Teaching Tips

A Forum for discussion and tips for advancing teaching and learning at Mona

Teaching your Students to Think Creatively and Critically

Do you want your students to "think creatively and critically?" Have you taught them how?

University teachers and others in the higher education landscape continue to see students functioning at a level where memorization and regurgitation seem to be the hallmarks of their educational output. Several of these students do not demonstrate the analytical skills necessary to indicate thorough going understanding of the subject matter content. One approach is to create more opportunities for practice and feedback.

Critical Thinking

But what is critical thinking? A critical thinker exhibits the following skills and competencies in relation to thinking:

a. Raises vital questions and problems, formulating them clearly and precisely;

b. Gathers and assesses relevant information, and effectively interprets it;

c. Comes to well-reasoned conclusions and solutions, testing them against relevant criteria and standards;

d. Thinks open-mindedly within alternative systems of thought, recognizing and assessing, as need be, their assumptions, implications, and practical consequences;

e. Communicates effectively with others in figuring out solutions to complex problems.

f. Critical thinking is, self-directed, self-disciplined, self-monitored, and self-corrective thinking. It entails effective communication and problem-solving abilities (Paul & Elder, 2002, p. 15).

The Importance of Practice and Feedback

Generally, students develop various kinds of skills, whether these are practical, for instance mechanical, musical performance, writing, math, physics, critical or creative thinking through practice and feedback. Practice and feedback are important pedagogical strategies that might be used in developing critical thinking skills. Students might also take on voluntary tasks that could help them develop skills and competencies or they might learn with someone else's help. Oftentimes, the cry is that our students do not think creatively or critically at all. In order to help students develop creative skills and critical thinking competencies, here are some activities you might take them through:

Developing Creative Thinking Skills: Practice and Feedback

Let them determine the following:

- Ways to verify a [calculated value, derived formula]
- Uses for [a specified object, a waste product]
- Ways to improve a [process, product, experiment, procedure, computer code]
- Real-world applications of a [theory, formula, algorithm]
- Safety or environmental concerns in [an experiment, a process, a plant]
- Flaws in a proposed design or procedure
- Benefits of doing something differently from how it is normally done

Developing Critical Thinking Competencies: Practice and Feedback

Earlier on, the importance of practice and feedback were underscored. The following are some activities recommended for practice and feedback by your students:

- Reviewing and marking: In order to develop critical thinking skills, engage in activities requiring your students to review and mark the work submitted for an assignment in your course. Students should be asked to grade the assignment and defend the mark given based on a careful summarization of the reasoning that informed the grade.

- Critiquing: Read and critique a newspaper column in the Opinion section of *The Sunday Gleaner.* The critique presented by your students *should* include an evaluation of the accuracy and persuasiveness of the opinions expressed and should identify stated and hidden assumptions, misleading statements, and inaccurate and unproven claims.

- Critical thinking: Analyzing. Provide an open-ended complex problem. Then ask students to determine if enough information has been presented to arrive at a solution. If there is insufficient information, ask students to determine what other information is needed and how this might be gathered.

- Critical thinking: Analyzing. An ethical dilemma is a good approach to get your students to analyze issues. Take the case of an employee who learns about the illegal activity of his supervisor or a graduate student who discovered that her supervisor altered research experimental data. The student should be asked to list and discuss possible courses of action and make and justify a recommendation.

- Critical thinking: Problem formulation. Ask your students to make up a problem and solve it. The problem should require more than simple formula substitution. In fact, better problems will require high-level analysis to solve it.

Improving Students' Critical Thinking Skills

One approach to improving the critical thinking skill of your students might be to formulate discussions and questions as follows:

Clarity	Could you elaborate further? Could you give me an example?
Accuracy	How could we find out if that is true? How could we verify or test that?
Precision	Could you give me more details? Could you be more exact?
Relevance	How does that relate to the problem? How does that help us with the issue?
Depth	What factors make this a difficult problem? What are some of the complexities of this question?
Breadth	Do we need to look at this from another perspective? Do we need to consider another point of view?
Logic	Does all this make sense together? Does what you say follow from the evidence?
Significance	Is this the central idea to focus on? Which of these facts are most important?
Fairness	Do I have any vested interest in this issue? Am I sympathetically representing the viewpoints of others? (Paul & Elder, 2006).