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| Title | メタ認知の気づきを促す教育プログラムの構成 |
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Abstract

Metacognition is a higher-order cognitive function involving the monitoring and control of object-level cognitive activities from a meta-level situated above. Conscious engagement in metacognition is expected to improve social adaptability, learning ability, and teaching skills. In this study, metacognitive awareness is defined as the realization of the significance of switching between the object level and the meta-level.

Metacognitive education has been widely implemented in the context of subject learning. However, these approaches often lack explicit instruction on metacognition, making it difficult for learners to become aware of it. Furthermore, focusing on problem-solving within learning tasks (object-level) can hinder the shift to the meta-level, which poses a challenge for fostering metacognitive awareness. Therefore, subject learning tasks were deemed unsuitable for this study, as the aim was to direct learners' attention from the learning task (object-level) to the meta-level. Based on these issues, this study addresses the following research questions: Can learners be guided to direct their attention to the meta-level? Can they be made to realize the significance of switching to the meta-level?

The purpose of this study is to construct an educational program specialized in fostering learners' metacognitive awareness and to analyze the specific opportunities that trigger such awareness. It is hypothesized that metacognitive awareness serves as a starting point for conscious metacognitive engagement by directing attention to the meta-level and facilitating the realization of its significance.

The difficulties associated with metacognition can be categorized into three main areas. First, the meta-level is hidden within internal cognitive processes. Second, directing attention to the meta-level imposes a high cognitive load. Third, the learning task itself can be inherently difficult. Furthermore, in subject learning tasks, the requirement of problem-solving creates a barrier to switching to the meta-level.

Consequently, this study adopts an approach that minimizes problem-solving within the learning task to reduce cognitive load, thereby directing attention to the meta-level and facilitating the switch. Familiar topics are employed as learning tasks to help learners realize the significance of metacognition. Furthermore, by incorporating peer interaction and advice into the process, the study allows learners to examine others' thinking, which mitigates the difficulty of the task itself. Based on these considerations, a "route explanation" task was selected. This task is designed to enable learners to personally realize the significance of metacognition through the metacognitive refinement of the knowledge used to explain the map. Scaffolding was established to allow learners to capture their own explanations at a meta-level by reflecting on their performance after the explanation, sharing it with their partner, and exchanging advice. These activities constituted the explanation task within the educational program.

An educational program centered on the explanation task was developed and implemented with six pairs of learners. Based on observed events and written responses to reflection questions, I analyzed the specific learning opportunities in which

metacognitive awareness emerged. Uniform learning opportunities were observed across all pairs. Notably, metacognitive awareness triggered by adopting others' perspectives was expressed as explicit awareness.

The results of this study suggest that directing learners' attention to the meta-level can make implicit metacognitive awareness explicit, enabling them to recognize the value of thinking at the meta-level. This provides a foundation for developing learners who can consciously engage in metacognition. Future research will explore how such metacognitive awareness relates to the cultivation of metacognitive skills.