

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

Benedikt Brünner, Martin Ebner

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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 shows a screenshot of the iMooX website interface. On the left, there is a sidebar with course information: "My course: My courses", "Get Fit in Computer Science (2024/25)", "Graz University of Technology", "Benedikt Brünner", "0% completed", and a list of units: "Unit 1 Einführung", "Unit 2 Grundlagen", and "Unit 3 Algorithmen". The main content area displays a video player for "1.2 Die Geschichte der Informatik | iMooX.at" with 444 views and a 9m52s duration. The video thumbnail features the word "INFORMATIK" in large white letters with a play button icon, and "Fit" in yellow script. Below the video is a red link "Transkript zum Video".

On the right, a chatbot interface is shown. It has a header "Welcome to the InfoFit Chatbot! How can I help you?". Below the header are four blue buttons with the following text: "Compare analog and digital Data", "What is a transistor?", "Generate me 3 questions to the von Neumann architecture", and "What color is #01FFFF?". At the bottom of the chatbot is a text input field "Send a message" with a send button, and two links: "Feedback senden" and "Reset Chat". A red arrow points from the bottom right of the video player area towards the chatbot interface.

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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

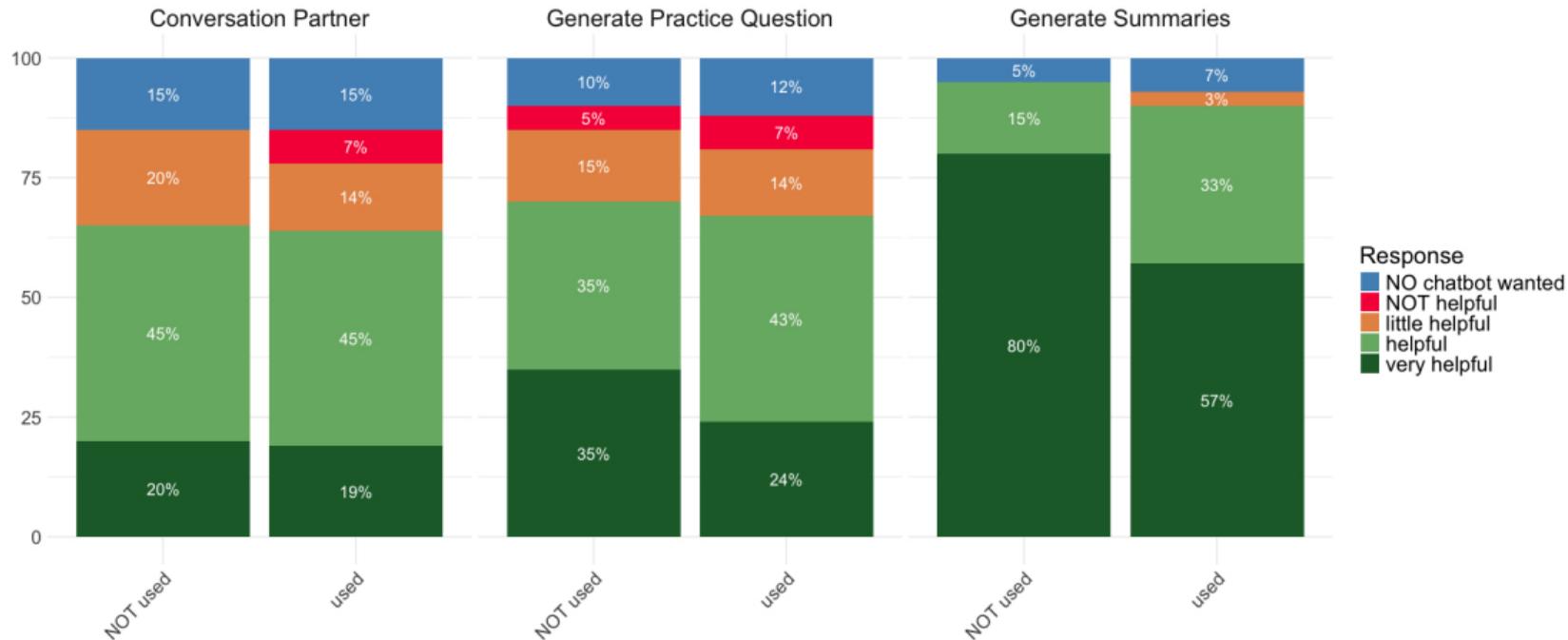
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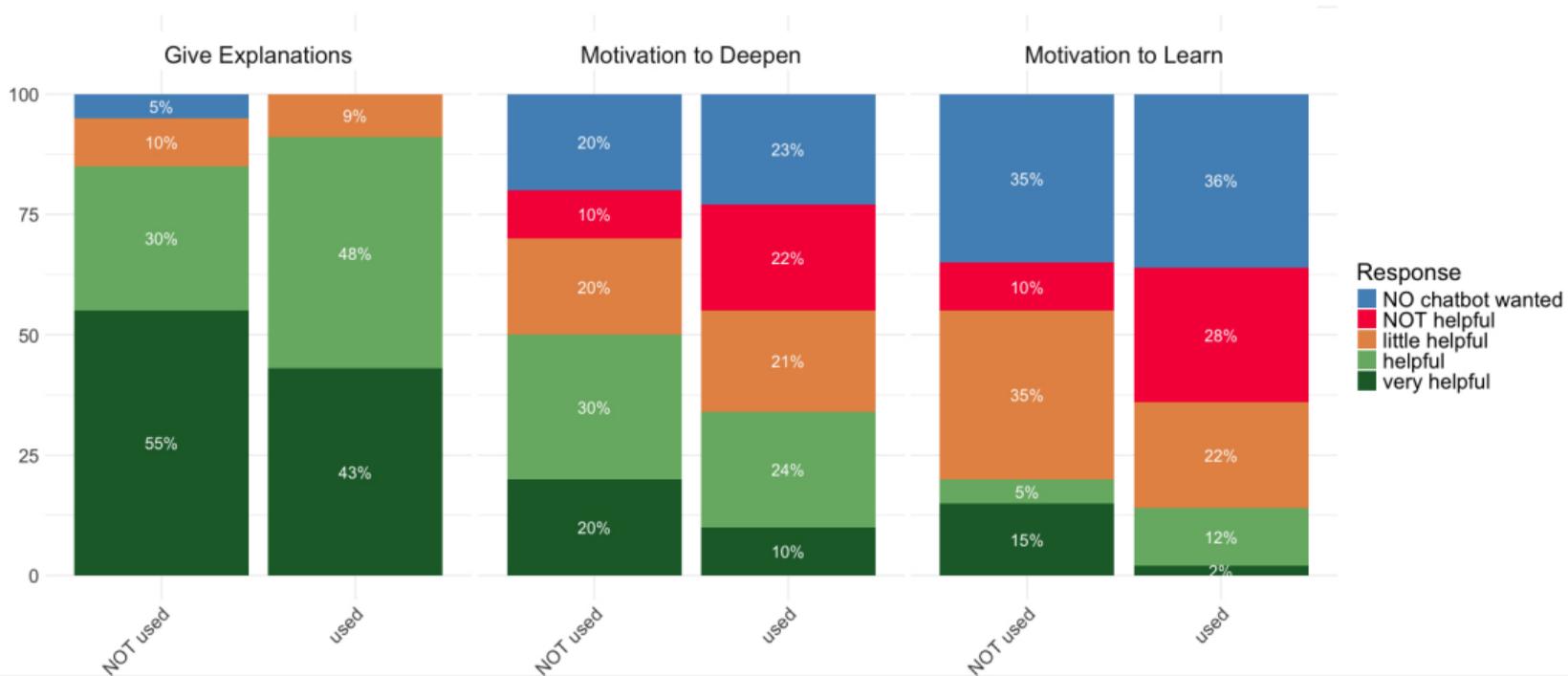
Perceived Usefulness

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

Perceived Usefulness

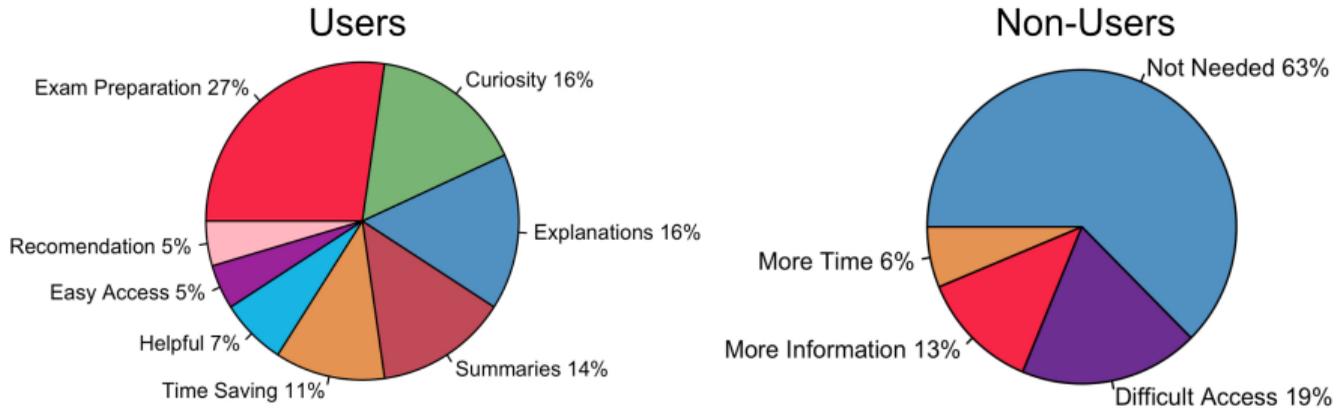


Perceived Usefulness



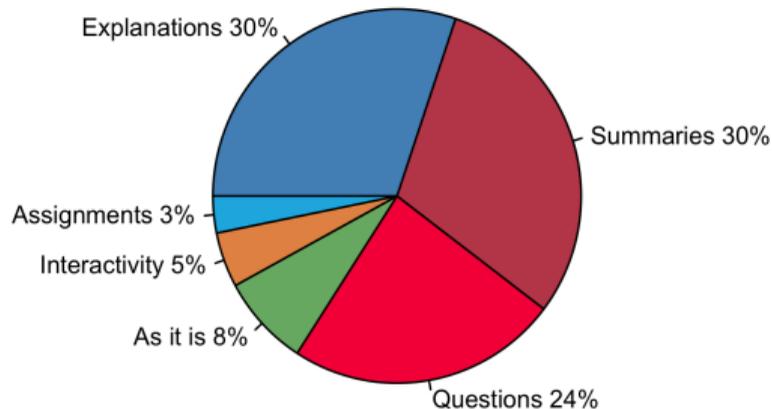
Why Did Students Use It?

- 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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FutureDEAL
 Digital Education And Learning



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