Some Reasoning Skills Central to Understanding Physiology

A. Some skills essential for conceptual reasoning (R-C)
1. Memorize knowledge of concepts in a mindful manner, not just rote learning.
2. Integrate knowledge with related concepts so as to develop sound explanatory frameworks.
3. Transfer and apply knowledge to understand and solve (novel) problems.
4. Reason analogically about concepts.
5. Reason both locally and globally about each concept (multi-level systems thinking).

B. Some cognitive skills essential for making sense of modes of representation (R-M)
1. Decode the symbolic language of your mode for representation.
2. Evaluate the power, limitations, and quality of the representation.
3. Interpret and use that mode of representation to solve a problem.
4. Spatially manipulate that mode of representation to interpret and explain a concept.
5. Construct another representation to explain a concept or solve a problem.
6. Translate horizontally across multiple modes of representation of a concept.
7. Translate vertically between modes of representation that depict various levels of organization and complexity.
8. Visualize orders of magnitude, relative size scales, or normalize measures against a standard.

References: