Adaptive Agent-Based Learning of Intercultural Communication Skills

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Language and Culture Training

- Interactive application with lesson and serious-game environments
- Learners communicate with conversational software agents (AI non-player characters) from another culture
- Enables practice of communication skills for better cultural and linguistic competence
- Used by ~100,000 people worldwide to date

Learner Adaptation

- Rapport-building allows agents to adapt to learner behavior during an interaction
- Scaffolding that assists the learner can be turned on and off, tuning the level of difficulty
- Dynamically-tailored curricula can adjust to individual learning objectives
- Tracking proficiency with vocabulary items supports learner-specific feedback

Examples from Deployed Systems

Scaffolding devices, like suggestions for the next move in the dialog, can be hidden to increase the level of difficulty for experienced learners

Missions and objectives are selected by learners or by lab managers, so that content is tailored to individual needs

Agents respond dynamically to learner's use of polite language ("Bapak" means "Sir")

When addressed informally, this agent decreases his rapport with the learner and refuses to help

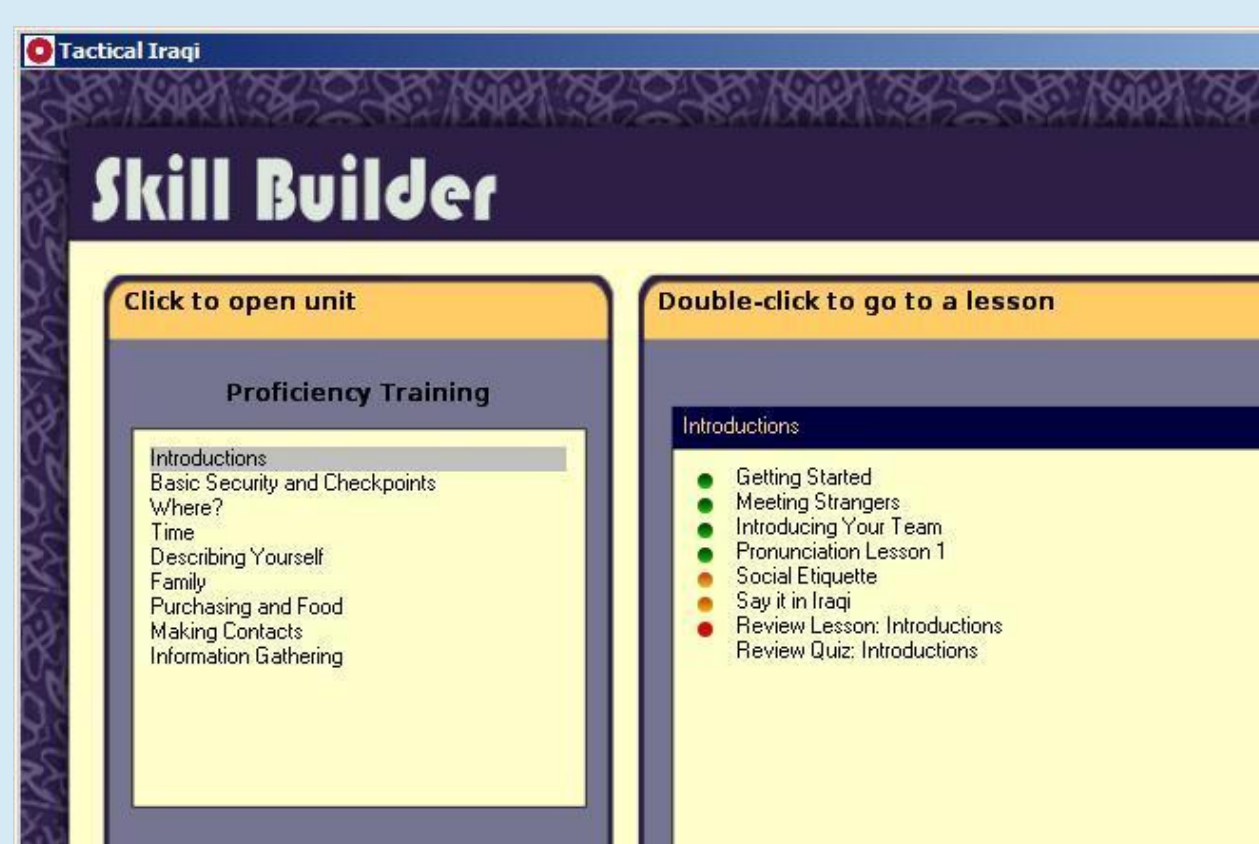**Fig 1. Operational Indonesian language and culture training system**

Fig 2. Screen shot of the Second Language Sustainment modification of Tactical Iraqi.

Green, yellow, and red indicators reflect the user's average proficiency with the vocabulary in each lesson
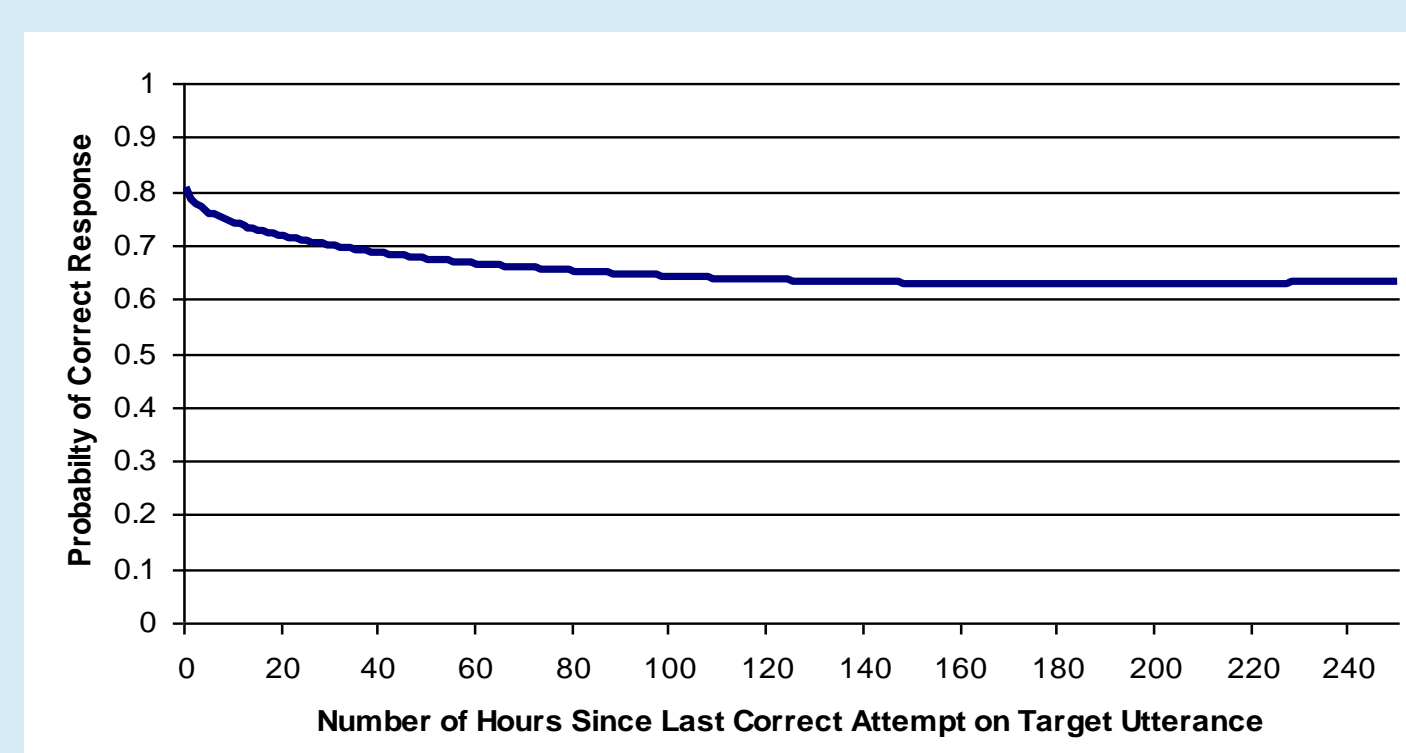

Fig 3. Post-hoc analysis of learner proficiency tracking in the Second Language Sustainment Project.

Proficiency with a vocabulary item at time t is estimated as the likelihood that the user will succeed if he attempts to use that item. The amount of time since the learner's last successful attempt has a significant effect on proficiency. In current work we apply this finding to time the presentation of refresher pages.

Ongoing and Future Work

- Hoahu: Analysis of historical user data to find patterns of learner behavior and improve the system in response
- Uku: Track proficiency for refresher lessons on a handheld device
- CultureCom: Make cultural communication tasks more challenging for users with high-proficiency learning objectives

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