Playing Card Games
-or-
Doing Worksheets in Math Class
That IS the Question!

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About the Presenters...

Sheri-Lynn Skwarchuk

- Education/Psychology Faculty
  University of Winnipeg
  Early Numeracy Research - Count Me In!
  Teaching about Inclusion Practices

- School Psychologist (#CA-47843)
  Child Assessment - University of Waterloo
  Children who Struggle with Math
  Inclusive Education

- Parent of 3 school aged children
  Grade 5, Grade 7, Grade 10
  Developmental History
  Diverse Abilities and Interests

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About the Presenters...

Harriet Winterflood

- School Psychology Student
  Child Assessment - University of Calgary
- Research Assistant for project
- Foster Parent/Group Home Assistant
  Diverse Abilities and Interests
  Effect of homework on children struggling in school
A Personal Story

- Young children brought home numeracy activity bags with instructions.
- ‘Play the games with your parent/sibling, practice the skills.’
- Asked my child’s teacher about processes.
- I wonder, ‘Does this really work?’
Background

- Math challenges in Canadian society
- Technology Increases
- Loss of Concrete—Canadian Penny
- Prolific Math Anxiety
- Relative Drop in International Academic Rankings

Mathematics Instruction under Scrutiny

Card Game Playing

- Card games have the potential to introduce math content, but with limited empirical evidence
- Math interventions for board game playing
- Quality of Interaction is important
- Suggestions for math content in certain card games such as Cribbage


Research Questions

1) Do math related card games versus worksheets improve addition accuracy?

2) Do math related card games versus worksheets improve addition fluency?

3) How do processes and results compare when playing math related card games versus completing math worksheets?
Methodology

- 32 Participants in Grades 1 & 2, from Winnipeg, MB.
- Completed a timed addition math fact test sheet (pre/mid/post), measuring both accuracy & speed.
- Pair groupings based on math ability.
- Card games: Add GO Fish, Addition Memory, Control: Crazy 8s, War
- Pairs randomly assigned to counterbalanced condition:
  - Math card games first, then worksheets
  - Worksheets first, then math card games
  - Non-academic card games (control) then worksheets
- 5 x 20 minute sessions with each activity
Results

- Math fluency improved for math card game and worksheet conditions.
- Non-math related card games did not improve speed. Controls showed speed improvements when children switched to worksheets.
- High addition accuracy scores on pre test- so no condition effects.
- Children preferred playing card games; some children turned worksheet completion into games.
### Results

Repeated Measures ANOVAs, followed by post hocs

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<thead>
<tr>
<th></th>
<th>PreTest</th>
<th>Mid-Test</th>
<th>Post-Test</th>
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<tbody>
<tr>
<td>Control</td>
<td>752.86</td>
<td>701.29</td>
<td>570.00</td>
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<tr>
<td>Worksheet First</td>
<td>495.92</td>
<td>390.42</td>
<td>301.25</td>
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<tr>
<td>Card Game First</td>
<td>535.54</td>
<td>464.69</td>
<td>402.23</td>
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<tr>
<td>Total</td>
<td>568.22</td>
<td>488.59</td>
<td>401.06</td>
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Implications

- Worksheets and math card game playing enabled children to practice math skills and improve speed performance.

- It does not take a lot of time to practice basic facts (5 x 20 minutes).

- Guidance and monitoring by a parent, teacher or capable peer is essential.

- Future studies should be conducted with harder problems to determine how card games can be used to facilitate skills children are currently learning.
Thanks to:

Healthy Child Manitoba

for their financial support of this project.