



College of Engineering
Department of
Mechanical & Industrial Engineering

The Sidney E. Fuchs Seminar Series

3:30-4:20pm, Friday, September 26th, 2014
Frank H. Walk Design Presentation Room



Learn to Think Like an Expert

by **David C. Wisler***

**PhD, NAE, GE Aviation (GE Aircraft Engines), retired
MIT CDIO Engineering Education Initiative**

Notice that the title reads learn to think like an expert not be an expert, although the latter is sound advice also. I concentrate on learning to think like an expert because this skill precedes being an expert and will reap vast rewards in the future. Besides, you will not be an expert when you graduate, but you can learn to think like one.

Understanding expertise and how experts differ from novices in storing, retrieving and using information provides insight into the nature of thinking and problem solving and shows what successful learning looks like. This is more than having a lot of knowledge about a subject.

Experts have a well-organized structure for storing and recalling knowledge that affects what they notice, how they organize new knowledge and how they represent and interpret information. This in turn affects their ability to remember, reason and solve problems.

Unfortunately, engineering students are rarely taught the skills needed to reason and think critically like an expert would think. Too often they are taught to memorize formulas and procedures, apply the best computer program and 'plug and chug' for solutions.

Having participated in many design projects, design boards, and project analysis meetings, I've seen 'thinking like an expert' put into action even by engineers evaluating problems that are not in their field of expertise.

This seminar provides insights needed for students to develop the skill of thinking like an expert.

* Dr. Wisler's distinguished career at GE Aviation spanned 38-years, during which he conducted and managed advanced technology programs. He is recognized as an international expert in turbomachinery aerodynamics technology. His work to improve airfoil shapes and understand the complex flow fields in the rotating components of gas turbine engines has been instrumental in reducing losses (reducing fuel burn) and improving performance. Immediately after retiring from GE, Dr. Wisler joined the CDIO Initiative to revitalize engineering education worldwide.

Dr. Wisler is:

- A member of the US National Academy of Engineering
- Elected to the GE Aviation Hall of Fame
- A past Sr. vice-president and fellow of the American Society of Mechanical Engineers (ASME) and Editor of the ASME Journal of Engineering for Gas Turbines and Power
- An Associate Fellow of the American Institute of Aeronautics and Astronautics
- The only three-time winner of the ASME Melville Medal for the best paper in all 17 technical divisions of the ASME, the winner of two IGTI Gas Turbine Awards for best paper of the year and was awarded the ASME Aircraft Engine Technology Award.