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One pair of boys and one pair of girls were exceptionally good at eliciting design changes in both partners. In each case, the pair had a student who was a Guide—a self-regulated learner who used metacognitive strategies to guide the redesign of both students.

The partner to the Guide was a student who was an Aspirant—a student who was unsure but very motivated to improve. The motivation came from observing the Guide’s design and redesign. As depicted in Figure 2a, the students were linked together and followed a similar redesign path. The pairing of a Guide with an Aspirant was a highly effective and dynamic combination, yielding the most design changes per pair.

The metacognitive strategies used by the Guide partner included vocalized private speech, questioning (e.g., “What would make this better?”), checking task instructions, and explanations that contained simulations of how the user would interact with the design or what the user was thinking or feeling. The metacognitive strategies used by the Aspirant partner included explanations (with and without simulations) and requests for feedback. After redesigning, the Aspirant’s design became more like the Guide’s with similar design features.

The Guide and Aspirant cases are shown in Figures 3 and 4 for the male and female pairs, respectively. The top row in each case shows the initial designs for the Guide (on the left) and for the Aspirant (on the right). The second row shows the revised designs after the student pairs have read and responded to the scripted prompts and then interacted informally.

For the boys, the Guide, Leo,<sup>1</sup> designed an enrichment toy—a play area—for cats, and the Aspirant, Javier, designed a toy for dogs. Note that Leo’s designs contain many “stations” where cats could have different forms of entertainment or pleasure (e.g., a feeding station, a napping room, a viewing room, and a slide).

Although Javier’s initial design was solid (a squeaky ball suspended from a weighted arm), the transcript revealed that he was dissatisfied with it after seeing his partner’s design. For example, when Leo read the prompt asking Javier what he thought was the best part of his design, Javier responded glumly that he didn’t know. And later, Javier asked Leo for support, saying, “I don’t even know what to put in mine.” Javier ended up abandoning his initial design completely and instead, with Leo’s support (e.g., “You should probably have a shoe room. A room full of shoes. Dogs love shoes”), made a play area for dogs with different stations (e.g., a ball room, a sock room, a shoe room, and a feeding station). Javier’s redesign features echoed Leo’s. The boys followed a similar redesign path.

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<sup>1</sup> All names are pseudonyms.

























