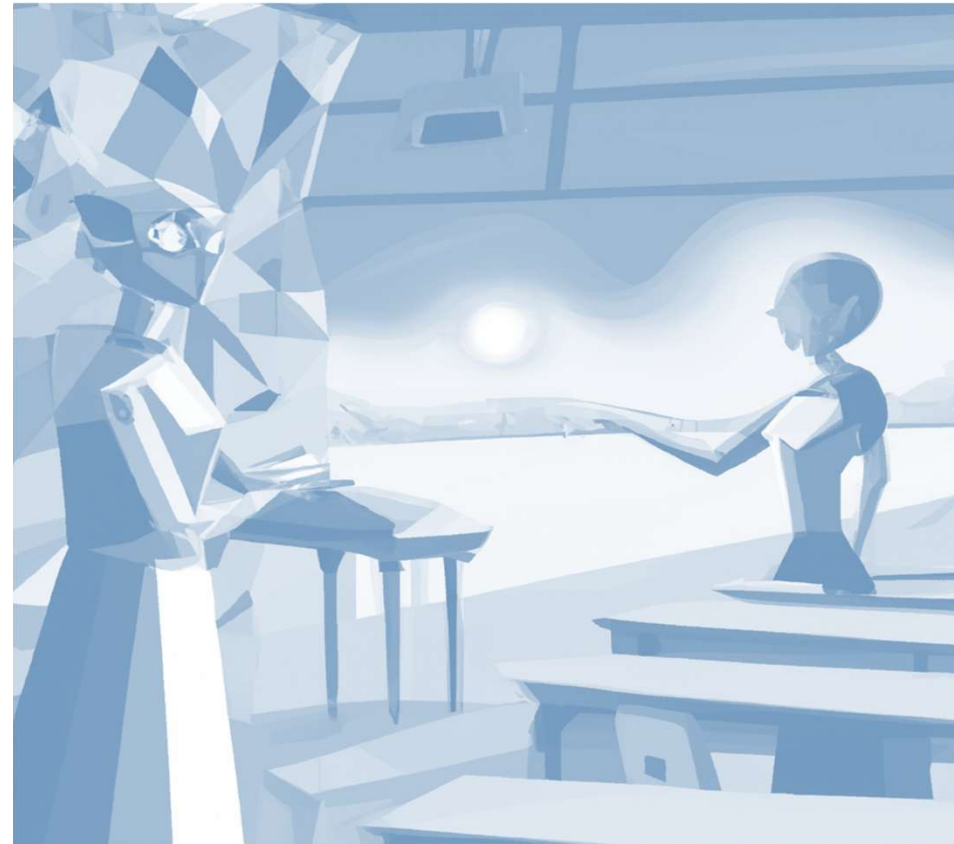
Conclusions

- Feedback provider identity disclosure influenced students' perceptions
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- Students' ability to guess feedback provider depended on the task
 - Students failing the Turing Test preferred AI feedback
 - Students passing the Turing Test preferred human feedback



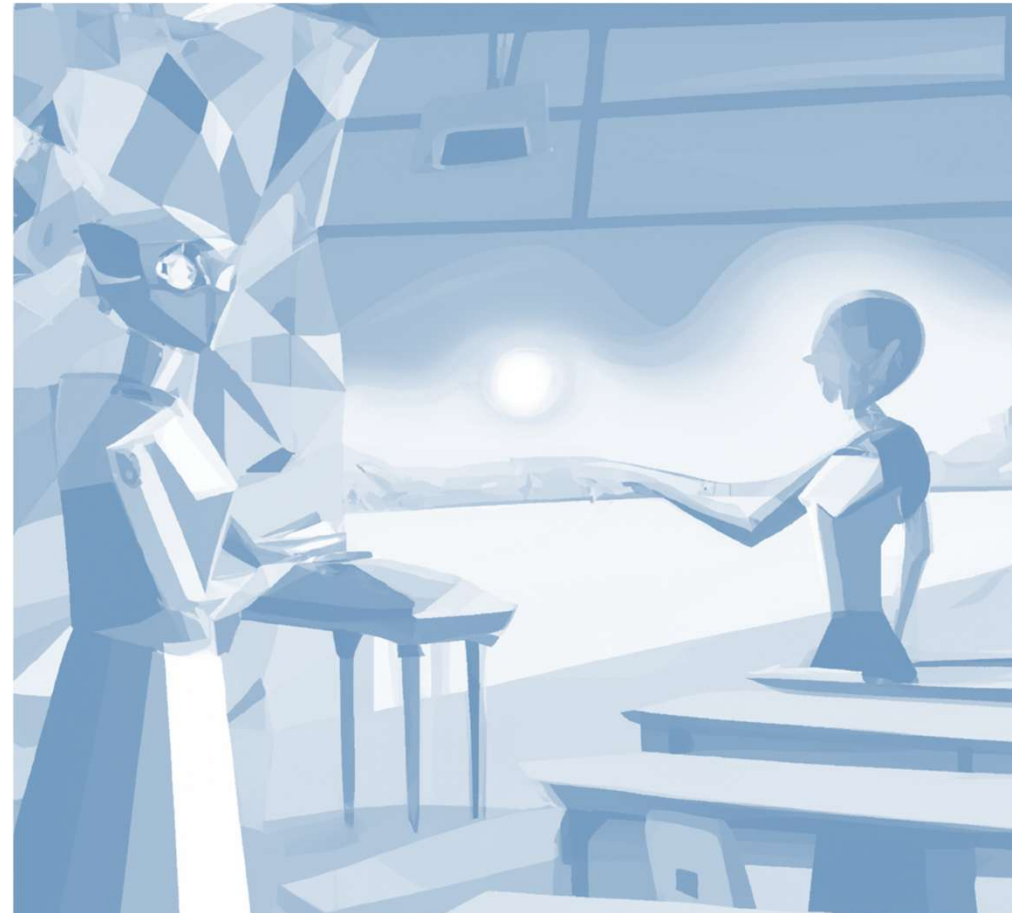
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- Students' ability to guess feedback provider depended on the task
 - Students failing the Turing Test preferred AI feedback
 - Students passing the Turing Test preferred human feedback
- Humans as feedback providers were perceived as more credible than AI



Limitations and Next Steps

The role of objective feedback quality



Nazaretsky, Gabbay, and Käser (2026). **Can students judge like experts? A large-scale study on the pedagogical quality of AI and human personalized formative feedback,** *Computers & Education: Artificial Intelligence.*

Limitations and Next Steps

The role of objective feedback quality

- The objective pedagogical quality and correctness of Human and AI feedback are similar
- The provider's identity and credibility shaped students' evaluations, rather than the objective feedback quality



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Our results highlighted **non-technological challenges** in integrating Generative AI in the educational context





**Thank you!
Any
Questions?**

Nazaretsky, et al. (2026). Who Gives Feedback Matters: Student Biases Towards Human and AI-Generated Formative Feedback
Journal of Computer Assisted Learning



Illustrations by DALL·E



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Nazaretsky, T., Gabbay, H., & Käser, T. (2026). Can students judge like experts? A large-scale study on the pedagogical quality of AI and human personalized formative feedback. *Computers and Education: Artificial Intelligence*, 10, 100533, pp. 1-16. <https://doi.org/10.1016/j.caeai.2025.100533>

Nazaretsky, T., Mejia-Domenzain, P., Swamy, V., Frej, J., and Käser, T. (2026). Who Gives Feedback Matters: Student Biases Towards Human and AI-Generated Formative Feedback. *Journal of Computer Assisted Learning* 42(1), 70153, pp. 1-22. <https://doi.org/10.1111/jcal.70153>

Nazaretsky, T., Mejia-Domenzain, P., Swamy, V., Frej, J., & Käser, T. (2025). The Critical Role of Trust in Adopting AI-Powered Educational Technology for Learning: An instrument for measuring student perceptions. *Computers and Education: Artificial Intelligence*, 8, 100368, pp 1-16. <https://doi.org/10.1016/j.caeai.2025.100368>

Nazaretsky, T., Cukurova, M., & Alexandron, G. (2022). An Instrument for Measuring Teachers' Trust in AI-Based Educational Technology. In *Proceedings of the 12th International Conference on Learning Analytics and Knowledge (LAK 2022)*, pp. 56-66. Association for Computing Machinery. <https://doi.org/10.1145/3506860.3506866>