

Pilot Go Instruction and Specialist Training Program in Elementary Math Classrooms

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Project Background

- Seed Grant (2019-2020), National Louis University
- Included over 100 third-grade students and six teachers in four classrooms
- First time Go was taught and played in third-grade mathematics classrooms
- Addressed three questions:
 - What natural opportunities for learning and using mathematics arise from playing Go?
 - How can Go games support students in meeting the state learning standards for math?
 - How do teachers' and students' perceive Go?



School & Classroom Context

- The school is located in the northwest suburbs of Chicago.
- The four classrooms are part of the school district's Chinese Immersion Program (50/50 model) catering to families where English is the primary home language.
- In Third Grade: Chinese Language Arts, Science and Social Studies are taught in Chinese; English Language Arts and Math are taught in English.



Data Collection

- Teacher surveys (Beginning and end)
- Student survey (End of project)
- Teacher interviews (End of project)
- Video recordings of Go game lessons and plays
- Interview with the GIST and Go teacher/mentor

1. How do you feel about this game? *

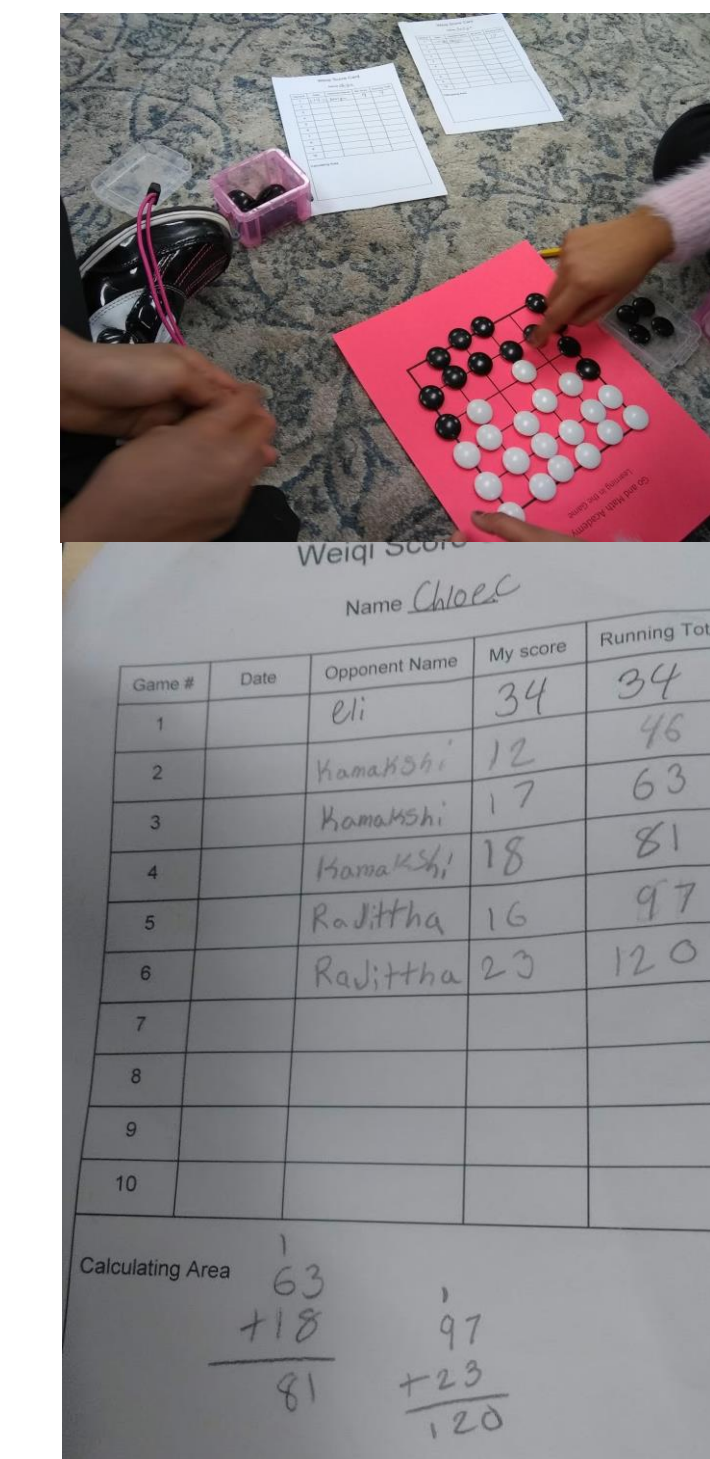
A lot of fun Some fun Okay Not fun

2. I use my math skills in these games. *

Agree Disagree

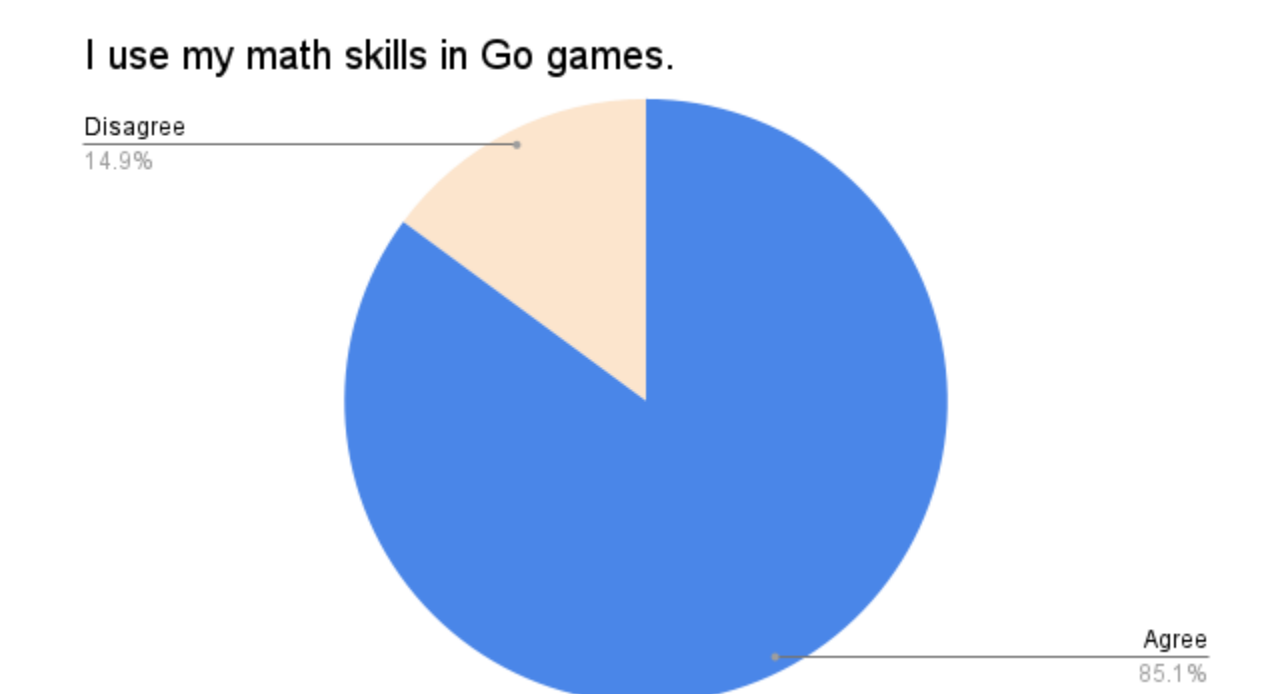
3. Which of the following math skills and concepts do you use during this game? (You can choose as many as you can.)

Addition Subtraction Repeated addition Multiplication Commutative property Distributive property Combined operations (adding, subtracting, and multiplying) Other



Results – Cont'd

- Students' perceptions of Go:



- "It is a cool and fun game but sometimes can be challenging; You use a lot of math skills."
- "It is a good game about math but you don't know you are doing math."
- "Go is a fun way to play against someone and build your math facts as well as your strategy in a game!"
- "It is a game of numbers."
- "Go can help you learn how to be a good leader and you can use your math skills!"
- "It is a good game to play and it will help you with your math skills."

Principal Investigators (PI)

- Xiuwen Wu: PI
 - Associate Professor in Special Education
 - Teacher educator
 - Novice-Mid Go player

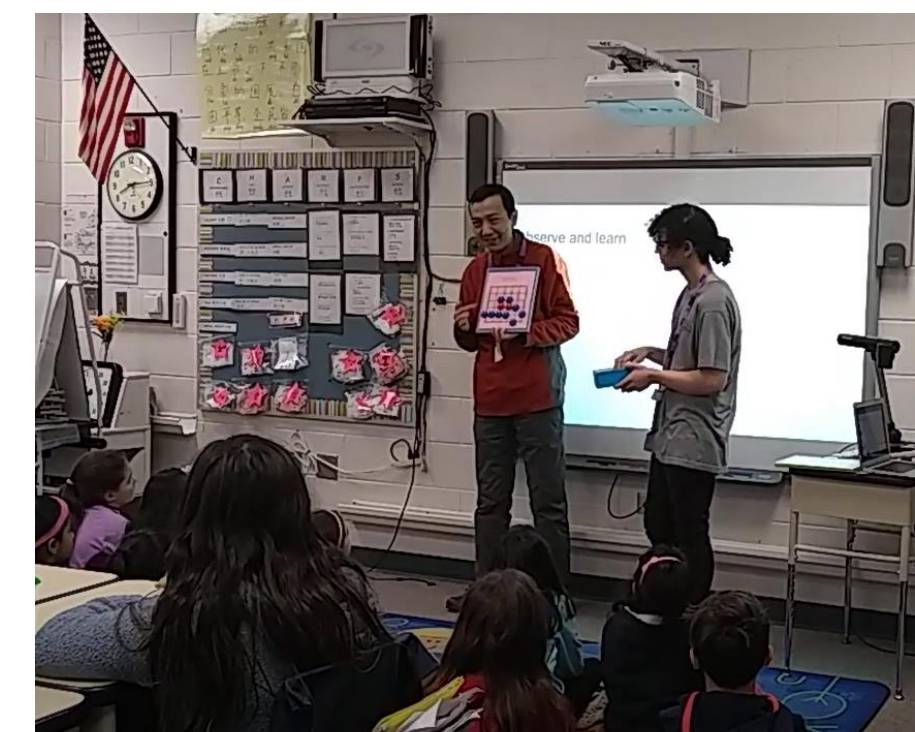


- Xinming Guo: Go and Math Instructional Mentor (GMIM)
 - IL-Licensed teacher
 - Advanced Low Go player (1D)
 - Founder of Go and Math Academy
 - 2015 AGF Teacher of the Year
 - Recipient of the 2018 Iwamoto World Awards



Go Implementation Process

- Taught students twelve Go lessons, including:
 - Six weekly on-site Go lessons
 - Four monthly on-site and virtual lessons
- Provided a project orientation for teacher:
 - Met with the teachers to introduce the project
 - Introduced Go game
- Implemented a predictable structure of Go lessons:
 - 10-15 minutes of direct instruction/modeling/demo
 - 20-25 minutes of game play time
 - Explicit instruction and cumulative review
- Piloted the Go and Math Instructional Specialist (GMIS) program:
 - Recruited a Go player from the local community to be the Go instruction trainee
 - Mr. Guo, the GMIM, mentored the GMIS trainee through instructional modeling, co-planning, and team debriefings, before and after each Go and math lesson in the classrooms.
 - The trainee practiced teaching in the classroom through guest speaking, co-teaching, and assistance to the students.

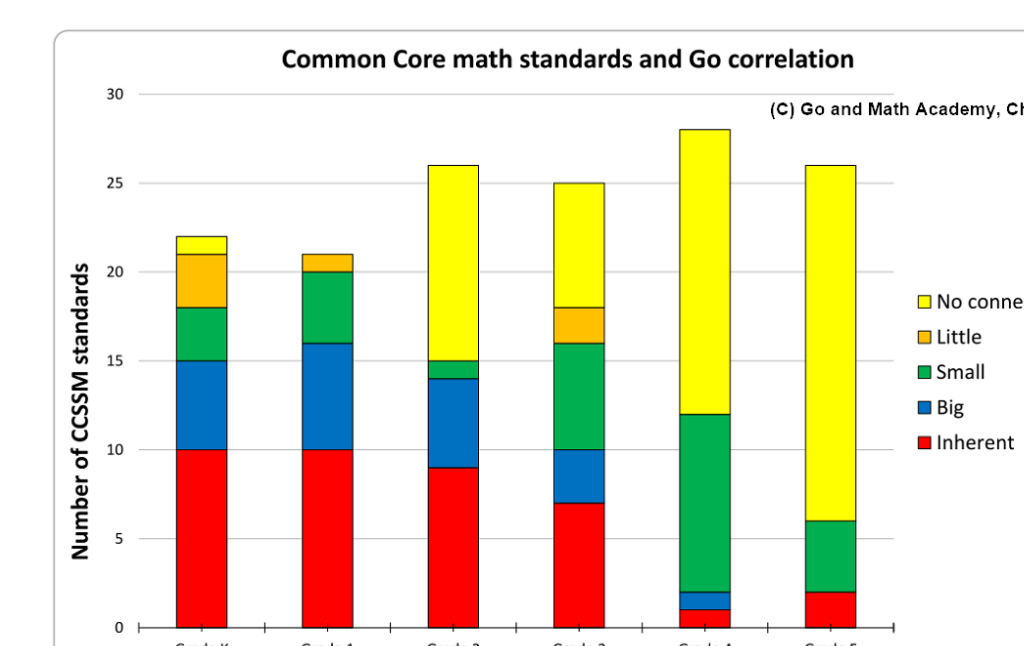


Results

- Abundant natural opportunities arose for the students to apply, practice, and discover math concepts and skills in the games, including: Subitizing, counting, multiplication, mixed operations (addition, subtraction, and multiplication), distributive property, and arrays.
- Go games are strongly connected to the state learning standards for mathematics:

Teachers' perceptions of the connections between Go and mathematics:

- Concrete representations of numbers
- Multiplication
- Mental math
- Visual/spatial thinking
- Composition and decomposition of numbers
- Number sense
- Addition
- Subtraction
- Checking answers (scores)
- Count on
- Repeated addition
- Repeated practice of basic facts
- Skip counting
- Regrouping



- Teacher perceptions:
 - "Go is often the preferred choice of activities when they have free choice."
 - "Student with ADHD showed a great interest in Go and was attentive during Go lessons."
 - "It is a great experience for students to apply math skills naturally and to practice basic math skills repeatedly in the game."
 - "The students really benefited from the extra math practice."

Conclusions

- This project provides empirical support for the educational benefits of Go for math learning.
- The teachers and students perceived Go game as having strong connections with math standards and serving as low-stress, engaging math learning contexts for all learners.
- The Go game lessons taught the students to accurately and quickly visualize numbers on the board through number shapes.
- Go games provided students with opportunities to practice a variety of math skills.
- The piloted GMIS program is a viable way to tap into local Go communities to train Go and math instructional specialists.

Future Steps

- Refine the Go and Math Instructional Specialist (GMIS) program and use the model to support local, national, and international Go players to bring Go into classrooms.
- Continue classroom-based research on the educational benefits of Go.