

# PAL3: Personal Assistant for LifeLong Learning

2014 - Current

Project Leader: Ben Nye and Bill Swartout



## Background

PAL3 is an embodied pedagogical AI framework for personalized adaptive learning on mobile devices, which provides on-the-job training, ongoing assessment and supports lifelong learning. PAL3 tracks where learners are (knowledge, past training and experience), where they want to go (career and learning goals), and uses that information to give personalized, adaptive coaching and resource recommendations to build a more resilient workforce. PAL3 runs on smartphones (iOS and Android) making it available to learners wherever they are, whenever they need it. The framework has been adapted to address domains such as electronics training (ONR), leadership and resilience strategies (MOM RP/N1/N17), suicide prevention training (N1/N17), and upskilling AI competencies (Army DEVCOM).

## Objectives

The goal of the PAL3 project is to support learners throughout their careers and help them navigate career transitions successfully. Typically gaps in training lead to skill decay, due to lack of structure and/or motivation to continue studying. To address these issues, PAL3 uses a combination of learning science techniques for engagement (open learner models, self-regulated learning support), game-like mechanisms (team leaderboards, scenario-based training) and a personalized recommender system that draws from an extensive library of curated training resources that combine pre-existing resources (guides, tutorial videos) and customizable interactive content (dialog-based tutoring, quizzes, simulations). Using techniques borrowed from the entertainment industry, PAL3 has been designed to be sufficiently engaging that learners will use it voluntarily. PAL3 is also able to leverage its AI recommender and built-in learning technologies even when offline, enabling usage where internet connectivity is unreliable or unavailable.

## Results

The PAL3 platform has produced strong learning and engagement across multiple domains. In a study at Naval Station Great Lakes, PAL3 prevented skill decay in Electronics for 70 sailors who used the system voluntarily, versus sailors who were not given the system. Moreover, sailors' skills were aligned to their effort using the system, with more frequent users improving their skills rather than merely maintaining them. Follow-up research on leadership transitions and strategies, demonstrated a 16% increase in learning gains for leadership and resilience. Ongoing research has leveraged the PAL3 framework to AI Upskilling (AI-UP) and toward suicide prevention general military

training (SAFER).

## **Next Steps**

PAL3 is currently delivered as a smartphone or tablet app (iOS or Android). In future work, PAL3 will be extended to include a web-based delivery, and a prototype version which integrates immersive technologies, such as Augmented Reality training scenarios and activities. The primary goal for PAL3 is to make apps based on the PAL3 framework available more widely. Versions of PAL3 for resilience and suicide prevention are being evaluated for transition to DoD service members. Upcoming versions of PAL3 for AI Upskilling are being developed with the goal to release them more broadly to the public app store. As a long term goal, PAL3 also seeks to encourage open ecosystems of intelligent content and tools, with its capabilities to deliver a wide range of different content types.

Published academic research papers are available from <https://ict.usc.edu/research/publications>  
(Search engine keyword: USC ICT Publications)

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