

Evidence-based targets for problem solving

Evidence-based targets	Progress toward internalizing these targets				
	20%	40%	60%	80%	100%
<b>M</b> Know your preferred style. Each has preferred style of working with information; some prefer symbolic, mathematical; some prefer words; some prefer pictures, drawings and diagrams. (24, 25, 40)					
<b>M</b> Skilled in translating abstract and unfamiliar situations into familiar ones (1)					
<b>M</b> Skilled in translating from words into equations (4,12,15)					
<b>M</b> Skilled in translating from words into a diagram (24, 25)					
<b>M</b> Skilled in creating accurate representations that are useful to you (24); <b>do not</b> misinterpret your own representations later in the problem solving process (12)					
<b>M</b> Skilled in drawing explicit and detailed diagrams that include key definitions (20)					
<b>M</b> Skilled in drawing many different drawings; include initial and final state representations where appropriate and include the goal or unknown on the diagram; include key concepts on diagrams (12, 20, 16, 24)					
<b>M</b> Skilled in identifying the system (what is and what is not included for analysis); <b>do not</b> fake it by drawing an ambiguous boundary (24)					
<b>M</b> Skilled in selecting unambiguous symbols for all different variables and concepts, use mnemonic notation (12, 20, 24); <b>do not</b> confuse yourself by using the same symbol to denote similar but different quantities; <b>do not</b> confuse symbols for coding; (12, 20, 24)					
<b>M</b> Skilled in representing changes in <i>time</i> (11, 12)					
<b>M</b> In drawing graphs, skilled in placing the coordinate system (12), <b>do not</b> make several choices and use different ones in different parts of the same problem (12);					

References 1 to 26 are based on Novice versus expert research summarized in PS News 55.  
40 Felder and Silverman