

Discussion 5.1: Basic Steps in Problem Solving

It is important for an engineer to follow the basic steps in problem solving because these steps ensure that solutions are logical, efficient, and technically sound. According to Dym et al. (2005), structured problem-solving allows engineers to apply critical thinking and creativity in designing effective solutions. For example, in computer engineering, when developing a new software system, following steps such as defining the problem, analyzing user needs, designing algorithms, and testing the program helps prevent bugs and system failures. Without this process, the software might crash or fail to meet user requirements, leading to wasted time and resources.

Dym, C. L., Agogino, A. M., Eris, O., Frey, D. D., & Leifer, L. J. (2005). *Engineering Design Thinking, Teaching, and Learning*. *Journal of Engineering Education*, 94(1), 103–120.

https://www.researchgate.net/publication/263063836_Engineering_Design_Thinking_Teaching_and_Learning?utm