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Motor-Vation
Using an Evidence-based Motor Intervention Program to support Fine Motor Development in Kindergarten

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About Me

- OT since 2000
- School-based 2005-2013
- Other practice areas: Acute pediatrics, SCI acute rehab, SNF, Inpatient mental health
- Professor
- Research Coordinator



Occupational Therapy

" Occupational therapists work with children and youth, parents, caregivers, educators, and other team members to facilitate children's and youth's ability to participate in everyday activities, or *occupations."*

"In… a school-based setting, occupational therapy practitioners use their unique expertise to help children and youth with and without challenges prepare for and perform important learning and developmental activities within their natural environment."

-The American Occupational Therapy Association (AOTA)

Occupational Therapist

- OTs support a child in his or her occupation of "student" by using knowledge and skills in biological, physical, social, and behavioral sciences to evaluate and intervene as needed.
- OTs are trained to apply evidence-based research ethically and appropriately to evaluate and provide these interventions.

- AOTA (2012)

Learning Objectives



By the end of this presentation the participants will be able to:

1. Identify specific fine and visual motor development skills needed for successful participation in kindergarten.
2. Recognize what current evidence states about the direct influence of fine motor difficulties on a students academic success.
3. Identify evidence relevant to the current role of an occupational therapist within MTSS/RtI in a school setting.
4. Describe the evidence-based options for occupational therapists to provide support in kindergarten classrooms.
5. Recognize a plan for increasing occupational therapy services in your schools kindergarten classrooms.

Background: The Problem



- There are typically developing kindergarten children who do not have proficient or fully developed fine and visual motor skills needed for academic tasks
- 20% of school children in the USA demonstrate fine motor difficulties (Hammerschmidt & Sudsaward, 2004)
- Fine motor difficulties can have detrimental effects on the academic, social, and emotional development of students (Rosenblum, Weiss, & Parush, 2003)
- Students have not been receiving adequate support in developing fine motor skills (Jackman & Stagnitti, 2007)

Evidence-Based Practice (EBP)



EBP is "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual [client]. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research." (Sackett D, 1996)

My EBP process



• **Questions**:

1. How specifically do difficulties in fine motor skills effect a kindergarten student's participation in the curriculum?

2. How can I (the OT) help support students who have fine motor difficulties but are not found to be eligible for special education services?

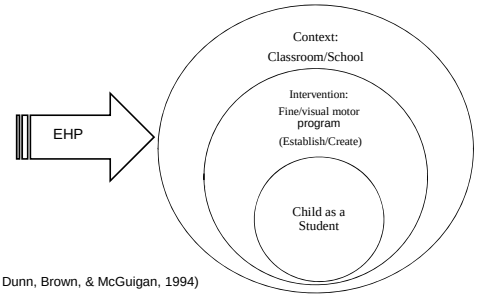
• **Searching**: what does the research say about this, and what I should I consider in order solve this problem?

• **Evaluating**: how strong is the evidence and does it match my clinical experience with these students and classrooms?

• **Implementing**: use the evidence to make changes in my practice and find additional ways to meet this need.

Model of Practice Applied

The Ecology of Human Performance*

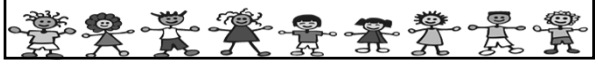


(* Dunn, Brown, & McGuigan, 1994)

How can my EBP process help you?

This evidence will help you:

- become more knowledgeable about fine motor difficulties and the relationship to academic success
- give you evidence to continue building your practice
- assist you to develop additional ways to help students gain skills they need to be successful learners
- gain more tools that can be used for providing early interventions



Questioning

1. What specific tasks do kindergarten students need to do?

Handwriting, Drawing, Painting

Gluing, Cutting

Dressing fasteners, toileting independence

Opening food containers

Questioning

What skills are Needed?

Handwriting, Drawing, Painting

- Tool manipulation
- Dominant hand use
- Crossing the midline
- In-hand manipulation
- Non-dominant hand use (support paper)
- Functional grasp pattern
- Opposition



Questioning

What skills are Needed?

Gluing, Cutting

- Hand strength
- Tool manipulation
- Bilateral coordination



Questioning

What skills are Needed?

Dressing fasteners, toileting independence

- Pinch
- Grasp
- Hand strength
- Bilateral coordination
- Crossing midline



Questioning

What skills are Needed?

Opening containers

- Bilateral coordination
- Strength
- Pinch
- Grasp



Questioning

How can I (OT) help?

1. Find ways to support students who are struggling but not in special education.
2. Educate myself on curriculum, classroom settings, and what students and teachers need the most.
3. Develop additional ways to use my training to support students beyond pull-out services.
4. Create partnerships with other resources to help.
5. Find evidence that drives and supports my solutions.

Searching

The Evidence

- Students today are expected to enter kindergarten being proficient in skills such as cutting, coloring, gluing, folding paper, and manipulating small objects and exit the grade having learned to write many of the 52 manuscript letters and a brief personal narrative using pictures (McHale & Cermak, 1992; MDE, 2013).

Searching

The Evidence

- Fine motor skills are an important component of childhood development and become critical when a child enters school.
- Estimated 20% rate of fine motor difficulties among the primary school-age population in the USA.
- "many teachers see fine motor difficulties as something they need to address unsupported within the classroom…"

1. Jackman, M., Stagnitti, K. (2007). Fine motor difficulties: The need for advocating for the role of occupational therapy in schools. *Australian Occupational Therapy Journal, 54*, 168-173.

Searching

The Evidence

- Kindergarten schedules include less time for engagement in play activities that help build developmental fine and visual motor skills; a typical day may include up to 85% spent on paper and pencil tasks and 15% on manipulative tasks (McHale & Cermak, 1992; Marr, Cermak, Cohn, & Henderson, 2003; Miller & Almon, 2009).

Searching

The Evidence

- "If intervention is not provided early, these children are at risk of motor difficulties that persist into adolescence and can lead to the development of secondary mental health and educational issues including poor social competence, academic problems, behavioral problems, and low self-esteem" (Miller, Missiuna, Macnab, Mallo-Miller, & Polatajko, 2001).
- Students who are able to develop visual motor integration skills in kindergarten later produce legible handwriting (Daly, Kelley, & Krauss, 2003).

Searching

The Evidence

- Neuroscience and other research evidence has found that a child's development of foundational fine and visual motor skills is a predictor of later academic, social, and emotional success (Bart et al., 2007; Grissmer, Grimm, Aiyer, Murrah, & Steele, 2010).
- Fine and visual motor difficulties can have negative effects on the academic, social, and emotional development of students (Rosenblum, Weiss, & Parush, 2003).

Searching

The Evidence

- Increased occupational therapy collaboration in classrooms and small group intervention have been effective in supporting fine motor development in students thus far (Bazyk et al., 2009; Bose & Hinojosa, 2008; Davies & Gavin, 1994; Dunford, 2011).

Searching

The Evidence

- At- risk children but without identified disabilities, who are in classrooms with integrated OT services, demonstrated statistically significant improvements in fine motor skills with OT intervention (Bazyk et al., 2009).
- The skills and knowledge occupational therapists possess qualifies them to provide this support (Jackman & Stagnitti, 2006).

Searching

The Evidence

- Occupational therapists should advocate for an increased role in supporting fine and visual motor needs of all students (Hammerschmidt & Susawad, 2004; Jackman & Stagnitti, 2006).

Searching

The Evidence

- Bazyk et al. (2009) stated that RtI can be used to "provide immediate intervention for children falling behind in the general education curriculum" (p. 168).
- This expansion created some changes in service delivery as many school-based OTs have become members of RtI educational teams (Ohl et al., 2013).

Implementing

M**OT**or-vation



WHAT: A Motor Intervention program that provides a multi-sensory developmental fine motor curriculum to high risk DK and K children.

PURPOSE: Promote increased fine motor skill ability for high risk students

HIGH RISK defined: Students that struggle with doing pre-writing, cutting, coloring, fine motor tasks/activities, and other fine motor/visual motor related learning.

WHERE: In each Kindergarten classroom or integrated in RtI/MTSS each week.

WHO: The Occupational Therapist and selected interventionists.

HOW: An intervention specialist, parapro, or volunteer will use a bin of materials, including specific instructions that was provided by the OT, to engage with small groups of students each session.

Implementing

EBP Program Details

1. Kindergarten Students (4-6 per classroom),
   - Referred by Kindergarten teachers in Oct/Fall
2. Intervention sessions provided by GVSU pre-OT volunteers
3. Intervention/centers: 6 weeks, Oct-Dec
   - Three days per week and lasting 10-15 minutes
4. OT's role:
   - Gather pre and post assessment
   - Train volunteers each year (Aug/Beginning Sept)
   - Visit classrooms when in the building/as needed
   - Follow up with students needing more intervention

Implementing

Evidence-based Materials

Figure 2. Pinching and Pizza Topping Bins

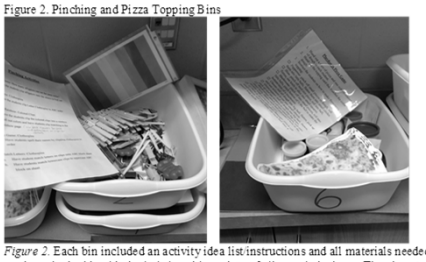


Figure 2. Each bin included an activity idea list/instructions and all materials needed for each session. A pinching bin included a wide variety of clips and pinchers. The pizza topping bin included photos of a slice of pizza and toppings along directions for making each topping out of play-doh.

Implementing

Small Group Intervention

Figure 1. Pre-OT Volunteers Engaging with Students



Figure 1. Pre-OT volunteers learned about fine and visual motor development, school-based OT practice, and how to engage with children in play-based developmental activities.

Evaluating

Project Outcomes

Figure 3. Post-Screen Combined Two Classroom Data of 13 students.

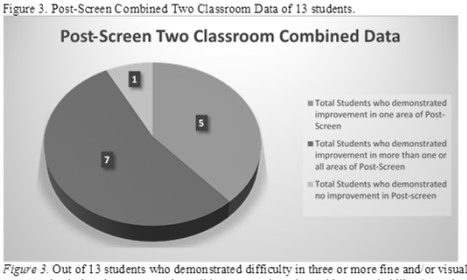


Figure 3. Out of 13 students who demonstrated difficulty in three or more fine and/or visual motor tasks during the pre-screening, all but one student showed improved ability (attention and shoe tying were not calculated in total fine and/or visual motor difficulties).

Evaluating

Increased Collaboration

- I got to know each classroom's unique culture and worked with each teacher to provide specific plans
- Teachers and support staff asked for in-services on ways to address fine-motor, visual-motor, and sensory-processing performance skills in the classroom.
- I recommended classroom materials that could be used to promote success in fine motor skill development
- I could select and place therapeutic materials in the classroom to address individual student needs
- I consulted with teachers and others to evaluate students, develop home and classroom programs and organize full team meetings as needed

Bazyk & al. (2009)

Best Practice

Summary

1. Fine motor skill development is vital to every child.
2. Current research states that students in the kindergarten classroom are in need of more support in this area.
3. Occupational therapists have the knowledge and skills to meet this need in school setting.
4. Occupational therapists can collaborate and work with teachers and other school staff to provide the best level of support in kindergarten classrooms.
5. Occupational therapy services can be increased in the kindergarten classroom through intervention program development, intentional collaboration, and use of other trained individuals to provide intervention.

So, How do I get started?



Getting Teachers On Board



In-service/present Motor Program to all K teachers & principals:

- ❑ "More OT support"
- ❑ Referral based- aligns well with MTSS/RtI
- ❑ 6 weeks (Fall) and during center or other intervention times
- ❑ Outcomes: will be shared with teachers and parents

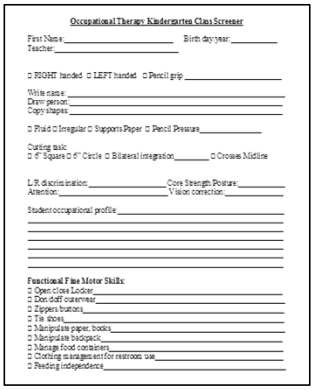
Establishing a Volunteer/Provider Base



- Intervention specialists or parapros
- Pre-OT students
- Parents
- Older Adults from the community
- Partner with a church
- Level I and Level II OT students

Functional Screener

- OT created
- Included Profile
- Developmentally based
- Functionally based
- Small group OR Individual



Occupational Therapy Kindergarten Class Screener

First Name:_____ Birth day/year: _____
Teacher:_____

□ RIGHT handed □ LEFT handed □ Pencil grip _____

Write name: _____
Draw person:_____
Copy shapes:_____

□ Fluid □ Irregular □ Supports Paper □ Pencil Pressure_____

Cutting task:
□ 6" Square □ 6" Circle □ Bilateral integration_____ □ Crosses Midline

L/R discrimination:_____ Core Strength/Posture:_____
Attention:_____ Vision correction:_____

Student occupational profile:_____
_____
_____
_____
_____
_____
_____

Functional Fine Motor Skills:
□ Open/close Locker_____
□ Don/doff outerwear_____
□ Zippers/buttons_____
□ Tie shoes_____
□ Manipulate paper, books_____
□ Manipulate backpack_____
□ Manage food containers_____
□ Clothing management for restroom use_____
□ Feeding independence_____

Motor-Vation Materials



- ❑ Create 10-15 Bins/Activities
  - ❑ Play & K Curriculum Based
  - ❑ Susan Thompson: Handy Learning
  - ❑ My Book: AOTA press?
  - ❑ Grants
- ❑ Detailed Directions in each Bin
- ❑ Bins located in classrooms OR a central location to be used in multiple classrooms

Questions & Discussion



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