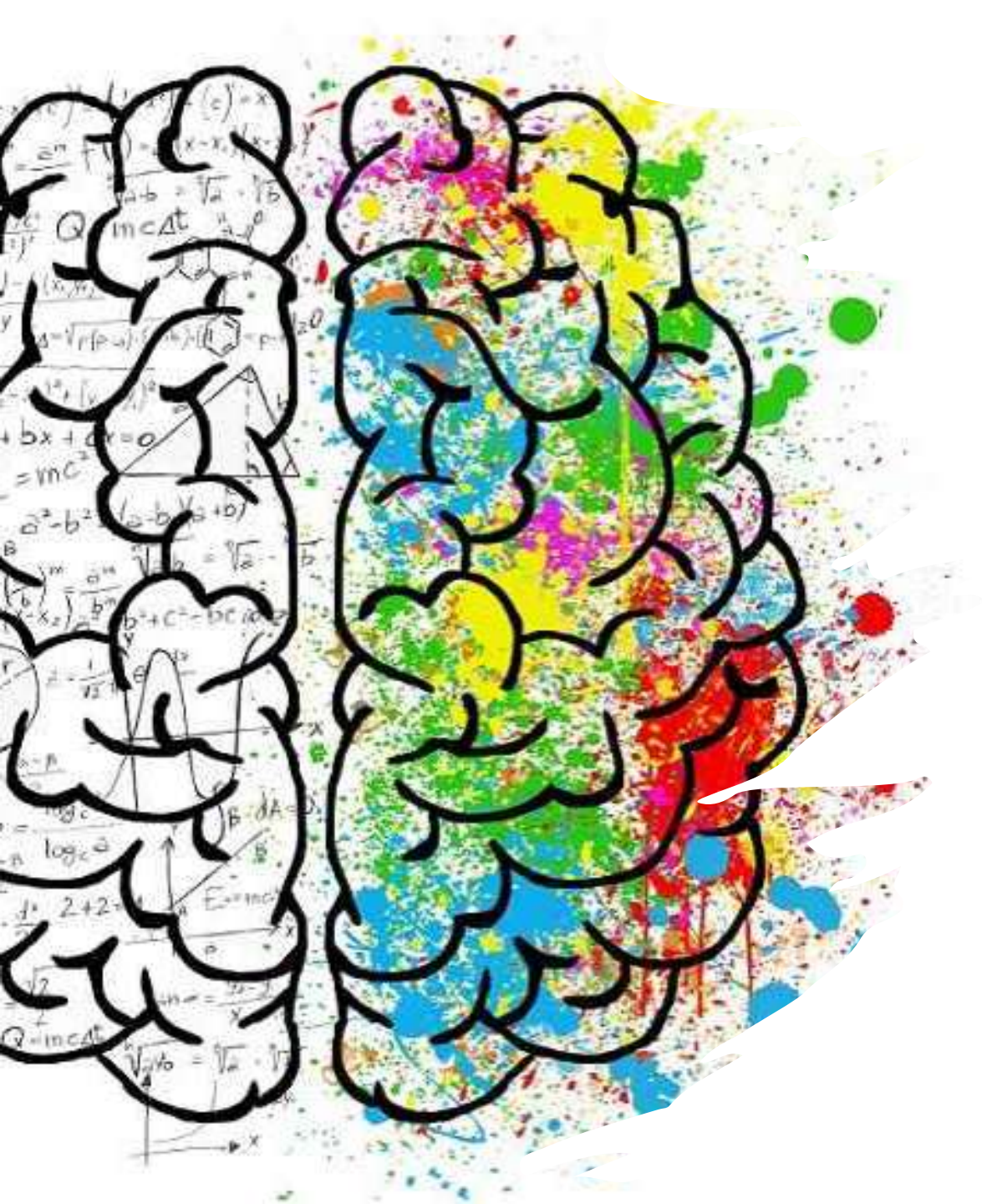




**FPT UNIVERSITY**



# THINKING AND ANALYSIS



# Chapter outlines

## **THINKING AND ANALYSIS**

1. Patterns of thought
2. Creative Thinking Skills

# LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify different patterns of thought, such as those found in Bloom's taxonomy
- Discuss the relationship of each thought pattern to education
- Define creative thinking
- Identify the value of creative thinking in education
- Describe the impact of limitations (such as rules) on creative thinking



# 1. Patterns of thought





# What Is Thought?

“We exist, and we are aware that we exist, because we think. Without thought or the ability to think, we don’t exist.”

# What Is Thought?

- **Thinking** is the mental process you use to form associations and models of the world. When you think, you manipulate information to form concepts, to engage in problem-solving, to reason, and to make decisions.
- **Thought** can be described as the act of thinking that produces thoughts, which arise as ideas, images, sounds, or even emotions.

**“Cogito ergo sum.” = “I think, therefore I am.”**

*(philosopher René Descartes, French, the early 1600s)*





# What Are Learning Objectives?

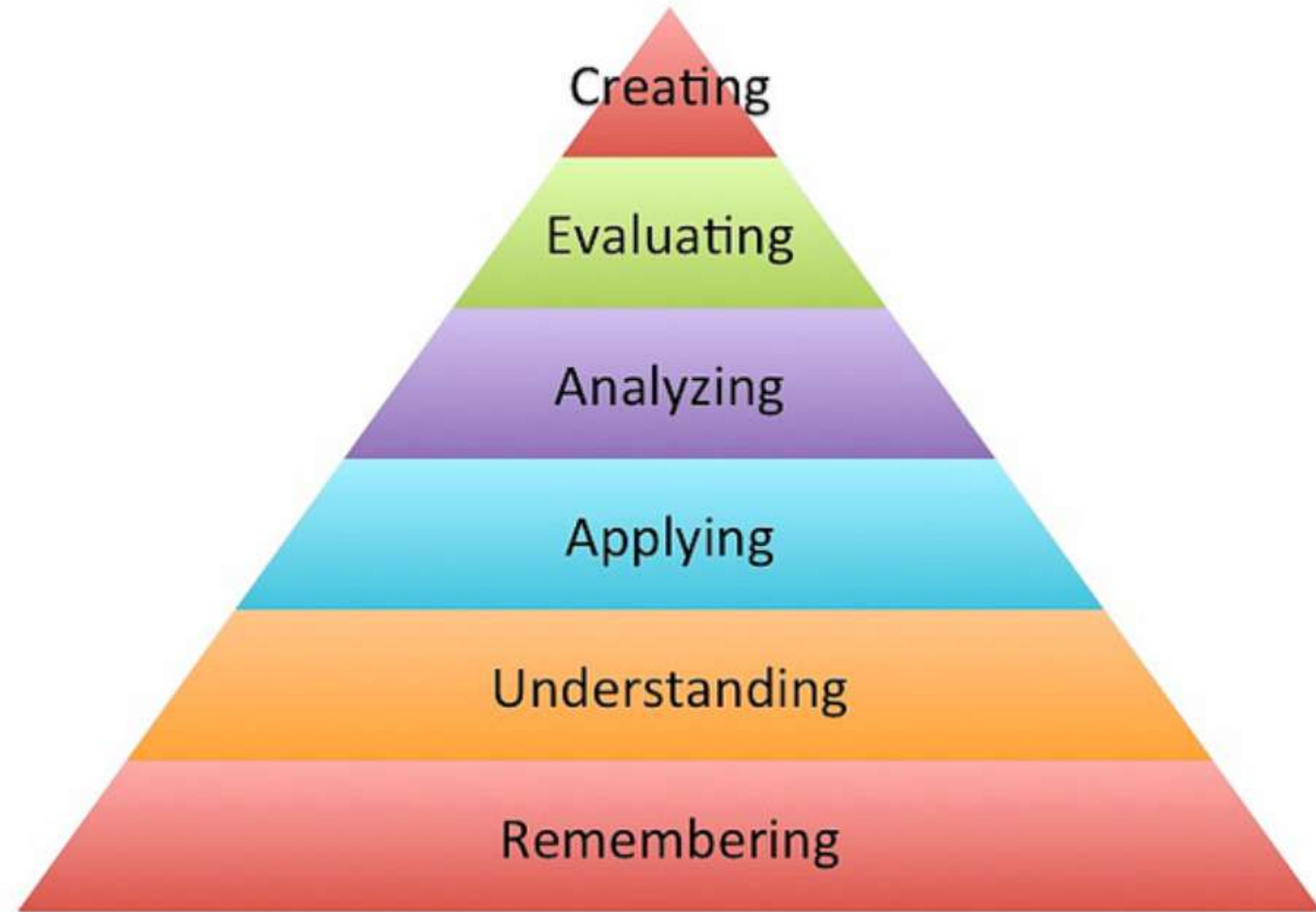
Learning objectives are *goals* that specify what someone will know, care about, or be able to do as a result of a learning experience.

The learning skills can be divided into three main categories or “domains”:

- **Cognitive domain** (*what you should know*),
- **Affective domain** (*what you should care about*)
- **Psychomotor domain** (*what you should be able to do*)



The  
Cognitive  
Domain of  
Learning



The New Version of Bloom's Taxonomy



## DESCRIPTIONS OF THE BLOOM'S TAXONOMY - THE COGNITIVE DOMAIN

MAIN SKILL LEVELS	DESCRIPTION
<b>Remembering</b>	When you are skilled in remembering, you can recognize or recall knowledge you've already gained, and you can use it to produce or retrieve or recite definitions, facts, and lists.
<b>Understanding</b>	Understanding is the ability to grasp or construct meaning from oral, written, and graphic messages.
<b>Applying</b>	When you apply, you use learned material (or you implement the material) in new and concrete situations.

## DESCRIPTIONS OF THE BLOOM'S TAXONOMY - THE COGNITIVE DOMAIN

MAIN SKILL LEVELS	DESCRIPTION
<b>Analyzing</b>	When you analyze, you have the ability to break down or distinguish the parts of material into its components, so that its organizational structure may be better understood.
<b>Evaluating</b>	With skills in evaluating, you are able to judge, check, and even critique the value of material for a given purpose.
<b>Creating</b>	With skills in creating, you are able to put parts together to form a coherent or unique new whole. You can reorganize elements into a new pattern or structure through generating, planning, or producing.



## 2. Creative Thinking Skills

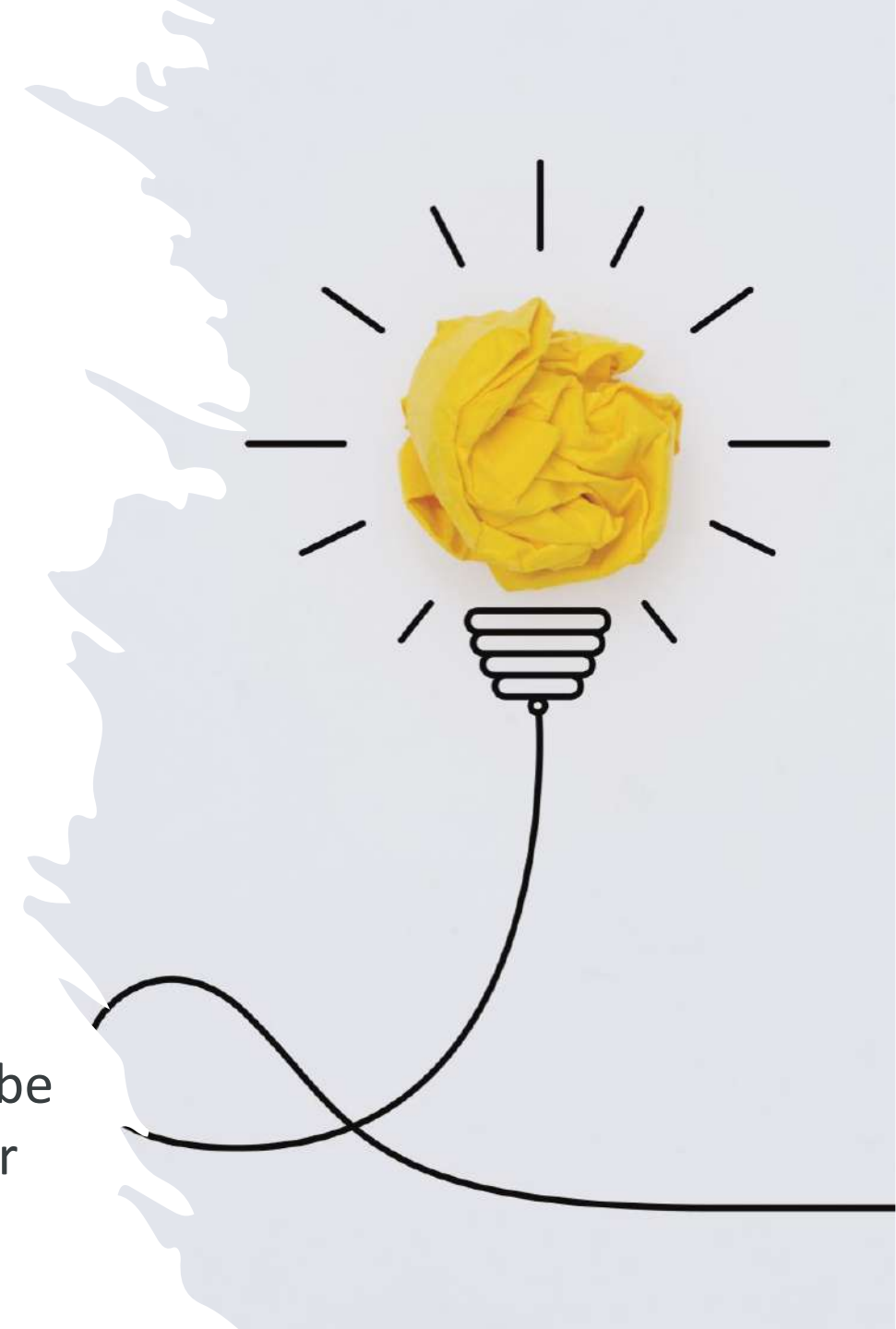
**“Everybody has a creative potential** and from the moment you can express this creative potential, **you can start changing the world.”**

*Paulo Coelho, author and lyricist*

# Creative Thinking

- **Everyone has creative abilities.** It's true of everyone who fully expresses creative abilities as well as those who express them very little or not at all.
- **All humans are innately creative**, especially if creativity is understood as a problem-solving skill.
- **Creativity is inspired when there is a problem to solve.** As a creative thinker, you are curious, optimistic, and imaginative.

**Creativity is inspired when there is a problem to solve.** Considered as an act of problem-solving, creativity can be understood as a ***skill***—as opposed to an inborn talent or natural “gift”—that ***can be taught as well as learned.***





# ACTIVITY: ASSESS YOUR CREATIVE PROBLEM-SOLVING SKILLS

## **Objective**

- Evaluate your attitude toward problem-solving in the context of cultivating creative thinking.

## **Directions:**

- Access *Psychology Today's* [Creative Problem-Solving Test](#) at the *Psychology Today* Web site.
- Read the introductory text, which explains how creativity is linked to fundamental qualities of thinking, such as flexibility and tolerance of ambiguity.
- Then advance to the questions by clicking on the “Take The Test” button. The test has 20 questions and will take roughly 10 minutes.
- After finishing the test, you will receive a Snapshot Report with an introduction, a graph, and a personalized interpretation for one of your test scores.
- Complete any further steps by following your instructor's directions.

# Creative Thinking in Education



College is great ground for enhancing creative thinking skills.

These are some college activities that can stimulate creative thinking. Are any familiar to you?

- Design sample exam questions to test your knowledge as you study for a final.
- Devise a social media strategy for a club on campus.
- Propose an education plan for a major you are designing for yourself.
- Prepare a speech that you will give in a debate in your course.
- Develop a pattern for a costume in a theatrical production.
- Arrange audience seats in your classroom to maximize attention during your presentation.
- Arrange an eye-catching holiday display in your dormitory or apartment building.

# Creative Thinking in Education



College is great ground for enhancing creative thinking skills. These are some college activities that can stimulate creative thinking. Are any familiar to you?

- Participate in a brainstorming session with your fellow musicians on how you will collaborate to write a musical composition.
- Draft a script for a video production that will be shown to several college administrators.
- Compose a set of requests and recommendations for a campus office to improve its customer service.
- Develop a marketing pitch for a mock business you are developing.
- Develop a comprehensive energy-reduction plan for your cohousing arrangement.

# How to Stimulate Creative Thinking

- 1. Sleep on it.** Over the years, researchers have found that the REM sleep cycle boosts our creativity and problem-solving abilities, providing us with innovative ideas or answers to vexing dilemmas when we awaken. **Keep a pen and paper by the bed** so you can write down your nocturnal insights if they wake you up.
- 2. Go for a run or hit the gym.** Studies indicate that exercise stimulates creative thinking, and the brainpower boost lasts for a few hours.
- 3. Allow your mind to wander a few times every day.** Far from being a waste of time, daydreaming has been found to be an essential part of generating new ideas. If you're stuck on a problem or creatively blocked, think about something else for a while.





# How to Stimulate Creative Thinking

- 4. Keep learning.** Studying something far removed from your area of expertise is especially effective in helping you think in new ways.
- 5. Put yourself in nerve-racking situations** once in a while to fire up your brain. Fear and frustration can trigger innovative thinking.
- 6. Keep a notebook with you** so you always have a way to record fleeting thoughts. They're sometimes the best ideas of all.





# A Brainstorm of Tips for Creative Thinking

**The best way to have a good idea is to have lots of ideas.**

*—Linus Pauling, double Nobel Laureate, chemist, biochemist, and peace campaigner*





# A Brainstorm of Tips for Creative Thinking

## SENSING

- Use all your senses - see, taste, smell, touch, hear, think, speak.
- Be a good observer of people, nature, and events around you.

## THINKING

- Engage thinking on the right side of your brain (intuition, open-mindedness, visual perception, rhythm . . .).
- Change your interpretation of an event, situation, behavior, person, or object.
- Allow ideas to incubate.
- Be open to insight as ideas pop into your mind.





# A Brainstorm of Tips for Creative Thinking

## IMAGINING

- Brainstorm by generating ideas with a group of people.
- Ask, “What would happen if . . .”
- Ask, “In how many different ways . . .”
- Develop ideas and expand their possibilities.
- Envision the future.







# A Brainstorm of Tips for Creative Thinking

## SPEAKING AND WRITING

- Use your words and your “voice” when conveying your original ideas.
- Avoid using clichés or overly familiar responses to questions or problems.
- Explain how your ideas move beyond the status quo and contribute to a discussion.
- Take notes.





# A Brainstorm of Tips for Creative Thinking

## DRAWING

- Use mind-mapping to capture ideas; start with a key concept and write it in the center of your page; use connecting lines, radiating from the central concept, and write down any connected or related ideas that come to you.
- Create pictures or drawings of situations (“rich pictures”) to show them in a different way.





# A Brainstorm of Tips for Creative Thinking

## LEARNING

Find ways to demonstrate your personal investment in projects.

Gather knowledge and conduct research.

Have more fun learning!

## MOVING

Do physical activities to engage the creative areas of your brain and think differently.

## RESTING

Take breaks.



The background consists of several white paper cutouts of human head silhouettes, each containing a large black question mark. These are arranged in a circular pattern. In the center, a blue line-art lightbulb is drawn on one of the silhouettes, with short lines radiating from it to indicate it is lit. The entire scene is set against a solid teal background.

Creative Thinking

Fiction and Facts



# Creative Thinking - Fiction and Facts

## FICTION

- Every problem has only one solution (or one right answer).

## FACTS

- Most problems can be solved in any number of ways.
- If you discover a solution that works, it's a good solution.
- Other people may think up solutions that differ from yours, but that doesn't make your solution wrong or unimportant.

# Creative Thinking - Fiction and Facts

## FICTION

- The best answer or solution or method has already been discovered.

## FACTS

- Look at the history of any solution and you'll see that improvements, new solutions, and new right answers are always being found.
- The ox or horse, the cart, the wagon, the train, the car, the airplane, the jet, the space shuttle? What is the best and last?

# Creative Thinking - Fiction and Facts

## FICTION

- Creative answers are technologically complex.

## FACTS

- Only a few problems require complex technological solutions.
- Most problems you'll encounter need only a thoughtful solution involving personal action and perhaps a few simple tools.
- Even many problems that seem to require technology can be addressed in other ways.

# Creative Thinking - Fiction and Facts

## FICTION

- Ideas either come or they don't. Nothing will help - certainly not structure.

## FACTS

- There are many successful techniques for generating ideas. One important technique is to include structure.
- Create guidelines, limiting parameters, and concrete goals for yourself that stimulate and shape your creativity.



it's  
**Q&A**  
TIME!

