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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

Email flaait.llt@tugraz.at

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Benedikt Brünner, Martin Ebner
ed-tech.at

Outline

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)?

Outline

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

Outline

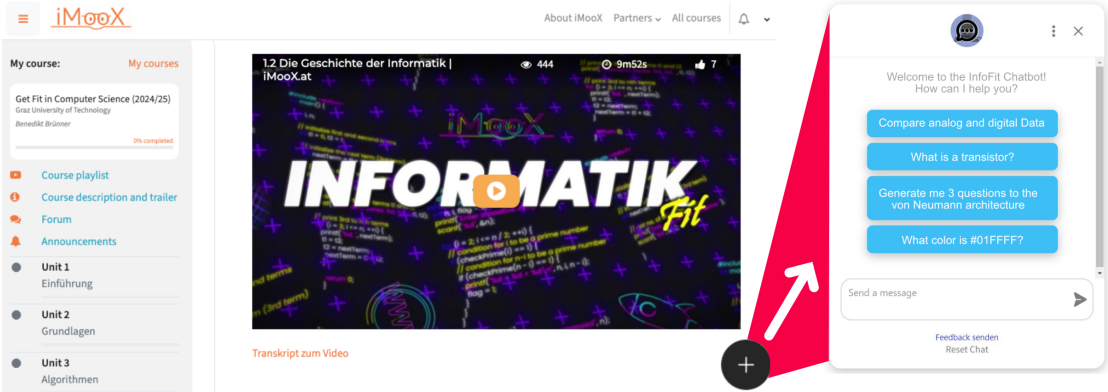
Chatbot Architecture

- 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



Outline

Study Design

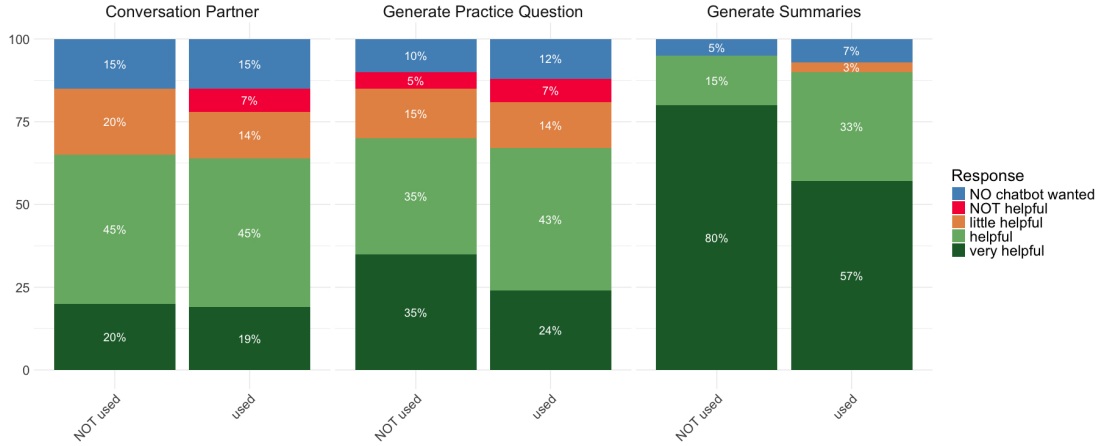
- Mixed-method survey (n = 79) after course completion
- 59 used chatbot, 20 did not
- Anonymous, GDPR-compliant
- Survey included Likert items and open-ended responses

Outline

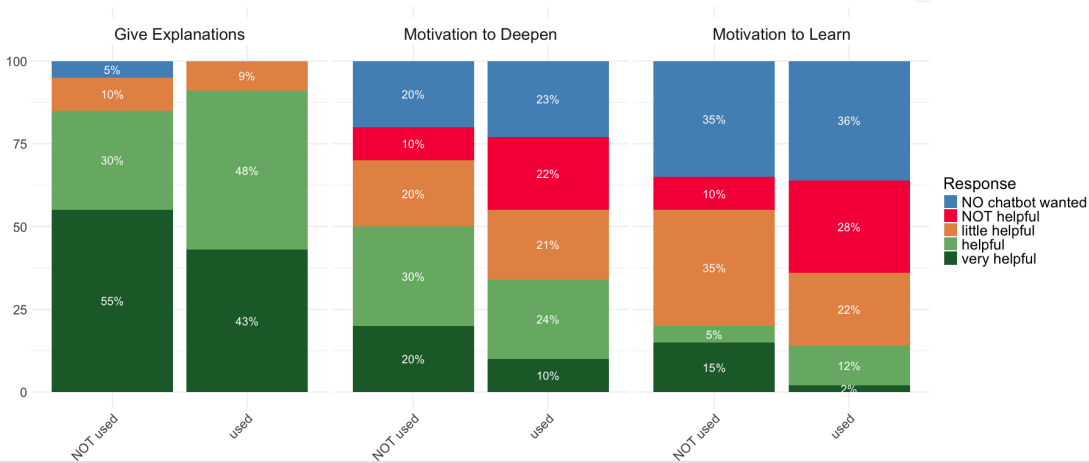
Perceived Usefulness

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

Perceived Usefulness

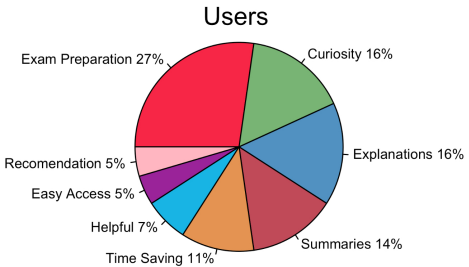


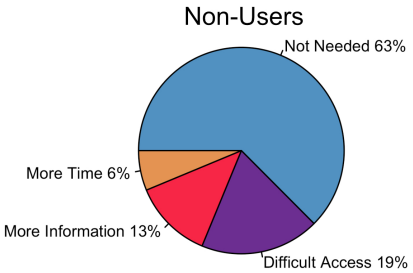
Perceived Usefulness



Why Did Students Use It?

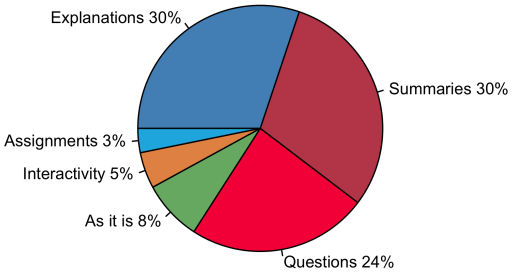
- [x] Exam preparation (27%), curiosity and explanations (each 16%)
- [ ] Not needed (63%) or difficult to access (19%)





How Can It Support SRL?

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



Outline

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

Outline

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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