Agile EDU

Supporting self-regulated learning in education technologies

EXECUTIVE SUMMARY

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Problem and context

Despite the well-established importance of self-regulated learning (SRL) in student success, implementing it effectively in classrooms remains a challenge. Research has shown that while learners can benefit significantly from setting goals, planning and reflecting on their work, they rarely do so without external support. Many EdTech tools aim to promote SRL but often focus on teacher needs rather than directly empowering learners or embedding SRL into lesson design.

This learning story emerges from the **Agile EDU** project and focuses on two European initiatives: Belgium's **BookWidgets LearningM!X blueprint**, a lesson design framework aimed at scaffolding SRL, and the Netherlands' **Learning Path dashboard**, a learner-facing data visualisation tool developed by the **National Education AI Lab (NOLAI)**. Both tools are grounded in research on SRL and aim to make it more actionable and visible in digital learning contexts.

The learning story investigates two distinctive yet complementary approaches.

1. BookWidgets and the LearningM!X Blueprint (Belgium)

BookWidgets is a digital tool for teachers to create interactive lessons. As part of the **INSTALL-ed project**, it integrated SRL principles into a template called **LearningM!X**, guided by Barry J. Zimmerman's SRL model (forethought, performance, self-reflection).

The key components of the LearningM!X implementation are:

- teachers structure assignments into modular tabs (Start, Orientation, Execution, Reflection and Remediation);
- learners engage in **goal setting**, **task planning** and **self-monitoring** through checklists, rubrics and graphic organisers;
- activities are **customisable and varied**, encouraging learners to choose strategies and reflect on outcomes;
- teachers monitor progress through a dashboard, tracking time spent, task completion and student self-assessments;
- the blueprint includes **21 SRL-aligned practices**, such as time management prompts, self-evaluation tasks and help-seeking cues.

2. NOLAI and the Learning Path dashboard (Netherlands)

NOLAI, hosted at Radboud University and funded by the Dutch government, brings researchers and educators together to co-design EdTech. Its **Learning Path dashboard** acts as an add-on to adaptive learning environments, providing learners with visualisations of their progress.

- Based on the **Winne & Hadwin COPES model (Azevedo et al. 2008)**, the tool supports SRL through four phases: task definition, goal setting, enactment and adaptation.
- Learner data is translated into **moment-by-moment learning curves (MbMLC)** that are visualised using dolphin metaphors to show progress.
- Students receive **feedback based on data patterns**, encouraging reflection and helping them make both small and large adaptations to their learning strategies.
- The tool supports learners in becoming **autonomous regulators** of their learning, particularly in exercise-based, data-rich environments.

Lessons learned

- **Complementary approaches enhance SRL**. While BookWidgets supports SRL through teacher-directed scaffolding in varied tasks, the Learning Path encourages learner autonomy in digital practice environments. Together, they offer a comprehensive approach to SRL development across different contexts and learning modalities. Educators could use a similar learning management system and incorporate SRL strategies for collaborative learning tasks, while a learning curve visualiser like the Learning Path can help students practise SRL while doing individual exercises.
- **Teacher involvement is crucial**. BookWidgets' blueprint requires active teacher participation to design SRL-rich tasks and monitor student activity. The freedom it offers enhances personalisation but also demands pedagogical insight and time investment.
- **Data visualisation empowers learners**. Learning Path effectively translates learning analytics into actionable insights for students. Its visual, metaphor-driven interface (e.g., dolphin icons) makes complex progress data accessible, even for younger learners.
- **Structured prompts boost SRL**. Learners rarely regulate themselves spontaneously. Therefore, prompting them to perform SRL tasks can help acquiring it as a routine. For example, prompts to set goals, reflect on time usage or evaluate outcomes help build SRL habits.
- **Flexibility vs. automation**. BookWidgets allows for open-ended tasks beyond quizzes, encouraging creativity and deeper engagement. In contrast, Learning Path excels in **automated, scalable feedback** for exercise-based learning environments.
- **Teacher-Researcher Collaboration Matters**. NOLAI's 'teacher in residence' model fosters a strong bridge between research and practice, ensuring that tools like Learning Path address actual classroom needs. Similarly, BookWidgets' collaboration with universities and schools on EU-funded projects has helped in shaping the SRL elements of the digital tool.

This case highlights two innovative, research-backed strategies for embedding self-regulated learning in digital education. The **LearningM!X blueprint** emphasises teacher-driven scaffolding, collaborative learning and flexible instructional design that fits in the LMS context, while the **Learning Path** provides additional support during individual exercises. Used together, these tools can address SRL from both instructional and behavioural perspectives, making SRL more accessible, visible and actionable for both teachers and students.

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