Human-centered design approaches for using Artificial Intelligence to support teaching and learning

Talk Lehre 2025 RWTH Aachen University

Irene-Angelica Chounta

Computational Methods in Modeling and Analysis of Learning Processes (colaps)

Faculty of Computer Science, University of Duisburg-Essen, Germany

colaps
https://www.uni-due.de/colaps/

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If you could have a superpower to help you in teaching,

what would it be?

https://tinyurl.com/s6czr98c

Chounta, Irene-Angelica, Emanuele Bardone, Aet Raudsep, and Margus Pedaste. "Exploring teachers' perceptions of artificial intelligence as a tool to support their practice in Estonian K-12 education." International journal of artificial intelligence in education 32, no. 3 (2022): 725-755.

Effectiveness

Efficiency

Rapport

Course Preparation

Personal Attributes

Personal Skills

Effectiveness

Efficiency

Rapport

Course Preparation

Personal Attributes

Personal Skills

Authoring Tools / Open Educational Resources

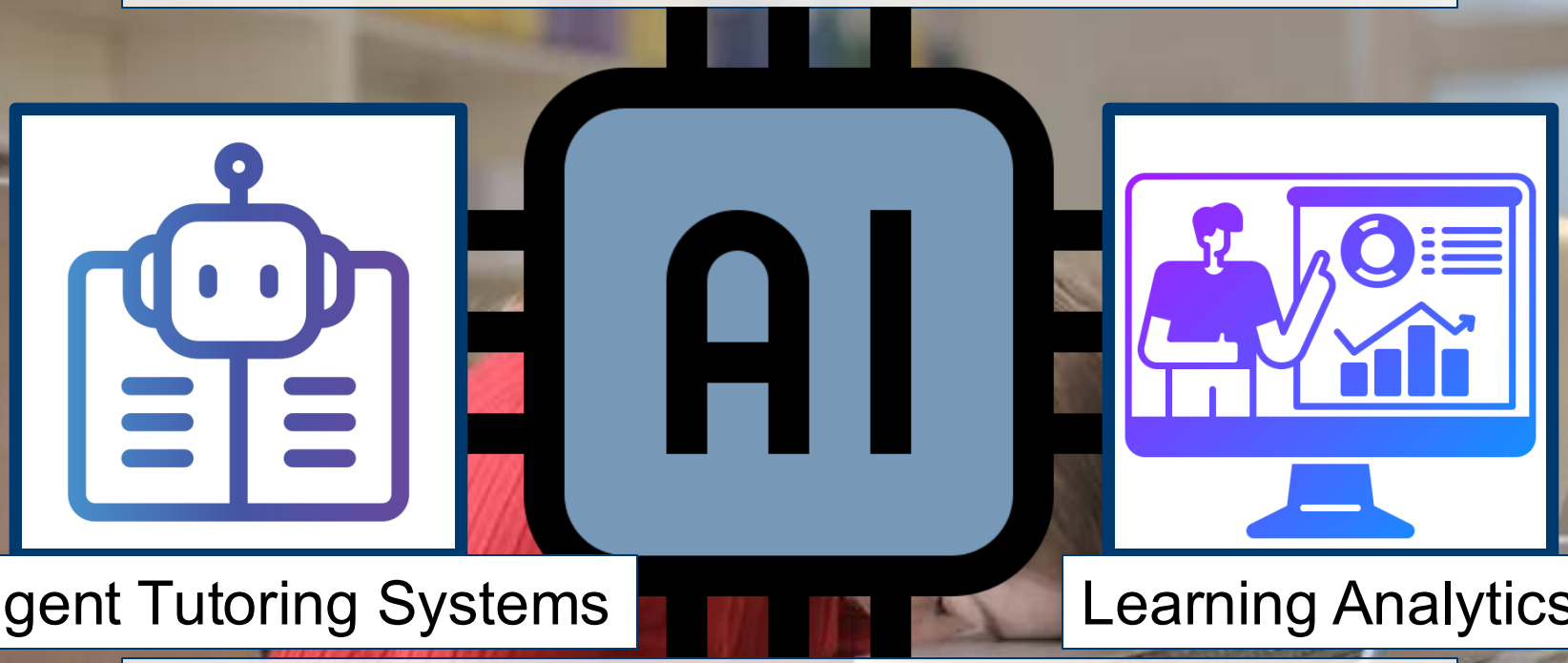
Intelligent Learning Environments

Learning Analytics

Automatic Grading

Learning Design & Course planning

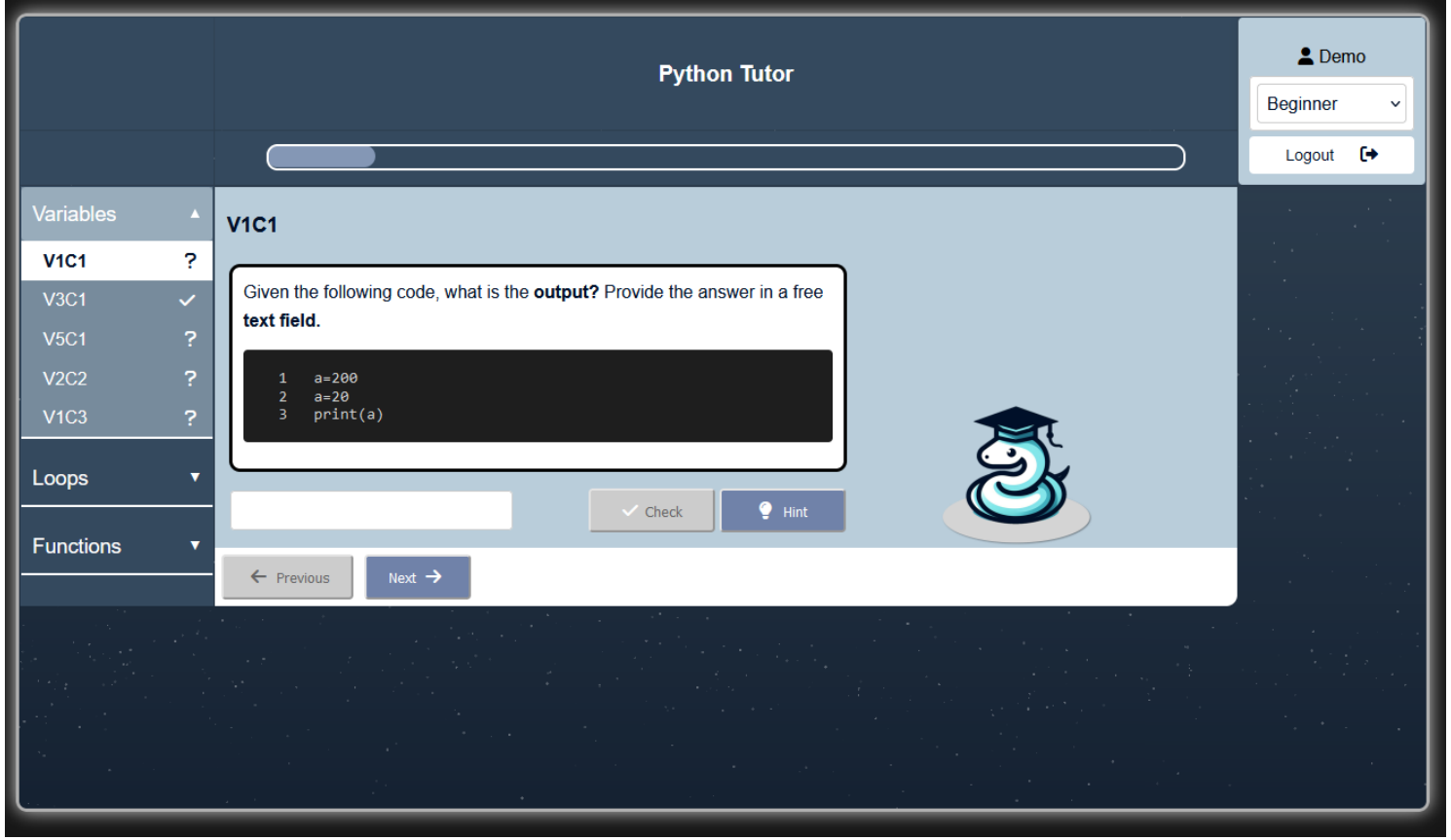
Teachers love to ….teach!



Intelligent Tutoring Systems

Learning Analytics

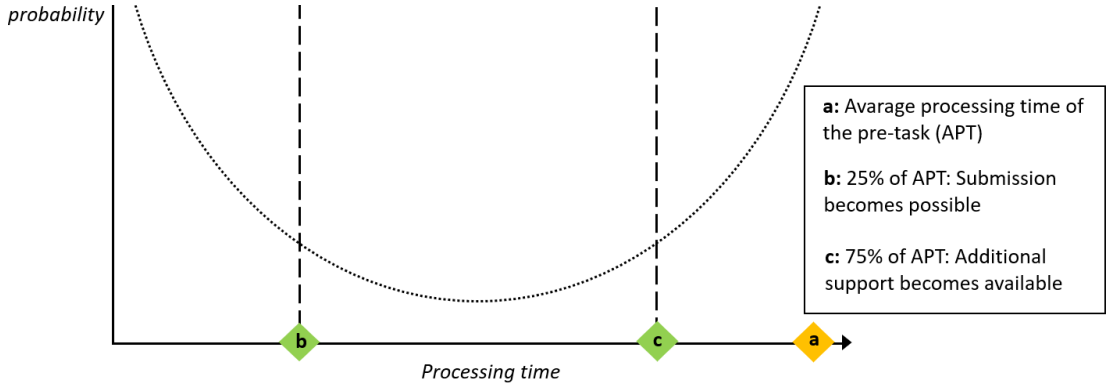
Teachers need support



Instructional Contingency

- No support
- Worked examples
- Explicit instructions

Temporal Contingency



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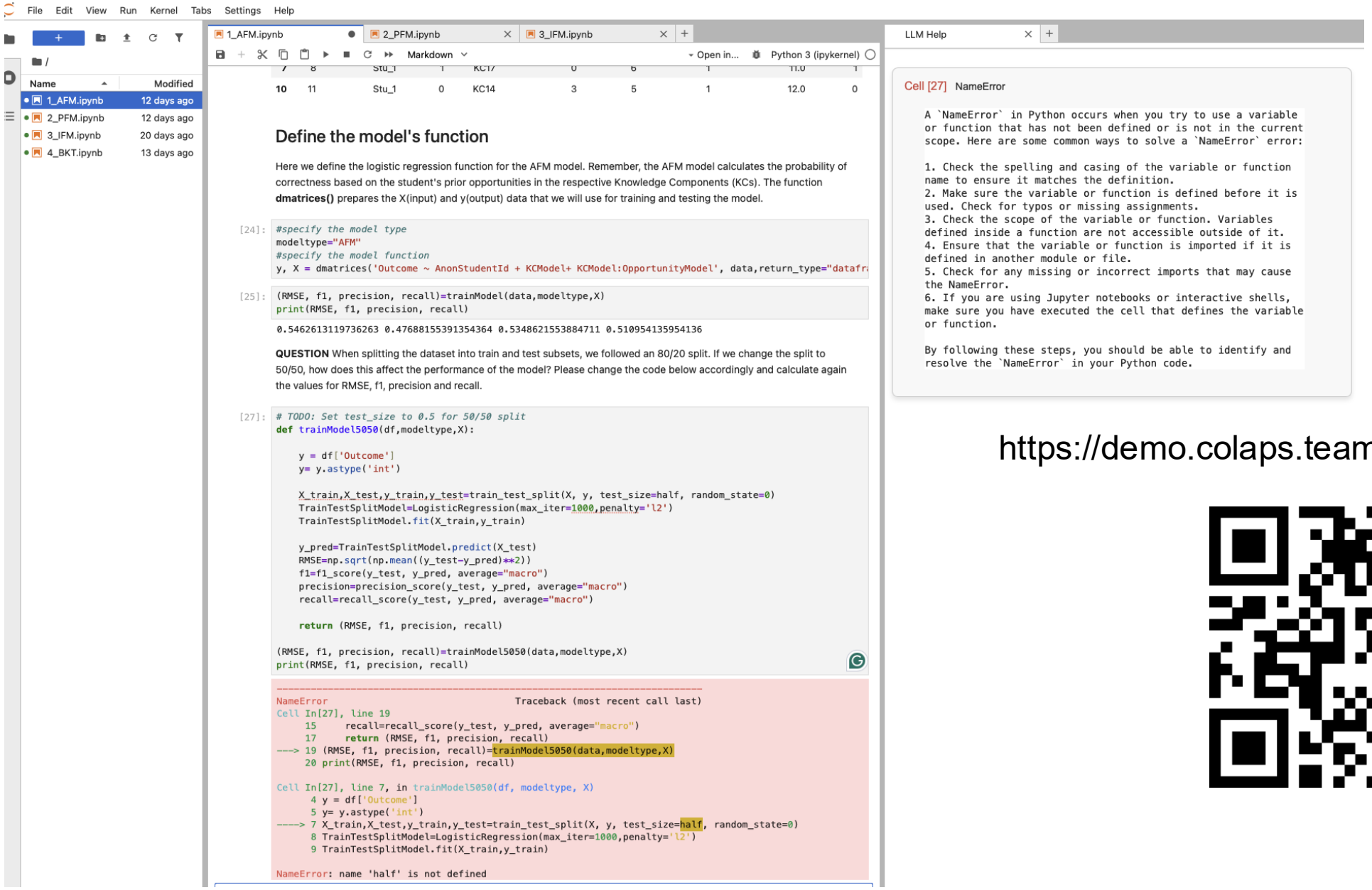

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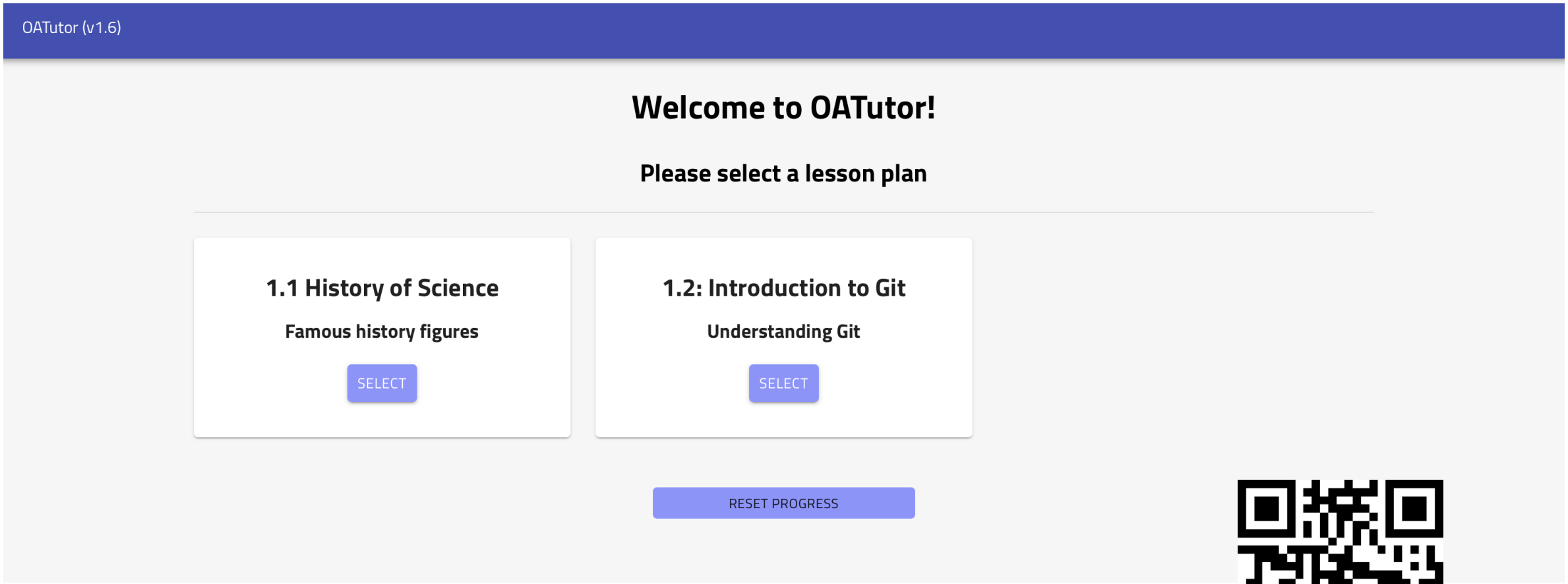
UA RUHR | RESEARCH CENTER TRUSTWORTHY DATA SCIENCE AND SECURITY

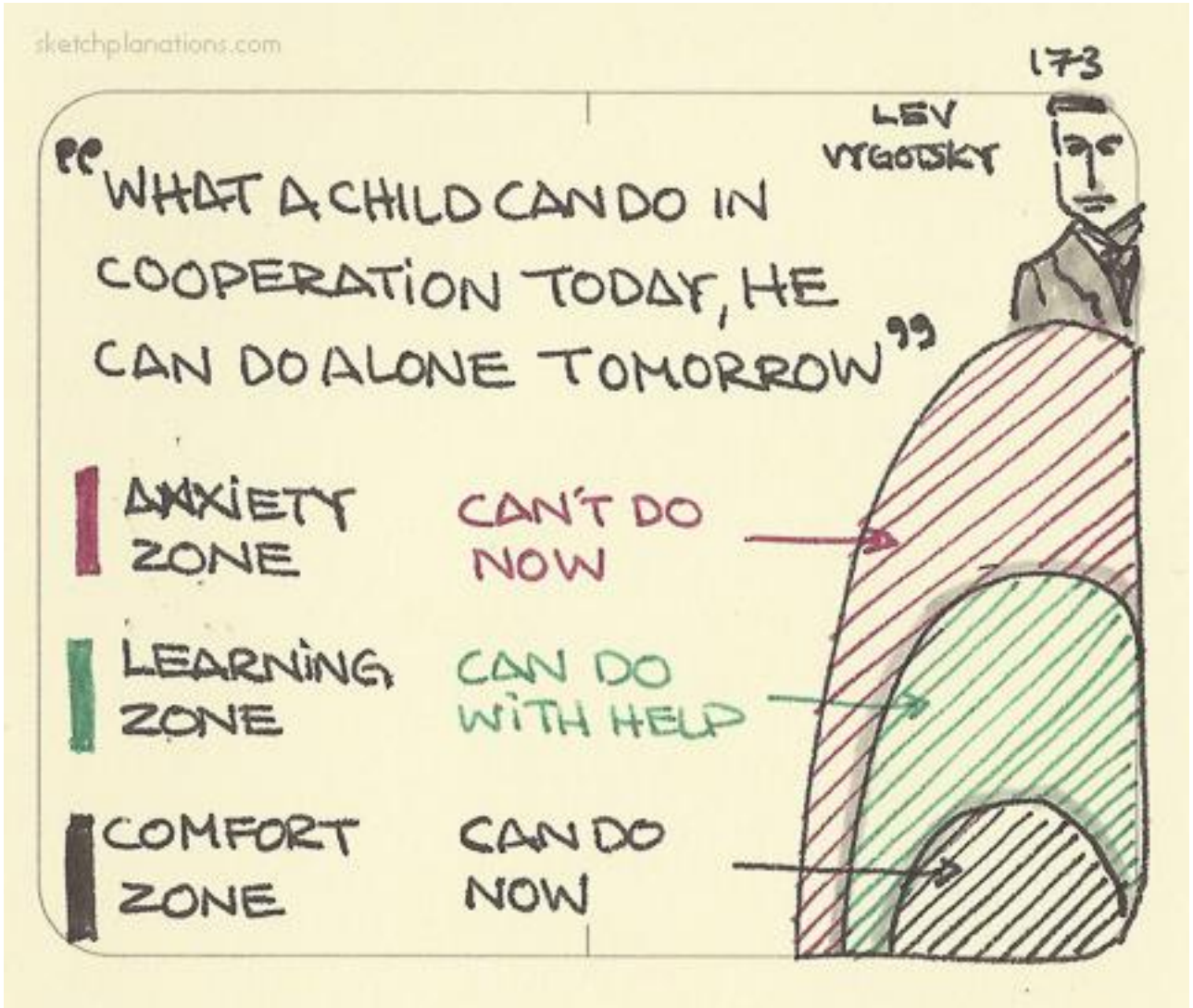
https://demo.colaps.team/jupyterhub/hub/login

ai.prompt
ADAPTIVE FEEDBACK FOR PYTHON PROGRAMMING

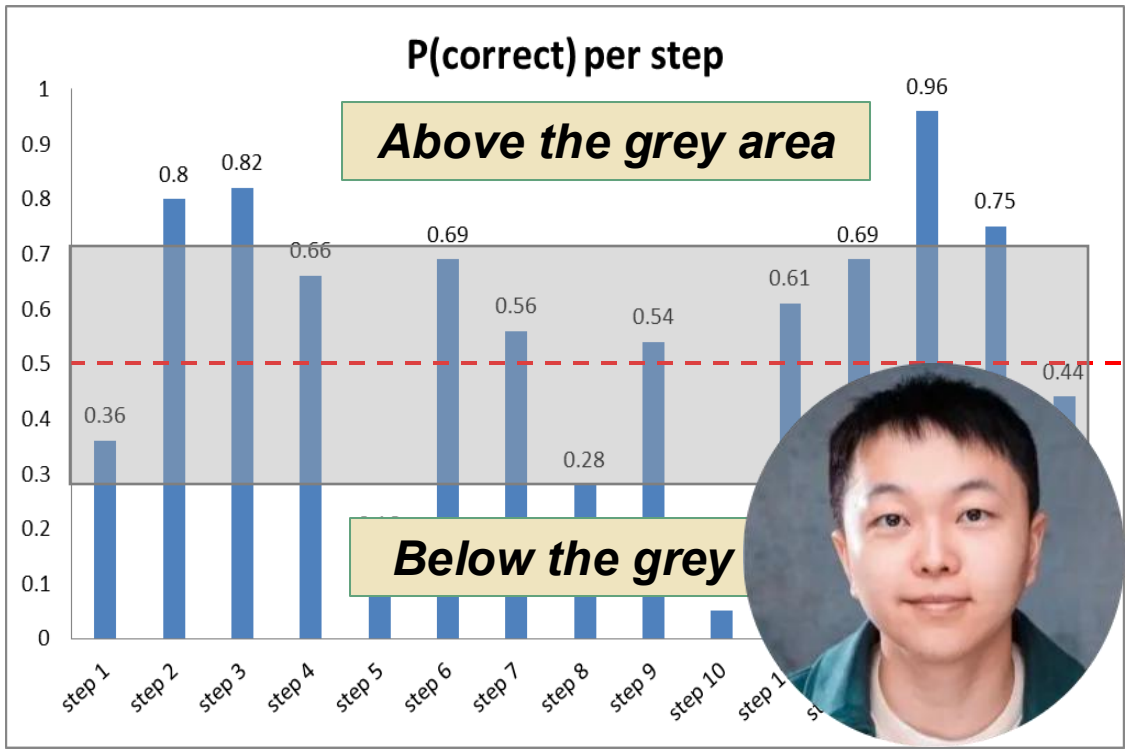


https://colaps-research.github.io/OATutor/

https://www.oatutor.io

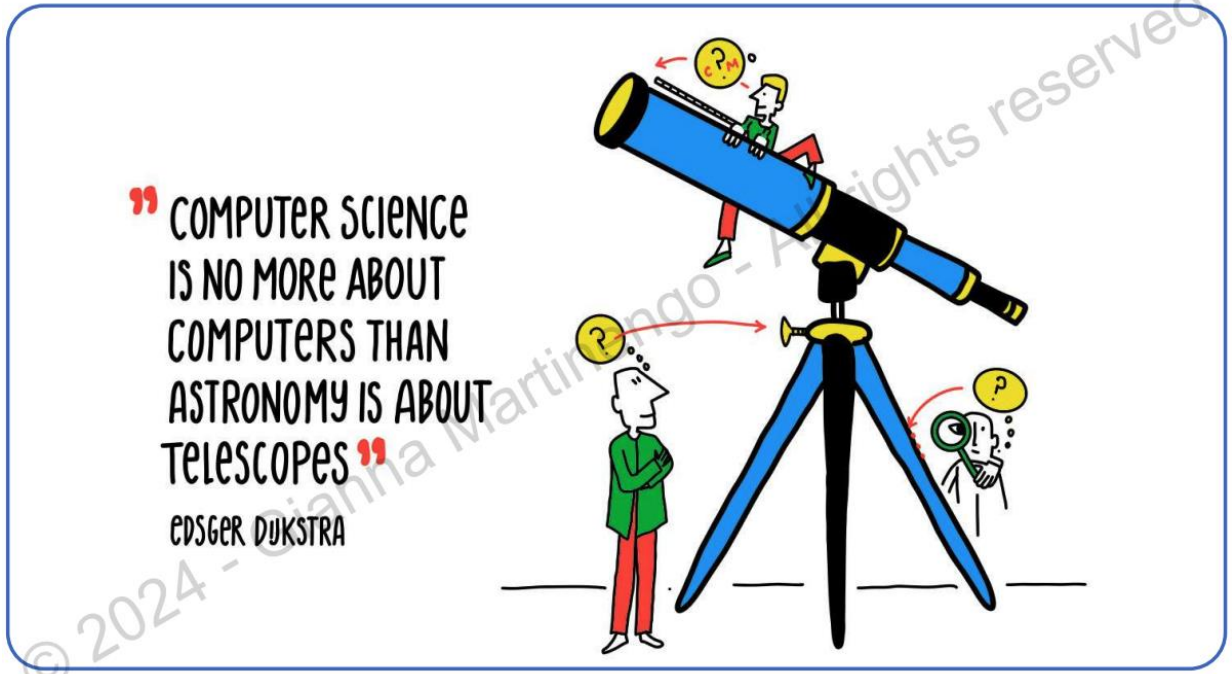


SOON.....



Schulze Bernd, N., & Chounta, I. A. (2024, July). Beyond the Grey Area: Exploring the Effectiveness of Scaffolding as a Learning Measure. In International Conference on Artificial Intelligence in Education (pp. 365-378). Cham: Springer Nature Switzerland.
Chounta, I.A., Albacete, P., Jordan, P., Katz, S., McLaren, B.M.: The grey area: A computational approach to model the zone of proximal development. In: Lavou´e, E., Drachsler, H., Verbert, K., Broisin, J., P´erez-Sanagust´ın, M. (eds.) Data driven ´ approaches in digital education, Lecture notes in computer science Information systems and applications, incl. internet/web, and HCI, vol. 10474, pp. 3–16. Springer, Cham (2017)
Katz, S., Albacete, P., Chounta, I.A., Jordan, P., McLaren, B.M., Zapata-Rivera, D.: Linking dialogue with student modelling to create an adaptive tutoring system for conceptual physics. International Journal of Artificial Intelligence in Education 31(3), 397–445 (2021). https://doi.org/10.1007/s40593-020-00226-y

AI and Education



Gianna Martinengo. Sharing from experience: competencies for “intelligent dialogues” with emerging technologies (ITS, 2024)

https://iis-international.org/wp-content/uploads/2024/10/2024-vers-SHARE-ITS-THESSALONIKI-GM-TALK-V6_compressed.pdf

Thank you

Happy to answer your questions ☺

You may want to check here:

- **[October 1-2 2025] Council of Europe 3rd AIED Working Conference**: (more information to be announced) https://www.coe.int/en/web/education/artificial-intelligence
- **[October 31 – November 2 2025] ETPE 2025** "14th Panhellenic Conference with International Participation", https://etpe2025.aegean.gr/en/14-ict/
- **[November 4-7 2025] Collabtech 2025**: "The 31st International Conference on Collaboration Technologies and Social Computing" http://www.collabtech.org

irene-angelica.chounta@uni-due.de
www.iachounta.com