

Research-Based Rationale: “An Invitation to Learning Engineering”

Project Overview

"An Invitation to Learning Engineering" is the first phase of a 3-level micro-credential program designed to build foundational competencies in learning engineering (LE). This initial e-learning course focuses on the Level 1 micro-credential, introducing professionals to the core principles and methodologies of the field. Developed using Articulate Rise and supported by agile project management in Jira, the course provides learners with practical, scenario-based learning experiences that enable them to apply theoretical concepts in real-world situations. These scenarios are designed to simulate professional challenges that learning engineering practitioners may encounter, fostering critical thinking, decision-making, and problem-solving skills.

The project aligns with the broader IEEE ICICLE strategic mission, which aims to advance learning engineering knowledge by fostering interdisciplinary collaboration and providing accessible, evidence-based support for professionals. By incorporating user-centered design elements, the course tailors the learning experience to meet the specific needs of its target audience. Informed by resources such as the “Learning Engineering Toolkit” (Goodell & Kolodner, 2023) and North’s (2023) Learning Experience Design framework, this Level 1 micro-credential lays the foundation for deeper engagement with LE practices. Ultimately, this project contributes to a scalable, standards-based professional learning ecosystem, aligning with ICICLE’s strategic objectives to build competencies across multiple levels.

Design Principles of the Learning Module

The design of this e-learning module is anchored in Learning Experience Design (LXD) principles, which include research, needs assessment, and relationship management (North, 2023). These core LXD capabilities form the foundation for creating impactful learning experiences, as they inform the way content is structured and how learners interact with the material. According to North (2023), mastering these core skills allows for a deeper application of experience design, accessibility, and project management—all of which are crucial for an effective e-learning module.

A key feature of the module is its incorporation of scenario-based learning (SBL), which engages learners through real-world problem-solving activities. Chernikova et al. (2020) emphasize that SBL enhances critical thinking and decision-making by immersing learners in realistic environments. In this project, the scenarios are tailored to simulate professional challenges that learning engineers might face, allowing learners to apply theoretical concepts in practical contexts. By using microlearning strategies, content is delivered in bite-sized segments, making it more digestible and accessible for busy professionals.

Learning Engineering in the Module

Learning Engineering plays a central role in the module's content and structure. As Bozarth (2024) discusses in her report on learner personas, understanding learners’ behaviors, goals, and environments is critical to designing effective educational interventions. This approach is applied

in the learning engineering micro-credential by creating detailed learner personas that guide the development of scenarios, ensuring they are aligned with the needs and challenges of professionals in the field.

Furthermore, the module development is guided by the Learning Engineering Evidence and Decision (LEED) Tracker (Totino & Kessler, 2024) and LE Case Guide 1.0 (Kessler et al., 2024), which ensure alignment with learning engineering best practices and ICICLE's strategic goals. These tools are integral in evaluating how well the learning intervention meets evidence-based standards, providing structured criteria for continuous refinement. The LEED Tracker assesses content development at each stage, ensuring that the Learning Engineering principles are applied effectively. The LE Case Guide 1.0 provides a detailed framework for incorporating real-world case studies and scenarios, ensuring learners can see direct applications of Learning Engineering concepts in their professional contexts.

The integration of xAPI further supports this process by enabling data collection on learner interactions, which informs the module's iterative refinement. By tracking learning behaviors, the project ensures that the module evolves to better meet the needs of its diverse learners (Thai et al., 2023).

Project Management Environment

The project management environment for this module development follows an agile instructional design model, as recommended by Torrance (2019). Agile practices ensure that feedback from subject matter experts (SMEs) and learners is incorporated into the development process, allowing for rapid iterations and timely updates. Jira manages tasks, tracks progress, and maintains transparency across the team.

Using the LEED Tracker and LE Case Guide 1.0 (Totino & Kessler, 2024; Kessler et al., 2024) within the project management environment adds a structured approach to tracking content development and project milestones. The LEED Tracker ensures that each stage of module creation is aligned with Learning Engineering competencies, allowing the team to evaluate the effectiveness of the instructional design in real-time. Meanwhile, the LE Case Guide 1.0 provides a clear methodology for incorporating relevant case studies and practical examples that resonate with the target audience, helping to contextualize learning for professionals.

Together, these tools enable the agile project management framework to function seamlessly, ensuring that project timelines are met while maintaining the high standards set by ICICLE. They provide both the structure and flexibility needed for continuous improvement, ensuring the module not only meets its initial goals but also evolves based on learner feedback and data-driven insights.

Conclusion

This learning engineering micro-credential exemplifies the integration of LXD principles, scenario-based learning, and agile instructional design. By incorporating evidence-based approaches like learner personas and real-time learning analytics, the module delivers a customized and adaptive learning experience. This project aligns with ICICLE's mission to advance Learning Engineering knowledge and provides learners with the tools and strategies they need to apply Learning Engineering principles in real-world contexts. The module's data-driven design and agile development methodology set a strong foundation for continuous improvement and scalability.

References

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