Abstract

This study analyzes learners’ use of speech and tools with a tangible tabletop system, with the goal to understand how learners used the system’s tools to support their interactions as a way to inform future design. Six salient combinations of speech and tool use were found: 1. exploring the activity, 2. proposing plans, 3. advocating for a position, 4. hypothesis testing, 5. working cohesively, and 6. controlling decisions.

The findings contribute new understandings about how learners negotiate meaning-making, for example: pausing the activity to engage in discussions, encouraging partner support and planning through multi-stepped actions and interdependent tools, and using low-risk test spaces to support decision-making skills. As recommendations for design, TUIs which aim to facilitate negotiation should support learners to: seek buy-in from their partners by creating mutual-benefiting decisions, to add to each other’s explanations and contributions, negotiate values, evaluate risks and benefits of trade-off decisions, and reflect on their progress and make corrections. These implications influence development for learner motivation and exploration, reasoning, and supportive team behaviours.

Keywords: Collaborative learning; shared meaning-making; TUIs; tabletops; discourse analysis; speech acts