Project Summary for IAL Website

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Project Title:	Enhancing Adult Learning Using A Mobile Micro-Learning Platform With Integrated Nudging Interventions: A Design-Based Research Approach
Project Number:	GA19-06
Year of Approval:	2020
Funding Source:	WDARF
Objectives and intended outcomes of the project:	Two problems have plagued research in the area of adult learning: 1) adult learners are mainly presented as a homogenous group, and 2) the perception of adult learners is confounded with their reality. Recent research suggests that to help adult learners; we should harness technologies for learning and enhance the adult learners' learning ability.
Project Team	
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Summary of Project (up to 300 words)	

This research proposal seeks to contribute to adult learning endeavors in three key ways. First, we diverge from current literature that mainly presents adult learners as a homogenous group by developing archetypes of adult learners using a comprehensive set of dimensions. Second, we seek to develop a theoretically grounded mobile micro-learning platform. This platform will be built based on 1) cognitive load theory to reduce the unnecessary cognitive burden on adult learners and 2) nudging theory to influence effective learning behaviors. Third, we seek to empirically investigate the impact of the mobile microlearning intervention on adult learning outcomes in order to assess its effectiveness.

Our overarching methodology is the design-based research (DBR) (Anderson & Shattuck, 2012; Reeves, 2006; Sandoval, 2014), which informs design, theory, and practice concurrently through iterative implementations. First, researchers analyze practical problems in collaboration with practitioners. Second, solutions are developed according to existing design principles and technological innovations. Third, iterative cycles of testing and refinement of solutions in practice. Fourth, researchers reflect to produce design principles and enhance solution implementation. Through these research phases, four corresponding research questions will be addressed:

1. What are the different archetypes of adult learners?
2. How could mobile micro-learning platforms be designed with integrated nudging interventions to improve adult learning?
3. What are the impacts of mobile micro-learning platforms on adult learning?
4. What implications do the results have for the refinement of mobile micro-learning interventions?

The rest of the proposal is as follows. We provide a review of the theoretical perspectives and streams of literature that we draw from to develop the proposed mobile micro-learning platform. Next, we discuss the preliminary works that set the foundations for the proposed research: 1) the functionalities already implemented in our prototype and 2) the conceptual development of adult learners archetypes. After that, we present our research methods. Finally, we present potential contributions of our work, and other essential information such as data management issues, ethics, risks, and clearance.

Summary of Project Findings, Deliverables and Impacts (up to 500 words)
Across iterative design-based research cycles, this project shows that adult learners are not homogeneous and that effective mobile micro-learning requires theory-grounded designs aligned with learners' motivational resources and Self-Regulated Learning (SRL) processes. Three findings inform personalization, platform design with nudging interventions, and refinement. First, adult learner archetypes were derived from motivational attributes and SRL-related dimensions. A representation-learning-supported, person-centered approach identified three profiles: Profile 1 (low grit and low goal orientation), Profile 2 (low grit and high performance goal orientation), and Profile 3 (high grit and high goal orientation). Across two studies, Profile 3 shows stronger SRL outcomes, while Profiles 1 and 2 struggle to sustain effective SRL without added scaffolding. These archetypes justify differentiated support rather than uniform interventions. Second, the project specifies how mobile micro-learning platforms can be designed with integrated nudging interventions. The design logic draws on Cognitive Load Theory to reduce unnecessary cognitive burden and on Nudging Theory to influence effective learning behaviors. Reflection prompts operationalize the nudging mechanism. Grounded in Construal Level Theory, results show that impacts depend on aligning prompt specificity and delivery timing with learning objectives. Immediate, specific prompts improve content mastery through task-focused reflection, while delayed, general prompts improve academic performance through strategic evaluation. Combining both produces complementary gains in SRL behaviors; however, the use of large language models (LLMs) for answer retrieval may weaken these gains by reducing reflective engagement. Third, the evidence informs the refinement of mobile micro-learning interventions over successive cycles. Scaffolding intensity and nudging configurations should be calibrated to learner archetypes. Prompt portfolios should be refined through coordinated choices of timing and specificity. AI-enabled features should sustain learner agency and reflective effort rather than substitute for them. **Deliverables** 1. Two peer-reviewed conference papers and presentations: • Kong, G., Oh, L., Teo, H., & He, S. (2025). "Are You Learning the Right Way? Mapping Adult Profiles through an Enhanced Person-Centered Approach." Proceedings of the 85th Annual Meeting of the Academy of Management (AOM). • Kong, G., Oh, L., & Teo, H. (2025). "A Construal Level Approach to Optimizing Reflection Prompts for Self-Regulated Learning." Proceedings of the 46th International Conference on Information Systems (ICIS). 2. A validated profiling pipeline for deriving adult learner archetypes and interpreting profile-specific SRL constraints. 3. A theory-guided reflection prompt toolkit specifying design rules for timing and specificity, alongside recommended deployment strategies. **Impacts** 1. Dissemination of results through presentations at the Academy of Management and ICIS Conferences, expanding visibility across the management and information systems communities. 2. Translation of findings into implementable design artifacts that directly inform future iterations of mobile micro-learning interventions. 3. Establishment of a replicable evidence base for tailoring learning supports to distinct adult learner archetypes, strengthening readiness for future trials, scaling, and stakeholder adoption.