The lack of significant correlations between some dimensions of metacognition and academic performance in science could indicate that the use of metacognitive skills is not necessary for achieving performance in science. The evaluation methods used by Romanian teachers might rather promote a superficial process of learning than an in-depth process. Accordingly, the evaluation strategies used by teachers could deepen even more the gap between metacognitive skills and academic performance in science, since students might achieve performance through using memorizing skills instead of metacognitive skills.

However, the insignificant correlations identified between specific metacognitive strategies and performance in science might also be explained by the instrument used to investigate the relation between these two variables. For instance, Sperling, Howard, Miller, & Murphy (2002: 74) found that the correlations between the Jr. MAI versions and achievement are generally low. Thus, the low correlations between Jr. MAI and achievement, which were reported by Sperling et al., might explain the insignificant correlations identified in the presented study.

Given the importance of metacognitive skills in science performance, we consider that it is essential for teachers to understand how to develop a culture of metacognition in the classroom. Gunstone and Northfield (1994) claim teachers should be trained for promoting metacognitive instruction in the school context. As Hartman (2001) concluded, we cannot expect students to be competent in applying metacognitive skills since they are rarely explicitly taught such skills, and since not all students develop them independently. In addition to the role played by teachers in promoting metacognitive skills, the role of the learning context is essential in metacognition and self-regulation. Teachers should be aware that metacognition plays an essential role particularly when tasks are complex and require the use of specific strategies (Bernacki, Aguilar & Byrnes, 2011: 3).

References


Thinking Metacognitively: Metacognitive Skills and Science Performance


Acknowledgment:
This research was supported by CNCSIS-UEFISCSU, project number PNII–IEFIDEI code 2418/2008.