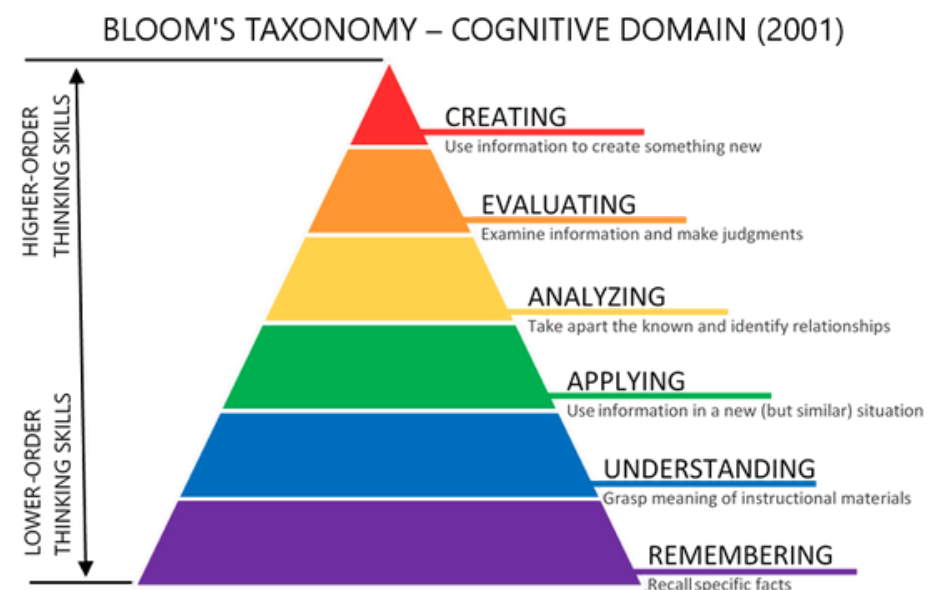


Efficacy

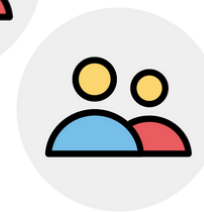
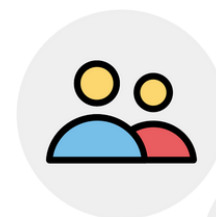
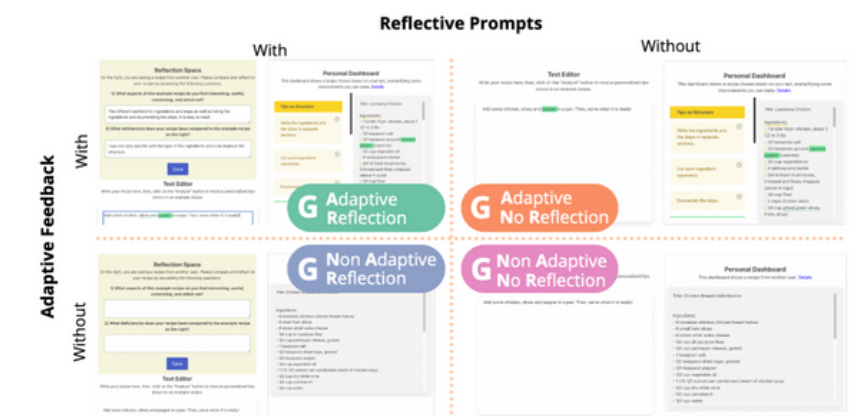
Learning Objectives

Co-designed per topic with educators according to Bloom's Taxonomy.



Evaluate the tool's impact **per topic and difficulty** using the quizzes and extracting skill mastery level (knowledge tracing, e.g. [1]).

Factorial design experiment to evaluate the impact of **specific features** (similar to [2])

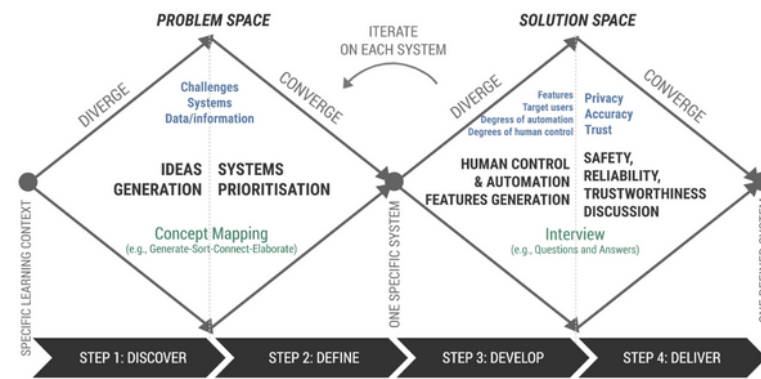


Controlled study on effect and perception of **prolonged usage**.

[1] Swamy, Vinitra, et al. "Deep Knowledge Tracing for Free-Form Code Progression", AIED, 2018.

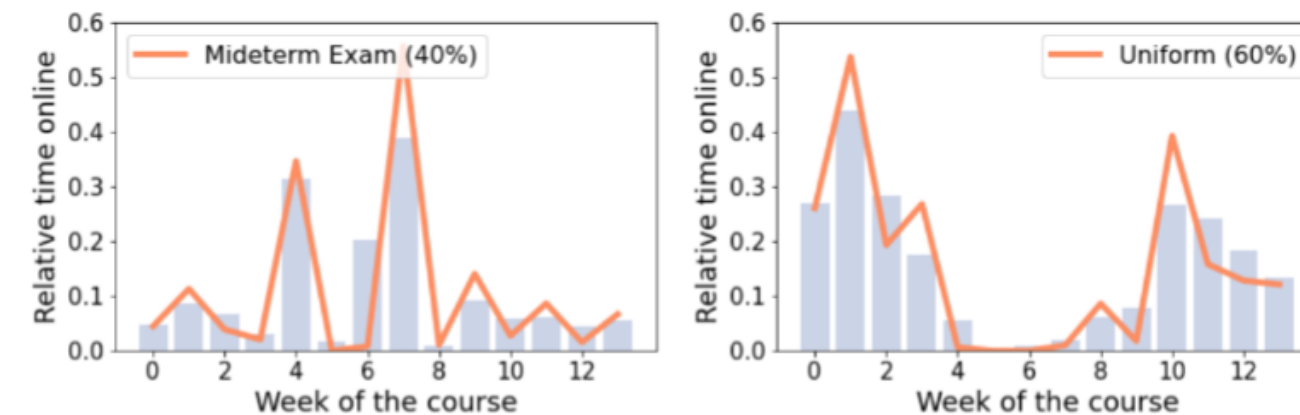
[2] Mejia-Domenzain, Paola, et al. "Enhancing Procedural Writing Through Personalized Example Retrieval: A Case Study on Cooking Recipes". IJAIED, 2024

Efficiency



Double diamond model for human-centered design

- Co-design sessions [1]
- Iterative design [2, 3, 4]



Trace data analysis

- Time series analysis of clickstream [5, 6, 7].
- Macro and micro SRL processes [8, 9, 10].

- [1] Swamy, Vinitra, et al. "Trusting the Explainers: Teacher Validation of Explainable Artificial Intelligence for Course Design". LAK, 2023 (Honorable Mention).
- [2] Mejia-Domenzain, Paola, et al. "Enhancing Procedural Writing Through Personalized Example Retrieval: A Case Study on Cooking Recipes". IJAIED, 2024
- [3] Mejia-Domenzain, Yazci, et al. "GELEX: Generative AI-Hybrid System for Example-Based Learning". CHI EA, 2024.
- [4] Mejia-Domenzain, Paola, et al. "Visualizing Self-Regulated Learner Profiles in Dashboards: Design Insights from Teachers." AIED LBR. Cham: Springer International Publishing, 2023.
- [5] Swamy, Vinitra, et al. "Meta Transfer Learning for Early Success Prediction in MOOCs." Learning @ Scale, 2022.
- [6] Asadi, Swamy, et al. "RIPPLE: Concept-Based Interpretation for Raw Time Series Models in Education." AAAI Educational Symposium, 2023.
- [7] Swamy, Vinitra et al. "MultiModN -- Multimodal, Multi-Task, Interpretable, Modular Networks." NeurIPS, 2023.
- [8] Mejia-Domenzain, Paola, et al. "Identifying and comparing multi-dimensional student profiles across flipped classrooms." AIED. Cham: Springer International Publishing, 2022.
- [9] Mejia-Domenzain, Paola, et al. "Evolutionary Clustering of Apprentices' Self-Regulated Learning Behavior in Learning Journals." IEEE Transactions on Learning Technologies 15.5 (2022): 579-593.
- [10] Mejia-Domenzain, Paola, et al. "Navigating Self-Regulated Learning Dimensions: Exploring Interactions Across Modalities." AIED. Cham: Springer International Publishing, 2024.