

## Reference List

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## Ideas to Consider

Motivate theoretical material by first presenting real-world problems or situations that the theory will help explain or solve (*SENSOR, GLOBAL*).

Balance concrete information (*SENSOR*) with conceptual information (*INTUITOR*) in all courses.

Complement oral and written explanation of concepts (*VERBAL*) with extensive use of sketches, plots, diagrams, and pictures (*VISUAL*).

Illustrate abstract concepts with at least some numerical examples (*SENSOR*), in addition to traditional algebraic examples (*INTUITOR*).

Use physical analogies and demonstrations to improve understanding of the magnitudes of calculated quantities (*SENSOR, GLOBAL*).

Demonstrate the logical flow of individual course topics (*SEQUENTIAL*), and also highlight connections to other material in the course and other courses, in other disciplines, and in everyday experience (*GLOBAL*).

Provide short periods of time in class for students to think about material being presented (*REFLECTIVE*), and also for active participation (*ACTIVE*).

- pause during lecture to allow time for thinking and formulation of questions (*REFLECTIVE*).
- assign "one-minute papers," where students write the most important point of the lecture and the most confusing unanswered question (*ACTIVE* and *REFLECTIVE*).
- assign brief, group problem-solving exercises where students work with their neighbors (*ACTIVE* and *REFLECTIVE*).

Encourage or mandate cooperation on homework, or through team projects (*ACTIVE*).

Make students your teammates!

Tell them what you are doing, and why you are doing it.

Tell them how an exercise is going to work before starting the exercise.

Tell them when you gain a better understanding of their learning through an exercise.

Tell them when you are pleased with how an exercise works.

Seek – and respond to – feedback from students. Try something as simple and informative as the "plus/delta" index card: hand out cards or small pieces of paper, and ask students to write on one side of the card something that they think is going well (the "plus"). Ask students to write on the other side of the card something that they think could be changed (the "delta").