



Designing a Teacher Dashboard to Support Primary School Teachers' Direct Strategy Instruction and Students' Self-regulated Learning

Melis Dülger*, Anouschka van Leeuwen, Jeroen Janssen, Liesbeth Kester
m.dulger@uu.nl

Introduction

Self-regulated learning (SRL) refers to learners' ability to actively plan, monitor, and regulate their learning. The COPES Model of SRL [1] outlines four phases: task definition, goal setting and planning, enactment, and adaptations.

Adaptive learning technologies (ALTs) provide external feedback and adjust the difficulty of the tasks according to students' levels [2]. They are widely used for practicing math.

Teachers' role: Improving students' SRL through direct instruction of SRL strategies [3]

Problem Statement:

- Students experience challenges in monitoring and controlling their learning
- Large classrooms make it difficult for teachers to monitor students' learning process

Teacher dashboards aggregate various indicators regarding students' learning process and present it to teachers through visualizations [4].

Methods

Round 1: Semi-structured Interviews

Aims

- Identifying relevant and actionable SRL indicators
- Identifying design preferences of teachers

Instruments

- Storyboards and reflective questions

Participants

- $n = 10$ Dutch primary school teachers using ALTs

Round 2: Semi-structured Interviews

Aims

- Identifying teachers' evaluations of the clarity and actionability of the dashboard information and visualizations
- Identifying teachers' preferences and concerns on aggregation of the classroom information

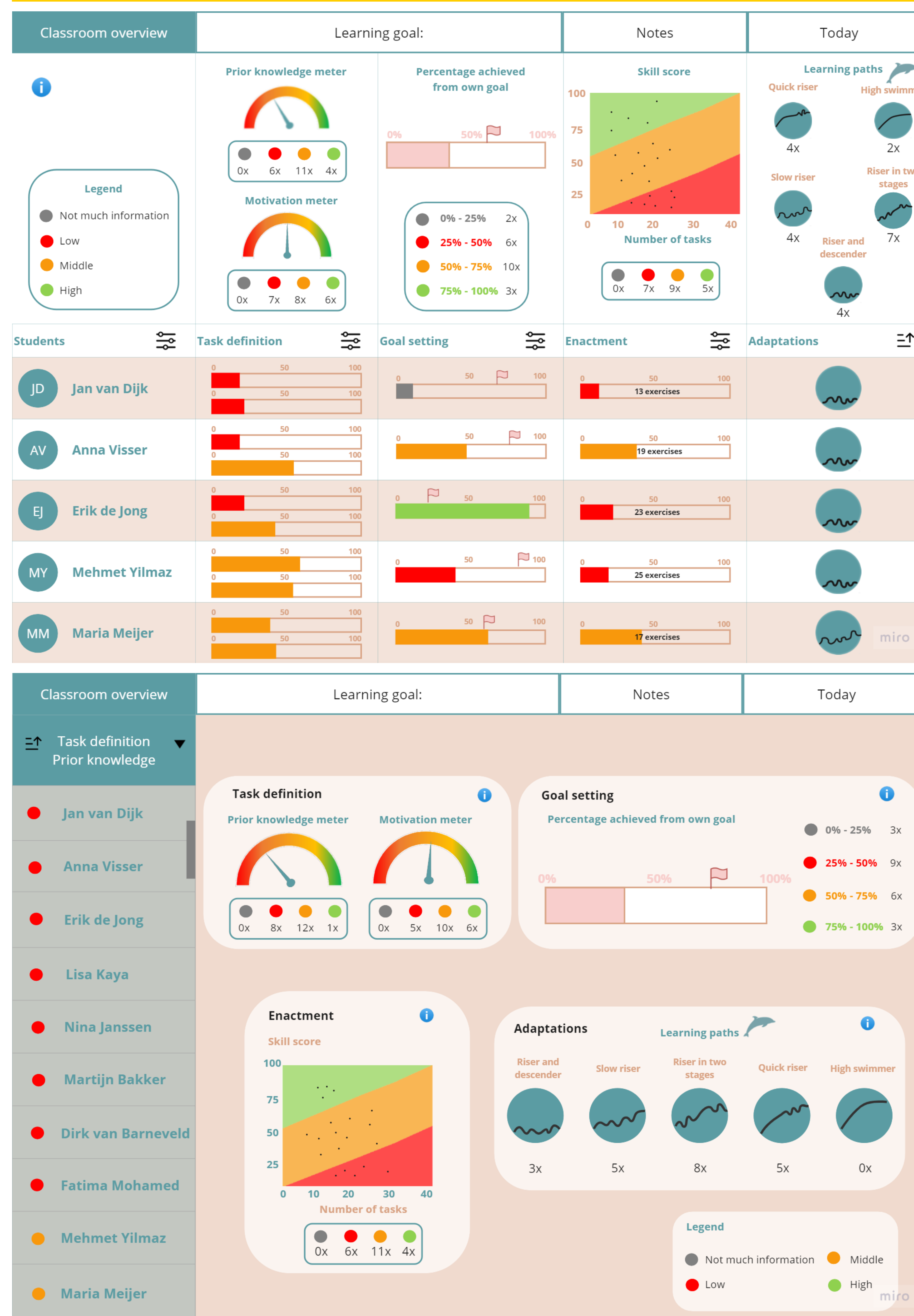
Instruments

- Classroom scenarios, reflective questions, prototypes

Participants

- $n = 11$ Dutch primary school teachers using ALTs

Prototyping



Results

Round 1: Relevant and Actionable SRL Indicators

Task definition: Students' prior knowledge, learning gaps, and motivation

Goal setting: Students' set and achieved goals

Enactment: Students' failed and achieved goals, number of correct and incorrect assignments, growth

Adaptations: Students' working strategies, where they face difficulties

Instruction

- Talking with students about their learning processes
- Preparing for upcoming lessons
- Informing and adapting instruction strategies
- Creating subgroups
- Planning

Round 2: Prototype Clarity, Actionability, and Design

- Goal setting and adaptations widgets should be clearer
- Most teachers find widgets actionable
- Individual information provided by Prototype 1 is useful
- The overview of Prototype 2 is clearer and easier to use
- Most teachers prefer a combination of these prototypes

Implications

The design steps described in the study and interview results may serve as a reference for future SRL dashboards in primary school classrooms.

References

- [1] Winne, P. H., & Hadwin, A. F. (1998). Studying as self-regulated learning. In *Metacognition in educational theory and practice*. (pp. 277–304). Lawrence Erlbaum Associates Publishers.
- [2] Van Leeuwen, A., Knoop-van Campen, C. A. N., Molenaar, I., & Rummel, N. (2021). How teacher characteristics relate to how teachers use dashboards: Results from two case studies in K-12. *Journal of Learning Analytics*, 8(2), 6–21. <https://doi.org/10.18608/jla.2021.7325>
- [3] Dignath, C., & Veenman, M. V. J. (2021). The role of direct strategy instruction and indirect activation of self-regulated learning—Evidence from classroom observation studies. *Educational Psychology Review*, 33(2), 489–533. <https://doi.org/10.1007/s10648-020-09534-0>
- [4] Schwendimann, B. A., Rodriguez-Triana, M. J., Vozniuk, A., Prieto, L. P., Boroujeni, M. S., Holzer, A., Gillet, D., & Dillenbourg, P. (2017). Perceiving learning at a glance: A systematic literature review of learning dashboard research. *IEEE Transactions on Learning Technologies*, 10(1), 30–41. <https://doi.org/10.1109/TLT.2016.2599522>