

# A Transdisciplinary Framework that Integrates Multi-Engaging Educational Tools in Active Learning Experiences to Enhance Student Critical Thinking

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**Abstract.** On the one hand, engineering schools traditionally rely on tools like problem-solving and project-based learning for students to obtain the core knowledge and skills required by their majors. On the other hand, management and business schools usually rely on the case method and role-playing tools for the same purpose. Professors traditionally use several active tools (problem-based learning, project-based learning, the case method, among others) and lately (to attract millennial and centennial student attendance) supportive engagement tools (gaming and Storytelling, among others) to design educational activities. The main objective is to obtain a deeper student understanding of concepts and skills. Still, they typically use only one active or engagement tool in the targeted educational activity. These tools, by themselves, have positively impacted student topic comprehension and skill development. This work explores using a mix of active and engagement tools (designed on a case-by-case basis) within a single significant educational activity to obtain a deeper understanding of the management or engineering tool, the skills required to use it, and the potential consequences to stakeholders. The contribution of this work is twofold: a) a Transdisciplinary framework to design a multi-engaging educational experience, and b) an illustrative instance based on an operations management graduate course.

**Keywords.** Active educational tools, engaging educational tools, gamification, problem-based learning, project-based learning, Storytelling, the case method, transdisciplinary approach to education.

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