ABSTRACT:
❖ Qualitative investigation at alternative high school in Colorado, USA; 2017-2018.
❖ Five-week terms; 1st: eight students, 2nd: five students.
❖ Evaluated impact of Rubik's Cube on self-confidence, engagement, teamwork, and critical thinking.

RESULTS/FINDINGS:
❖ Across ten weeks, students completed 24 mosaics (36-625 cubes in size).
❖ Pupils’ engagement levels were linked to class format.
❖ Learners’ mindset shifted from “I CAN'T do this!” to “I CAN do this!”

THE ‘A’ IN STEAM:
❖ Constructed mosaics to produce artwork with Rubik’s Cubes.
❖ Learned about historical figures including Einstein, Tesla, and others.
❖ Utilized online applications to create original designs.

LESSONS & ACTIVITIES:
❖ Geometry
➤ Surface area, volume, and nets of cubes
❖ Probability:
➤ Factorials, exponents, and permutations
❖ Trigonometry:
➤ Pythagorean Theorem
❖ Technology:
➤ Pixels and graphic design

ENGAGEMENT:
❖ Students learned how to solve the entire Rubik’s Cube.
❖ The group was motivated to construct a custom mosaic of a school staff member.
❖ The class moved towards democratic autonomy.

EXTENSIONS & DIFFERENTIATION:
❖ 2x2—used with less-experienced learners.
❖ Classic 3x3—used with students of all ages.
❖ 4x4 with “parity”—used with advanced pupils.
❖ “Void Cube”—used to provide a new challenge.

PERSEVERANCE & GIFTEDNESS:
❖ 1974: Ernő Rubik, Hungarian sculptor and professor, invented the “Magic Cube”; he spent a month trying to solve his own puzzle.
❖ 1981: 12-year-old boy Patrick Bossert writes “You Can Do The Cube”; 1.5M copies sold.

FUTURE STUDIES:
❖ How can this be scaled to larger classrooms?
❖ In what ways do gifted students engage with the Rubik’s Cube?

REFERENCES:
The Cube: A Unique Twist in STEAM Gifted Education
Dan Van der Vieren
Colorado, United States
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