

Habit: Systems Thinking

Engineering Literacy Dimension: Engineering Habits of Mind

Overview: *Systems Thinking* is the ability to recognize that all technological solutions are systems of interacting elements that are also embedded within larger man-made and/or natural systems and that each component of these systems are connected and impact each other. A systems thinking habit of mind enables an engineering literate individual to understand how each component of a solution design or idea fits with other components while forming a complete design or idea. Additionally, it enables them to consider how a solution idea or design interacts as a part of the larger man-made and/or natural systems in which they are embedded. This Engineering Habit of Mind is important to Engineering Literacy as our world is a system made up of many other systems. Things are connected in remarkably complex ways. To solve problems, or to truly improve conditions, engineering literate individuals need to be able to recognize and consider how all those different systems are connected (NAE, 2019).

Performance Goal for High School Learners

By the end of secondary school, engineering literate students should be able to think in terms of systems when making decisions throughout the course of an engineering project/activity, through recurring design critiques, in order to consider how a solution idea or design interacts with, and impacts, the world.

Resources

Engineering is Elementary. (n.d.). *Engineering habits of mind*. <https://blog.eie.org/topic/engineering-habits-of-mind>

LinkEngineering. (n.d.). *Habits of mind*. <https://www.linkengineering.org/Explore/what-is-engineering/5808.aspx>

Royal Academy of Engineering. (2014, May). *Thinking like an engineer: Implications for the education system*. <https://www.raeng.org.uk/publications/reports/thinking-like-an-engineer-implications-full-report>