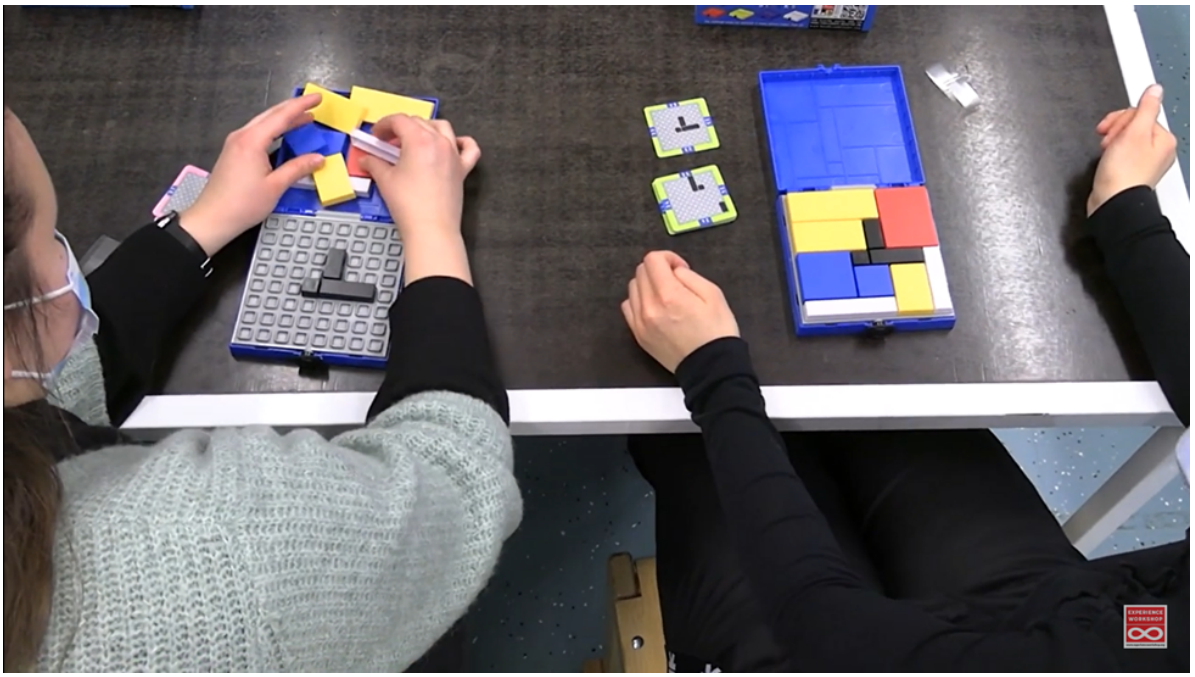
Grade / Age: Secondary School Students (Grades 9-12 / Ages 14-18)
Topic: Cognitive Games and Problem-Solving in STEAM
Subject area: Mathematics, Sciences, Arts
Keywords: Cognitive Games, Problem-Solving, Logical Reasoning, Spatial Awareness, Creativity, Collaboration, STEAM
Single/team work: Team Work
Language: English (can be adapted to other languages)
Duration: 3-4 weeks

Description of the Task: PuzzleCraft: Designing Cognitive Games to Unravel the Art of Problem-Solving in STEAM



Students will work in teams to design and create their own cognitive game or puzzle that embodies mathematical, scientific, and artistic principles. The project will include the following stages:

Research and Exploration: Teams will explore existing cognitive games and puzzles, analyzing their design and problem-solving elements.

Design Phase: Students will brainstorm and design their own game or puzzle, incorporating mathematical concepts, scientific principles, and artistic aesthetics.

Prototyping: Teams will create physical or digital prototypes of their game or puzzle, iterating and refining their designs.

Testing and Iteration: Students will test their games with peers, gather feedback, and make necessary revisions.

Final Presentation: Teams will present their final game or puzzle to the class, explaining the mathematical, scientific, and artistic connections, and reflecting on the design process.
Solutions of the Task: **The solution will vary depending on the chosen game or puzzle design. Students will be assessed on their research, design process, collaboration, creativity, final product, and presentation.**
Prior knowledge: **Basic understanding of geometry, logical reasoning, familiarity with game design principles (training can be provided).**
Comments: **This project fosters collaboration, creativity, critical thinking, and problem-solving. It integrates mathematics, sciences, and arts through a hands-on, real-world application. Teachers may need to provide training or resources on game design principles.**
Connection to other subjects/topics/areas: **Mathematics: Exploration of geometric shapes, logical reasoning, application of mathematical concepts.** **Sciences: Connection to scientific principles, understanding of materials and technology if creating a physical prototype.** **Arts: Aesthetic design, creativity, visual representation.** **Technology: Use of game design software or tools if creating a digital prototype.** **Language Arts: Research, presentation skills, written reflection.** **This activity provides a rich, interdisciplinary experience that engages students in a meaningful, real-world project, allowing them to explore the connections between cognitive games and STEAM education. It can be adapted to various grade levels and extended to include connections to other subject areas.**