Joy through Justice: Inspiring Change through Meaningful Activities

Kyle Evans, Trinity College
Megan Staples, University of Connecticut

#MAAthFest
How does math (attempt to) quantify “fair” or equitable outcomes?

In school (K-12) math this evolves:
- Equal
- Proportional
- True to a claim or standard (not outlier)

There are various contexts in which math “solves” the fairness problem:
- Apportionment (U.S. House of Representatives)
- Cake-cutting
- Rental harmony
- Stable Marriage Problem
How do public schools get funded?
Where does the money come from?
Connecticut Supreme Court in 1977 ruled that education is a basic and fundamental right and that public school students are entitled to equal enjoyment of that right regardless of hometown.

Having a system based only on local property tax revenues was ruled unconstitutional and the state was ordered to use state funds to equalize education.
Connecticut School Funding

- Local: 58.3% ($7B)
- State: 37.5% ($4.5B)
- Federal: 4.3% ($0.5B)

Total Funding: $12B
The state money is an attempt to “equalize” education by quantifying “fairness.”

What factors would you consider when distributing money to schools/districts?
1) Distribute real data cards from mystery CT district
2) Make sense of district data compared to state totals
3) See data from other groups and decide on “fair share”
4) Groups share out and collectively negotiate $ distribution
5) Districts and formula are revealed
6) Discussion and reflection
It’s important!

- Facilitated in a few high school classrooms
- Feedback from teachers that adopted it themselves
- MTC Hawaii (MaTCH)
- Chapter in our book
Connecticut uses a student-based foundation model.

District $ from state last year:

Foundation $ \times$ Weighted Student Count $ \times$ Base Aid Ratio

$11,525 \ 1.3$ Low-Income $70\%$ Property Wealth
$1.45$ Low-Income $> 60\%$ $30\%$ Income Wealth
$1.25$ ELL

All districts receive something.
Bonuses for lowest-performing districts.
Math Teachers’ Circle 4 Social Justice (MTC4SJ)

- Founded in 2020
- Monthly online workshops
  - Tuesday evenings, average 22 participants
- Mostly in-service teachers
- Embrace capacity and community
- Summer Stars cohorts
- Open-access lessons/resources book
Summer Stars

- 2021: 14 CT educators (MS, HS, coaches)
  - 2-week PD focusing on the why/what/how of social justice math + teacher identity
  - Developed 6 lessons in groups that became workshops last year + chapters in our book
- 2022: 7 CT educators (HS, pre-service)
  - Currently developing 2 more lessons which will be future workshops + book chapters

Joy through Justice
#MAAthFest
Connecting Mathematics & Social Justice
Lessons and Resources for Secondary Math Teachers
“Leaky Pipeline” of Women in STEM

- Workshop in 2021 created by Samantha Greenberg, Kaitlyn Pierce, Marie Randle, McKayla Wyble
- “Women in STEM” week in my own Stats courses
- Will be added to our book in the next set of lessons
Inspiring Change

“Leaky Pipeline” of Women in STEM

- Workshop in 2021 created by Samantha Greenberg, Kaitlyn Pierce, Marie Randle, McKayla Wyble
- “Women in STEM” week in my own Stats courses
- Will be added to our book in the next set of lessons
- Won an award 😊
Next Steps

- More use in schools
  - Book includes user reflections to add to resources
- Broader impact
  - In our own state
  - Pre-service teachers
  - Other Math Circles
- Expansion - Elementary Circle starting this year!
  (MTC4SJ-E)
- Continue outreach efforts
Thank You!

MTC4SJ Website: bit.ly/mtc4sj

MTC4SJ Book: bit.ly/mtc4sjbook

Email: mtc4socialjustice@gmail.com

kyle.evans@trincoll.edu
Features of Social Justice Math

**Motivation**

**Investigation**

**Reflection**

**Action**

**Relevant social issue**

**Mathematizing**

**Problem-solving**

- **Identity**
  - Viewing yourself
  - Combat Injustices

- **Diversity**
  - Viewing others
  - Viewing fairness

- **Justice**
  - Viewing fairness

**Math Teachers' Circle**