

Educator–AI Partnership: From Learning Design to Microcredentials

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Abstract. *The poster presents the development of an AI assistant functionality and microcredential module in a well-established, collaborative online learning design (LD) tool. The AI assistant supports educators in creating and refining course designs by generating learning outcomes, aligning teaching and learning activities and assessments, and interpreting analytics. Most recently, an additional module has been introduced enabling issuance of Europass-compliant digital microcredentials based on LD. The AI assistant assists in defining credential metadata, streamlining the process from course design to digital credentialing, supporting transparency, standardization, and automation in higher education.*

Keywords. learning design, learning analytics, design analytics, artificial intelligence, AI assistant, microcredentials

1 Introduction

To enable efficient teaching and learning, it is essential to ensure pedagogically sound, student-centred learning design (LD). To support this, since 2021, (BLIND) has been developing an innovative concept and a free-to-use web-based LD tool (Divjak et al., 2022; Divjak et al., 2023; Divjak et al., 2024; Divjak et al., 2025): Balanced Design Planning (BDP). The tool has undergone several cycles of enhancement, with new functionalities developed following user feedback, as well as the contemporary technological advancements.

Generative AI (GenAI) brings both challenges and opportunities to the world of education, including LD. Importantly, recent studies highlight the potential of AI to support educators in designing personalized and pedagogically sound learning experiences while reducing workload (Choi et al., 2024; Holmes et al., 2023). Driven by user feedback collected in several higher education institutions (HEI) in Europe, asking for assistance in LD with the BDP tool (Divjak et al., 2023), the tool has been enhanced with real-time AI assistance to support educators in formulation of learning outcomes (LOs), development of topics, units,

and teaching and learning activities (TLAs), ensuring constructive alignment, and analytics presentation (Divjak et al., 2025).

Furthermore, responding to the European Union initiatives calling for authentication of microcredentials through European digital credentials for learning (Council, 2022), an additional module has been introduced for issuing Europass-compliant microcredentials automatically, using data from course designs. Prior to its implementation, an interoperability analysis was conducted at several European HEIs (within projects iLed and TRUELA) to examine how BDP can integrate with existing institutional systems. The findings revealed a clear need for standardized metadata, automated data exchange, and alignment with established frameworks such as the Europass Digital Credentials Infrastructure (EDCI). As a result, the microcredential module was developed to export credential data in a machine-readable, interoperable format, enabling seamless issuance and cross-system compatibility. This integration bridges LD and credentialing, promoting transparency, automation, and learning recognition in higher education (iLed, 2025a).

2 Research Design and Results

2.1. AI Assistant: LeDA

The development of the BDP LD tool has been following the design science cycle, while applying an incremental and iterative approach. Reflecting the overall approach to the development of the tool, the integration of the GenAI assistant (LeDA), which uses API calls to an LLM (GPT-4o), has been structured in three phases: problem investigation, treatment design, and treatment validation (Divjak et al., 2025).

1. Problem investigation included determining the requirements for the AI assistant. A user survey and expert focus groups were conducted within international projects iLed and TRUELA in 2023 and 2024. The survey results revealed educators' key needs: AI support for formulating LOs, ensuring constructive alignment, interpreting analytics, and receiving real-time, example-based guidance. These

findings informed the design of a beta version of the AI assistant, which was further discussed by the focus groups, which provided proposals for further development.

2. Treatment design refers to the upgrade resulting in the beta version of the AI assistant. Importantly, structured prompts were prepared, tailored to different stages of the LD process. Led by the prompts, the AI assistant generates LOs, topics, units and TLAs, with proposals on each level generated with respect to the content of higher levels of LD (e.g. topic proposals are aligned with LOs). The AI assistant provides multi-layered responses (rationale, content, and disclaimer) encouraging educators' critical engagement. Educators can customize AI output, re-iterate prompts, and integrate results directly into their course designs.

3. Validation was conducted on 30 course LDs. Educators developed initial designs independently, then used AI to refine them. Feedback collected after each interaction with AI indicated that most prompts were helpful and saved time, while complex, multi-level prompts required simplification. A survey was conducted to gather educators' feedback (Divjak et al., 2025), showing that the AI assistant was highly appreciated, especially at lower levels of planning (TLAs, units). Results confirm the benefit of combining AI suggestions with pedagogical expertise. Real-time learning analytics were also implemented, providing users and developers with insight into AI use and impact.

2.2. Interoperability and microcredentials

Parallel to this, an interoperability analysis (iLed, 2025a) was conducted to assess how BDP could integrate into existing institutional ecosystems (e.g., Learning Management Systems, Student Information Systems, curriculum and QA systems). The analysis revealed a strong need for standardized metadata, structured LD formats, and automated data exchange between systems. The interoperability analysis confirmed the potential for seamless integration of the BDP tool with key institutional systems at various levels - course metadata, LD structure, and analytics workflows. These findings provided concrete functional and technical requirements that informed the development of the microcredential module. The analysis emphasized the importance of using standardized data structures, aligned with the EDCI.

Based on these findings, a microcredential module was developed, enabling Europass-compliant credential issuance automatically, using data from course LD. The process is structured in two phases: credential design and data generation. Educators define credential metadata, activities, assessments, and achievements, with optional AI assistance that generates descriptions, outcomes, and summaries aligned with the course. Credential data - such as LOs, activities, assessments, and achievement statements - can be generated or edited, then exported in EDC-compliant JSON format. Individual credential files are

created per learner and prepared for official issuance via the Europass platform (iLed, 2025b). This integration supports transparent, automated, and interoperable credentialing in line with European standards.

3 Conclusion

As part of the development of an innovative tool for learning design (LD), we developed two functionalities supported by AI. First is the AI assistant, validated in 30 courses, that successfully generates LD content based on structured prompts, but its optimal use relies on educators acting as pedagogical experts and decision-makers. Their understanding of the social and contextual dimensions of learning is key to ensuring high-quality, student-centered designs. Second is the integration of the microcredential module, aligned with interoperability requirements, enabling seamless issuance of Europass-compliant credentials based on validated LDs. While AI enhances efficiency and consistency in LD, the educator remains at the center - as the critical orchestrator of the learning experience, ensuring integrity, relevance, and impact.

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