PERSONAL & SOCIAL CAPABILITIES

Ways to integrate critical thinking skills into Higher Education

We all know that critical thinking is a valuable skill. In a recent survey, 95% of Chief Academic Officers rated critical thinking as one of the most important skills for students to acquire.[1] It's no wonder, considering that five out of the top ten skills identified as being in demand in the workforce of the future relate to critical thinking. (Read our *Future of Skills* research for more information).[2]

Critical thinking is the combination of these skills:

- **Accumulate** – collecting or identifying evidence
- **Create** – creating arguments or methods
- **Critique** – identifying strengths and weaknesses
- **Improve** – suggesting opportunities for improvement

Here are some example learning tasks to give you inspiration for how you can encourage students to develop critical thinking skills.

Accounting & Finance	Develop a new formula to calculate stock valuation. Conduct an audit of a company's financial records. Create a 5 year revenue projection for a company. Critique someone else's analysis of the financial stability of a company.
Engineering	Design a remote control car that runs on an alternative form of energy. Redesign a car engine to make it more fuel efficient. Optimize heat flow in a mechanical system.
Management	Develop a new operating model for product development for a company. Create a new strategy for product development based on research reports made around the company's revenue and expense data. Based on a market research report, determine what product to stop developing in a product portfolio.
Marketing	Using market research results, develop a new advertising campaign for a product.
Foreign Languages	Name a person you admire and provide one or two reasons why. (This is suitable for beginners, as it can be done with simple language.) Read a number of different texts containing information about adventure holidays and three potential clients. Adapt each holiday package to meet the requirements of the clients. (This is suitable for intermediate learners, as the language in the texts can be controlled.) Carry out online research about forms of alternative energy. Select one form and argue why the government should consider converting to that source of energy. (This is suitable for advanced learners.)
Maths	Explain why you should use a certain solution or procedure in a specific problem. Provide a proof for a specific mathematical formula or rule. (Note: this should not be a proof that students have already learned.)
Science	Critique the validity of an advertisement that claims vinegar in a glass-cleaning product will remove the spots (mainly calcium carbonate) left on glasses by tap water. Formulate a hypothesis based on existing knowledge of chemistry principles. Develop a set of experiments to test the hypothesis. Critique the results in reference to the hypothesis and explain whether and how the hypothesis needs revising.

1 Association of American Colleges and Universities. (2011). *The LEAP vision for learning: Outcomes, practices, impact, and employers' view*. Washington, DC: Association of American Colleges and Universities

2 Pearson, Oxford University, Nesta, (2017). *Future of Skills*

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Now that you have some examples, use the guidance below to devise your own learning experiences to enhance critical thinking in your classroom.

Define and discuss critical thinking skills directly with learners

The term 'Critical Thinking' has different meanings, both in education and colloquially. It is likely that some students have a different understanding than their instructors, so it is important to make it clear to students when they are using these skills and what you mean by them.

1. Teach students what good critical thinking looks like in terms of desirable behaviors and useful strategies.
2. Situate explicit critical thinking instruction in specific disciplines, where applicable.
3. Provide students with clear opportunities to practice their critical thinking skills with your support, and give them feedback on their performance.

Teach strategies for critically examining evidence and drawing conclusions

In many disciplines, critical thinking involves accumulating and evaluating evidence, then using that evidence to draw and justify conclusions. Teaching students specific strategies in this area can support the development of critical thinking skills.

1. Provide students with the experience of analyzing arguments (e.g. recognizing kinds of evidence, evaluating evidence, distinguishing arguments from non-arguments, identifying assumptions, drawing appropriate inductive conclusions from evidence).
2. Help learners to internalize a questioning mindset when gathering and examining evidence and drawing conclusions by modeling asking good questions (e.g. What evidence supports your point? How might you look at the issue differently than someone else? What information isn't relevant to the question?)
3. Give students practice identifying concepts that can weaken arguments (e.g. logical fallacies [attacking the individual rather than the argument or oversimplifying an opponent's position], experimenter bias [conscious or unconscious bias], correlation versus causation [assuming that because there is a correlation between variables, one must be caused by the other], presence of confounding variables [an extra variable that has not been accounted for that influences the result]).

Incorporate project- and writing-based assignments to teach and assess critical thinking skills

Project- and writing-based assignments are effective ways to elicit critical thinking skills, because they typically require organization of information and complex reasoning.

1. Writing assignments can provide students evidence on an issue (i.e. documents or articles) that must be critically synthesized, organized, and evaluated in order to support a decision or conclusion on the issue.
2. Rubrics are useful tools for scoring writing assignments and providing learners with feedback on their skills.
3. Project-based assignments should require students to explore authentic problems that are complex and do not have clear right or wrong answers.

Increasingly unstructured tasks

As students gain expertise with critical thinking skills, allow them to practice critical thinking in increasingly unstructured tasks.

Tasks that utilize critical thinking vary in their level of structure, with less structured tasks being more difficult and requiring more complex critical thinking skills. Tasks that are less structured tend to 1) have less clear goals or instructions; 2) have a broader range of possible solutions; 3) require more information to solve the problem, from less controlled sources; and 4) require evidence that is difficult to collect or missing.

1. As students begin learning critical thinking skills, provide well-structured tasks as an introduction.
2. Well-structured tasks can also address individual critical thinking skills in isolation, so students can practice individual aspects of critical thinking without being overwhelmed.
3. Transitioning to unstructured tasks as students develop skills in critical thinking is also important, as unstructured tasks are typically more representative of problems students are likely to face in the workforce.

Are you incorporating critical thinking instruction in your teaching? Tell us how. **efficacy@pearson.com**