Project Summary for IAL Website

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Project Title:	Advance through productive failure with the ADVANCE (Adult Development and Virtual Autonomous Nurturing Collaborative Educator) AI agent
Project Number:	GA24-03
Year of Approval:	2025
Funding Source:	WDARF
Objectives and intended outcomes of the project:	This project aims to improve CET training through the integration of generative AI and its synergy with effective pedagogical underpinnings (i.e., productive failure (PF) and scenario-based learning (SBL)). The intended outcomes include improved learner engagement and better educational outcomes through interactive, adaptive, and personalized learning experiences, as well as understanding of the different learning needs between PET and CET and how a customizable GenAI agent meets these needs.
Project Team	
Principal Investigator:	Asst. Prof. Rosmawati, PhD (Singapore Institute of Technology)
Summary of Project (up to 300 words)	

This project will investigate how a pedagogically effective and customizable GenAI can be a powerful solution to transform the current adult learning practice, hence narrowing the current digital divide (Adarkwah, 2024). This customizable GenAI agent (named ADVANCE – Adult Development and Virtual Autonomous Nurturing Collaborative Educator) pivots on two important pedagogical concepts – Productive Failure (PF) and Scenario-Based Learning (SBL) and a technological integration framework (TPACK).

ADVANCE will be designed according to SBL and generate role-play case studies, provide feedback and guidance on the learners' judgments and action, and produce self-assessment questions, hence enabling adult learners to engage in complex problem solving and learn through failures along the way. ADVANCE will combine PF with SBL to create an interactive and supportive learning environment while allowing learners to learn from their mistakes and failures constructively. Moreover, as ADVANCE personalizes learning paths based on initial assessments and offers customizable settings like task difficulty and study schedules, it gives learners agency and autonomy with their learning journey.

Hence, building these two pedagogical designs into ADVANCE, we adopt TPACK as our theoretical framework to guide the effective integration of Technology (the GenAI platform), with Pedagogy (PF and SBL), with Content Knowledge (i.e., disciplinary concepts) and Context knowledge (that requires applied professional discretion, e.g., auditing, mentoring, ethics). This framework will guide us in reimagining how the CET learning space can be like in the age of GenAI.

While SBL and PF are well-established methodologies in adult education, with PF being adaptable to various forward-thinking pedagogies, their application within the context of GenAI tool in adult education remains relatively unexplored. This research project aims to address this gap, thereby offering a significant contribution to the field.