CREATIVITY, CRITICAL THINKING AND TECHNOLOGY IN CONTEMPORARY EDUCATION. RESEARCH FINDINGS OVERVIEW

Dr. Ivanna Shubina

Outline

1. Introduction
2. The relationship between critical thinking and creativity
3. Critical thinking and creativity in education
4. Educational technologies in relation with critical thinking and creativity
5. Creativity and critical thinking in relation with gender
6. Conclusion

What are your expectations from our meeting today?

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CRITICAL THINKING VS. CREATIVITY

Mental puzzle

Anthony and Cleopatra are dead on the floor of a villa in Egypt. Nearby there is a broken bowl. There are no marks on their bodies. They were not poisoned.

How did they die?

Critical thinking: theoretical background

- Philosophical approach (Bailin, 2002)
  - "**purposeful, self-regulatory judgment** which results in **interpretation, analysis, evaluation**, and **inference**" (Facione, 1990, p. 3),
- Pedagogical approach:
  - **Bloom's taxonomy** model categorizes thinking skills as a **higher-orde**r (analysis, creating, and evaluation) and **lower-order skills** (remembering, comprehension, applying).
- Psychological approach:
  - "the **mental processes, strategies**" (Sternberg, 1986, p. 3), **use to solve problems, make decisions,** and **learn new concepts,**

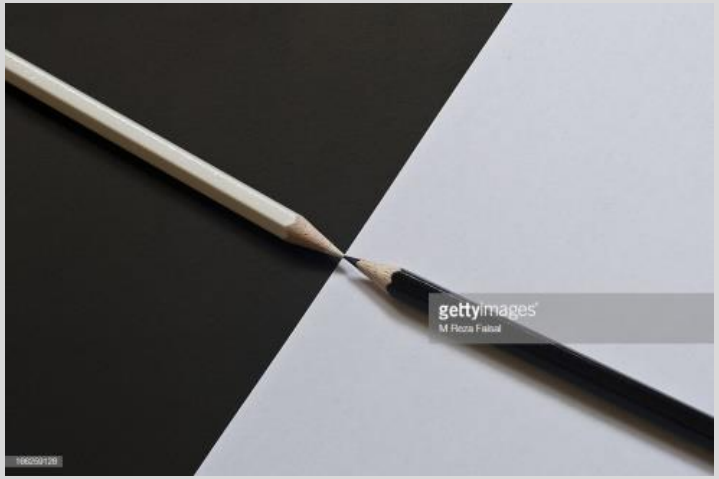
Creativity : theoretical background

- Creativity as a **human trait** (da Costa et. al., 2015)
- Creativity as a **process or product** (Runco, 2004).
  - Creativity is a **process, product, or a person's attribute;** a **context** that enables creativity to develop and persist (Baer, 2010).
  - Creativity has three crucial **aspects**: novelty, effectiveness, and ethicality (Cropley, 2001)
- Creativity and **Intelligence** (Taylor, 1985; Eysenck, 1993).

Critical Thinking & Creativity

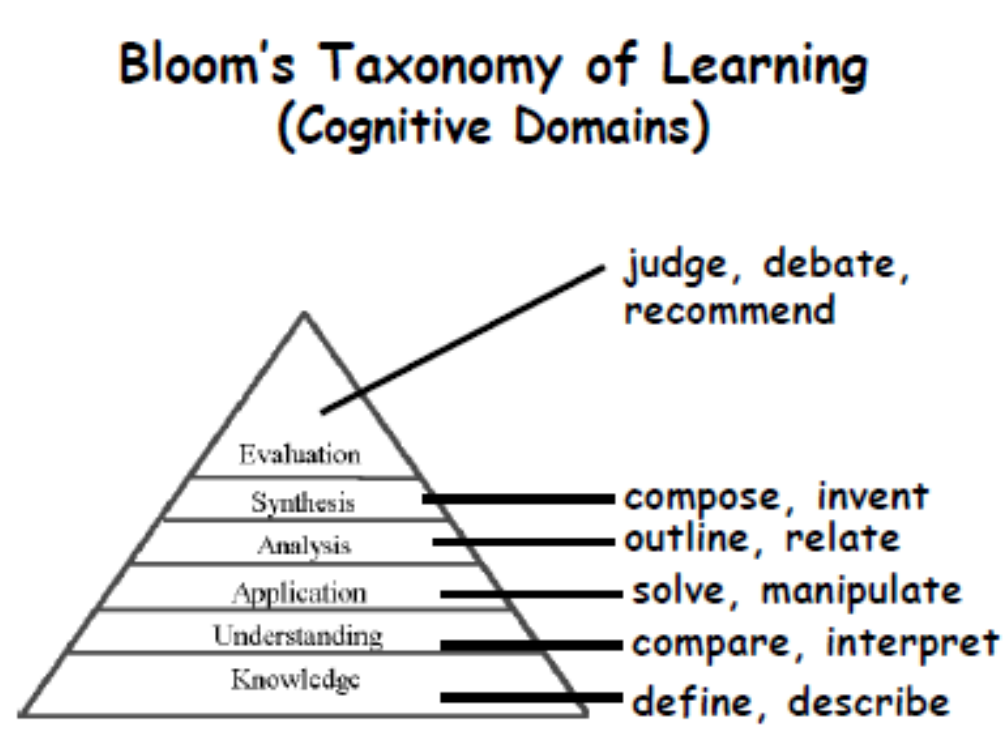
- What is the relation between them?

Radical dichotomy approach



Complementary approach

Critical thinking and education



- Evaluating arguments and making judgments;
- Giving reasoned considerations of evidence, conceptualizations, methods, contexts, and standards;
- Conceptualizing, applying, analyzing, synthesizing, and/ or evaluating information gathered from, or generated by: observation, experience, reflection, reasoning, or communication.

Ways to develop cognitive skills

- Critical Thinking

- Creativity

1. Facts or opinions?
2. Mental puzzles
3. Making predictions
4. Finalizing stories
5. Describing Pictures
6. Problem solving
7. Making generalizations
8. Tricky questions
9. Case studies

What do you think about:

- Displaying the "best" work as a motivating strategy
- Creativity requires some distinguishing result or product
- Competitions and creativity reinforcement
- Creative = original
- Creative students = great inventors
- Accepting of the brilliant ideas or solutions

Barrier or supporter?

- Teacher's attitude and practice
- Assessments' rubrics
- Teacher's special expectations
- Types and structure of assessments
- Teacher's feedback
- Motivational strategies
- Perception of risk
- Motivational beliefs
- Acceptance of technology
- Self-determination
- Misbeliefs regarding creativity
- Teacher's evaluation
- Spirit of competitions
- Rewards
- Students' self-efficacy
- Students' self-esteem
- Interactivity
- Self-regulation
- Social role (teacher)
- Social context (society)
- Personality features

Creativity, critical thinking & Educational Technologies

- Opportunities:
  - Wide range of graphics, animation, sound, text
  - Plenty of various digital sources to each specific course
  - Adjusting to students' interests, attitudes, goals, knowledge and experience.
- Benefits:
  - monitoring and storing detailed information
  - commenting learners' progress and achievements
  - creating individual portfolio
  - providing individual feedback
  - developing students' attention, imagination, memory (Carr, 2010).
- Importance:
  - interaction between individual and group knowledge construction, providing background for discussions, internalization and externalization of the knowledge(Cress et al, 2013).

Gender & cognition

Gender & Creativity

- **No gender difference in performance at tests**, measured creative potential, but there were some significant **differences** between genders **in self-perception** (Torrance, 1983);
- Flexibility more important for males, fluency more important for females (Ali, 1999)
- **Females scored higher in aesthetics, feelings, and actions**, (Costa, Terraciano, and Mcrae, 2001)

Gender & Critical Thinking

- Critical thinking skills in math of females (year 9) were slightly better than that of males. (Mawaddah, 2018)
- No gender differences in inference-making and deduction were found (Bagheri, 2016)
- Gender differences are significant at high level critical thinking skills ability, while at moderate or low levels those difference are not significant (Zetriuslita, Ariawan, Nufus, 2016).

Reflection. Conclusion & discussion

Creativity

CRITICAL THINKING

THANK YOU

Dr. Ivanna Shubina, (PhD)
Associate Professor of Psychology
Ivannashubina@gmail.com