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Evaluating Playful Creative Problem Solving in Kyiv and Ukrainian Refugees in France

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Step 1 Why is creative problem solving so important?

Top 10 skills of 2025

- Analytical thinking and innovation
- Active learning and learning strategies
- Complex problem-solving
- Critical thinking and analysis
- Creativity, originality and initiative
- Leadership and social influence
- Technology use, monitoring and control
- Technology design and programming
- Resilience, stress tolerance and flexibility
- Reasoning, problem-solving and ideation

Source: Future of Jobs Report 2020, World Economic Forum

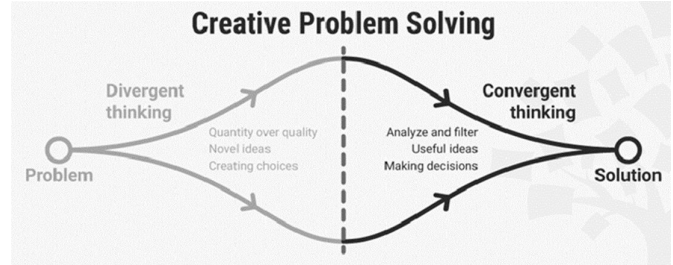
Step 2



Creativity is a complex human process that can be observed in a high diversity of learning, professional, and personal tasks

Creative problem solving (CPS) is a way of using **creativity** to develop new ideas and solutions to problems

Step 3 CPS, Divergent & Convergent Thinking



Divergent Thinking (ideation)

Convergent Thinking (idea selection)

Source: Runco, M.A. (2011) 'Divergent Thinking', in Mark A. Runco and S.R. Pritzker (eds) Encyclopedia of Creativity (Second Edition). San Diego: Academic Press, pp. 400-403.

Step 4 Divergent Thinking Components

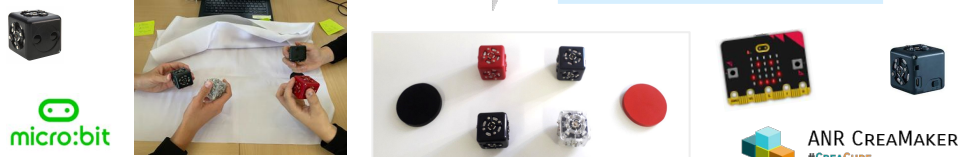
- fluency**: Number of ideas
- flexibility**: Number of different ideas
- originality**: Number of original ideas (<5% - **creativity** component)

Source: Guilford, J. (1967) 'Creativity: Yesterday, today and tomorrow', The Journal of Creative Behavior, 1, pp. 3-14.

Step 5 Creative problem solving with educational robotics

CPS can be supported with visuospatial constructive play objects (VCPO) or artefacts such as **modular robotics**

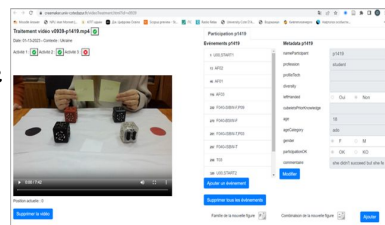
The ANR CreaMaker project aims to advance the study of individual and collective **creative problem solving** through educational robotics



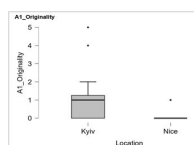
Step 6

Research Goal: How the **stress** impacts on **creativity** & students' **creative problem solving skills** during wartime?

To evaluate **divergent thinking**, learner-players are asked to solve the **CPS #CreaCube** playful task



	A	B	C	D
1				
2	Average	Fluency	Flexibility	Originality
3	Nice group	4.933	1.6	0.13
4	Kyiv group	4.938	2.19	1.19



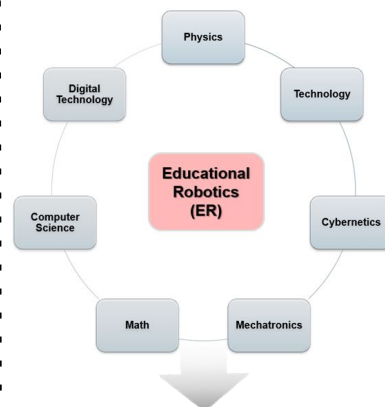
Number of participants (N=33):

Nice group (Ukrainian students in France)
- 17 students (normal conditions)

Kyiv group (Ukrainian students in Ukraine)
- 16 students (difficult conditions: **air raid sirens, sounds of explosions, cut of electricity, cold weather and no heating etc.**)

Educational robotics

Educational robotics is a cross-disciplinary area of students' learning and present educational trend



Future/present robotics jobs:

- robotics teacher
- operator of multifunctional robotic systems
- robot designer
- designer of neuro-interfaces for robot management
- designer of "smart" houses
- unmanned aerial interface designer
- service engineer in robotics
- robotics programmer
- medical robot operator
- drone operator
- drone engineer

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Module 3. The EU experience in CPS with educational robotics.