

# InfoFit and Beyond: AI Chatbots as EdTech Tools for Self-Regulated Learning in MOOCs

**Benedikt Brünner, Martin Ebner**

2025-06-23

27th International Conference on Human-Computer Interaction, Gothenburg, Sweden

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# Outline

- 1 Introduction
- 2 Background
- 3 Chatbot Design
- 4 Methodology
- 5 Results
- 6 Discussion
- 7 Conclusion

## Context

- MOOCs enable democratized education (Ebner & Schön, 2021), but come with challenges of asynchronous learning
- Self-Regulated Learning (SRL) is essential for learners' MOOC success
- Chatbots offer personalized, real-time support (Jahić et al., 2024)
- Generative AI enhances chatbot potential to support SRL (Brünner et al., 2025)

## Research Aim

- Evaluate integration of a RAG-based genAI chatbot in a MOOC
- Support learning based on Zimmerman's SRL model: forethought, performance, reflection (2008)
- **RQ:** How do learners interact with AI-powered chatbots in MOOCs, and to what extent do these interactions support self-regulated learning (SRL)?

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## Zimmerman's SRL Model 2008

- Forethought: planning and goal setting
- Performance: monitoring, strategy use
- Self-reflection: evaluation, self-feedback

## AI Chatbots in EdTech

- Real-time feedback and explanations
- Personalized, private assistant, accessible 24/7
- Literature shows potential, but limited SRL coverage



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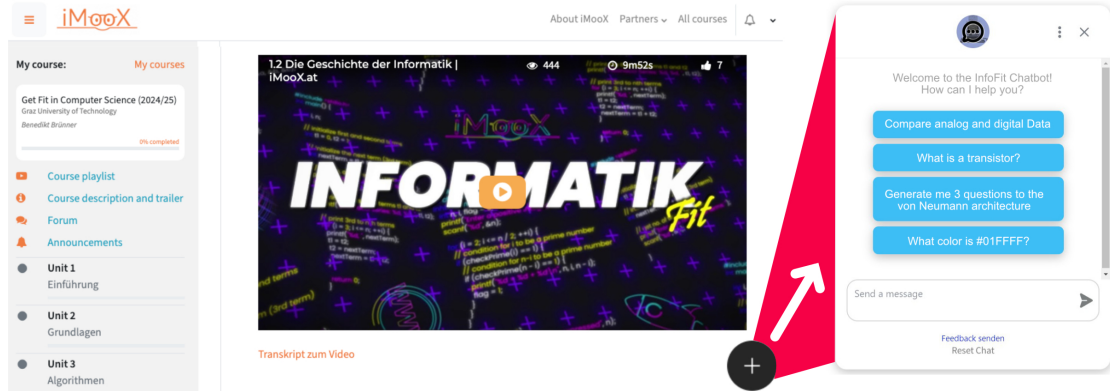
# Chatbot Architecture

- RAG-based architecture using AnythingLLM
- Course content embedded in vector database
- Model: GPT-4o-mini via Azure-hosted API
- GDPR-compliant, EU-hosted infrastructure

## Integration into MOOC

- Course: *Informatik-Fit* on iMooX.at
- Flipped classroom + asynchronous chatbot access
- Chatbot available after opt-in
- Supported explanations, summaries, Q&A

# Low Barrier Integration



The image displays a screenshot of the iMooX website and a chatbot interface. The website shows a course titled "INFORMATIK Fit" (1.2 Die Geschichte der Informatik | iMooX.at) with a video player and a sidebar menu. The chatbot interface, titled "Welcome to the InfoFit Chatbot! How can I help you?", features several buttons for user interaction: "Compare analog and digital Data", "What is a transistor?", "Generate me 3 questions to the von Neumann architecture", and "What color is #01FFFF?". A red arrow points from the chatbot interface towards the website content.

**Website Content:**

- Course: **INFORMATIK Fit**
- Unit 1: Einführung
- Unit 2: Grundlagen
- Unit 3: Algorithmen

**Chatbot Interface:**

- Welcome to the InfoFit Chatbot! How can I help you?
- Buttons: Compare analog and digital Data, What is a transistor?, Generate me 3 questions to the von Neumann architecture, What color is #01FFFF?
- Input field: Send a message
- Buttons: Feedback senden, Reset Chat

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## Study Design

- Mixed-method survey ( $n = 79$ ) after course completion
- 59 used chatbot, 20 did not
- Anonymous, GDPR-compliant
- Survey included Likert items and open-ended responses

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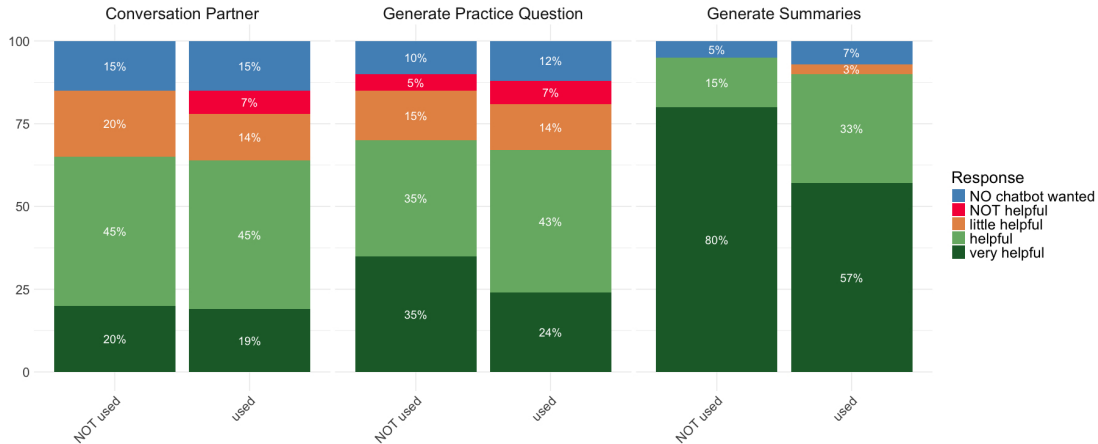
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## Perceived Usefulness

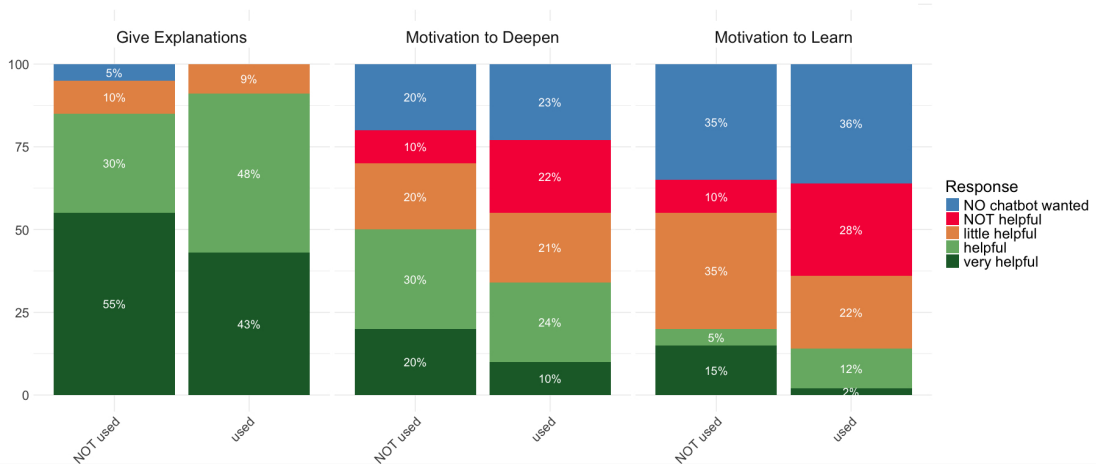
- Top use-cases: summarization, explanations, practice questions
- Motivation support rated lower
- 98% recommend future use



# Perceived Usefulness

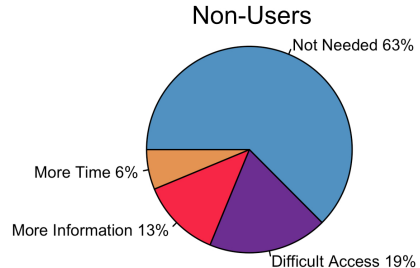
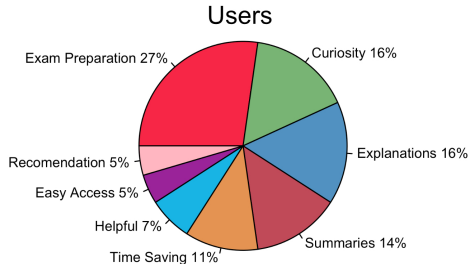


# Perceived Usefulness



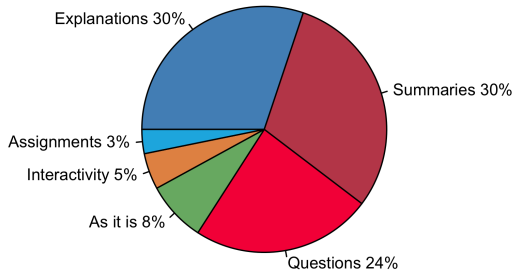
## Why Did Students Use It?

- ☒ Exam preparation (27%), curiosity and explanations (each 16%)
- ☐ Not needed (63%) or difficult to access (19%)



## How Can It Support SRL?

- Supported the learning process best with
  - explanations, summaries, custom questions



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## Takeaways

- Effective: forethought, performance, reflection phases
- Limitations in motivational support
- High interest, but room for improvement regarding
  - onboarding
  - deeper lecture integration

## Future Directions

- Add multimodal input (voice, images)
- Automate content embedding - currently manual
- Long-term SRL effects
- Deepen useful integration with course structure

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## Final Thoughts

- Chatbots are promising EdTech tools in MOOCs
- RAG architecture improves accuracy
- Motivation remains a challenge
- Strong potential for personalized learning support

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