

**Protocol for monitoring the use of metacognitive strategies during group collaborative interaction (POMSCI) (Sáiz-Manzanares, 2024)**

Metacognitive Strategies	Sub-strategies	Activities (steps)	1	2	3	4	5	
<b>Orientation (ask what)</b>	Previous knowledge	1. The students forming the collaborative group have prior knowledge about the task.	1	2	3	4	5	
		2. The members of the collaborative group seek information about the task or problem to be solved.	1	2	3	4	5	
		3. Collaborative group members seek information about unfamiliar concepts.	1	2	3	4	5	
	Understanding of information	4. The members of the collaborative group read the instructions for solving the problem.	1	2	3	4	5	
		5. The members of the collaborative group highlight the most relevant information of the case study.	1	2	3	4	5	
		6. Students point out the most important steps in solving the problem.	1	2	3	4	5	
	Positive motivational strategies in the orientation phase.	Creation of the socio-cognitive conflict in the Orientation Phase	7. In the orientation phase the students in the group generate moments of conflict development.	1	2	3	4	5
			8. Students in the group differentiate the conceptual knowledge part of the task.	1	2	3	4	5
		Cognitive knowledge	9. The students in the group differentiate the procedural knowledge part.	1	2	3	4	5
			10. The members of the collaborative group participate cooperatively in the orientation phase.	1	2	3	4	5
<b>Planning (ask how)</b>	Self-regulation in the resolution	11. Group members ask the teacher questions to help them plan the solution.	1	2	3	4	5	
		12. Group members develop a planning outline of the resolution steps.	1	2	3	4	5	
	Group organization	13. The group distributes the resolution tasks among the members.	1	2	3	4	5	
		14. The members of the group draw up a schedule of	1	2	3	4	5	

		phases and development times.						
	Positive motivational strategies in the planning phase.	15. Students verbalize positive phrases during planning.	1	2	3	4	5	
		16. Students verbalize negative phrases during the planning phase.	1	2	3	4	5	
	Creation of socio-cognitive conflict in the Planning Phase	17. During the planning phase students in the group generate socio-cognitive conflict.	1	2	3	4	5	
	Positive Motivational Strategies in the Planning Phase	18. Students point out the most interesting steps of the problem or task to be solved.	1	2	3	4	5	
	Cooperative learning in the Planning phase.	19. Members of the collaborative group participate cooperatively in the planning phase.	1	2	3	4	5	
<b>Evaluation (supervision) (questions when and why)</b>	Monitoring and self-evaluation	20. Group members develop a protocol for evaluating the planned steps.	1	2	3	4	5	
		21. Group members ask the teacher for help in implementing the resolution plan.	1	2	3	4	5	
		22. Group members ask metacognitive questions.	1	2	3	4	5	
	Error detection and learning	23. Group members detect errors in the plan implementation process.	1	2	3	4	5	
		24. members correct the errors detected.	1	2	3	4	5	
	Positive Motivational Strategies in the Evaluation Phase	25. Students verbalize positive phrases during the evaluation phase.	1	2	3	4	5	
	Creation of the socio-cognitive conflict in the Evaluation Phase	26. Students resolve discrepancies during interaction by finding common ground.	1	2	3	4	5	
	Positive Motivational Strategies in the Evaluation Phase	27. Students increase their motivation in group interaction during the semester.	1	2	3	4	5	
	Self-reinforcement	28. Students use self-reinforcement during the problem solving process.	1	2	3	4	5	
	Cooperative learning in the Evaluation phase	29. The members of the collaborative group participate cooperatively in the evaluation phase.	1	2	3	4	5	

Elaboration (question of what for)	Self-efficacy		1	2	3	4	5
		30. Students verbalize the strengths and weaknesses of the interaction developed.	1	2	3	4	5
		31. Each of the members of the group explains what have been the major difficulties encountered.	1	2	3	4	5
		32. Each of the members of the group presents what have been the greatest achievements.	1	2	3	4	5
		33. Each group member reflects on his or her knowledge before and after interaction.	1	2	3	4	5
		34. Each member of the group points out lines of continuity with respect to the interaction developed.	1	2	3	4	5
		35. The members of the collaborative group participate cooperatively in the development phase.	1	2	3	4	5
		36. Each of the members of the group presents the main difficulties they have encountered.	1	2	3	4	5

Note 1 = Never; 2 = Almost never; 3 = Sometimes; 4 = Almost always; 5 = Always