



One-on-one tutoring for every student

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„Wow. This is from  
Germany, and it actually  
works!?“

# AI Usage by students (Study of Hochschule Darmstadt)

STUDIUM

## Über 90 Prozent der Studierenden nutzen KI-Tools

### Künstliche Intelligenz im Studium

**Eine quantitative Längsschnittstudie zur Nutzung KI-basierter Tools durch Studierende (2023 & 2025)**

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**h\_da**

hochschule  
darmstadt

HOCHSCHULE STUDIUM FORSCHUNG

Bundesweite Studie: Mehr als 90% der Studierenden nutzen KI-basierte Tools wie ChatGPT fürs Studium

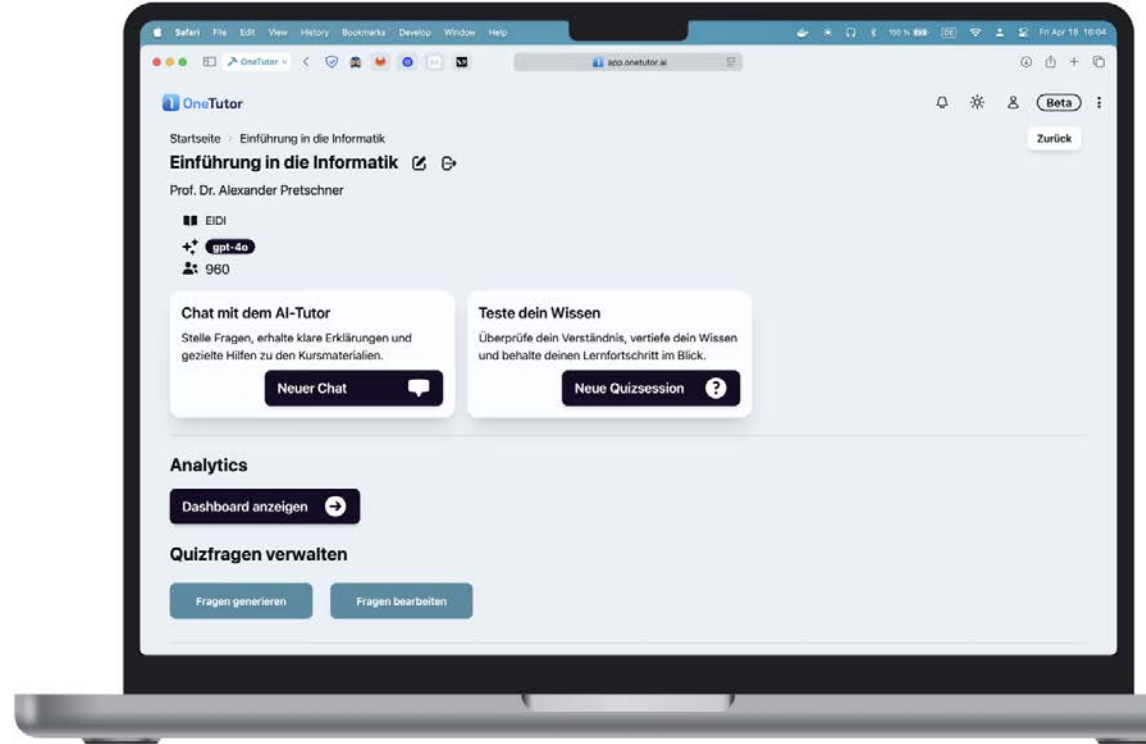
# How can AI be used in teaching?

- Chat: known unknowns
- Quiz: unknown unknowns
- Individualized learning
- Exam creation and grading
- Homework Assistance?

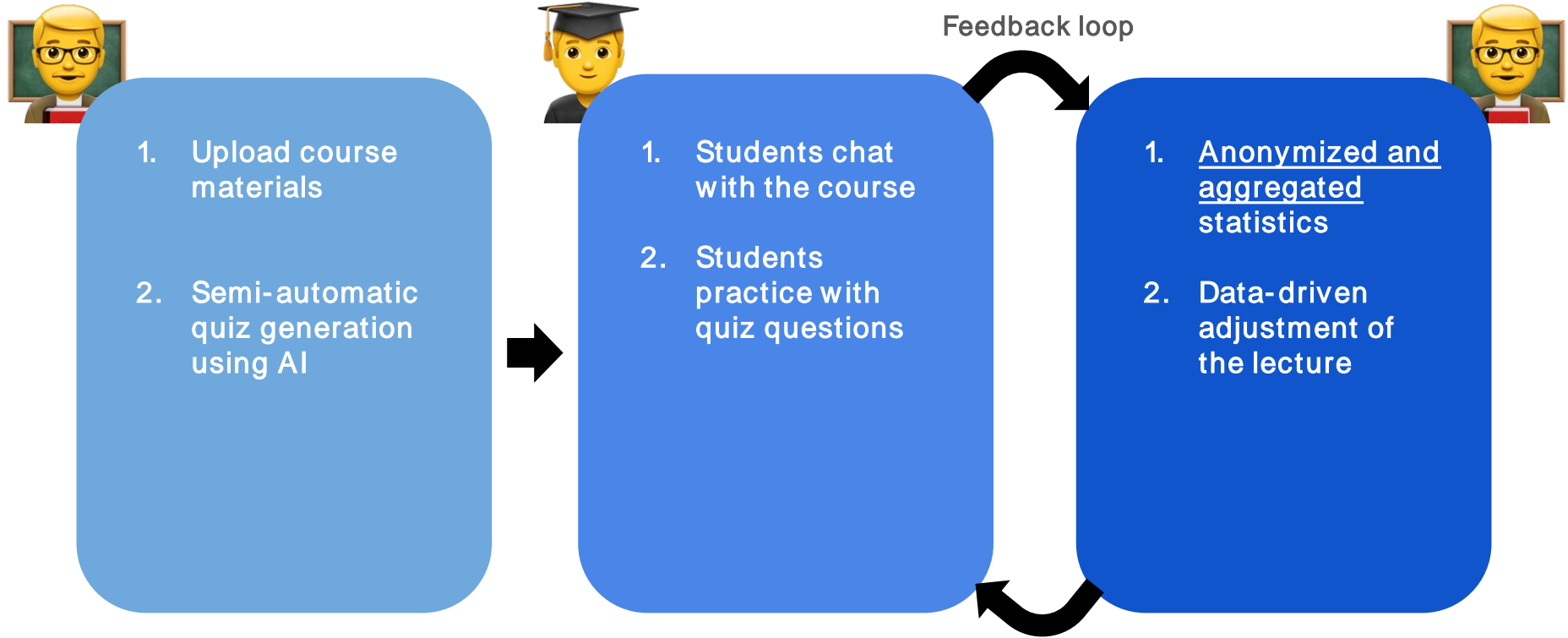


# What is OneTutor?

- AI tutor based on course materials
- AI-powered quiz generation
- Usage statistics
- AI model agnostic
- Privacy by design



# Interactions



RAG (Retrieval-Augmented Generation)-system is the engine behind OneTutor

# What students say about OneTutor...

”

The tool is truly fascinating and very helpful for memorizing the content.

”

OneTutor is a great tool. I use it almost every day, and it helps me tremendously to close gaps in my knowledge. I wish this tool existed for every subject.

”

OneTutor is a great tool! It does have some quirks, but please keep developing it! It would be amazing if it could eventually be used for the

”

I think the concept is generally really good, and especially the quiz has a lot of potential in my opinion.

”

I was worried that it would mix general knowledge with the lecture knowledge but i get very confident results which reflect exactly what's stated in the lecture.

”

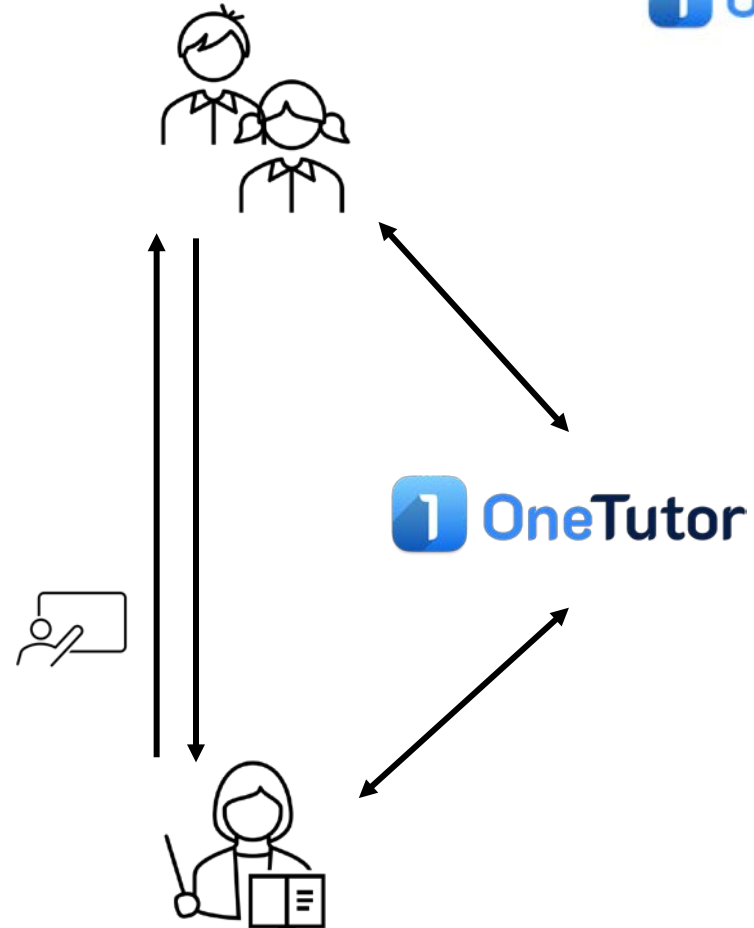
I find OneTutor really cool, but I wish more subjects were supported, especially math modules like DS and more knowledge-based modules like ERA.

Teaching today:  
unidirectional

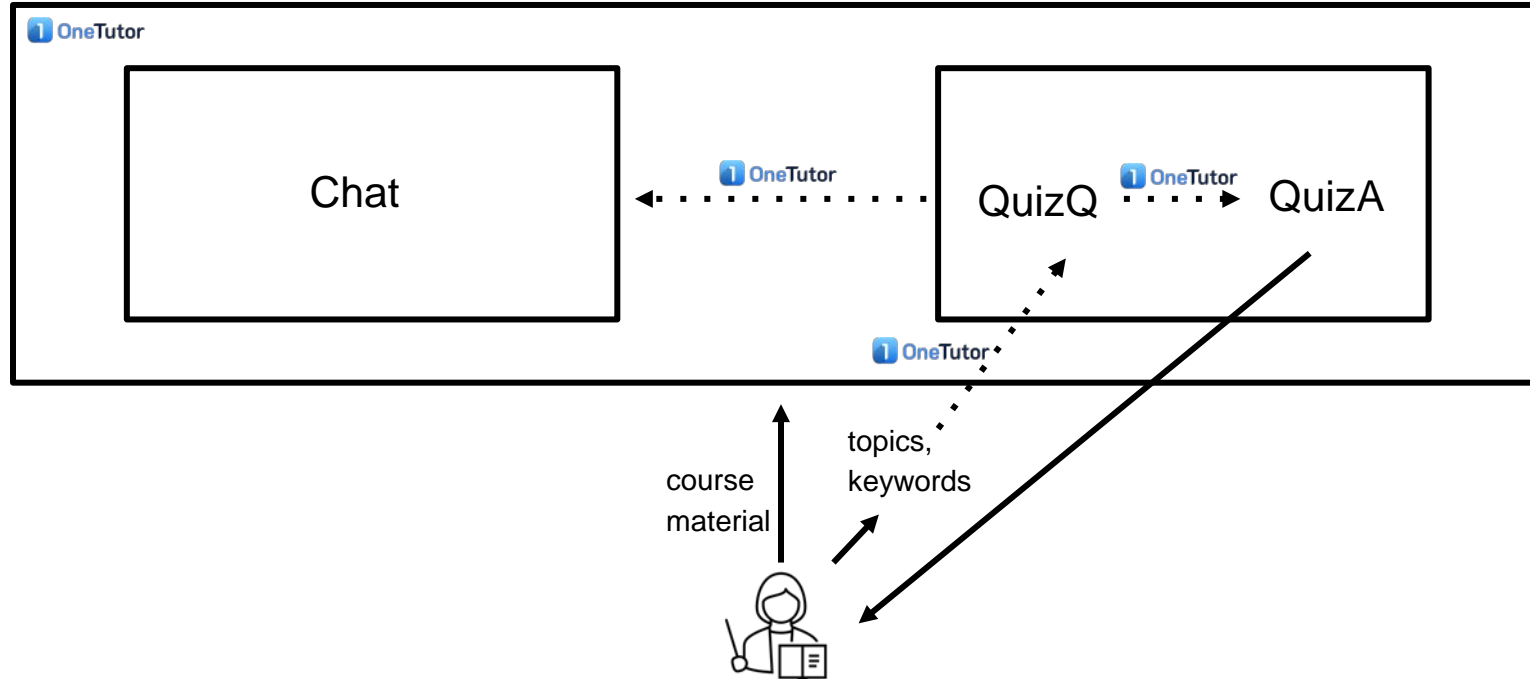




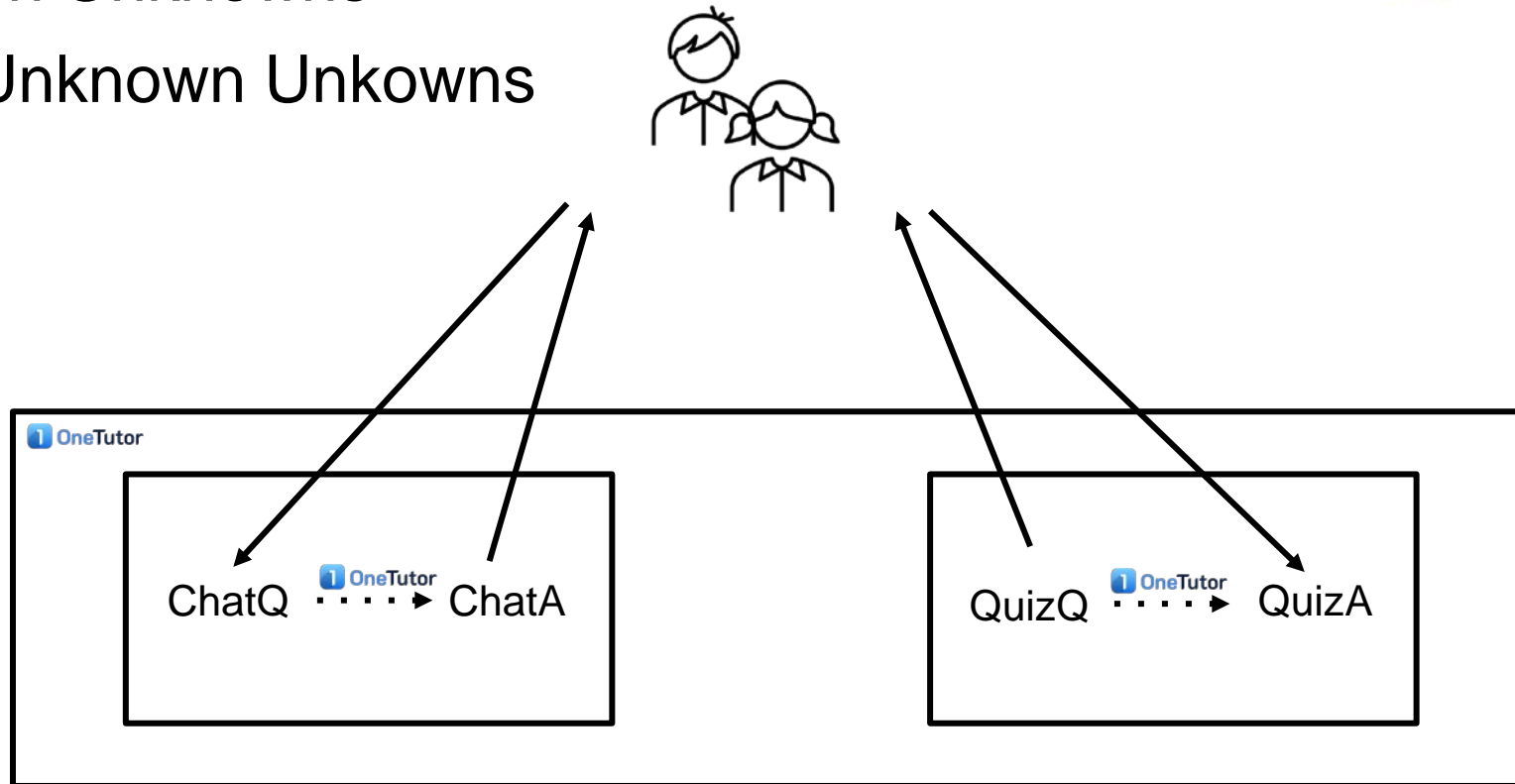
Teaching with OneTutor:  
interactive,  
individual  
bidirectional,  
with feedback



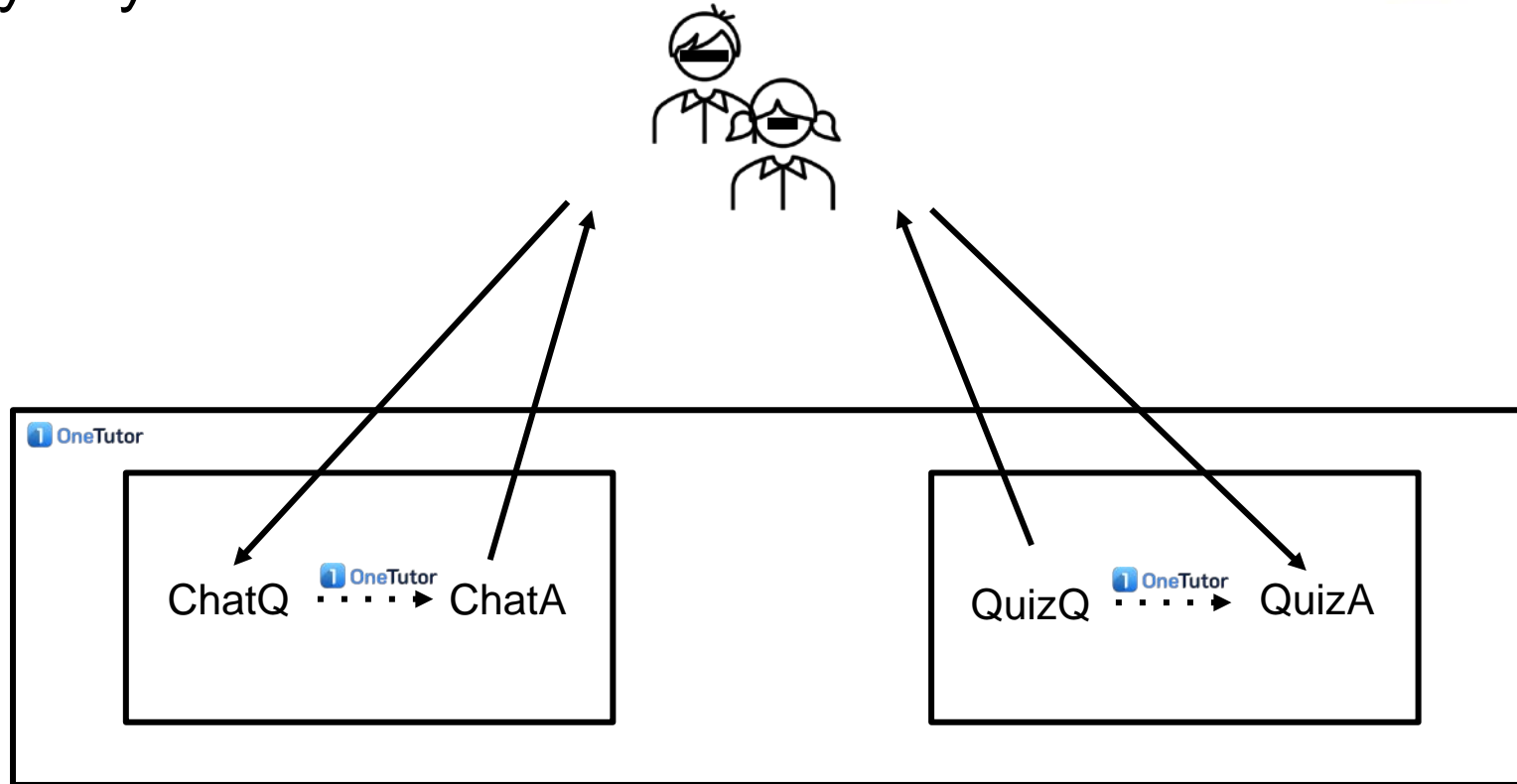
# Co-Creating Quizzes



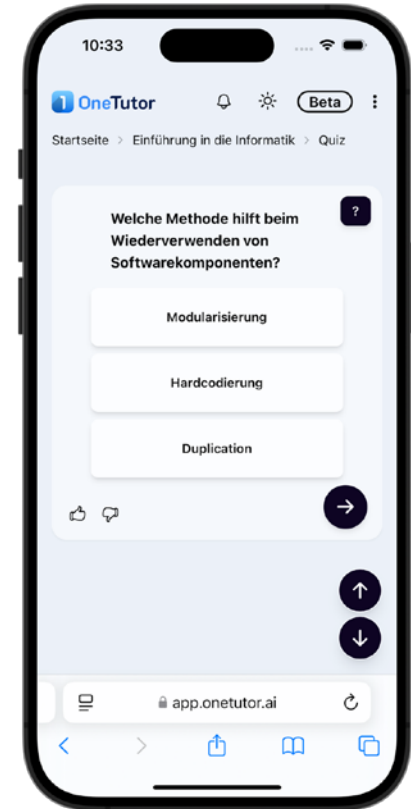
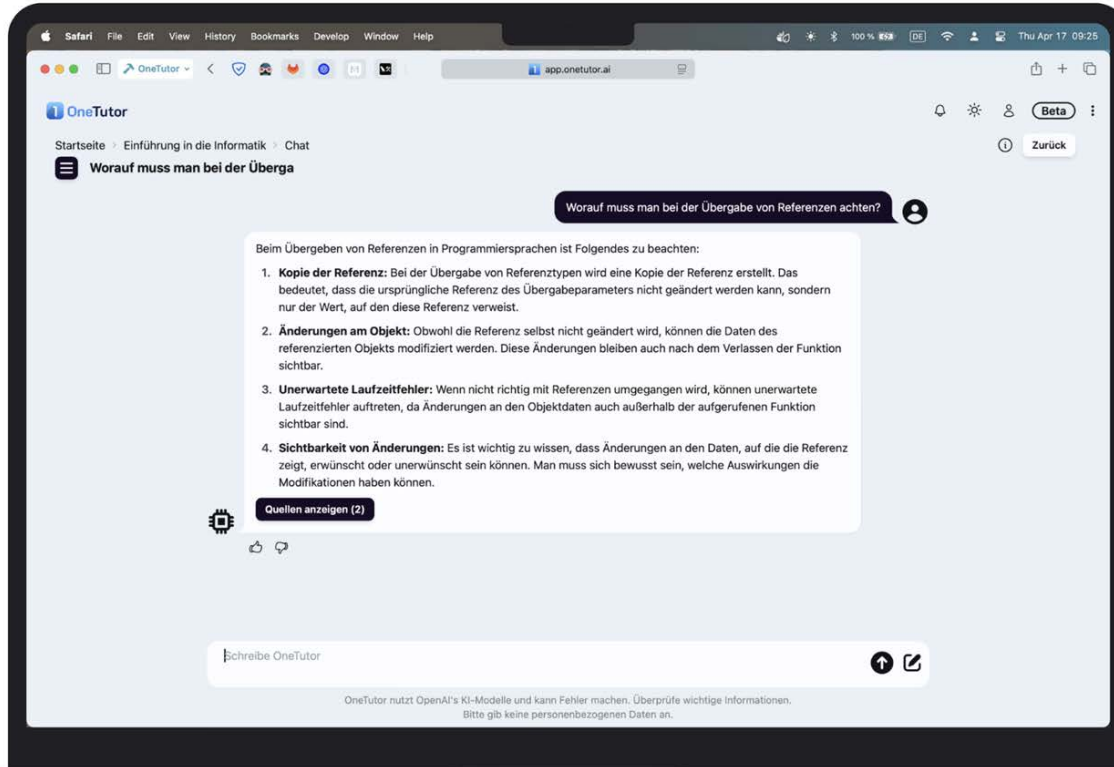
# Known Unknowns and Unknown Unknowns



# Anonymity



# Chat with the course and test your knowledge



## Themen

**Nebenläufigkeit****Listen****Arrays****Kontrollstrukturen****interfaces****Programmieren & Maschinenlernen****Kollektionen****Nebenläufigkeit: Monitore****I/O****Referenzen****Objekte****Keller****Kapselung****Vererbung****Schleifen****Exceptions****Nebenläufigkeit III: Wartende Threads****Rekursion****Netzwerk****Quiz starten**

**Warum ist es wichtig, Testfälle für Programme zu erstellen?**

?

um die korrektheit zu überprüfen

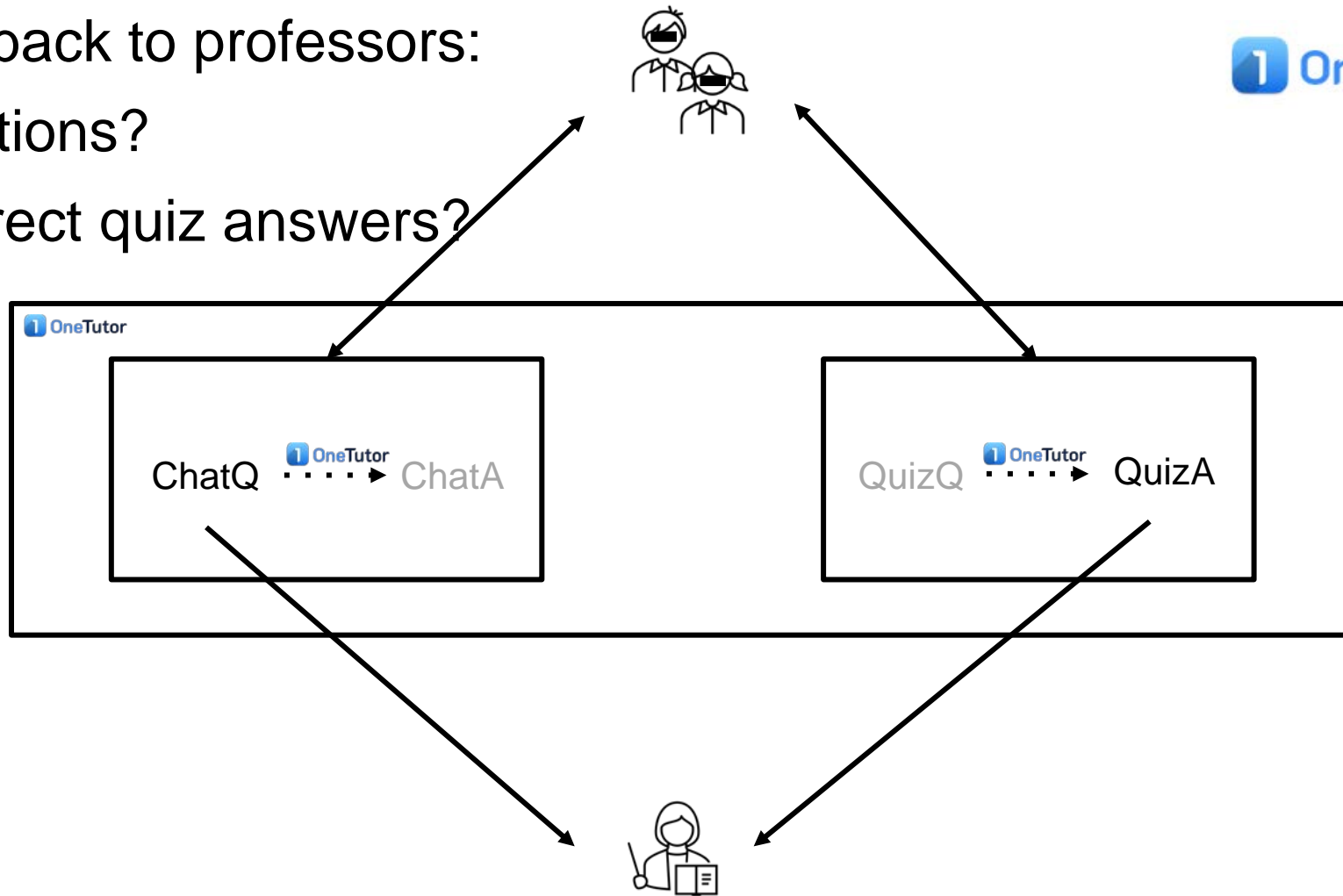
Deine Antwort erwähnt einen wichtigen Grund, nämlich die Überprüfung der Korrektheit. Allerdings fehlt der Aspekt der Zuverlässigkeit, der ebenfalls entscheidend ist.

**Punkte: 4 / 5 ★**



Weiter

Feedback to professors:  
Questions?  
Incorrect quiz answers?





# What insights do professors gain?



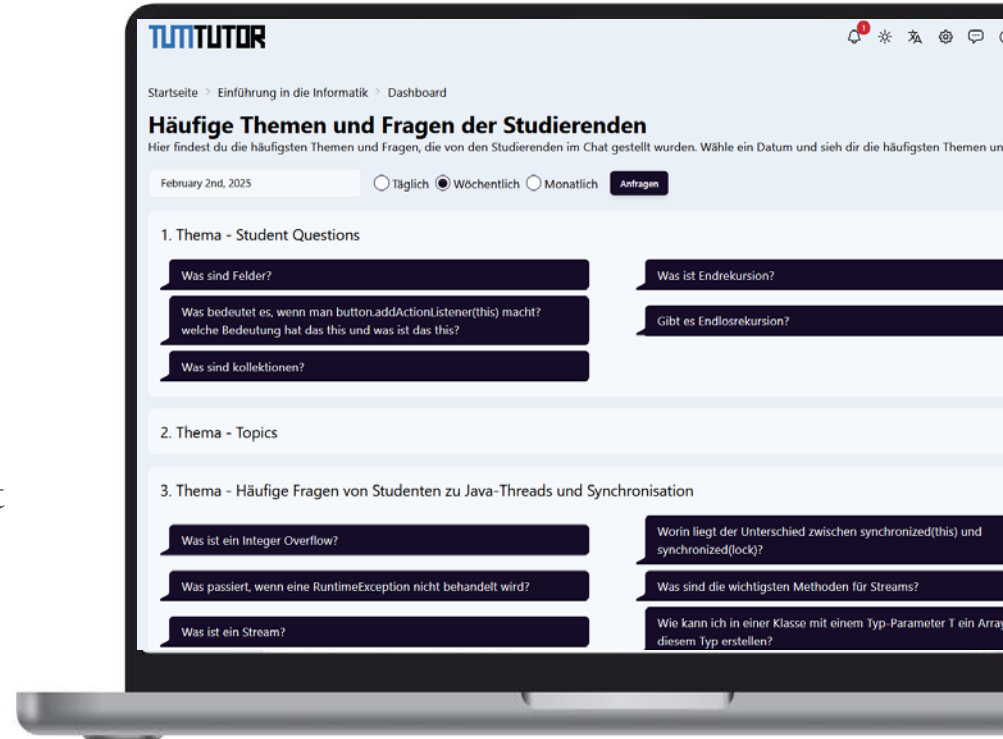
Automatic grouping of frequently asked questions



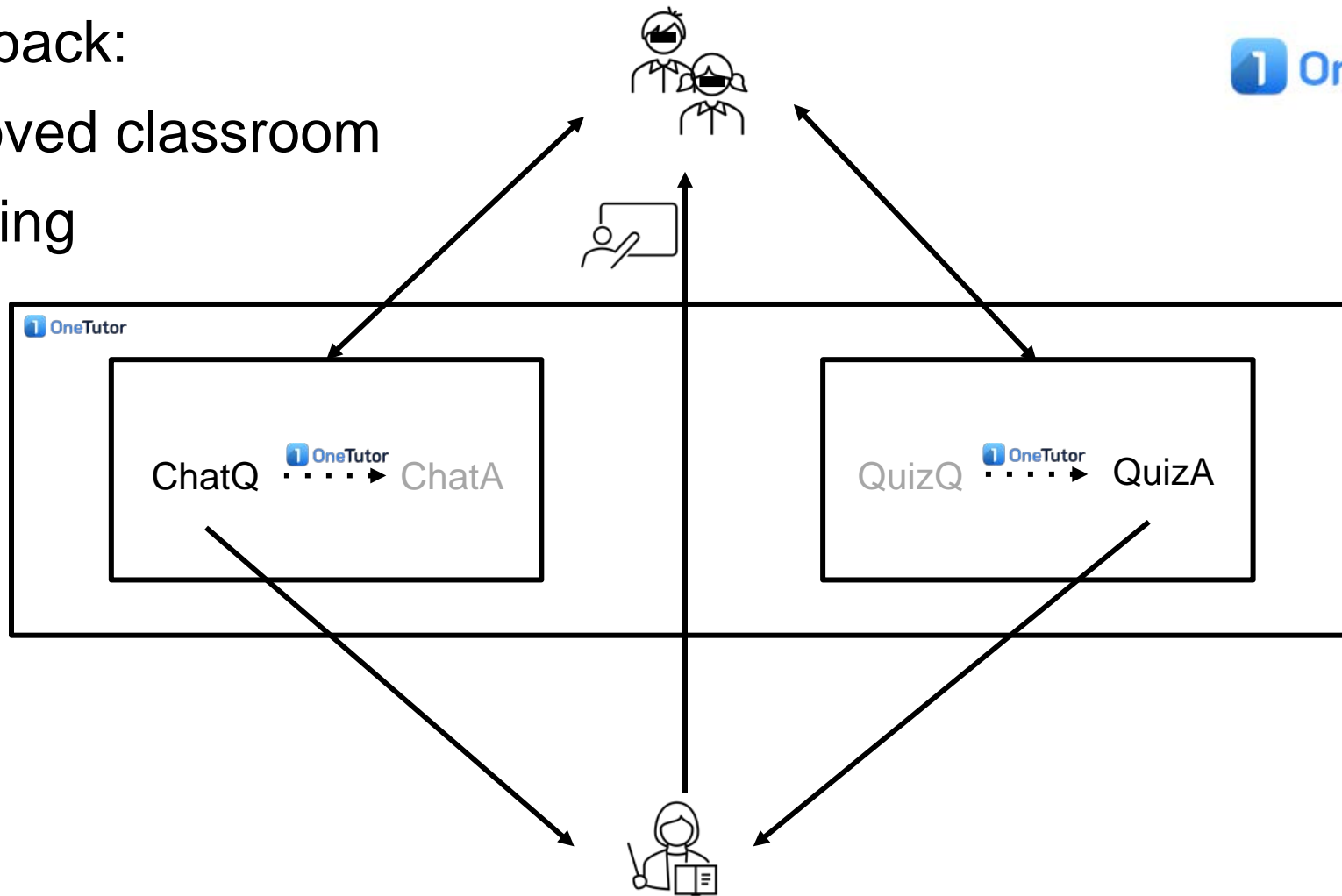
Engagement statistics per course



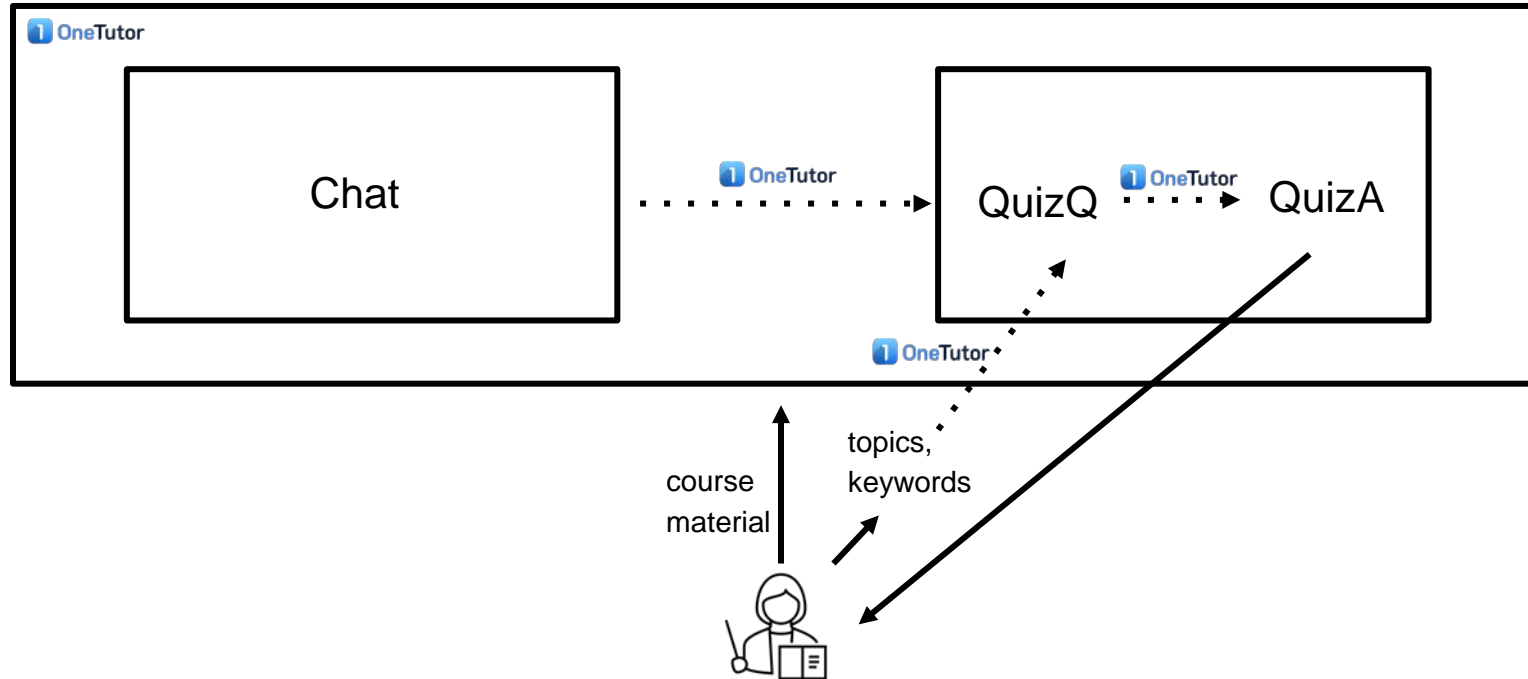
Understanding what students don't



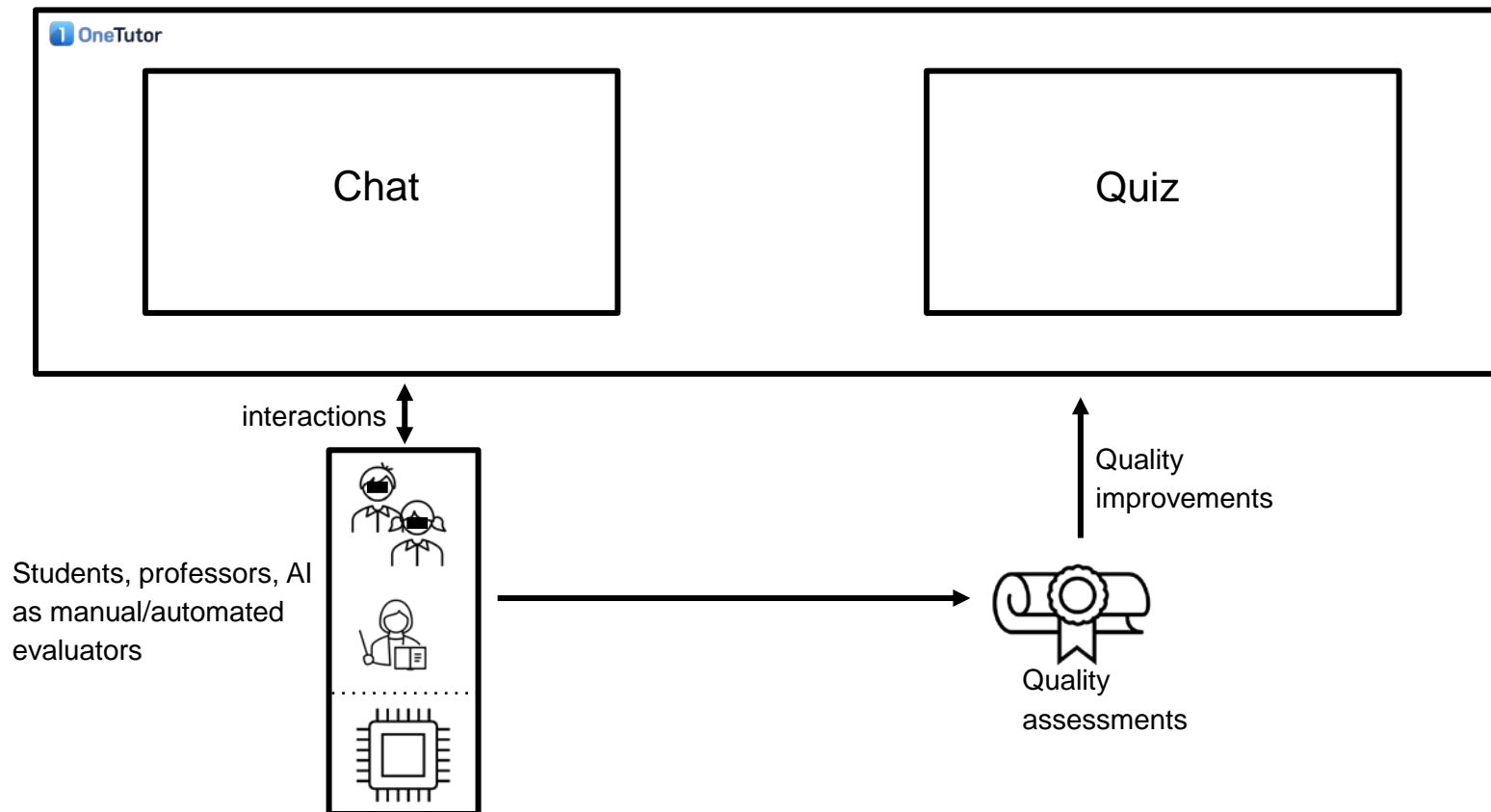
# Feedback: Improved classroom teaching



# Co-Creation with Feedback: Quizzes from chats



# Co-Creation: Improved Quality through Feedback



# Co-Creation through Feedback Loops



# History of OneTutor

- Student lab started in April 2024
- Published on November 20, 2024.  
Developed by five master's students and [Prof. Dr. Pretschner](#) at TUM
- Spin-Off May 2025

## Numbers (21.9.2025)

**13.500+**  
students

**400k+**  
solved quizzes

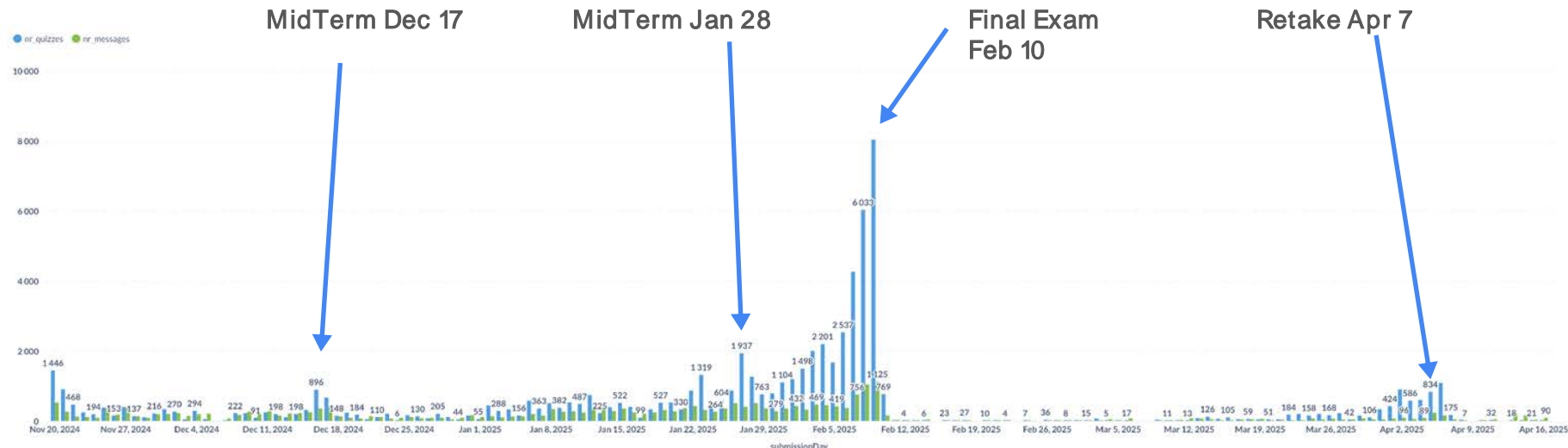
**240k+**  
messages

**590+**  
courses live

**35** universities

**43k+**  
quiz questions  
created

# OneTutor Activity Over Time (EIDI)

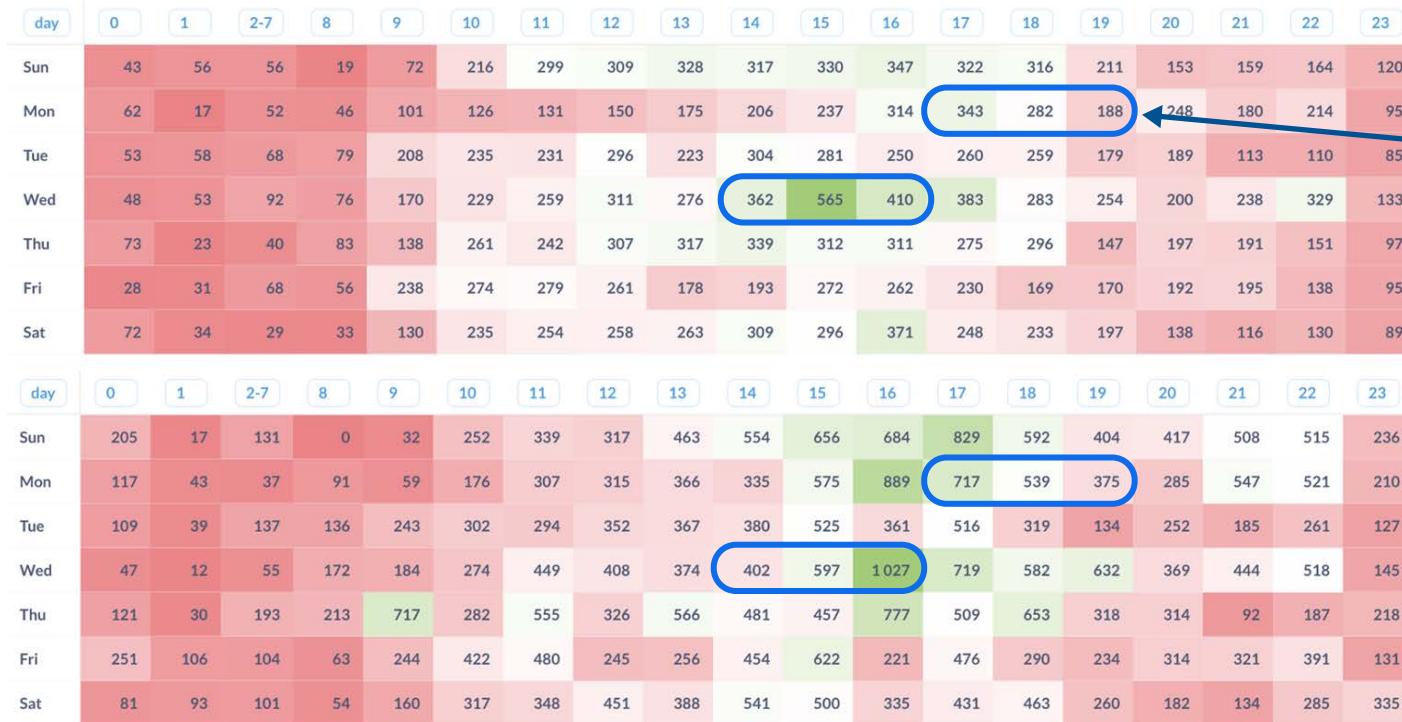


## Some Preliminary Findings

- Introduction to Programming in Winter 2025, Prof. Pretschner, 1200 first sem. students
- Students do quizzes directly before and after class; chat during class
- N=146 randomly picked questions:  
chat answers 89% accurate, 10% partly accurate, 76% useful (!), 19% partly useful
- 72% of students feel the chat helped them prepare for the exam
- 51% of students feel the tool removes barriers for learning, 35% say it increases interest
- No correlation between usage *frequency* and grades
- Yet: 34% of students fail; 28% users fail; 13% active users fail ( $\geq 20$  interactions)
- Free text quiz performance correlates with grades



# Pre- and Post-Class Activity (EIDI until Feb 3)



Chat messages  
(top heatmap)

Lecture times  
Monday 5:15 PM -  
6:45 PM,  
Wednesday 2:15 -  
3:45

Quiz submissions  
(bottom heatmap)

But is it „effective“?

bidt project Affectiveness: longitudinal study with 10+1 universities over three years

What is effectiveness?

**Expect response to depend on subject, beginner vs. advanced, facts vs. arguments, degree of maths, university vs. university of applied sciences**



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Rosenheim



TH Aschaffenburg  
university of applied sciences



Ostbayerische Technische Hochschule  
Amberg-Weiden

HOCHSCHULE  
WEIHENSTEPHAN-TRIEDORF  
UNIVERSITY OF APPLIED SCIENCES

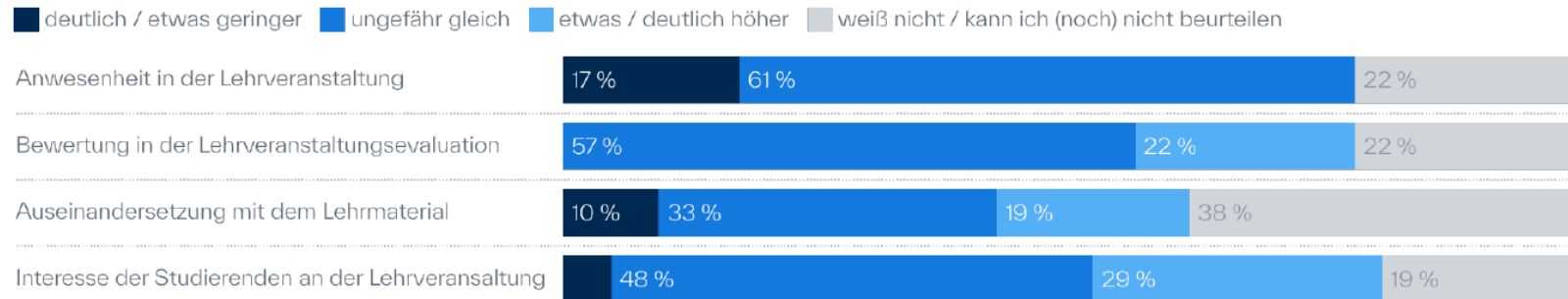


virtuelle  
hochschule  
bayern

# Vorabergebnisse – Dozierendenbefragung ex post

## Veränderungen in der Lehrveranstaltung durch den Einsatz von OneTutor

*Haben Sie im Vergleich zu früheren Veranstaltungen Veränderungen an Ihrer Lehrveranstaltung bezüglich folgender Aspekte festgestellt?*



Basis: n = min. 21.

Vorläufige Ergebnisse

# Vorabergebnisse – Dozierendenbefragung ex post

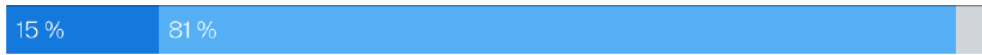
## Einsatz von OneTutor in der Lehrveranstaltung

trifft ganz und gar nicht zu 
  trifft eher nicht zu 
  trifft eher zu 
  trifft voll und ganz zu 
  weiß nicht / kann ich (noch) nicht beurteilen

Ich sehe OneTutor als sinnvolle Ergänzung zu bisherigen Lehrmethoden.



Ich erachte den Einsatz von generativer KI in der Hochschulbildung grundsätzlich als sinnvoll.



Ich würde OneTutor in dieser Lehrveranstaltung noch einmal anbieten.



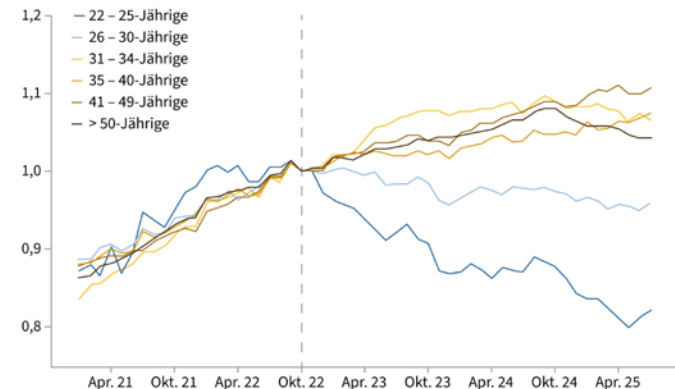
Basis: n = min. 26.

# Considerations

- Adding individualization and bidirectionality to physical classes
  - Currently working on personalized learning paths
  - Skeptical about help with homework
- Chat responses OK, quiz questions not always: manual curation necessary
  - But is a professor really more accurate than a machine?
- Used neither by all students nor by all professors
- Don't help too much: homework is meant to be hard!
- Makes campus seemingly less attractive – „campus exodus“ a real concern
  - „AI-moderated tutorials“
- Talked about the How today: „What to teach in times of GenAI“ may be the more pressing question

## Softwareentwickler

Beschäftigungsentwicklung, Start von ChatGPT = 1



## Finally

- Students use such systems anyway
- Let's stay in the driver's seat!



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<https://onetutor.ai>



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