Effectiveness of Traditional Handwriting Instruction Supplemented with App-Based Instruction on Handwriting Legibility

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An Evidence-Based Occupational Therapy Intervention
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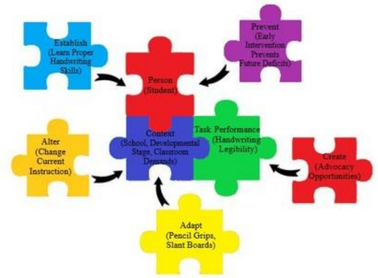
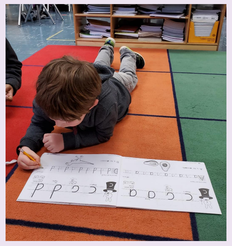


Ecology of Human Performance

SETTING & BACKGROUND

Setting



- Suburban public-school district south of Atlanta, Georgia
- 42,000+ students district wide
- 28 elementary schools
- Average of 20-22 students in each class

Background

- Large number of occupational therapy referrals for handwriting (Asher, 2006)
- Lack of formalized instruction and increased demands related to higher prevalence of handwriting difficulty (Asher, 2006)
- Electronic device use is highly motivating for students even though it appears to have a mixed impact on fine motor development (Butler, Pimenta, Tommerdahl, Fuchs, & Cacola, 2019; Karlsdottir & Stefansson, 2002; Lin et al., 2017)
- Handwriting skills are an important occupational task for students within their school day (Randall, 2018)
- Explicit handwriting instruction combined with app-usage that provides accurate instruction is an effective way to improve handwriting legibility (Jordan, Michaud, & Kaiser, 2016)

PICO QUESTION

Do kindergarten students (P) who participate in traditional handwriting instruction supplemented by a tablet-based application which teaches letter formation (I) demonstrate improved legibility (O)?

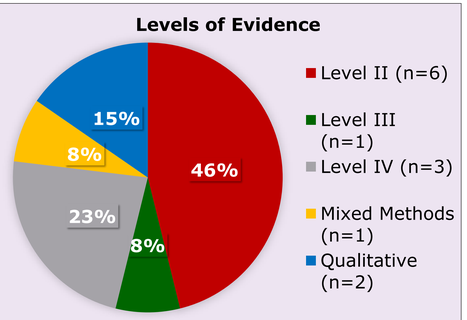
SIGNIFICANCE TO OT

- Determine the effectiveness of supplementing traditional handwriting instruction with practice utilizing a tablet-based application for letter formation.
- Increase the knowledge base of school-based occupational therapists on evidence-based interventions to improve handwriting legibility
- Increase collaboration with teachers to allow occupational therapists to support whole classrooms of students.

LITERATURE REVIEW

CAT Portfolio

- 13 Articles
- Published between 2002-2019
- Direct support: 8 Articles
- Indirect Support: 5 Articles



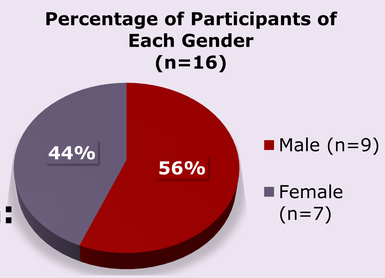
Themes:

- Inconsistency of handwriting instruction in early education
- Perceptions of teachers related to handwriting instruction
- Occupational Therapist collaboration with Teachers
- Use of Technology
- Evaluation and Outcome Measures

DESIGN & IMPLEMENTATION

Participants:

- 16 Kindergarten students
- 10 students in general education;
  - 6 with additional services
  - 1 with Occupational Therapy



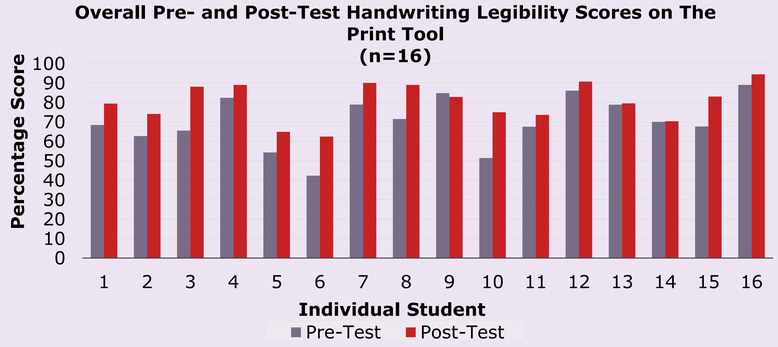
Project Implementation:

- Small group lessons for 5 weeks
- Focused on lower case letter formation
- Rotating traditional and app-based instruction sessions
- Collaboration with classroom teacher and paraprofessional

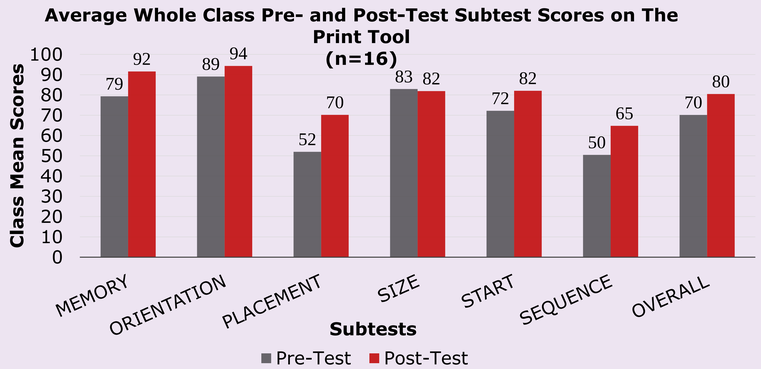
Outcome Measures:

- Pre-test/post-test design
- The *Print Tool*® by *Learning Without Tears*™
  - Subtests: memory; orientation, placement, size, starting point, and sequence
  - Overall Score

OUTCOMES



- 94% of students showed increased overall scores on the Print Tool®
- 94% of students improved in letter sequencing
- 81% of students improved in memory and placement
- Students with services improved more than general education students



SUMMARY

- 15 out of 16 students (94%) showed improvement in overall scores
- Only the size subtest showed a decrease in skill
- Traditional handwriting instruction supplemented with an application-based instruction method is effective to improve handwriting legibility in kindergarten students.
- A handwriting program that provides explicit instruction and is reinforced through practice on an application would benefit kindergarten students.

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