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Critical Thinking in Global Challenges

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- What is Critical thinking, and why is it important?
- ‘Credibility and Relevance’: Understanding where information comes from and the nature of evidence
- ‘Assessing arguments’

Critical Thinking

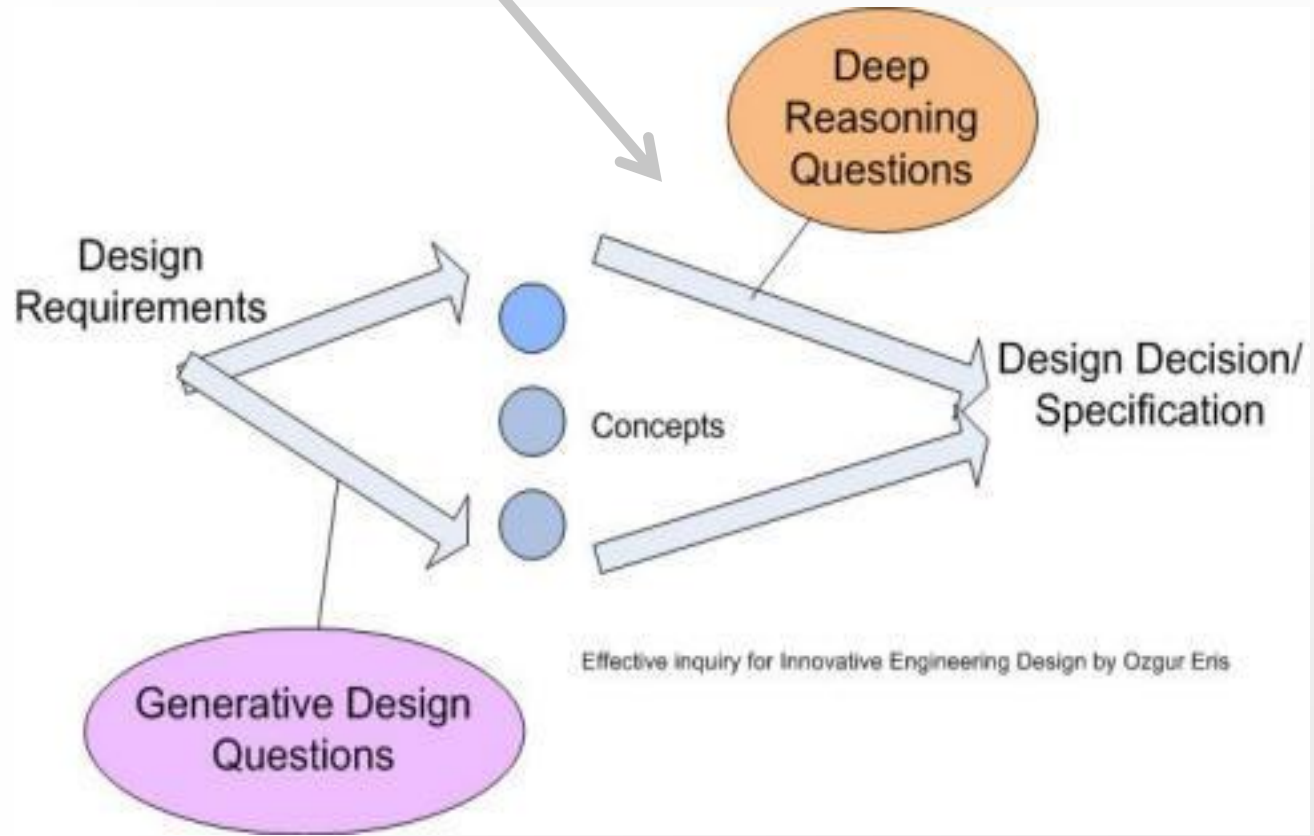
Convergent Thinking . . . tending to move toward one point or to approach each other : CONVERGING <*convergent* lines>

Lesson Plan: Provide a statement and ask the teams to determine if its true and the reason why.

- Asks appropriate clarifying questions
- Judges well the quality of an argument, including its reasons, assumptions, evidence, and their degree of support for the conclusion
- Formulates plausible hypotheses
- Defines terms in a way appropriate for the context
- Draws conclusions when warranted – but with caution

Critical Thinking

- Analyzing the past
- What evidence?
- What is the author's purpose?
- Convergent thinking
- Skepticism is a virtue



Learning Modules of Thinking Skills



Bloom's Taxonomy

Higher Order thinking

Elements

Creating

Generating new ideas, products, or ways of viewing things

Evaluating

Justifying a decision or course of action

Analysing

Breaking information into parts to explore understandings and relationships

Applying

Using information in another familiar situation

Understanding

Explaining ideas or concepts

Remembering

Recalling information

Critical Thinking

Follow-up to the exercise:

Hindsight Questions

Hindsight Questions are used to help young people learn from experience. We want them to learn from their own experience and, perhaps more importantly, we want them to learn from the experiences of others.

Insight Questions

Insight questions are designed to help students **seek for a deeper level of understanding** by looking beyond the obvious to consider things that are more obscure and less well understood without further investigation or thought.

Foresight Questions

Foresight Questions are used to help young people **learn how to anticipate** the probable or likely consequences of their choice

Critical Thinking

- * Analyzing the past
- * What evidence?
- * What is the author's purpose?
- * Convergent thinking
- * Skepticism is a virtue

In Critical Thinking we rely on Questions and Reflections to achieve our understanding and convergence.

Meta-cognitive reflection

- * What do I want to understand?
- * What have I learned?
- * What do I still need to learn?
- * Provide feedback for reflection
- * Regulate ones behavior

Questions ... Engaging the student

- * Logical Sequential
- * Open ended
- * Listening is the first step in good questioning
- * Provocative
- * Engage
- * Encourage higher order thinking

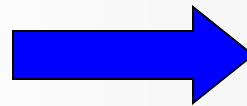
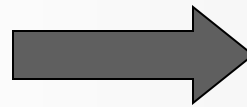
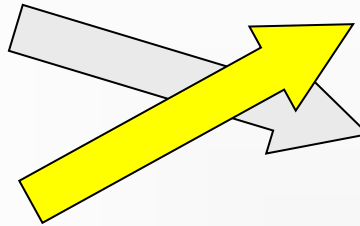
Blooms Taxonomy

Original Terms

- Evaluation
- Synthesis
- Analysis
- Application
- Comprehension
- Knowledge

New Terms

- Creating
- Evaluating
- Analyzing
- Applying
- Understanding
- Remembering



Bloom Questions

Elements	Verbs	Questions
Creating Generating new ideas, products, or ways of viewing things	Designing, constructing, planning, producing, inventing.	Compose an engineering song, skit, and poem or rap to convey the problem in a new form.
Evaluating Justifying a decision or course of action	Checking, hypothesising, critiquing, experimenting, judging	Assess whether or not you took the correct approach.
Analysing Breaking information into parts to explore understandings and relationships	Comparing, organising, deconstructing, interrogating, finding	Differentiate between how your approached the problem and how you would react in different approaches.
Applying Using information in another familiar situation	Implementing, carrying out, using, executing	Construct a theory as to why this was a good approach.
Understanding Explaining ideas or concepts	Interpreting, summarising, paraphrasing, classifying, explaining	Summarize what the problem is about.
Remembering Recalling information	Recognising, listing, describing, retrieving, naming, finding	Describe how you took place.

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Connections between engineering, writing and reading

Engineering Design Process	Writing Process	Reading Strategies
Identify Problem	Set purpose for writing	Set purposes for reading
Research	Research: read target book, learn about key concepts, and ask questions	Introduce concepts and information needed for comprehension
Brainstorm	Brainstorm	Ask guiding questions; activate background knowledge
Choose and plan	Choose a topic, plan, organize ideas	
Create	Draft	Read and monitor understanding
Test	Get response to text (peer, teacher, target audience)	Clarify understanding as needed, evaluate text for veracity or completeness
Redesign	Revise	Re-read for understanding or read another book for additional perspective/ information. Evaluate whether an established purpose was met.
Share	Share/Publish	Discussion, poster or various writing assignments



Web Sites

<http://www.criticalthinking.org//>