Printing and Letter Formation: An Occupational Therapy Perspective to Fine Motor Skills

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Overview

- What is “occupation” and occupational therapy (OT)?
- OT history, our credentials & how we practice
- Areas of practice, our scope & where we can be found
- P-E-O model of practice
- OT Challenges
- OT role with students & education
- OT and literacy!
- What is literacy? What is written communication? How can an occupational therapist help?
Overview Con’t…

- Mechanics of Pre-printing and Writing are as follows:
  - Fine Motor Skills
  - Visual Spatial Skills
  - Sensory Processing Skills
  - Ergonomics
  - Gross Motor Skills
  - Attention
  - Organization

- OT Assessment & Intervention
- Assistive Technology
- Resources
- Wrap up & the OT goal for children and early literacy!
What is Occupational Therapy?

• Canadian Association of Occupational Therapists (CAOT, 2012): “the art and science of enabling engagement in everyday living, through occupation”

• “enabling people to perform the occupations that foster health and well-being”

• “enabling a just and inclusive society so that all people may participate to their own potential in the daily occupations of life”
What really is occupation?

  - creates structure and organizes our time
  - brings meaning to life (culturally, spiritually)
  - therefore, it affects quality of life and is therapeutic
  - a basic human need!

• Occupation (CAOT, 2012) is defined as much more than a career! Referring to the things people do in everyday life, essential for health and well-being.
Example

- **Occupations** describe who you are and how you feel about yourself
- So for a child, their occupation could be a student, a playmate, a dancer, a soccer player, a big sister or brother
- **Person & culture specific!**
What does an Occupational Therapist Do?

- **College of Occupational Therapists of Ontario:** (COTO, 2012)

  - Help people learn or re-learn to manage activities of daily living that are deemed important to the client
  - Provide service to people when their ability to function independently has become limited due to injury, a physical or mental illness, or existing condition
  - Allow people to regain control & satisfaction
Occupation – Our “Roots”
(Wikipedia, 2012)

- Started in WW I
  - Military origins: the “Ward Aides/Occupation Aides” were women in uniform caring for soldiers:
    - Vocational training for the soldiers who were finished their mission
    - “Bedside occupation” (manual and mental) for the wounded and/or veterans effected by PTSD
    - Evaluation of living independently

- 1926 – Canadian Association of Occupational Therapists (CAOT) was formed, and by this time the title became “occupational therapy”. Expansion of roles within medicine that included programs within the Toronto Board of Education for “handicapped children”

- 1930’s – charitable groups raised funds (street fairs, dances, theatre nights) for even more programs at Toronto’s Hospital for Sick children
Occupation – Our “Roots”  
(Wikipedia, 2012)

• After WWI & WWII – there was a struggle to keep people in the profession as “reconstruction aides”; therefore, the profession sought “medical legitimacy” by improving credentials (i.e. schooling certificates & research)

• Throughout the last century, the profession has evolved from being a diversion from illness & treatment to...

• “Enablement through meaningful occupation...”  (Wikipedia, 2012)
What is the Canadian Association of Occupational Therapists?

• **CAOT**
  - Provides practicing OT's with resources (services, products, events, networking) to assist in our achievement of professional duty.
  - Provides us with leadership and helps us attain information to better ourselves as a profession.
What is the College of Occupational Therapists of Ontario (COTO)?

• Self regulatory body that supports registered occupational therapists to ensure they are competent, ethical and accountable in enabling the health of Canadians (COTO, 2012)

• Regulated Health Professionals Act (RHPA) of Ontario (e.g. Docs, Nurses, Physio, Psych’s etc.) which powered by the Minister of Health and mandates the college.
OT Education

- **Ontario** (2008) - all university programs for OT’s have lead to a Master’s credential to be eligible for the accreditation by CAOT.

- As students, our undergrad backgrounds vary in a broad array of studies (e.g. bio, psych, kin, sociology)
How do we practice OT? (CAOT says)...

- Use a systematic approach
- Apply evidence based research
- Guided by a practice model (e.g. PEO)
- Practice “Process” – assessment, intervention, evaluation, re-evaluation
- Client centered
- Occupation driven
Scope of Occupation
(Rigby, P., et, al., 1999)

• **Self care** (dressing, feeding, toilet training, managing laces/zippers, bathing, grooming)

• **Productivity** (schoolwork and early literacy!!)...printing & letter formation

• **Leisure** (play)
P-E-O Practice Model
(Rigby, P., et al., 1999)

- Person
- Environment
- Occupation

- KEY – a “fit” between 3 factors
P-E-O Model of Performance

- Person
- Environment
- Occupation
Optimizing Occupational Performance

• Accommodations for the child
• Modifications to the environment and the occupation
• **GOAL**: optimize task performance to improve child’s confidence and success
Areas of OT Practice (CAOT, 2012)

- Advising on health risks in the workplace
- Safe driving for older adults
- MVA insurance claims
- Return-to-work assessment
- Orthotics/plastics
- Mental Health
- Stroke, cardiac care, palliative, spinal cord injury
- Wheelchair prescription
- Assistive devices (writing/communication aids)
- Community (in-home safety, post surgery)
- Manager, program developer, researcher, educator
- Private practice (various populations)
Where to find us....

- Community agencies (VHA Rehab Solutions, St. Elizabeth Rehab)
- Hospitals, clinics
- Chronic Care Facilities
- Rehab Centres (ErinOak Kids, Kerry's Place, Blue Balloon)
- School Boards/daycares/private schools
- Residential Programs & Mental Health Centres (CAMH)
- Self Employed
“Specialities”

• Specific age groups (0-100)
  - Newborn, infancy (milestones), preschool – university, adult and elderly
  - Transitions in between groups!

• Specific disabilities/conditions
  - Feeding (NICU), pain management (arthritis), energy conservation (cardiac), eating disorders, Alzheimers, stroke, Autism, hand clinics, mobility aids (ADP authorized), palliative care, oncology, cerebral palsy, MS, MD, LD, DD, visually impaired, etc., etc…
Challenges for OT

• Role blurring with other professions
• A **VERY** broad scope!
• Developing a single def’n within our varying scopes that accurately reflects what we do.
• ...by maintaining “occupation”, we keep this unique flexibility within our discipline to move with the flow of social, cultural, and environmental change (Wikipedia, 2012).
What does an OT do for Students?

- Advocate for classroom accommodations & modifications based on needs and abilities
- We assess the PEO in order to provide rec’s and foster a teamwork approach with child, teacher/staff and parent
Student Needs

• School team gets together to assess:
  - auditory, visual, language, sensory processing, motor coordination and cognitive factors (i.e. attention or memory?)

• Every aspect impacts literacy!!
A Student’s Primary Occupation with Regards Literacy?

• To learn how to form letters
• To learn how to match sounds with letters
• To read and write
• To become literate members of society
Written Communication?

• Planning, remembering & applying a thought = ability to get ideas onto paper for the reader

• Keys: writing speed & legibility

• Copying, composing & dictating text (student expectations)

• (Amundson, 1998)
OT Intervention - How can we help?

• Techniques and strategies that help students be **successful** & **functional** within the school setting

• **Compensatory** and **remedial**

• Embark on child’s **strengths**

• Help **identify** what challenges are in the way of his/her classroom success

• (Amundson, 1998)
OT and Literacy...

- “Literacy has been described as the ability to read for knowledge and write coherently and think critically about what was written…” (Wikipedia, 2012).
- Early Literacy = letter formation!
- The mechanical and organizational difficulty with this process
Mechanics of Pre-printing for early Literacy

1. Fine Motor Skills (strength & stability)
2. Visual Spatial Skills
3. Sensory Processing Skills
4. Ergonomics (body position)
5. Gross Motor Skills (Motor Planning)
6. Attention
7. Organizational Skills
1. What are Fine Motor Skills Composed of?

- Fingers, hands, wrists, arms, shoulders, chest/upper body
- Visual-motor (tracking)
- Proprioception (body awareness)
- In hand manipulation
  - Bi-lateral Coordination
  - Dexterity
  - Precision
1. Fine Motor Skills Con’t...

- Explore appropriate writing utensil & teaching how to handle (? tripod grasp)
- Pencil grips
- Pencil pressure (proprioception & body awareness)
- Multimedia - consider incorporating unique and motivating introductions to writing tools
- Improve strength (play-doh)
- Improve coordination (connect dots, tracing, colouring)
General ways to improve basic fine motor skills that are critical to pre-printing & literacy

- Pencil “Olympics” & Hand “Aerobics” (Amundson, 1998)
- Tracing, colouring, scissoring, connect the dots
- Finger moving activities – rotation, translation, shift, finger & thumb opposition
- Strengthening activities (play-doh)
- Eye-hand coordination (not video games!)
- Bilateral skills (beading, lacing, learning to “spread”, opening lids) – targeting strength & stability (Yack, Sutton, Aquilla, 1998)
2. What are visual-spatial skills?

- Printing: using eyes and hands in sync
- The system that allows interpretation about surroundings via perception (i.e. depth, spatial orientation, figure ground) (Smith-Myles, et al., 2000)
- Refer for vision test? - can they see the board during instructions?
2. Visual-spatial Skills Con’t...

- Trial adapted paper (coloured lines, raised lines, cues & prompts)
- Finger spacing
- Teach **directionality**: left & right, up & down, over & under, top & bottom as precursors to letter forms
- Start with basic shapes and lines
3. **What is Sensory Processing?**

*(Smith-Myles et. Al., 2000)*

- **Tactile** - touch (info about the enviro)
- **Vestibular** - balance/inner ear (speed & direction of body or object movement in space)
- **Proprioception** - body awareness (where a body part is and how it's moving)
- **Visual** - helps define boundaries as we move
- **Auditory** - sound feedback from the enviro
- **Gustatory** - taste and closely related to...
- **Olfactory** - smell
3. Sensory Processing (examples)

- Use of unconventional media to help learn letter formation using motor memory...
1. Visual – colour, lights, flashing
2. Auditory – talking pen, “quack” scissors, animation, music, lyrics
3. Kinesthetic/proprioceptive feedback – feel the directionality of correct letter formation (build letters and trace with finger)
4. Tactile – shaving cream, finger paint, chalk etc
5. Smell/taste – scented markers, pudding?
Threshold Continuum
(Smith-Myles, et. al., 2000)

• **Under reactive (hi) - task avoider & passive child (not responding to stimuli)**
  - Decreased attention, delayed reaction
  - Counteraction = sensory seeking at times to stay focused (hyperactive)
  - Hi tolerance for lots of stimulation

• **Over reactive (low) - sensory seeker (excitable & sensitive to sensory input)**
  - Uncomfortable with certain textures, lights & sounds
  - Counteraction = sensory avoiding as they 'shut down' to cope
  - Lo tolerance for lots of stimulation
4. Ergonomics

• Desk - slanted
• Paper - slanted for R & L handedness
• Chair - back & arm rest for low tone, (90° at ankles, knees & hips)
• Adaptive Equipment - “move n sit” cushion, foot stool, weighted lap snake)
• Physical Impairment Considerations?
5. Gross Motor Skills

- Upper Body Strength - printing in prone on floor, tug of war, hand builders, animal walks/gym skills are critical!
- Core strength & Stability (Posture & Tone) - therapy ball chair/activities?
- Motor planning & execution (breaking up the steps of the task so more manageable)
- Could the child have Developmental Coordination Disorder (DCD)?
5. Important Ways to Maximize GM Skills for printing

- **Body awareness (Simon Says, Head & Shoulders)** - helps with motor planning & execution, plus directionality (critical for basic pencil strokes for pre-printing!)
- **Jumping jacks, hop/jump, skip, bike** for overall desktop endurance and improving printing performance
- **Boosts child’s confidence!**
Body Tone and Attention

- Under reactive (leans on furniture, “weak” & sluggish); requires lots of stimulation in order to focus; thus, high threshold for feedback
- Connection with low energy & task refusal when doing FM & printing tasks
- Challenged proprioceptive skills (i.e. body awareness); disregard for people & sounds, may seem to be avoiding or inattentive
6. Attention

- Auditory processing disorder?
- Referral for Audiology Ax?
- Receptive language impairment? (processing verbal instructions)
- Sensory Impairment? (decreased tone, high threshold for sensory input, poor GM skills and body awareness)
- Classroom distractions (by the door or window, visual clutter)
- BREAKS! This type of student requires them
7. Organization

- Cognitive testing via school Psychologist?
- Tied to executive functions in the frontal cortex of the brain – planning, sequencing & org info
- Tied to attention!
- Org. of motor tasks (motor memory and execution) hence, the importance of breaking printing tasks down into chunks
- Very complex issue
OT Assessment

- VMI
- COPM
- Sensory Profile
- Parent & Teacher Interview
- Medical Reports
- Observations
- Benbows Observation of Hand Skills
- Qualitative vs Quantitative
Interventions to Improve Literacy

- Trial & error of equipment
- Referral to other disciplines
- Remediation & therapy
Handwriting Without Tears
(by Jan Olsen)

A complete handwriting curriculum that teaches pre-printing to cursive handwriting adopting sensory & fine motor techniques.

“Handwriting is an important part of language development and a component of the overall approach to literacy.” (Osten-Gerszberg, 2004)

“Teaching how to form letters organizes children visually, because the way to write each letter is left to right and top to bottom, which is how we read.” (Osten-Gerszberg, 2004)
Motor Write Along

• Examples
Use of Assistive Technology

- Computers & assistive software (may or may not help with literacy)
- Helps with speed and efficiency to aid in written output
- Improves legibility
- Read & Write Gold/Kurzweil
- Co-writer
Technology Cont...

- Adapted keyboard & mouse to improve access for physically impaired (CP, MD) so they learn and improve literacy skills
Wrap Up…So what about literacy?

• OT plays a crucial role in the development of FM/GM skills which are CRITICAL for pre-printing, letter formation and writing skills.

• OT’s are highly skilled in task analysis, body mechanics and evaluation of the “fit” of both within the child’s environment to help advocate for child’s success with early literacy.

• OTs are experienced in adaptive equipment and writing aids to improve a child’s performance in literacy.
Wrap up...

• OT’s have been trained to collaborate with other disciplines and professionals to maximize a child’s performance in the classroom
• We value parental involvement as parents know their children best (key during Ax)
• We encourage parental involvement as much as possible during intervention so they can use themselves as a means to improving their child’s skills to enhance printing/literacy on a DAILY basis
Above all...

• Although we appreciate and learn from the other players in the child’s life to help improve their literacy skills, we ultimately want to facilitate the child’s independence by helping them become active participants in maximizing their occupational performance for the love of literacy!!
THE END
Thank You for Coming!
References


• Canadian Association of Occupational Therapists. “Our History” http://www.caot.ca/otnow/nov01-eng/nov01-history.cfm (March 28, 2012)


References


