

## 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:

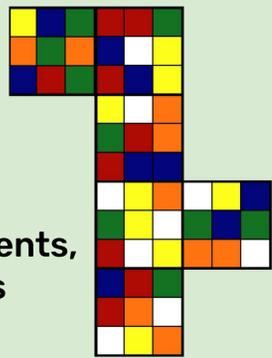


- ❖ Constructed mosaics to produce artwork with Rubik's Cubes.
- ❖ Learned about historical figures including Einstein, Tesla, and others.
- ❖ Utilized online applications to create original designs.



## LESSONS & ACTIVITIES:

- ❖ **Geometry**
  - Surface area, volume, and nets of cubes
- ❖ **Probability:**
  - Factorials, exponents, and permutations
- ❖ **Trigonometry:**
  - Pythagorean Theorem
- ❖ **Technology:**
  - Pixels and graphic design



## The Rubik's Cube: A Unique Twist in STEAM Gifted Education

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July 27, 2019

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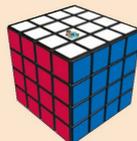
## ENGAGEMENT:

- ❖ 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.



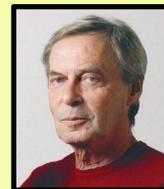
## EXTENSIONS & DIFFERENTIATION:

- ❖ **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:



Arm-twisting vs. Cube-twisting:  
An Analysis of Student Engagement  
Using the Rubik's® Cube  
(Van der Vieren, 2018)



You CAN Do The  
Rubik's Cube