MPS 8 Define the stated problem

Evidence-based targets for problem solving

Evidence-based targets	Progress toward internalizing these targets				
	20%	40%	60%	80%	100%
M Defining a problem is a three-stage process: this is stage 2. Focus on the given problem statement only and classify the given information into the goal, constraints, criteria and the "situation". (19, 24, 25)					
M Successful problem solvers can correctly differentiate between constraints, criteria, possible solutions and procedures. (24, 25)					
M Postpone immediately defining the problem; simply sort information. Unsuccessful problem solvers tend to immediately try to translate the situation into a mathematical formula instead of trying the understand the physical reality (3,4,19,11)					
M Keep your options open into the Explore stage. Unsuccessful problem solvers fail to keep options open, become quickly fixed upon an incorrect path, are impatient, jump into the problem with an immediate answer (9, 12, 24)					
M Extract and classify the information carefully. (Unsuccessful problem solvers omit given information, misread the words, unknowingly replace missing information with unstated assumptions (12)					
M Can identify assumptions and hypothetical information in the given scenario (9, 24)					
M Systematically classify the input data and identify the goal **as it was given in the problem statement**. Refrain from replacing it with a possible solution ("*determine the offset in a control situation*" is not replaced with "*to solve a second order differential equation*"), translating it into a symbol ("*solve for the force*" is not replaced with "*solve for F"*). (24)					

References 1 to 26 refer to the Novice versus Expert research summarized in PS News **55**.