TOYBOX Literacy and Numeracy Learning Outcomes in Early Childhood Education Centres

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INTRODUCTION

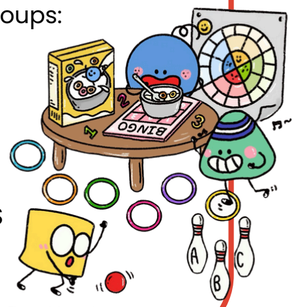
- Early intervention prior to a child's entry into formal education is essential to their academic skills/well-being.
- TOYBOX's free, evidence-based interventions and activities aim to improve literacy and numeracy skills in children ages 2-8 years.

Study Purpose

- To determine whether participation in the TOYBOX intervention is effective in improving literacy and numeracy skills in children aged 2-6 years after completing 10 minute sessions, 3 times a week, for 5 weeks with their early childhood educator (ECE).

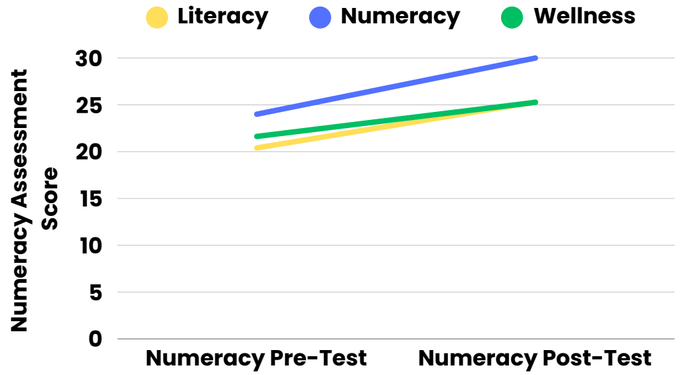
METHOD

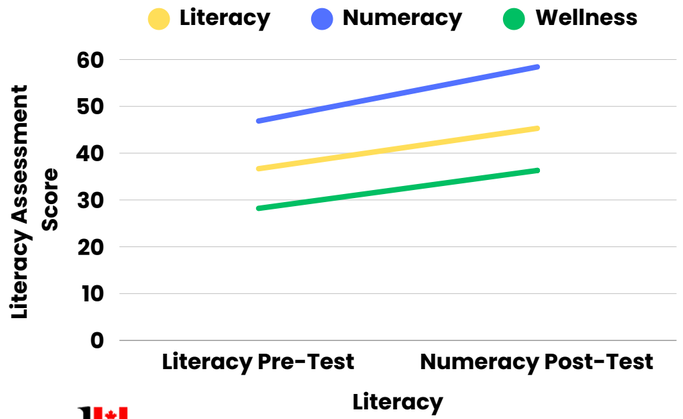
- 101 children aged 2 - 6 years from 7 early learning centres. Sample reduced to 68 children due to intervention length.
- Children were randomly assigned to 3 groups:
  1) Literacy Focus
  2) Numeracy Focus
  3) Wellness Focus
- Pretest and posttest measures:
  - Uppercase letter naming, number naming, counting, cardinality & PENNS
- Intervention materials included a bag of supplies and activity instructions
- Pretest → 5 week intervention with ECE → Posttest



RESULTS

Two ANCOVAs with post letter ID and post numeracy as DVs, Intervention group as IV, with child age in months and minutes of intervention as covariates were computed.





HYPOTHESES

1) Literacy group to show improvement in literacy skills, but not numeracy skills
2) Numeracy group to show improvement in numeracy skills, but not literacy skills
3) Wellness group (control) to show no academic gains

Other Considerations...

Do skills transfer from one domain to others?
What age range is associated with highest rate of growth?

DISCUSSION

- Children who spent more minutes on the intervention (range= 10-258 minutes) improved academically compared to those with less contact time, $F(1, 67)= 12.35$, $p<.001$ for numeracy; $F(1, 68)= 4.469$, $p <.039$ for literacy.
- Children's numeracy scores improved for children in the numeracy group, $F(2, 67)= 2.72$, $p<.037$ one-tailed.
- Literacy skills improved for all children, regardless of group.

EDUCATIONAL SIGNIFICANCE

Preschoolers (esp. @ age 4) should be encouraged to work on learning activities at their level in early learning settings. Numeracy exposure resulted in specific numeracy learning outcomes. See **TOYBOXManitoba** website for activity ideas.

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