WAGENINGEN
UNIVERSITY & RESEARCH

WUR at the Age of GenAI

Mapping Teachers' GenAI Literacy, Use, and Perception

2024-2025

AI-Generated





4TU. CENTRE FOR ENGINEERING EDUCATION

WAGENINGEN UNIVERSITY & RESEARCH

RESEARCH TEAM

Omid Noroozi

Nafiseh Taghizadeh Kerman

Harm Biemans

Perry den Brok

Kazem Banihashem

EDUCATION AND LEARNING SCIENCES

CHAIR GROUP

Content

- Background
- Objectives
- Methods
- Results
- Summary

Background

- AI tools are becoming an integral part of everyday life
- In education, the use of AI tools, particularly Generative AI (GenAI), is rapidly expanding as:
  - AI can adapt to individual student needs, providing tailored learning experiences
  - Automates administrative tasks, grading, and feedback, saving educators time
- It is crucial to understand how teachers perceive and use GenAI tools, as there are some concerns about AI in education, such as:
  - AI models may have biases or provide inaccurate or misleading information
  - Risk of plagiarism and reliance on AI-generated content instead of critical thinking
- This is essential for shaping university policies related to GenAI in education

Objectives

The main objectives of this project are:

- Delving into teachers' AI literacy knowledge
- Exploring teachers' experiences with GenAI tools
- Understanding teachers' perceptions of using GenAI tools

GenAI and AI literacy

GenAI:

- a subset of AI, focuses on generating new, original content by learning patterns from existing data via using deep learning techniques, systems like GPT models (Brown et al., 2020)

AI literacy:

- the ability to comprehend the fundamental principles and concepts of AI-driven technologies
- includes knowing and understanding AI, using and applying AI, creating and evaluating AI, and addressing ethical considerations (Ng et al., 2021)

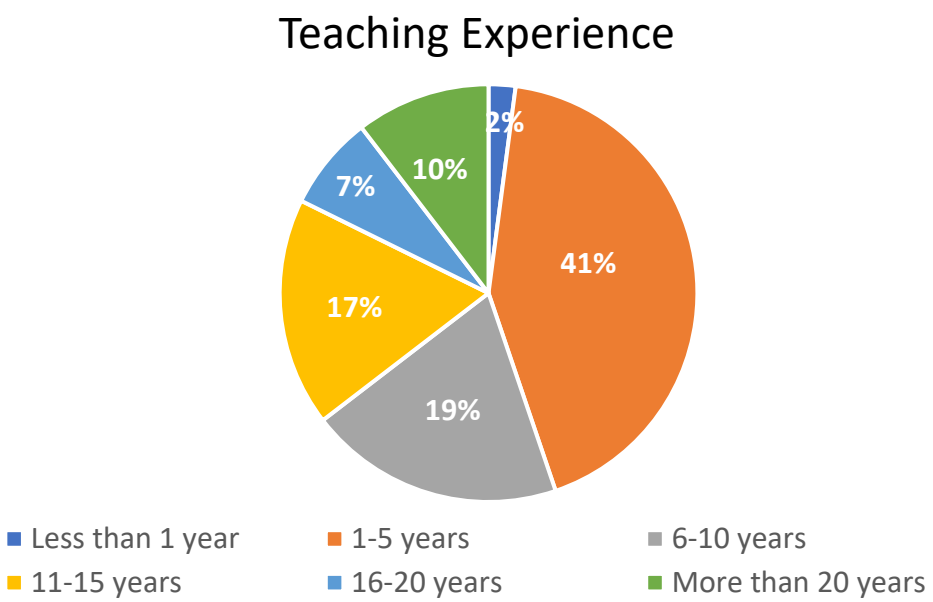
Methods

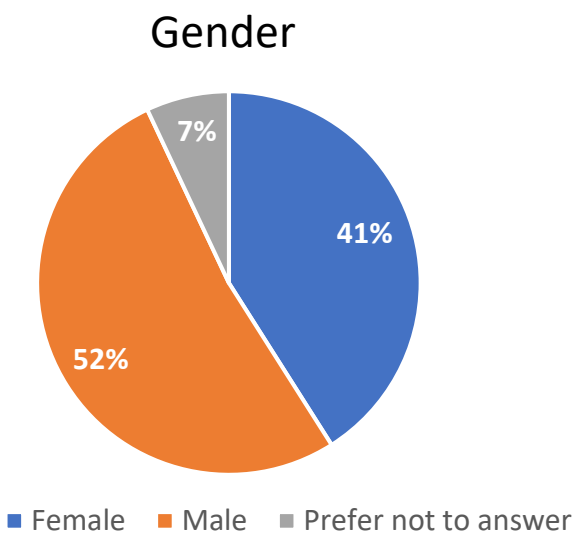
- Method: Survey-based Study
- Targeted Group: WUR teachers
- N of Participants: 302
  - **Gender**:
    Female (123), Male (157), Prefer not to say (21)
  - **Field of Study:**
    Plant Sciences (52), Social Sciences (66), Animal Sciences (27), Environmental Sciences (73), Agrotechnology & Food Sciences (54), Other (30)
  - **Nationality:**
    Dutch (203), Non-Dutch (92)
  - **Years of Experience:**
    <1 year (6), 1–5 years (124), 6–10 years (57), 11–15 years (51), 16–20 years (21), >20 years (30)
- Period of Attendance: Academic Year 2024
- Data Analysis: SPSS Software
- Analysis methods: Descriptive Analysis and Multivariate Analysis of Variance (MANOVA)

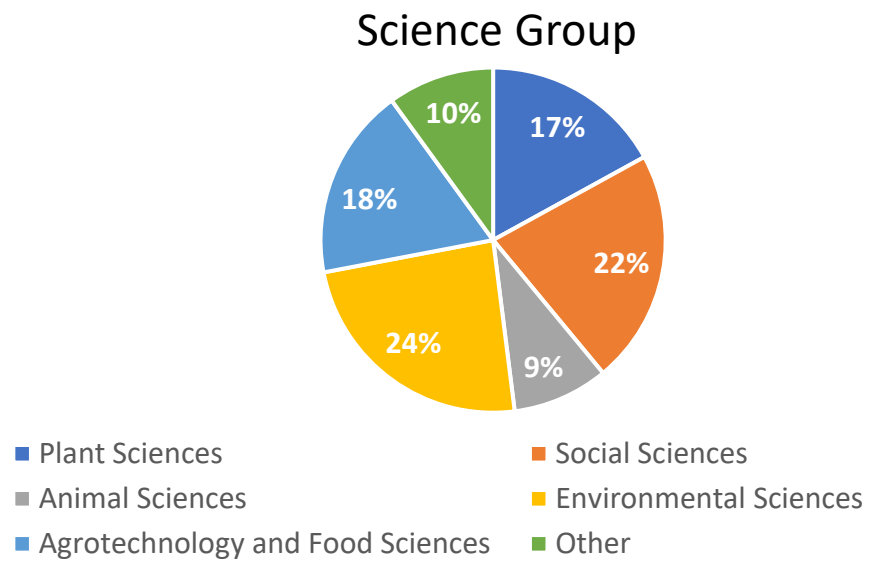
Results

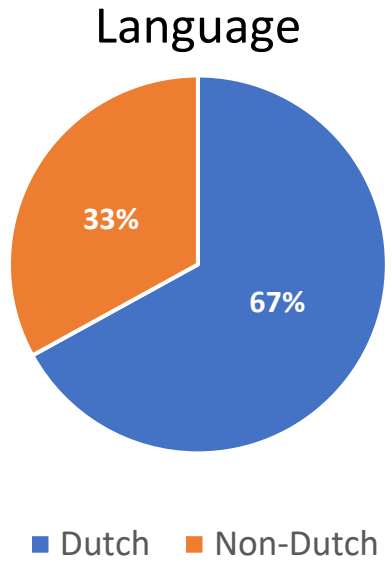
- Demographic Information
- AI literacy: Overall knowledge
- AI literary: Female vs Male
- AI literacy: Science Groups
- Experiences with GenAI
- GenAI for teaching and learning
- Transparency in using GenAI
- Institutional support for using GenAI
- Perceptions of using GenAI

Demographic Information

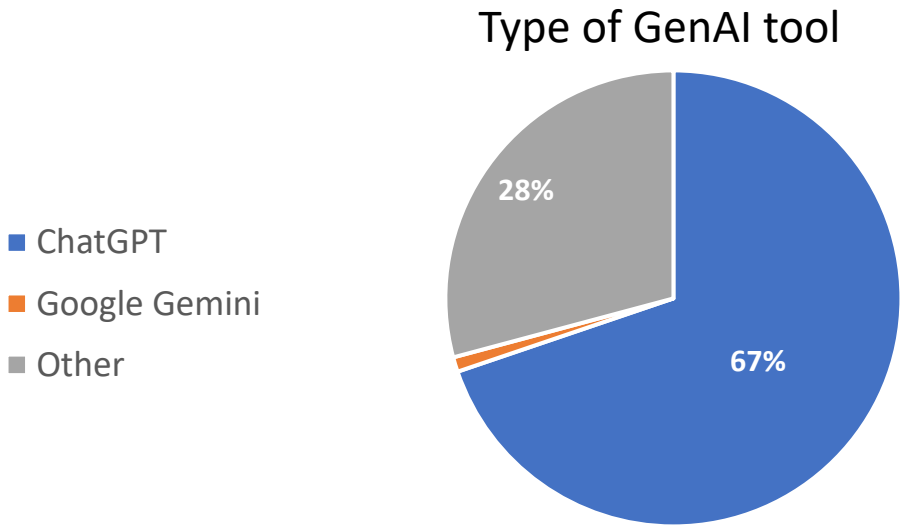


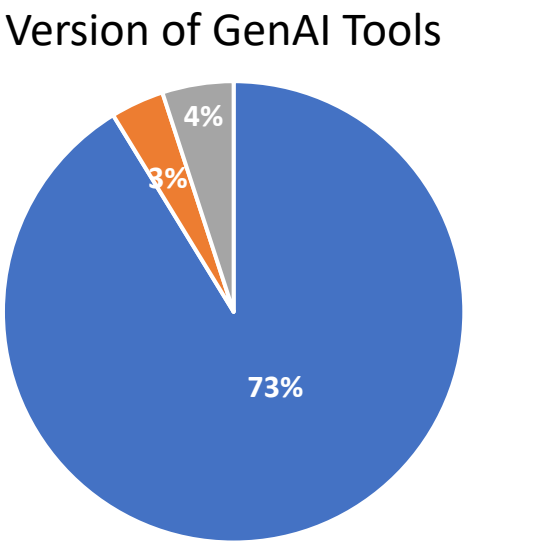


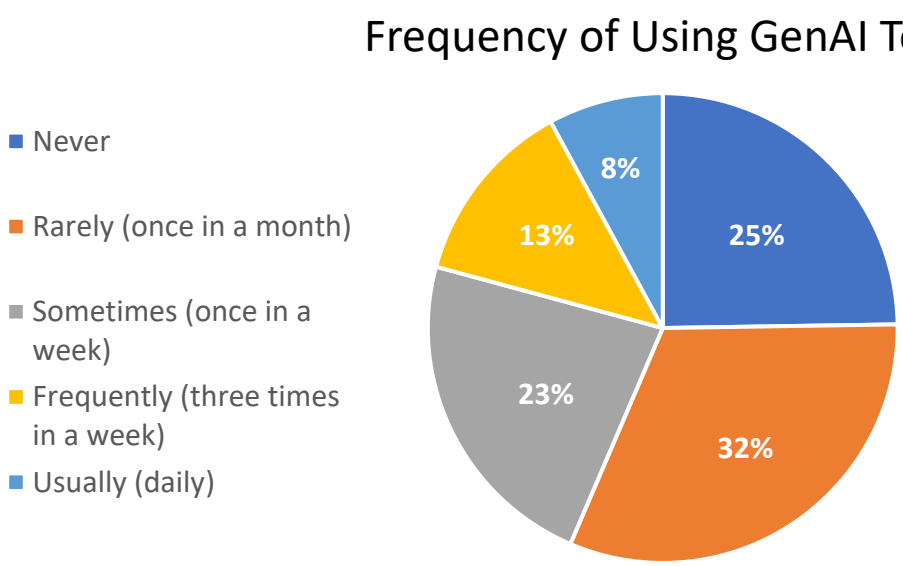




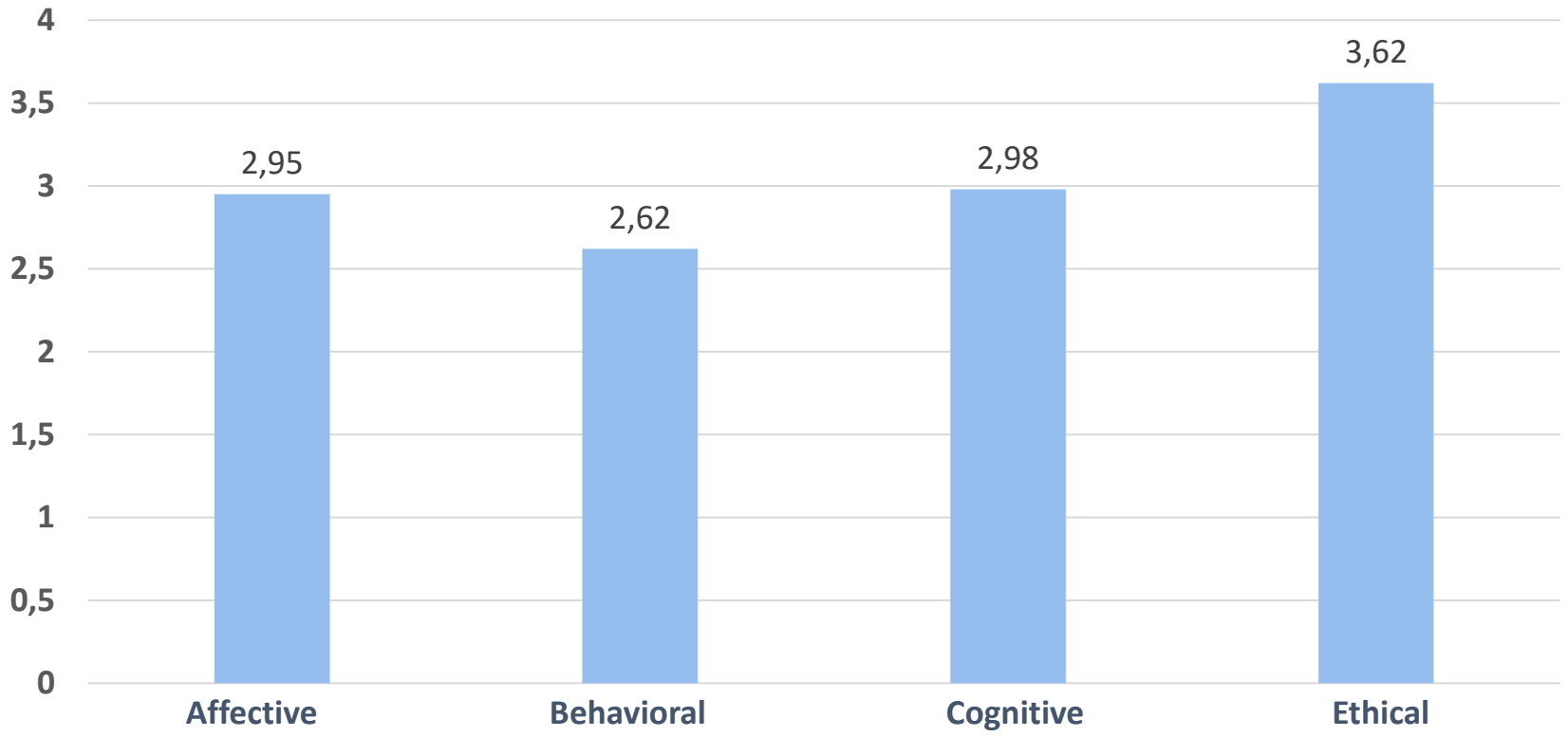
Experiences with GenAI







AI Literacy

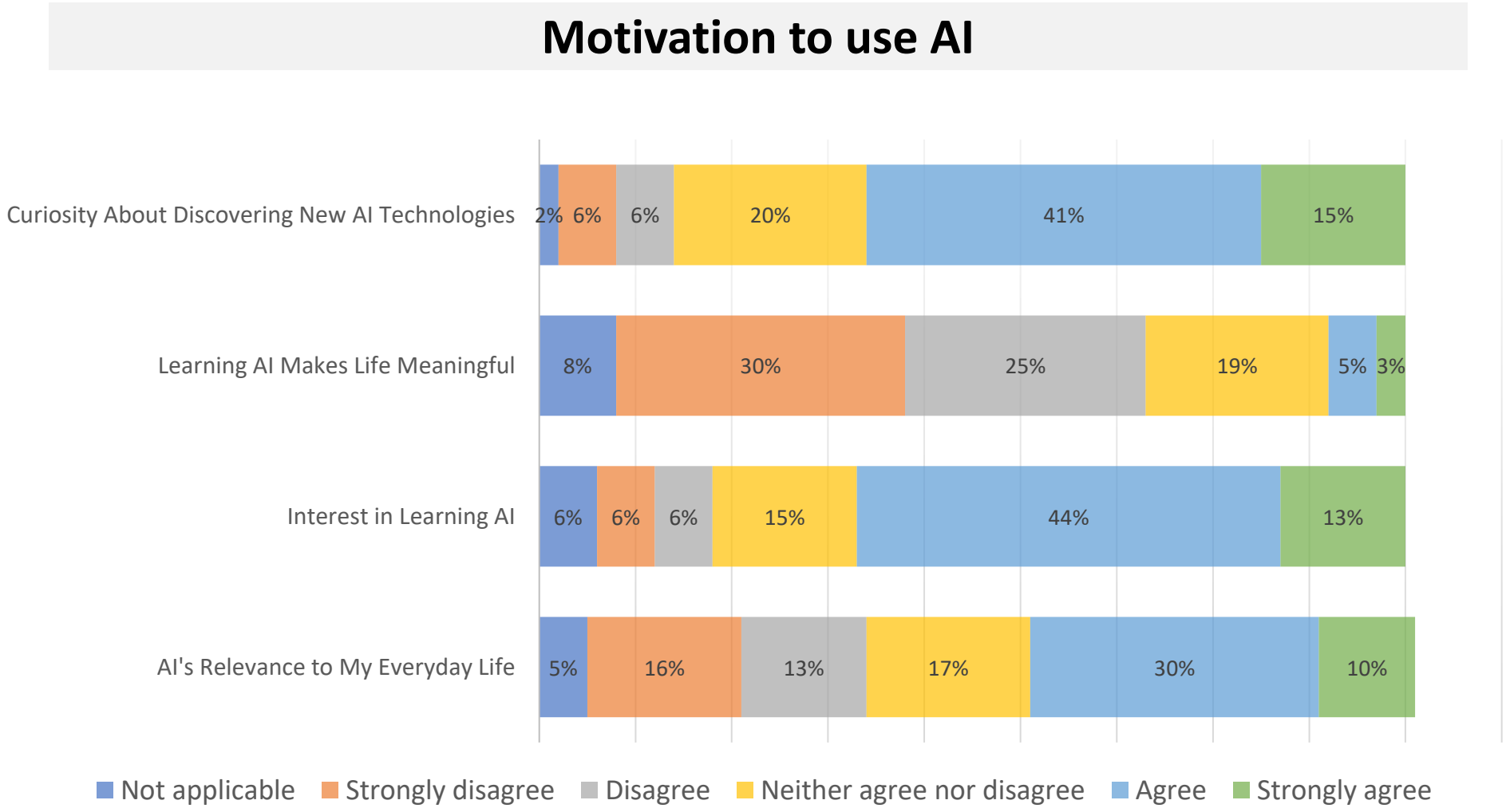


Teachers scored themselves high in the ethical aspect of AI literacy, suggesting a strong awareness of the ethical considerations associated with AI use.

WAGENINGEN
UNIVERSITY & RESEARCH

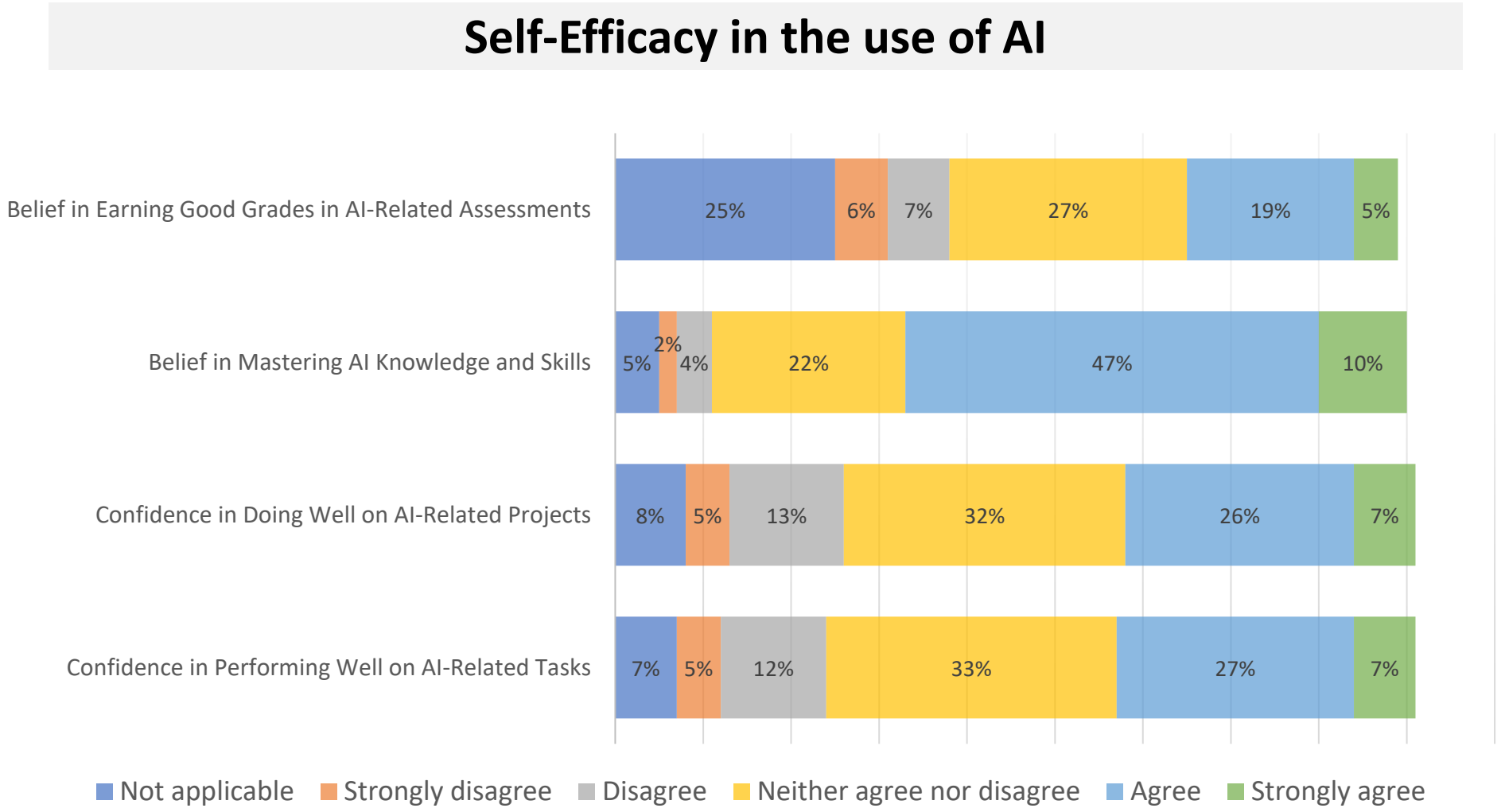
Note: Answering scale: 1 (Strongly Disagree) to 5 (Strongly Agree)

Affective Aspect of AI Literacy



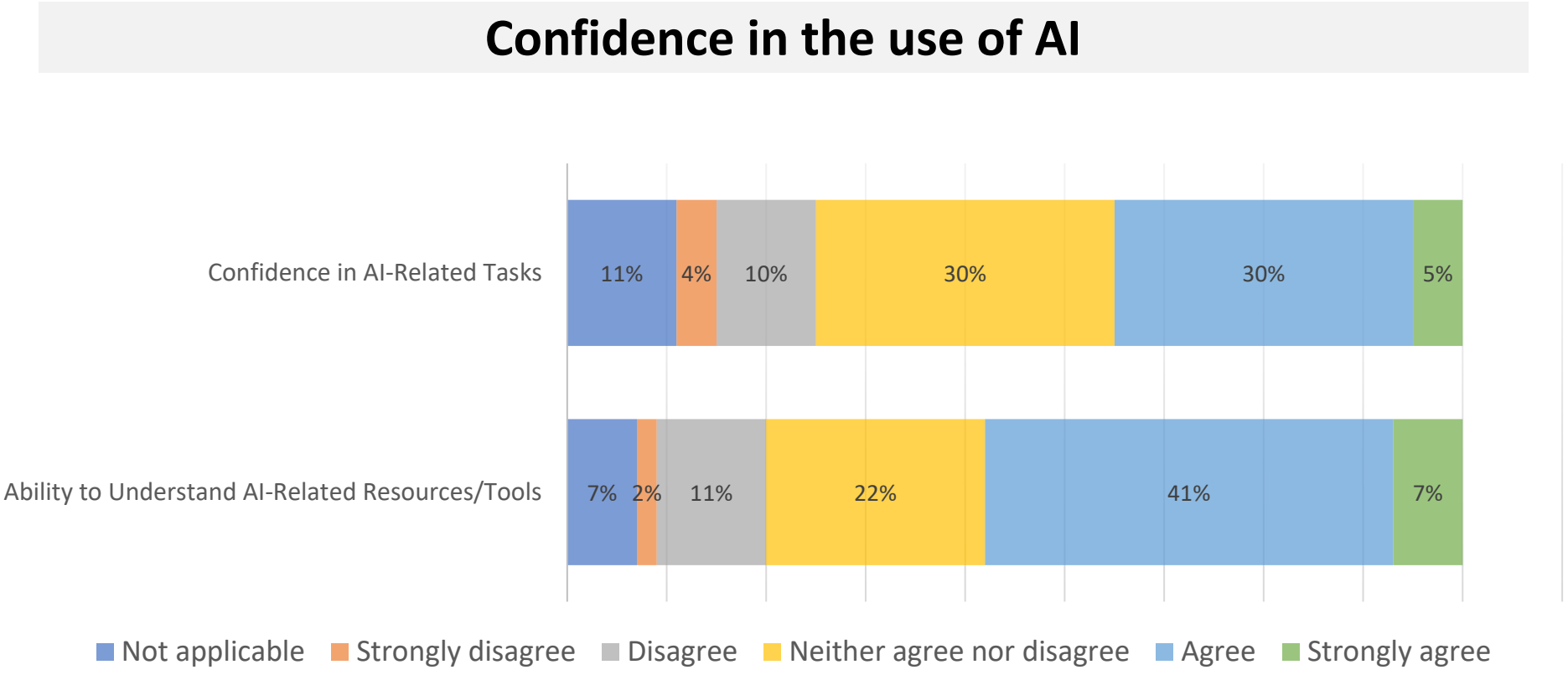
WAGENINGEN
UNIVERSITY & RESEARCH

Affective Aspect of AI Literacy



WAGENINGEN
UNIVERSITY & RESEARCH

Affective Aspect of AI Literacy

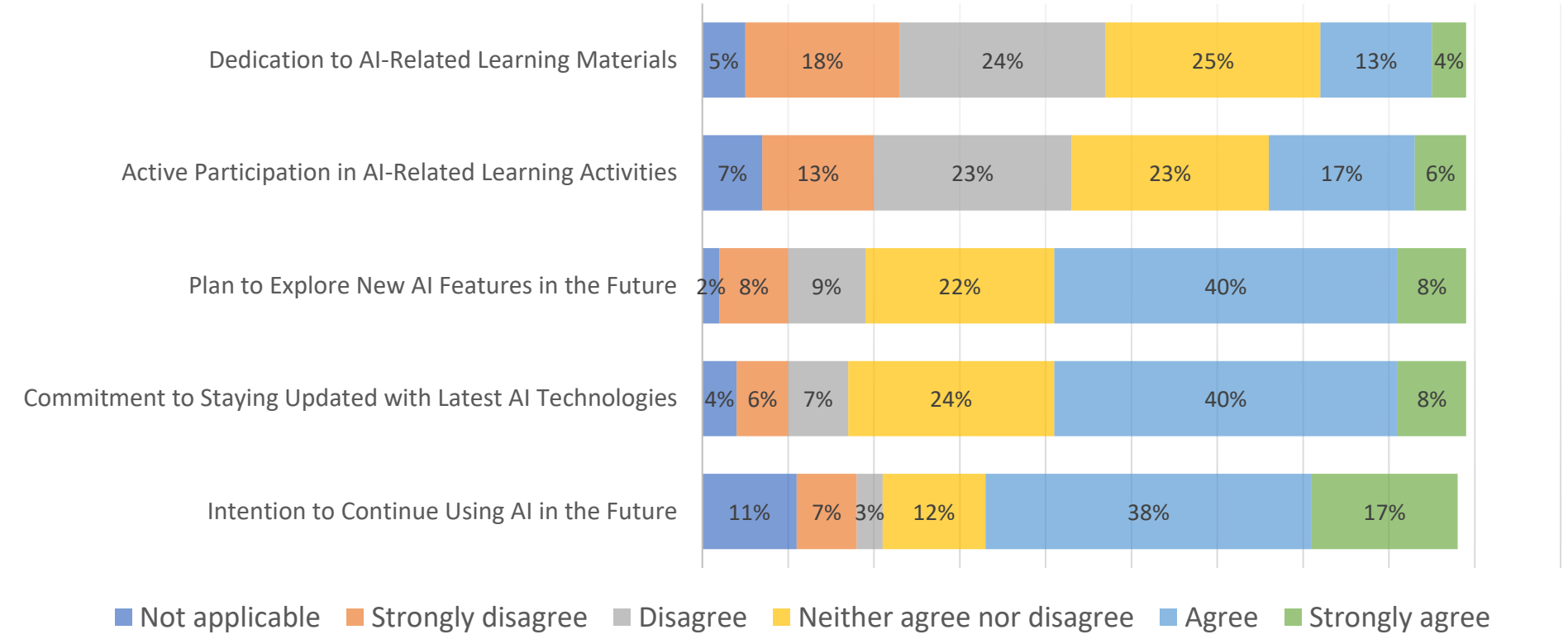


Main Remarks #Affective

- Teachers perceived themselves as interested in and curious about learning and integrating AI into their practice.
- Teachers perceived themselves as confident in their understanding and knowledge of AI.
- Teachers perceived themselves as highly capable of performing AI-related tasks.
- Teachers perceived AI as not highly relevant or meaningful to their everyday lives.

Behavioral Aspect of AI Literacy

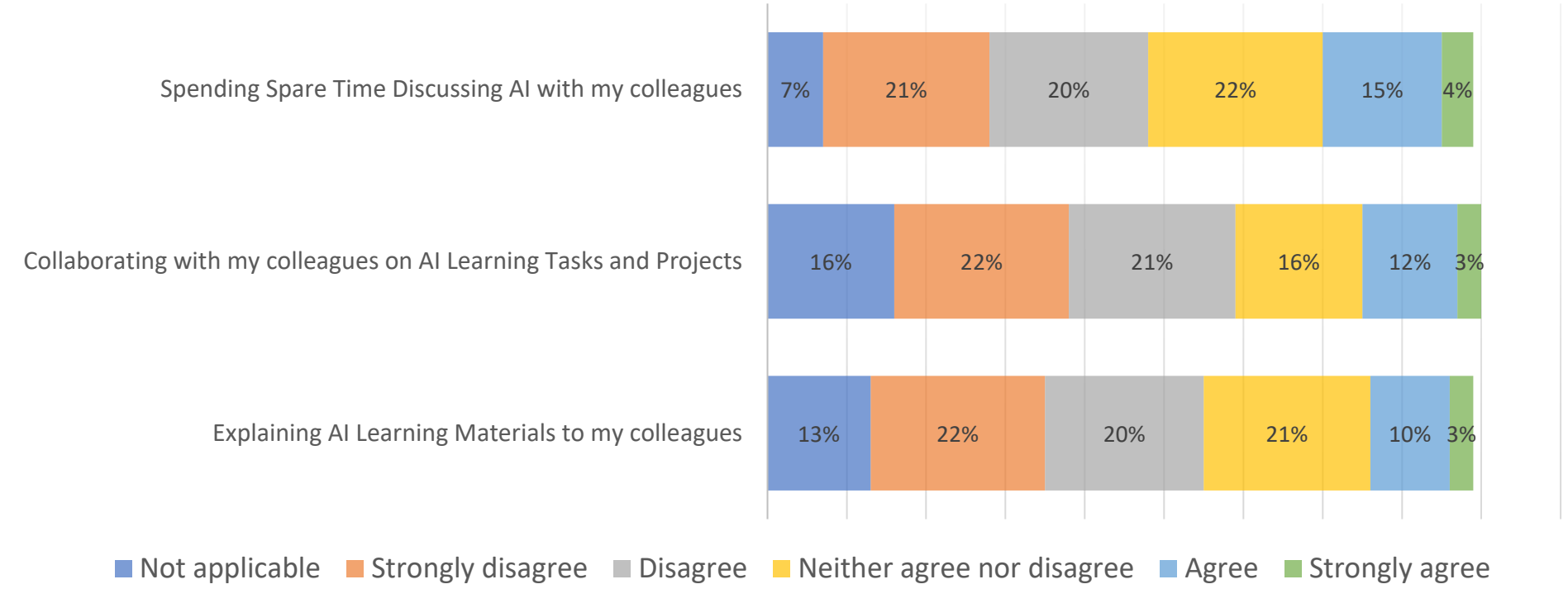
Commitment to use



WAGENINGEN
UNIVERSITY & RESEARCH

Behavioral Aspect of AI Literacy

Collaboration to use AI



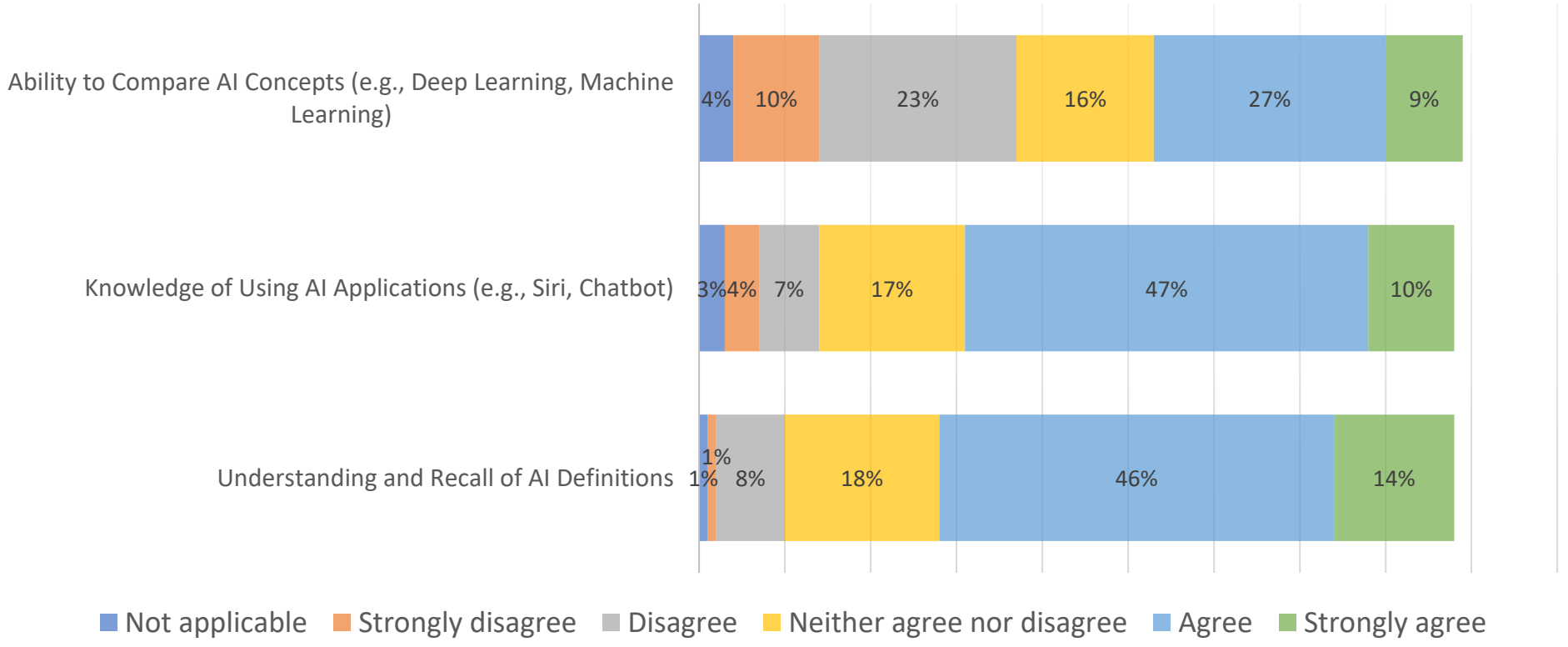
WAGENINGEN
UNIVERSITY & RESEARCH

Main Remarks #Behavioral

- Most teachers perceived a strong interest in exploring new AI features.
- Most teachers perceived a high intention to integrate AI into their future practices.
- Most teachers perceived a commitment to staying up-to-date with AI developments.
- Most teachers perceived a lack of encouragement to collaborate with colleagues on AI-related tasks.

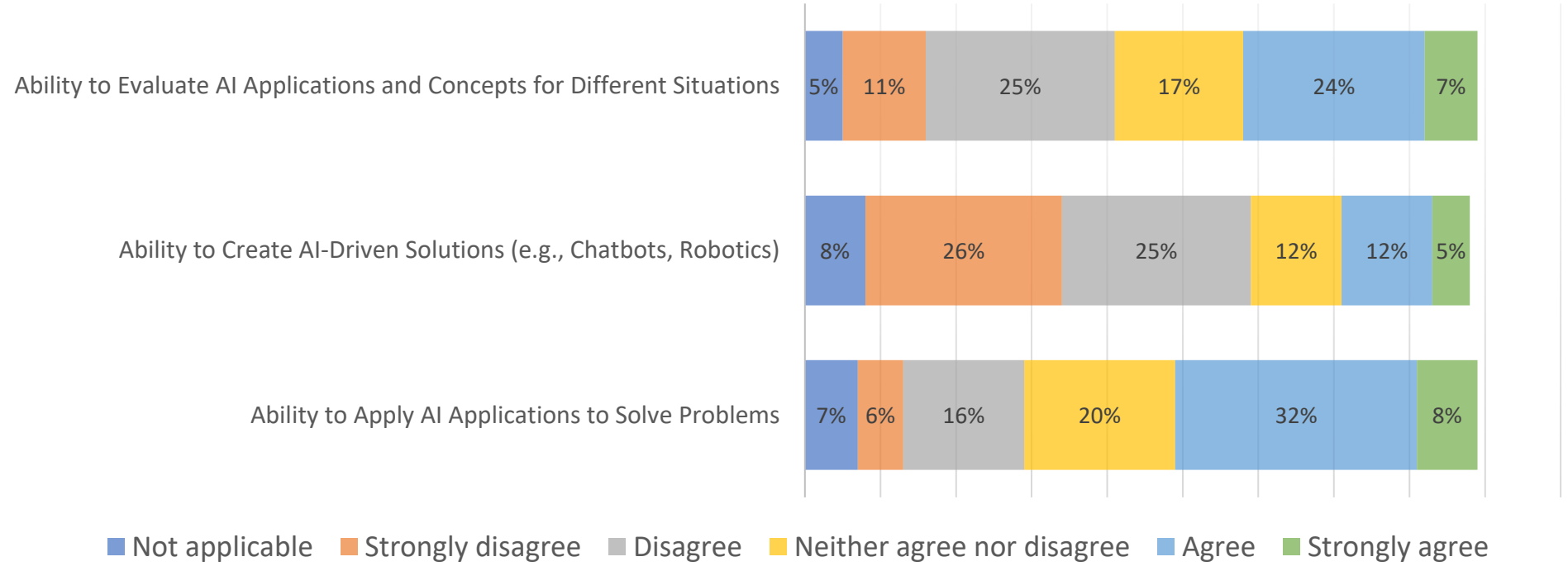
Cognitive Aspect of AI Literacy

Knowing and Understanding AI



Cognitive Aspect of AI Literacy

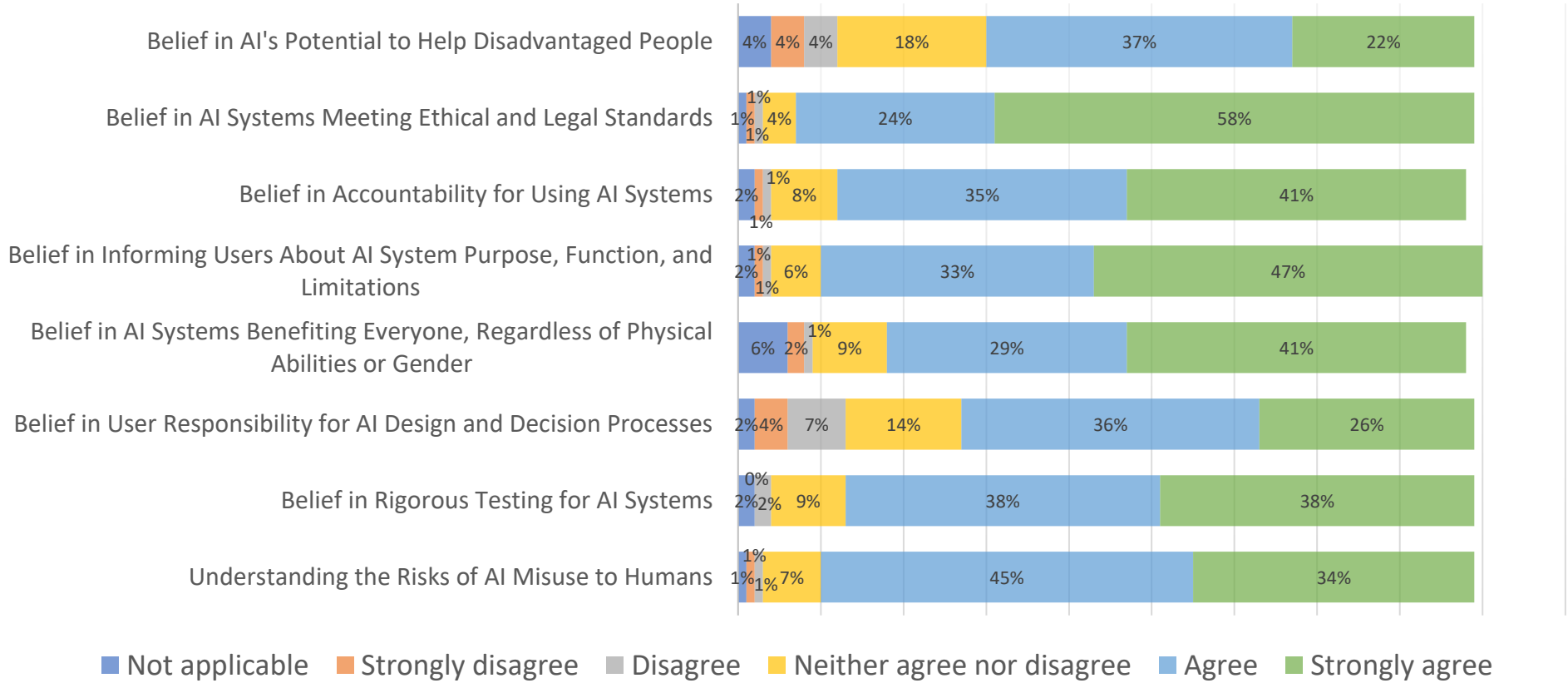
Apply AI



Main Remarks #Cognitive

- Most teachers perceived themselves as confident in knowing and understanding AI.
- Teachers perceived themselves as somewhat confident in their knowledge of applying AI.

Ethical Aspect of AI Literacy

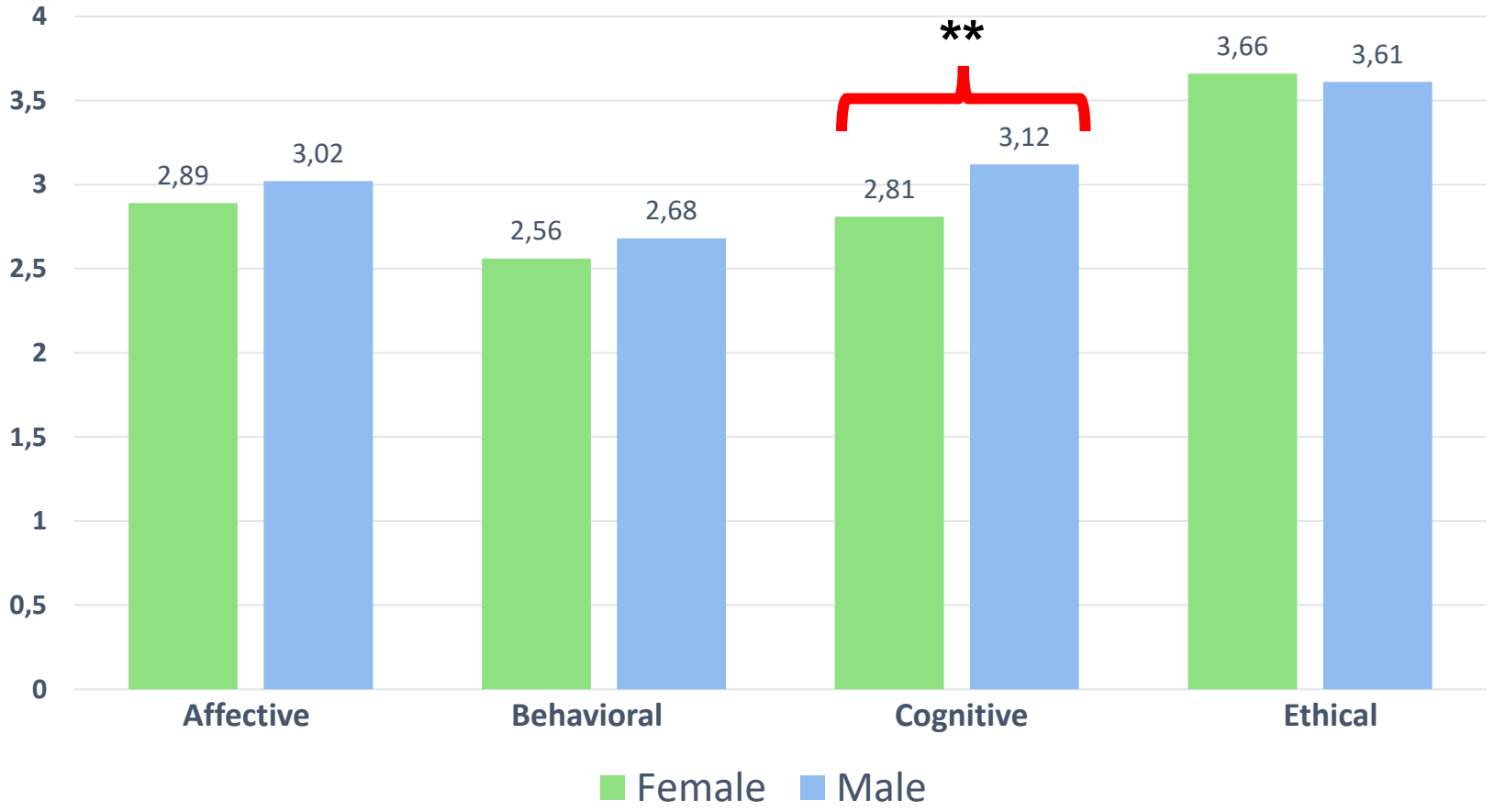


WAGENINGEN
UNIVERSITY & RESEARCH

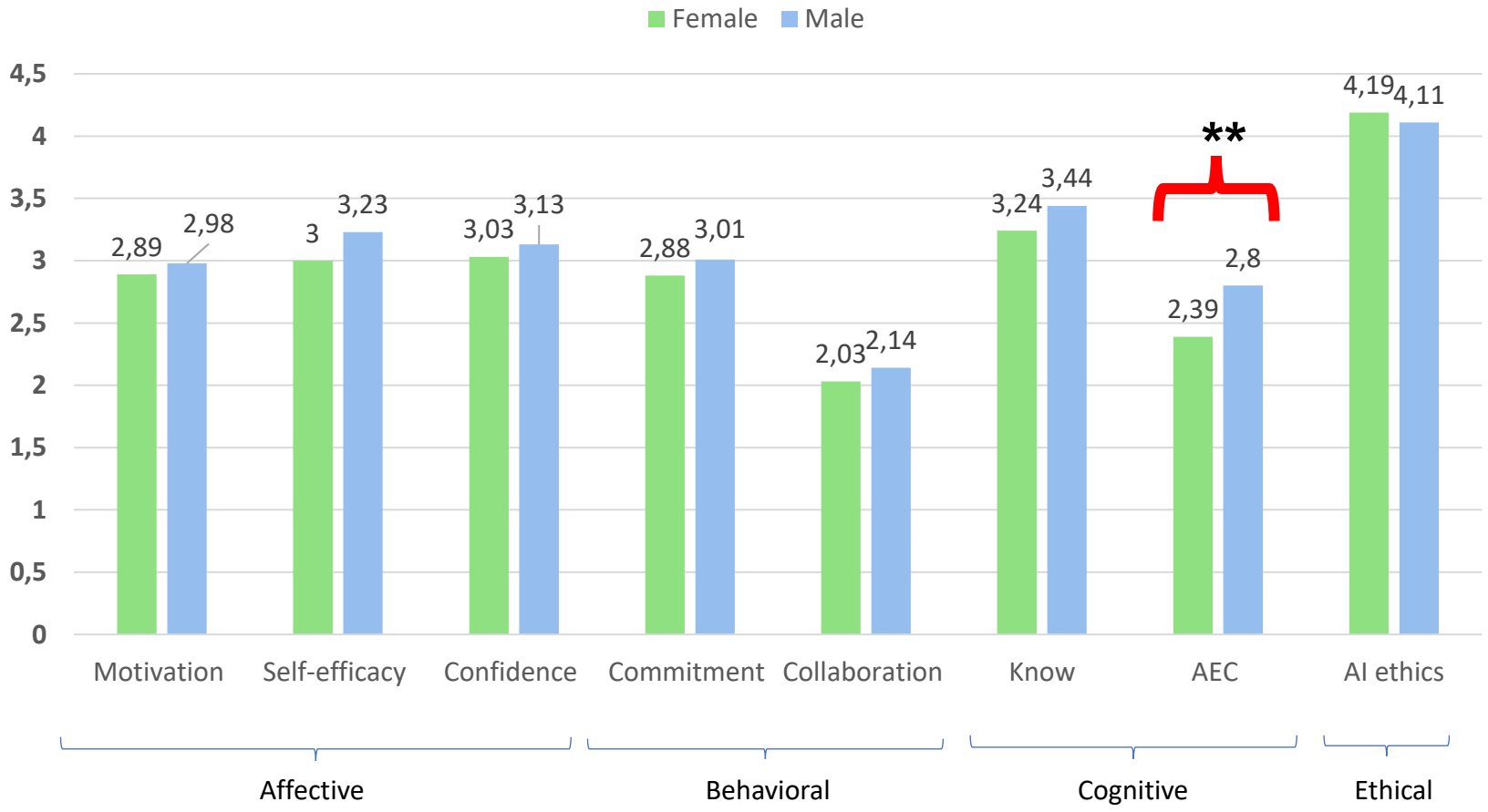
Main Remarks #Ethical

- Teachers perceived themselves as highly aware of AI risks and biases.
- Teachers perceived themselves as having a strong self-awareness of AI accountability.
- Teachers perceived themselves as highly aware of AI limitations.

AI Literacy: Male vs Female



AI Literacy: Male vs Female #continued



Main Remarks #Gender

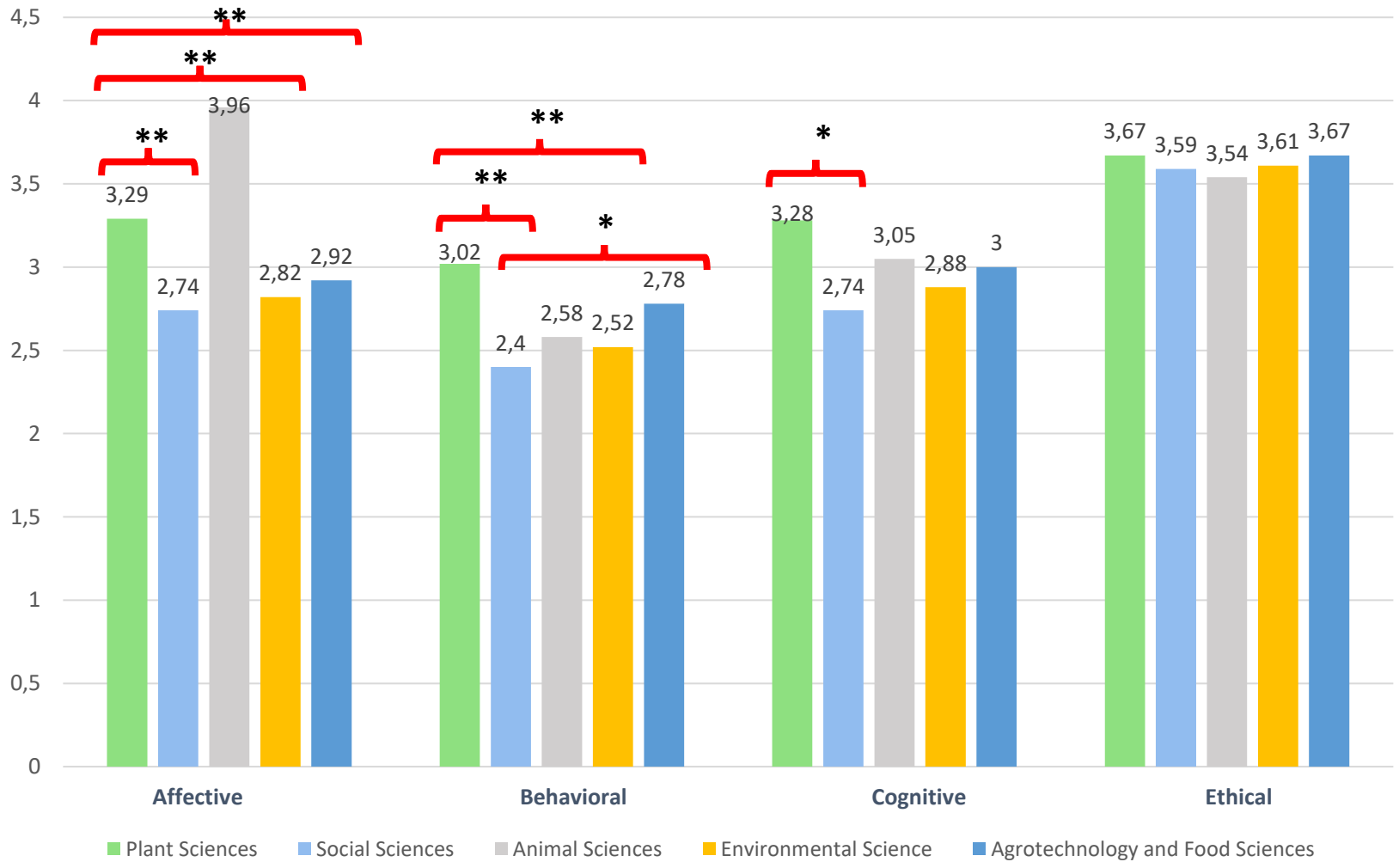
- Male teachers scored themselves significantly higher than female teachers regarding the cognitive aspect of AI literacy, more specifically in terms of Applying AI

While there is no significant difference:

- Male teachers scored themselves slightly higher compared to females regarding the affective aspect of AI literacy
- Both male and female teachers perceived themselves lower in the behavioral aspect of AI literacy
- Both male and female teachers perceived themselves equally high regarding the ethical aspect of AI literacy

Question: Do we need to take differences found into account for support and/or policy?

AI Literacy: Among Science Groups



WAGENINGEN
UNIVERSITY & RESEARCH

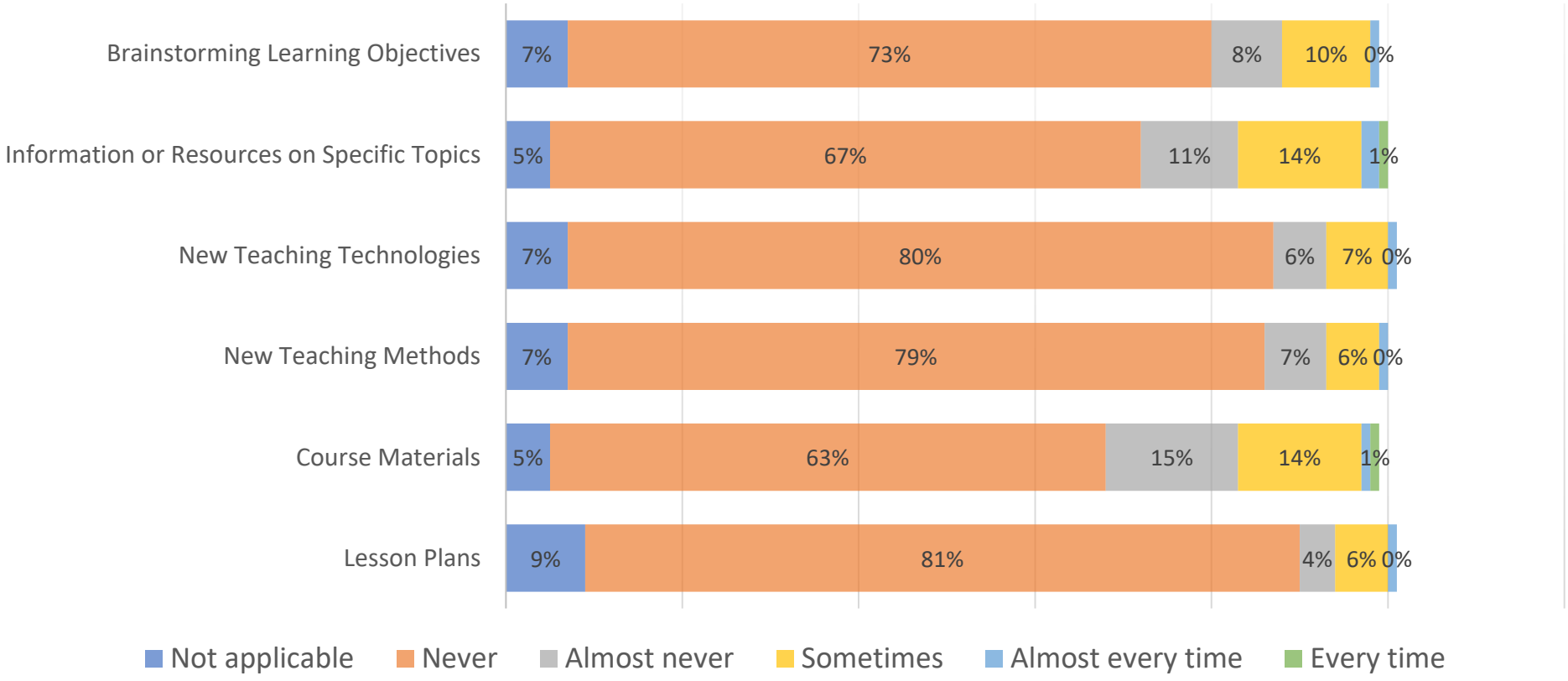
Main Remarks #Science Groups

- The Animal Sciences group teachers scored themselves higher than teachers from other groups regarding the affective aspect of AI literacy
- The Plant Sciences group teachers scored themselves higher than teachers of other groups regarding the behavioral and cognitive aspects of AI literacy
- All groups scored themselves almost similarly regarding the ethical aspect of AI literacy

Question - All groups scored rather low in the behavioral aspect of AI literacy, may call for more support to improve this aspect?

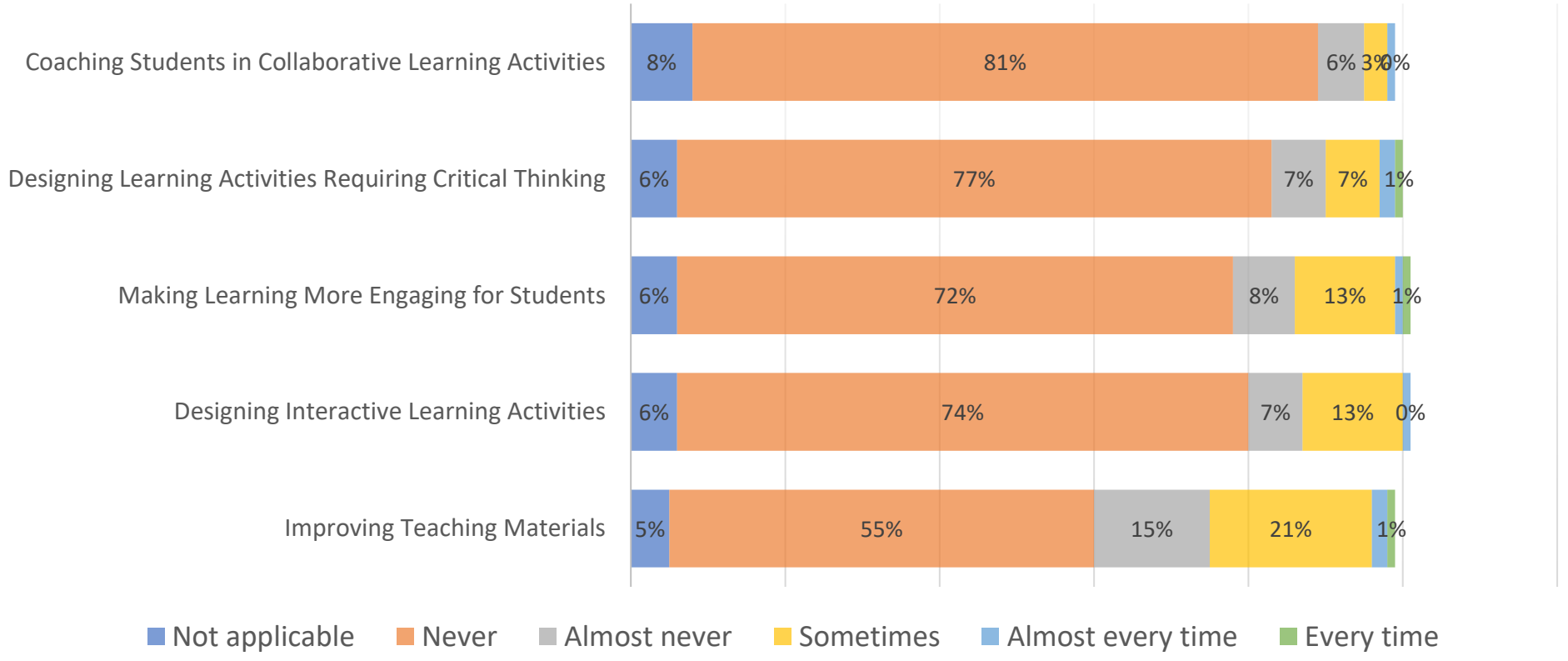
GenAI for Teaching

For Teaching, Lesson Plans, and Learning Materials

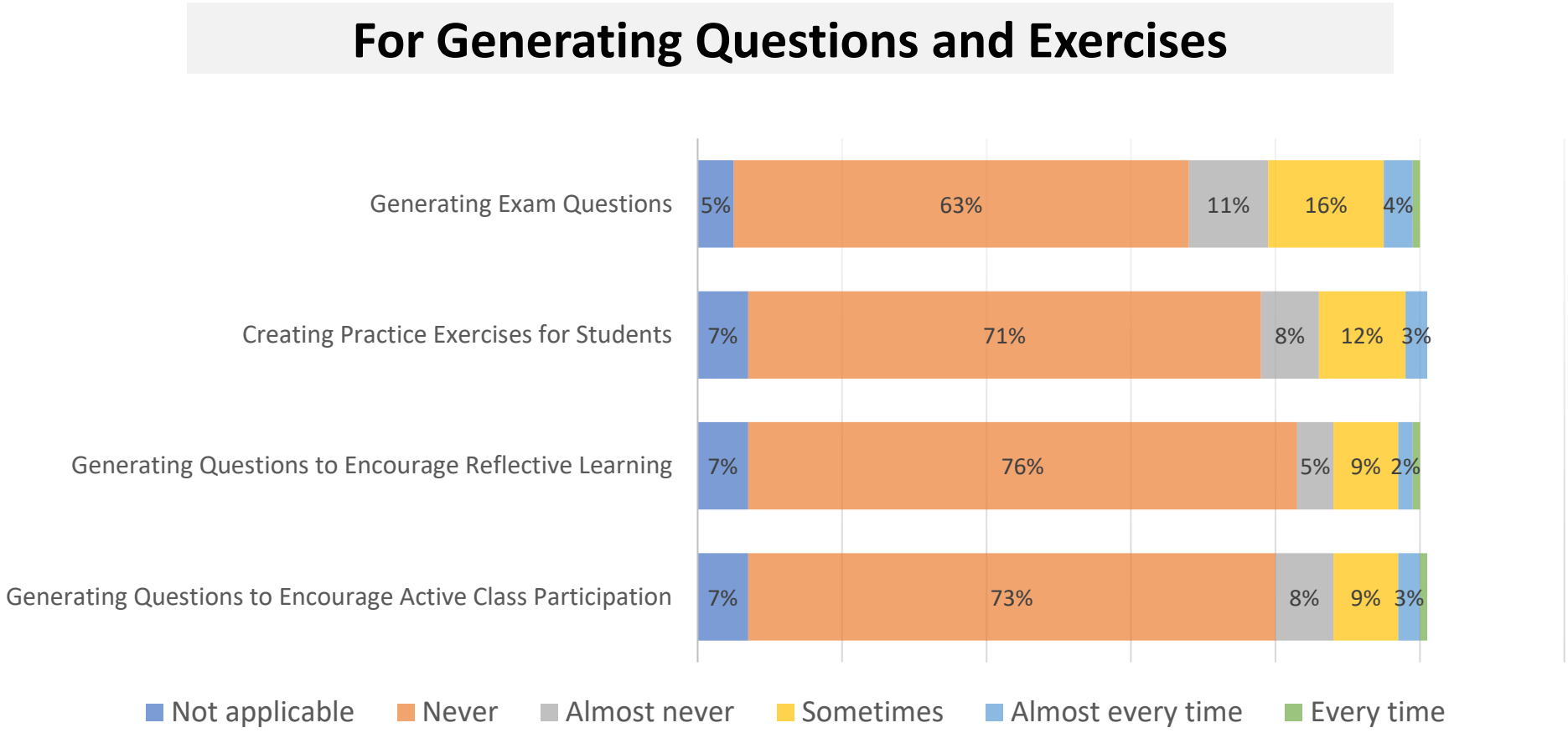


GenAI for Teaching #continued

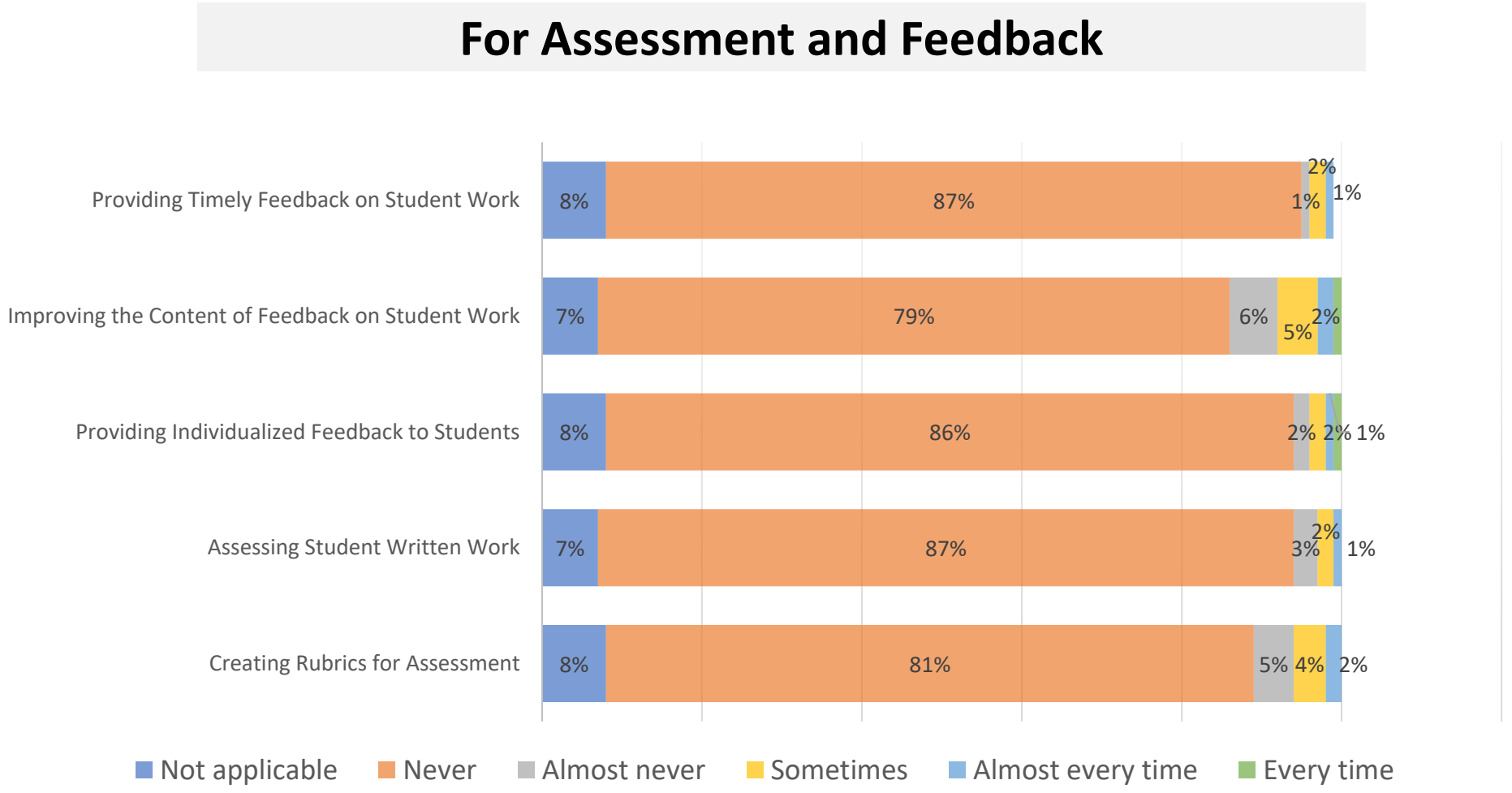
For Engagement, Interactions, and Critical Thinking



GenAI for Teaching #continued



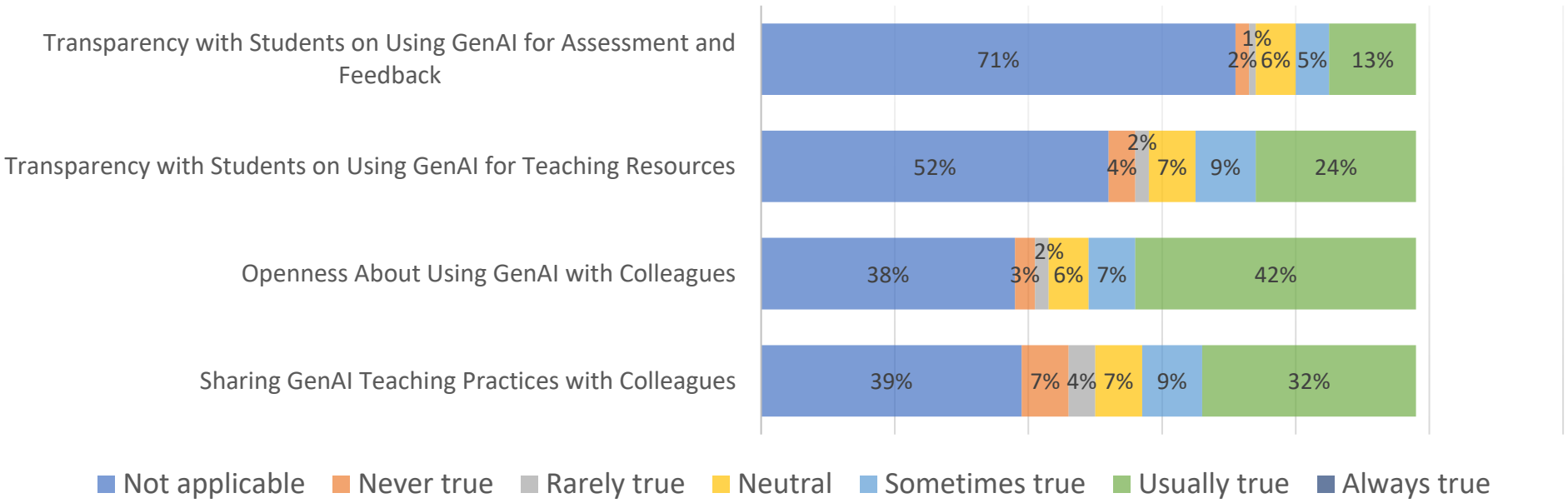
GenAI for Teaching #continued



Main Remarks #GenAI Use

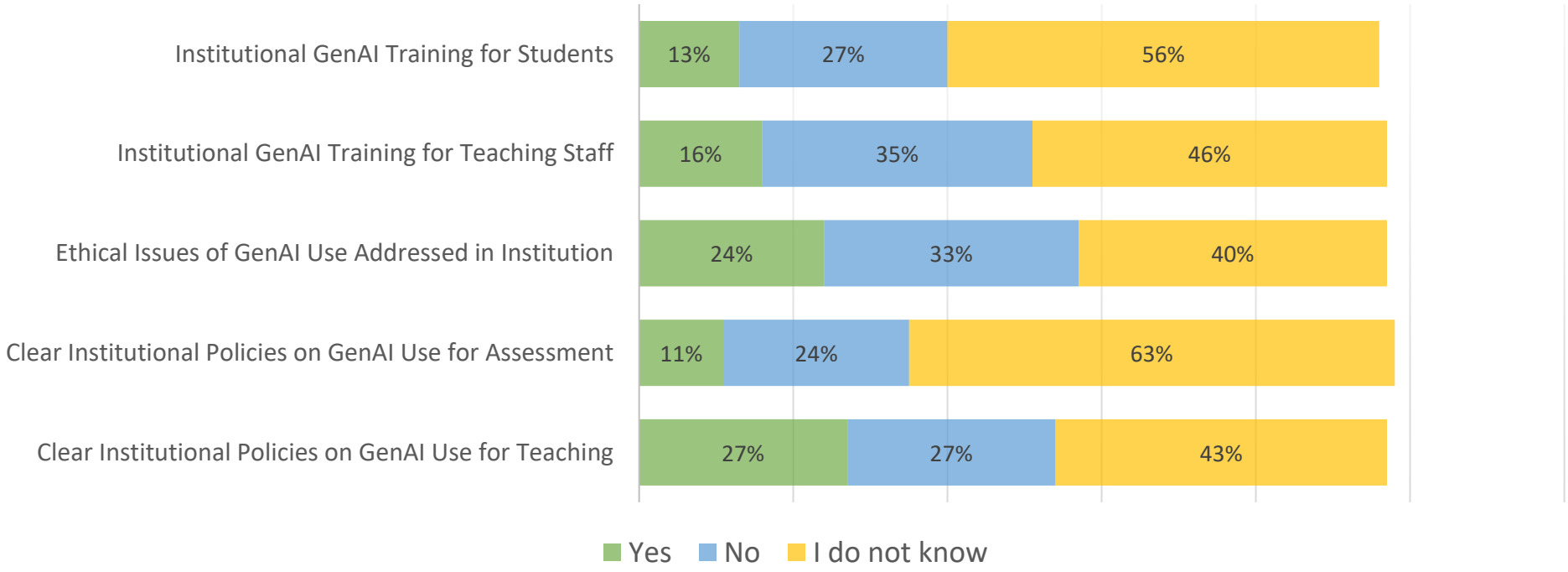
- The free version of ChatGPT was perceived as the most widely used GenAI tool.
- Most teachers perceived themselves as hardly using GenAI tools for teaching.
- The most common perceived use of GenAI for teaching, reported by 21% of teachers, was for improving teaching materials.

Transparency in Using GenAI



Teachers who perceived themselves as using GenAI for teaching were mostly transparent and open about their use.

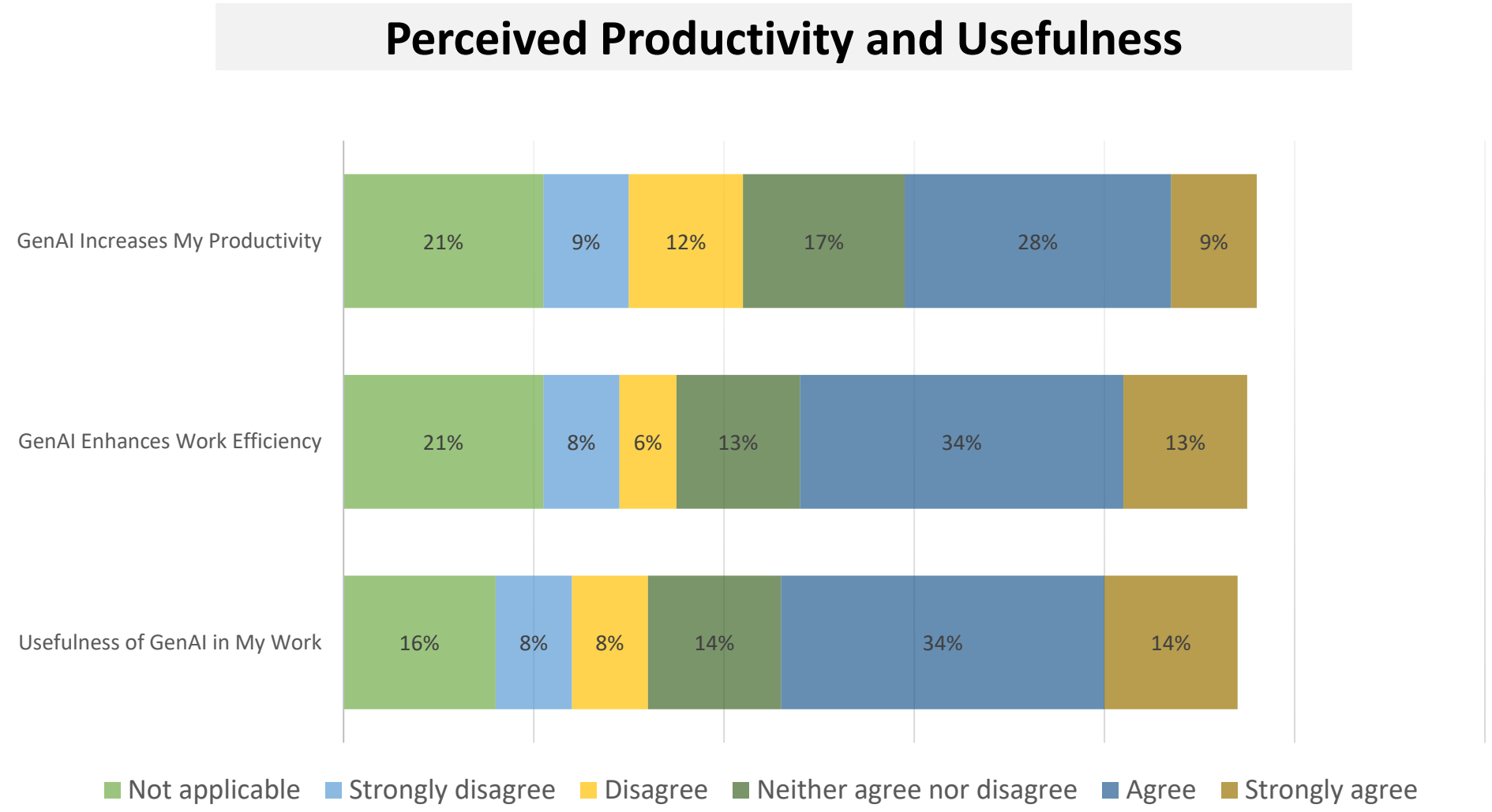
Institutional Support for GenAI Use



Most teachers perceived uncertainty about the comprehensive existence of institutional support for GenAI use or perceived themselves as unaware of any available support.

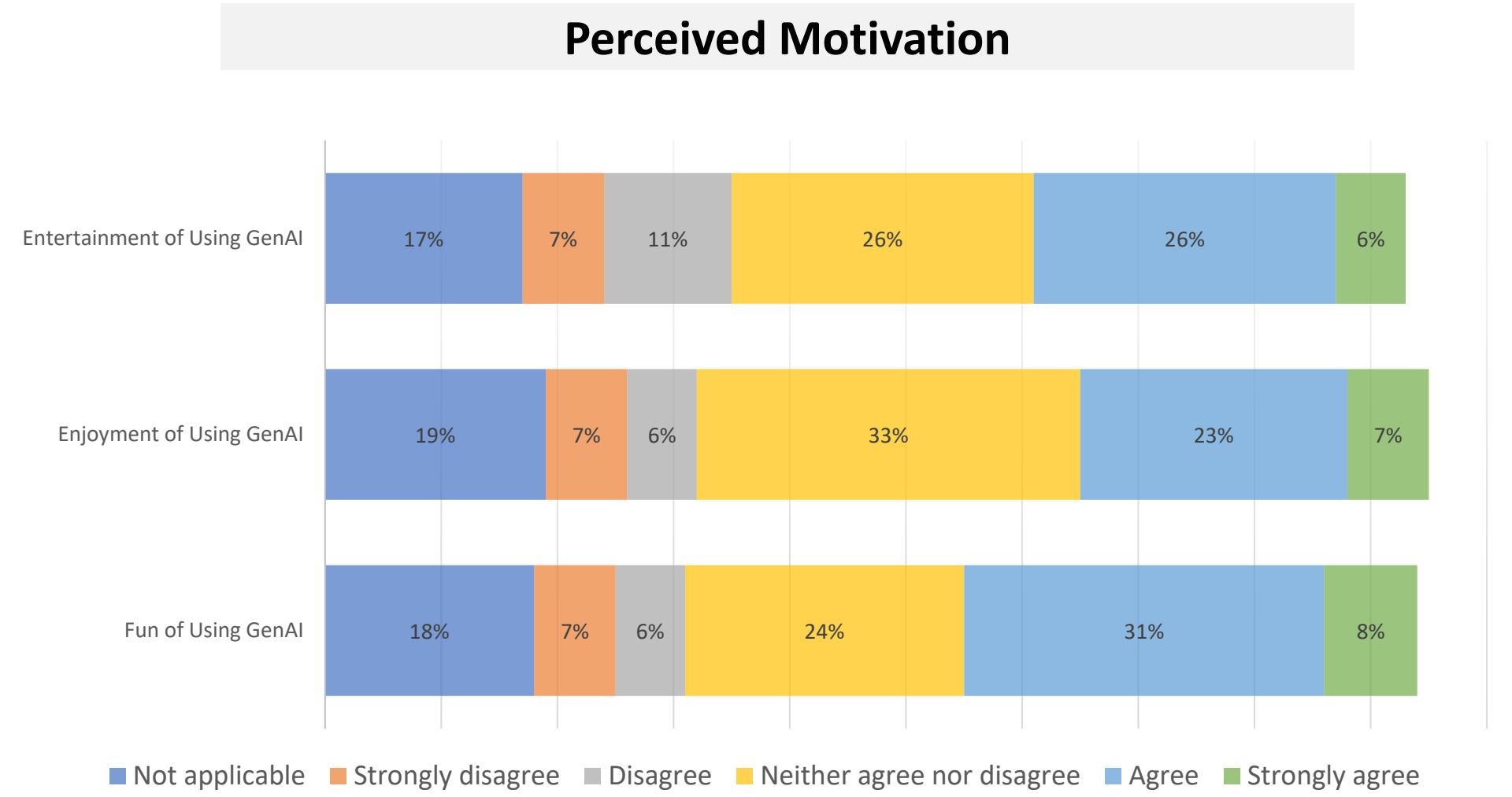
The findings raise a need to promote institutional support!

Perceptions of GenAI Use

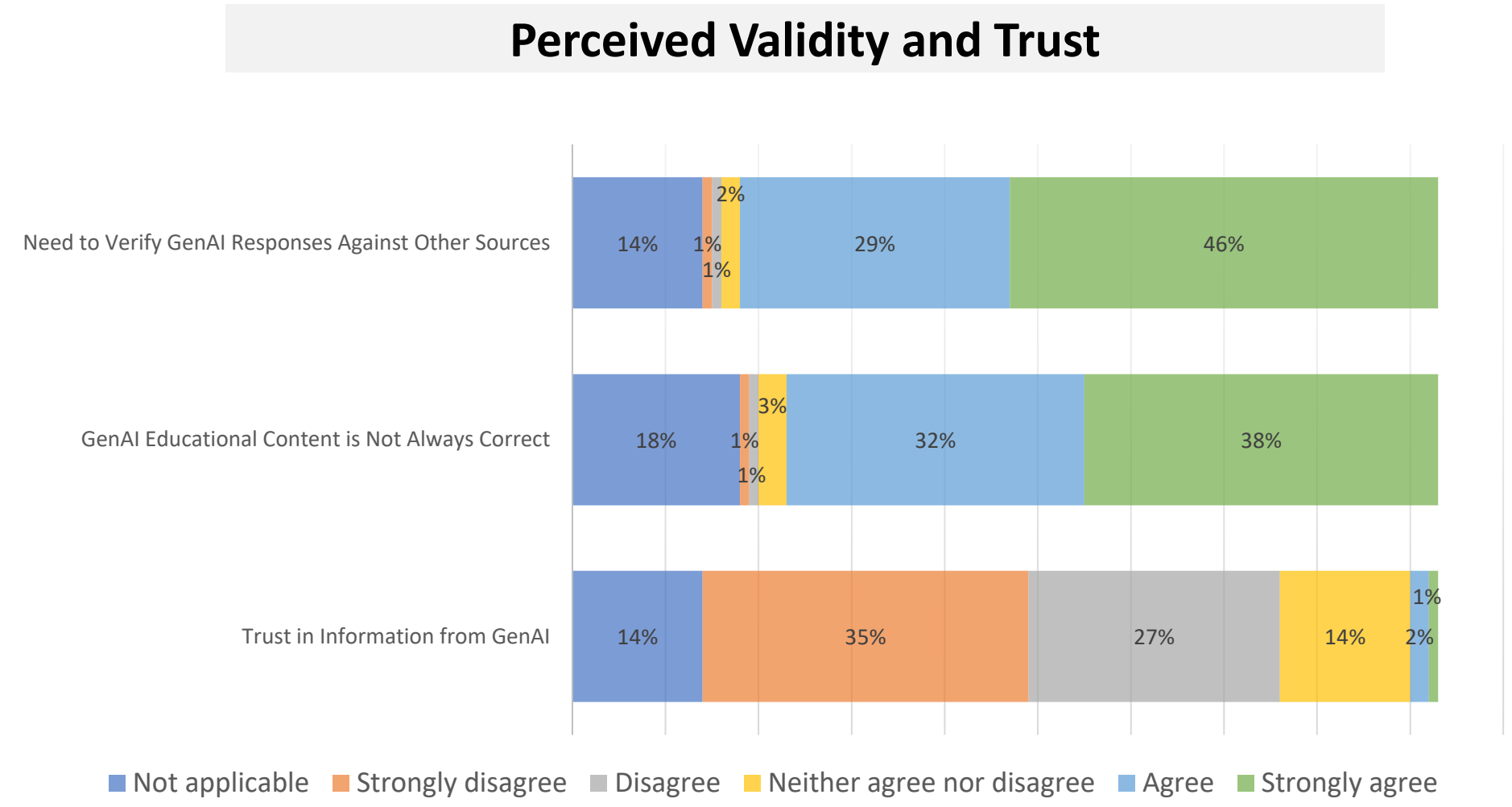


WAGENINGEN
UNIVERSITY & RESEARCH

Perceptions of GenAI Use #continued



Perceptions of GenAI Use #continued



Main Remarks #GenAI Perception

- More than half of teachers perceived GenAI as beneficial for their productivity and work efficiency.
- Most teachers perceived GenAI as easy to use.
- Teachers perceived themselves as somewhat motivated to use GenAI.
- Most teachers perceived GenAI responses as not fully trustworthy.

Conclusion

- Among teachers who used GenAI, ChatGPT was perceived as the most frequently utilized tool.
- Teachers perceived their use of GenAI for teaching as infrequent.
- Teachers perceived themselves as transparent regarding their use of GenAI.
- Teachers perceived themselves as not fully aware of the institutional support available for GenAI.
- While teachers perceived GenAI as easy to use, they expressed reservations about trusting its outputs.
- Teachers perceived themselves as well aware of the ethical aspects of AI use.
- Male teachers perceived themselves as more knowledgeable about certain AI aspects compared to female teachers.





4TU. CENTRE FOR ENGINEERING EDUCATION

WAGENINGEN UNIVERSITY & RESEARCH

RESEARCH TEAM

Omid Noroozi

Nafiseh Taghizadeh Kerman

Harm Biemans

Perry den Brok

Kazem Banihashem

EDUCATION AND LEARNING SCIENCES

CHAIR GROUP