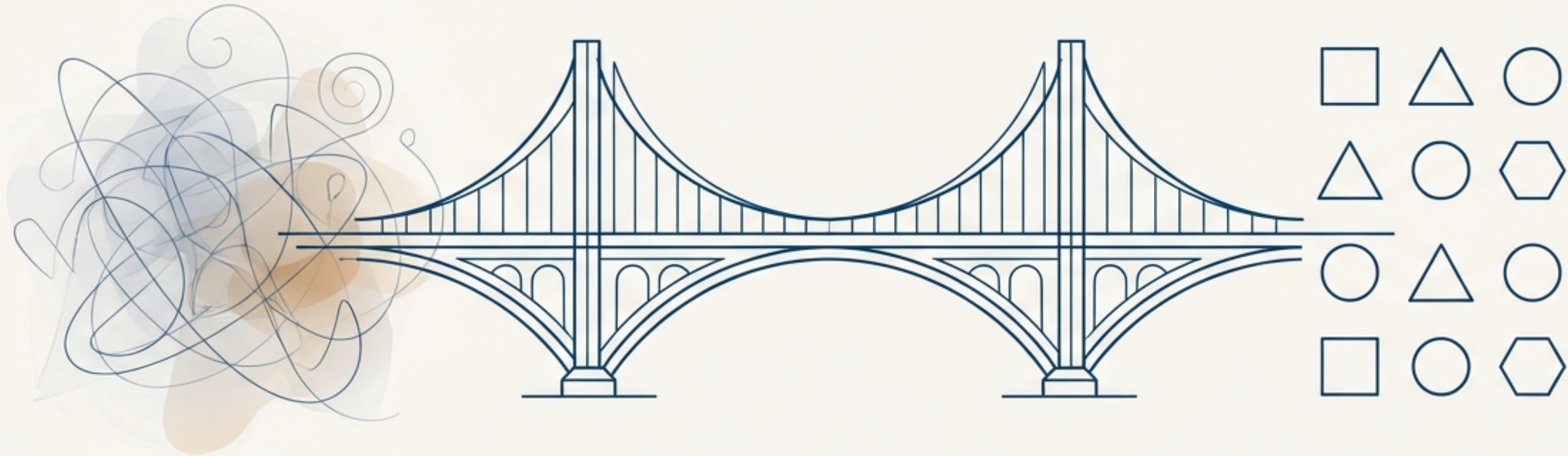


# Bridging the Gap: How Students and Teachers \*Actually\* Use AI in Higher Education

Empirical Insights from a Study in the Netherlands



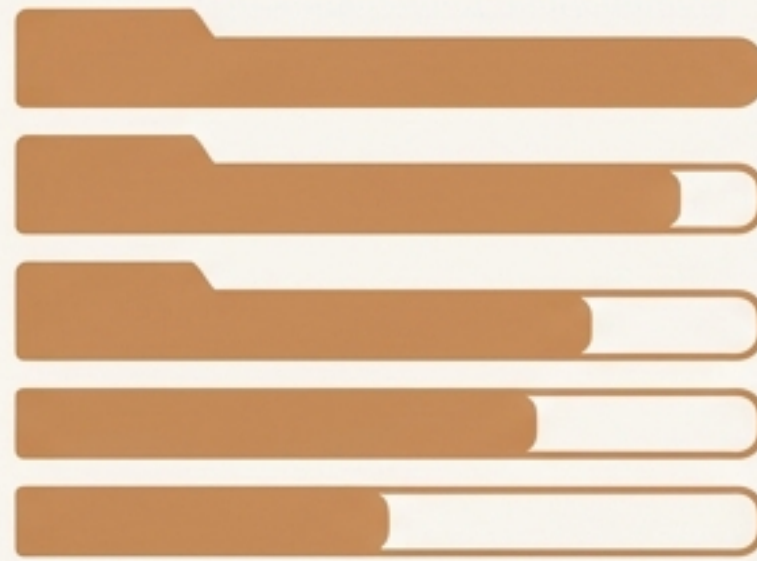
Nynke Bos, Klaas-Jan Lammers, & Andrea Prince van Leeuwen

# AI in higher education is defined by a gap between its transformative potential and its practical implementation.



## The Hype

The academic and public discourse is filled with a spectrum of expectations for AI, from enthusiasm about personalized learning to apprehension about its ethical implications.



## The Reality

Despite this discourse, empirical studies suggest that AI's current application focuses more on enhancing efficiency than on transforming pedagogy. Research shows AI is used for existing tasks like structuring texts or preparing lessons.



## The Knowledge Gap

There is limited empirical evidence on how students and teachers are *actually* using these tools in their daily practices, especially within the Netherlands. This study was designed to address that gap.

# This research sought empirical insights into the real-world application of AI in Dutch higher education.

The central objective was to understand the daily academic practices of students and teachers by investigating four key areas:



## 1. Patterns of Use

What types of AI tools are used and for which specific educational purposes?



## 2. Motivations

Why do users choose to adopt (or not adopt) specific AI tools?



## 3. Perceived Benefits & Risks

What are the experienced advantages and challenges of using AI?



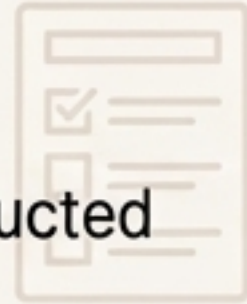
## 4. Identified Competencies & Barriers

How do users develop skills, and what obstacles do they face?

# A quantitative approach was used to survey students and teachers at a Dutch university.

## Research Design

An exploratory quantitative study was conducted using digital questionnaires.



## Sample Size

The final sample included...

**96** students



**71** teachers



...from a Dutch university of applied sciences.

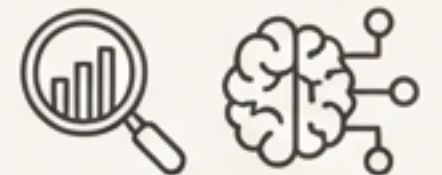
## Data Collection

- Digital questionnaires were distributed in the spring of 2025.
- The instrument used a mix of closed-ended questions (5-point Likert scales) and open-ended questions to capture both quantitative patterns and qualitative experiences.



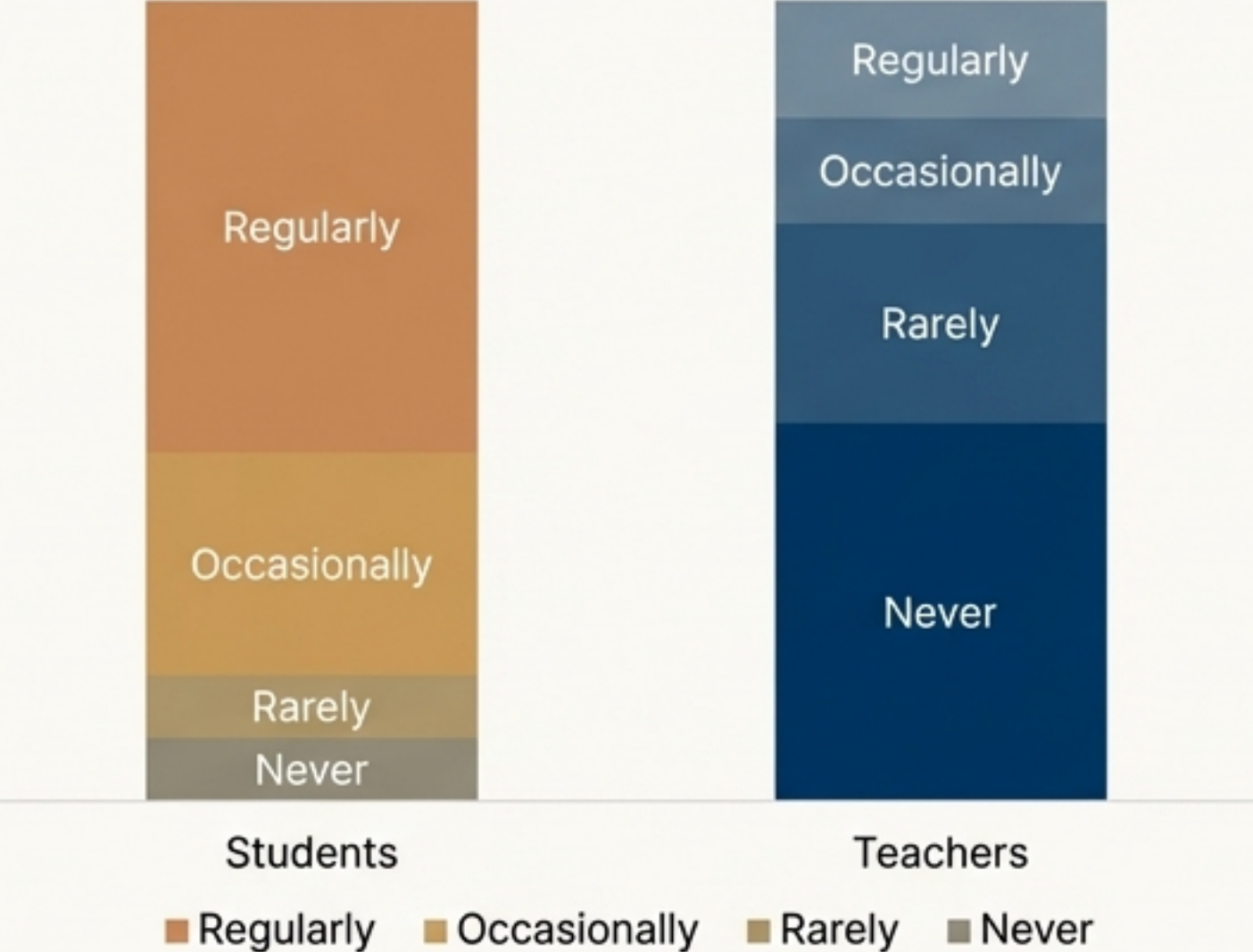
## Data Analysis

- Quantitative data was analyzed for descriptive statistics using JASP software.
- Qualitative responses were analyzed using an inductive thematic analysis approach.

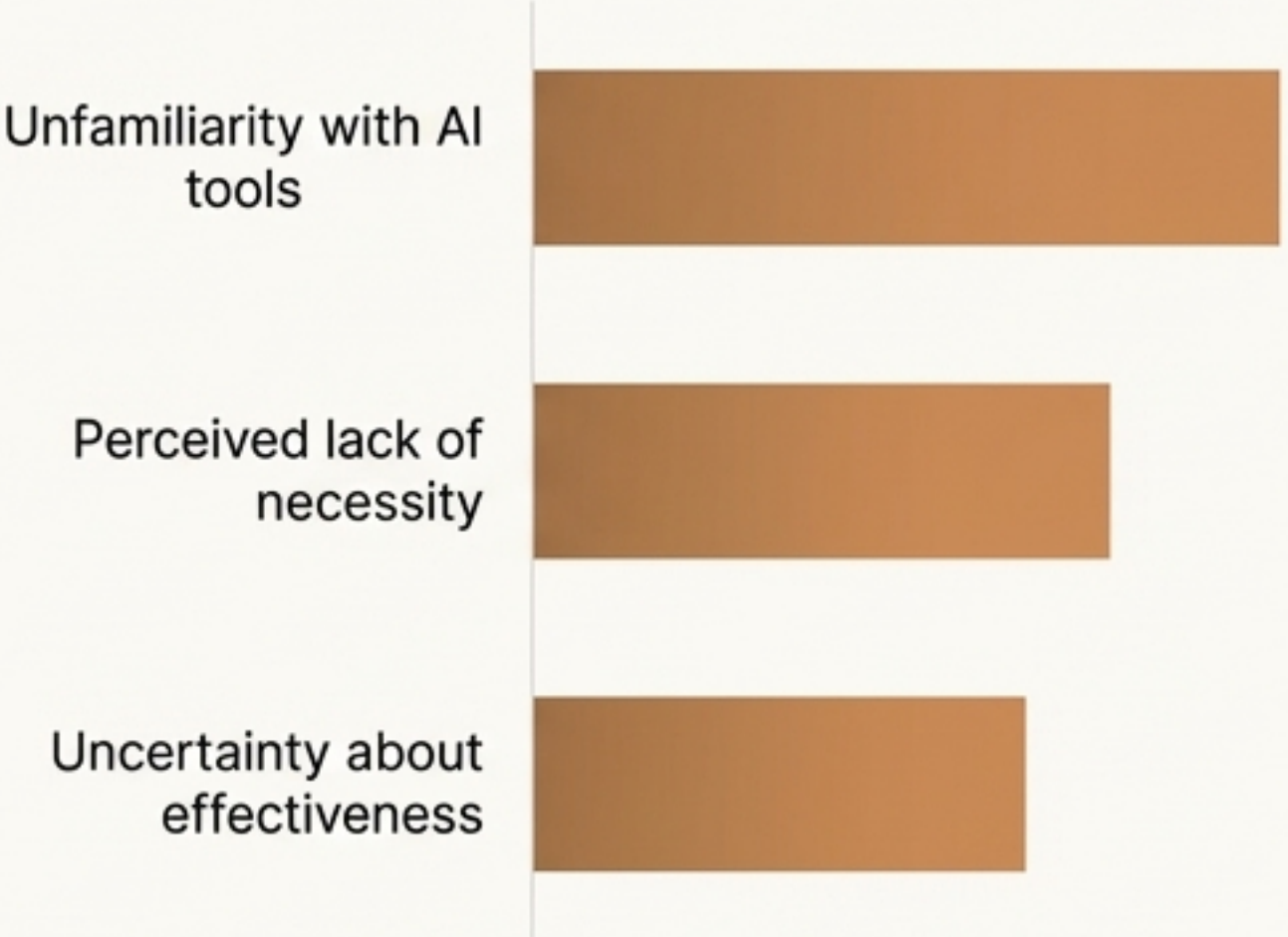


# Student adoption of AI is more widespread, while a significant portion of teachers report rare or no usage.

### Frequency of AI Tool Use



### Reasons for Not Using AI

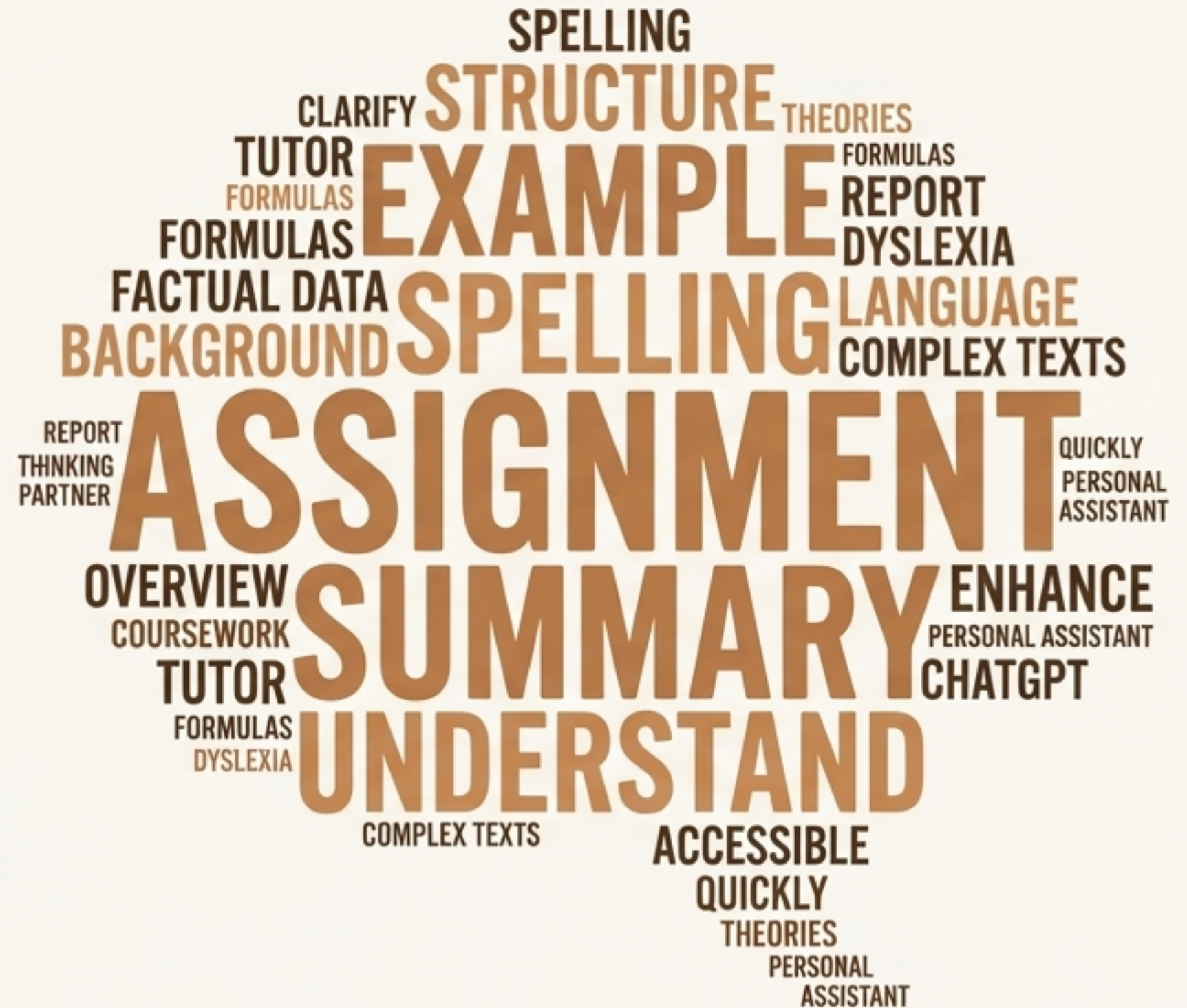


Ethical objections were noted as minimal for both groups.

# Students primarily use AI as a personal assistant to enhance their coursework and understanding.

Students who utilize AI (predominantly ChatGPT) do so for five core activities:

1. **Language Processing:** Checking spelling, refining sentence structure, and clarifying meaning. Especially valued by students with language difficulties like dyslexia.
2. **Summarizing & Structuring:** Gaining an overview of long or complex texts.
3. **Idea Generation:** Acting as a “thinking partner” to overcome writer’s block for reports and assignments.
4. **Content Explanation:** Using AI as an accessible digital tutor to explain complex topics like formulas or theories.
5. **Information Search:** Quickly accessing factual data and background information.



# Students value AI for its efficiency but are wary of its unreliability and the risk of superficial learning.



## Perceived Benefits

- Efficiency: Significant time savings.
- Quality: Improved quality of written texts.
- Process Support: Helps in starting assignments, promoting progress, and giving a sense of control.



## Limitations & Risks

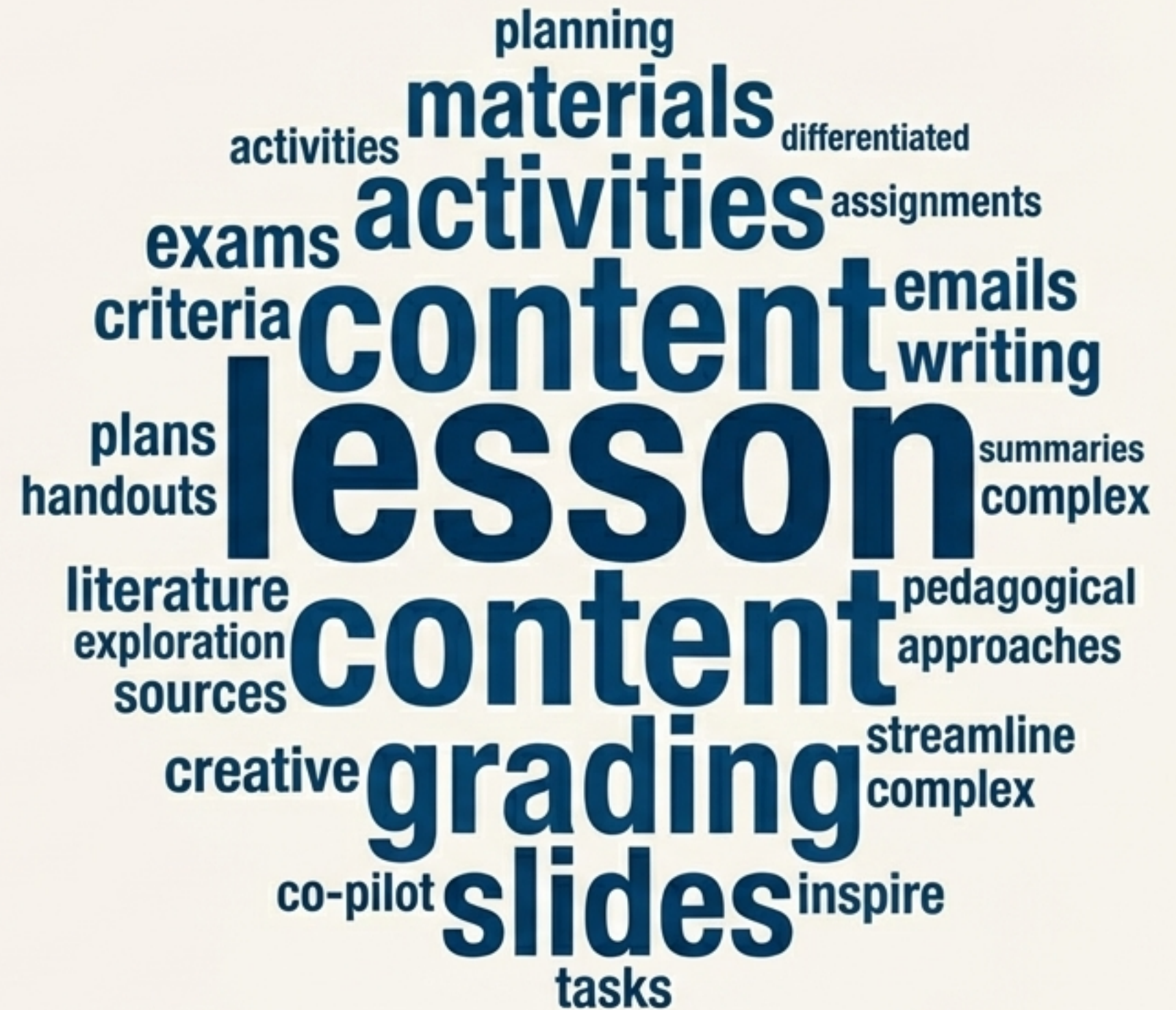
- Reliability: Questionable accuracy, factual errors, and 'hallucinations' require extra verification.
- Superficiality: Temptation to copy information, jeopardizing deep learning and critical thinking.
- Skill Gap: Formulating effective prompts is a **non-obvious** skill that requires practice.

**\*\*Key Insight:\*\*** Most students develop AI skills on their own initiative through self-study and peer tips, with little formal guidance from their institution.

# Teachers employ AI as a co-pilot to streamline lesson preparation and inspire new pedagogical approaches.

Teachers who use AI (mainly ChatGPT, but also Copilot, Perplexity, etc.) do so for four primary educational tasks:

1. **Lesson Preparation:** Generating ideas for creative educational activities and developing differentiated materials.
2. **Assessment Creation:** Creating and reviewing exam questions, assignments, and assessment criteria.
3. **Text Production & Editing:** Drafting emails, lesson plans, handouts, and summaries to lower the barrier to writing.
4. **Information Synthesis:** Assisting in literature exploration and summarizing complex sources.



# While AI offers teachers efficiency gains, concerns about reliability, student plagiarism, and lack of institutional support are significant.



## Perceived Benefits

- **Efficiency:** Accelerates routine tasks, freeing up time for more personal attention to students.
- **Inspiration:** Acts as a “sparring partner” to generate new ideas and break out of established patterns.



## Limitations & Risks

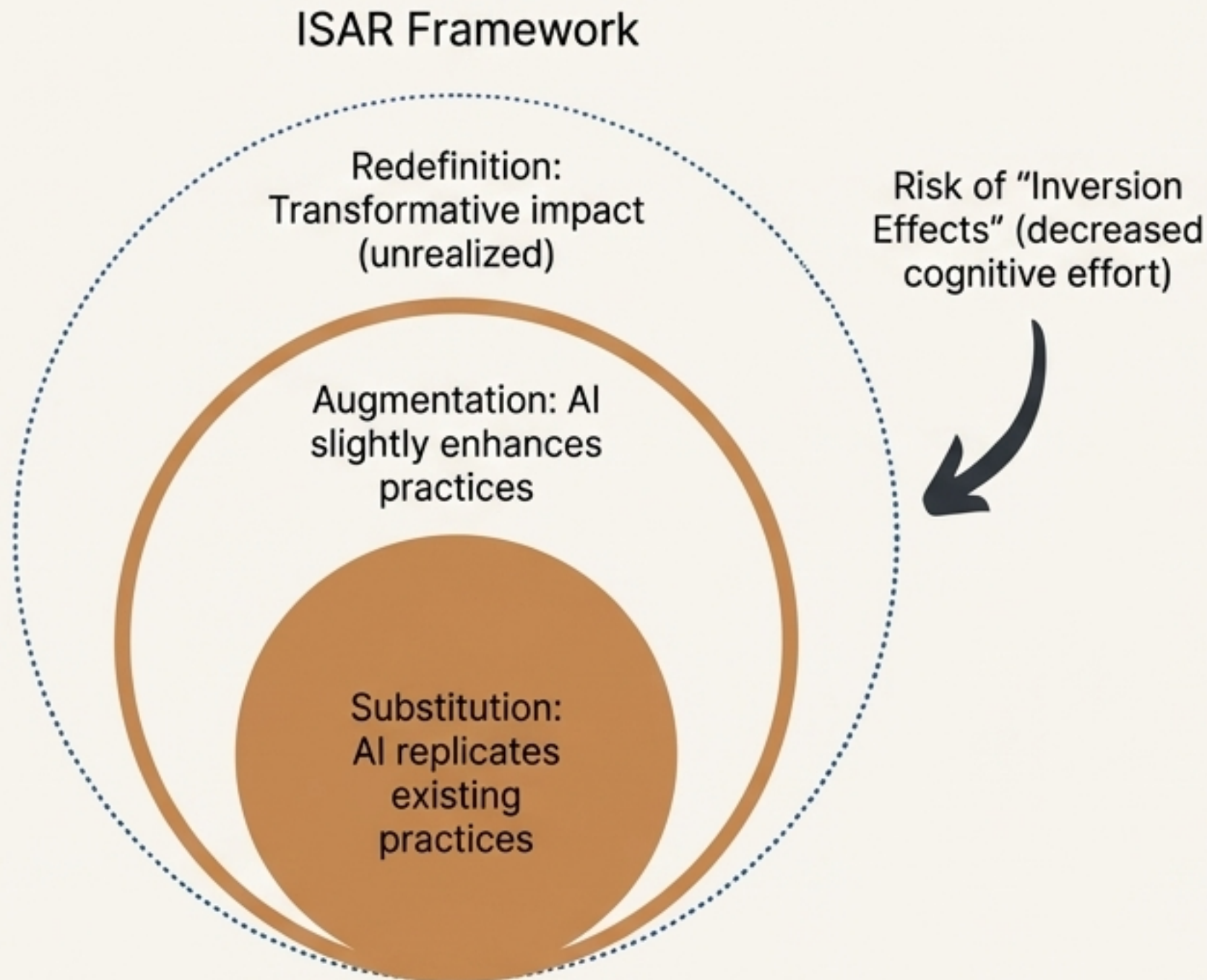
- **Reliability:** AI is seen only as a starting point; teachers report fictitious sources and factual errors, requiring critical verification.
- **Pedagogical Concerns:** Risks of student plagiarism and potential erosion of students’ critical thinking and personal creativity.
- **Institutional Barriers:** Lack of licenses for advanced AI tools and the absence of clear institutional policies on AI use.

**Key Insight:** Like students, teachers acquire skills largely through self-study and collegial exchange, with formal training being limited.

# Students and teachers use AI for different purposes and hold distinct concerns about its integration.

Aspect	Students	Teachers
<b>Primary Focus</b>	<b>Product Enhancement:</b> Using AI as a 'personal assistant' to improve their own study products (reports, assignments).	<b>Process Development:</b> Using AI as a tool for educational development, test construction, and creating teaching materials.
<b>View of AI</b>	Often seen as a directly usable production tool.	More inclined to critically evaluate output and integrate it into broader educational objectives.
<b>Key Concerns</b>	Reliability of information, superficial learning, and developing prompt skills.	Student plagiarism, impact on learning processes, data privacy, and security.
<b>Frustrations</b>	Lack of formal guidance and training.	Lack of structural provisions, such as paid licenses and clear institutional policy frameworks.

# Current AI use aligns with substitution and augmentation, falling short of genuine educational transformation.



## Connecting to Theory (ISAR Framework):

The findings show that AI is primarily used for practical support. In terms of the ISAR model (Bauer et al., 2025), this usage falls under:

- Substitution: AI replicates existing instructional practices.
- Augmentation: AI slightly enhances practices with added support.
- There is limited evidence of Redefinition or transformative impact on pedagogy.

## The Risk of "Inversion Effects":

The efficiency gains reported come with a risk. As noted by Bauer et al. (2025), over-reliance on AI can lead to decreased cognitive effort and more superficial learning, undermining educational goals.

## A Necessary First Step?

This practical, efficiency-focused phase may be a necessary first step in the adoption process, where users gain familiarity before engaging in more transformative applications (Treve, 2024).

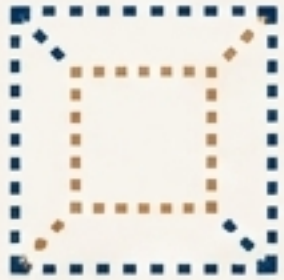
# The study reveals an urgent need for institutional strategy to foster critical and ethical AI literacy.

- **Empirical Contribution:** This research provides crucial empirical evidence on real-world AI adoption in European higher education, moving the conversation beyond speculation.
- **The Problem of Informal Learning:** The current “bottom-up” learning culture, while **demonstrating user initiative, leads to disparities in proficiency and fails to address the complex ethical dimensions of AI.**

## The Path Forward: A Call for Institutional Action



# Acknowledging limitations points toward a clear agenda for future research on AI in education.



## Limitations of This Study

- **Generalizability:** Convenience sampling at a single institution limits broader applicability.
- **Self-Reported Data:** Social desirability bias may lead to underreporting of actual AI use.
- **Snapshot in Time:** The study captures a moment in a rapidly evolving technological landscape.



## Future Research Agenda

Two distinct trajectories are needed:

1. **Learning *with* AI:** How can AI effectively support student learning and teaching? This includes pedagogical design, impact on critical thinking, and educator training.
2. **Learning *about* AI:** How can curricula prepare students for professional roles where AI is ubiquitous? This includes ethics, professional identity, and the transformation of work.

# AI is currently an efficiency tool, not a pedagogical revolution; its transformative potential depends on intentional institutional action.



## Current State

In Dutch higher education, AI is a practical instrument for efficiency. Students and teachers report benefits in time savings and support, but transformative applications remain unrealized.



## The Central Challenge

Users are navigating AI individually, with significant concerns about reliability and ethics. This informal approach is insufficient for developing the deep, critical AI literacy required for the future.



## The Opportunity

To realize AI's potential, institutions must shift from a reactive to a proactive stance. This requires building a culture that views AI not just as a tool for productivity, but as a catalyst for deeper learning, shared inquiry, and societal readiness.

# How to Cite This Research

Bos, N., Lammers, K.-J., & Prince van Leeuwen, A. (2025).  
Exploring the role of AI in Higher Education: A study of  
usage by students and teachers in the Netherlands.  
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