(CO-OP) PRINCIPLES FOR PARTICIPATION

A Guide for Implementation: Using the Principles of CO-OP to Frame a Top-Down Approach with School-Aged Children

Lara Collins Barros, OTD, OTR/L
Written in collaboration with
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Contents

Introduction 4

Goal: Best-practice & Evidence-based Services to Promote Participation in School 7

Plan: Using the Principles 11

- Client-centered and Occupation-focused 12
- Problem Solving: Goal-Plan-Do-Check and Dynamic Performance Analysis 15
- Problem Solving: Guided Discovery 18
- Problem Solving: Enabling Principles 20
- Involvement of a Parent or Supportive Adult 22
- Intervention Format 24

Do: The Principles in Practice 25

Check: Re-assessment 28

Conclusion 29

References 31

Appendix A: Best Practices vs Current OT School-based Practices 37

Appendix B: Activity and Participation 42

Appendix C: Generalization and Transfer 43

Appendix D: Assessment and Reassessment 45

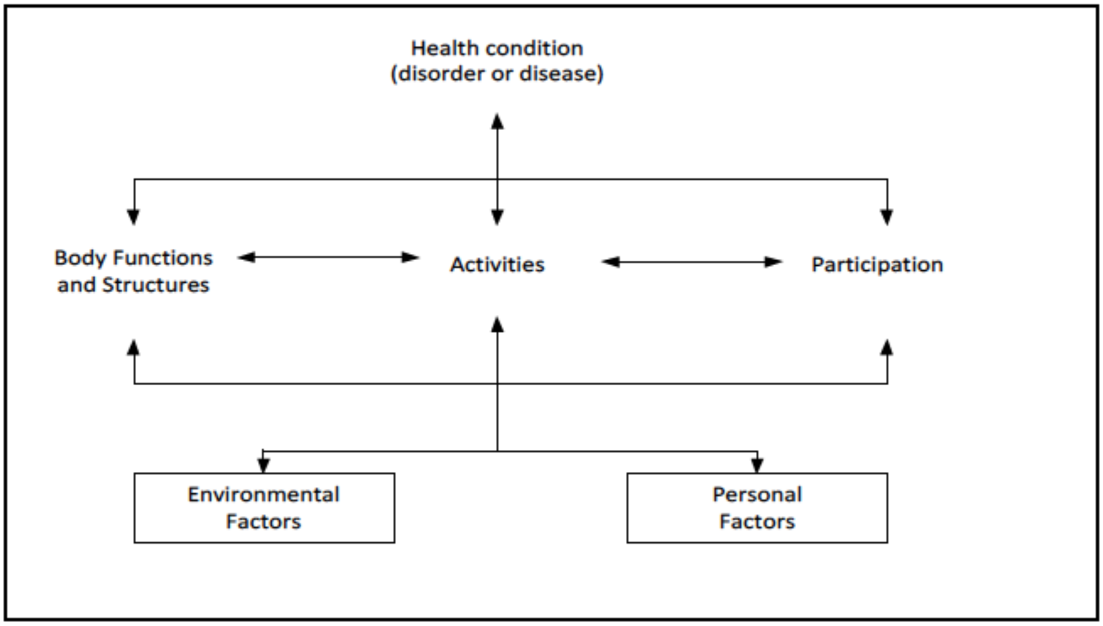
Glossary of Terms 50

Introduction

This evidence-based clinical practice guideline, (CO-OP) Principles for Participation (P4P), utilizes intervention principles from the Cognitive Orientation to daily Occupational

Performance Approach (CO-OP; CO-OP Approach^{TM}) to frame school-based occupational therapy (OT) practice. P4P addresses the individual at the activity and participation level of the World Health Organization's (WHO) International Classification of Functioning, Disability, and Health (ICF) (see Figure 1) (WHO, 2001).

Figure 1 The World Health Organization's International Classification of Functioning, Disability and Health (ICF) Taken from WHO (2001).


Health condition
(disorder or disease)
Body Functions
and Structures
Activities
Participation
Environmental
Factors
Personal
Factors

:

P4P is a guideline on how an OT can use CO-OP principles to improve participation in the elementary school setting. P4P provides a framework to provide school-based services that are evidence-based and consistent with AOTA's Practice Framework (AOTA, 2020). Appendices are provided at the end of this document to provide more comprehensive information regarding:

- Appendix A: Best Practices vs Current OT School-based Practices
- Appendix B: Activity and Participation

- Appendix C: Generalization and Transfer
- Appendix D: Assessment and Reassessment
- Glossary of Terms

Intended Audience

P4P is written for occupational therapists working in the elementary school setting with students from kindergarten through the fifth grade in the United States of America.

Requisite Qualities of the Occupational Therapist

An OT using P4P should be committed to following best practices including being student-centered, occupation focused, and strength-based (AOTA, 2020). The OT must work in a school district that supports their obligation to provide services that are considered best practices. The OT must have all of the typical skills: the ability to manage student behaviors and promote engagement required for the child to learn, and effectively communicate at an appropriate level to the student (Polatajko & Mandich, 2004). The OT must have opportunities to observe occupational performance and have an understanding of how performance issues impact learning and participation in the school setting. Finally, an OT must also be committed to collaborating with school professionals and families to promote generalization and transfer of skills (Polatajko & Mandich, 2004).

P4P is intended for OTs working with students in a consultative or direct service model in Tier 3 (see Appendix A) of the Multi-tiered systems of support (MTSS) system (Smith & Okolo, 2010). The use of CO-OP principles does not always require the physical handling of the student; therefore the OT may be working in-person or remotely with the student. This guideline addresses the application of principles to practice, it does not prepare the therapist to

Implement the CO-OP Approach™. As the OT applies these principles and sees their benefits, they should seek specific training to develop their skills and use the CO-OP Approach™ in practice by accessing https://icancoop.org for information (Skidmore et al., 2017).

Requisite Qualities of the Student

The student that P4P is intended to be used with is in kindergarten through the fifth grade, demonstrates challenges in occupational performance affecting participation in school (see Appendix B) and has qualified for school-based services. The student must be able to participate in goal identification and through the interview process with or without stimulus pictures (Polatajko & Mandich, 2004). Students with intellectual disabilities are not excluded from this guideline if given the proper supports (e.g. youth with Down Syndrome were able to learn to ride a bicycle when visuals, videos and other supports were provided while using CO-OP) (Halayko et. al, 2017). The student must have access to at least one supportive adult in addition to the OT that can support generalization and transfer of skills to the student's natural setting, e.g. home or school (Polatajko & Mandich, 2004).

Requisite Qualities of the Supportive Adult

The role of a supportive adult is instrumental to the selection of goal areas, and generalization and transfer of skills to ensure increased participation. The supportive adult may be a teacher, paraprofessional, parent or other individual who is present during the student's day. This adult must be able and willing to provide the support needed to generalize and transfer learned skills into the child's everyday environment. This is supported, in part, through "homework", or opportunities to practice the skills learned in the child's own environment (Polatjko & Mandich, 2004). This adult must be able to effectively communicate with the child and staff to report performance issues, challenges, and successes.

Organization of P4P

P4P is organized using CO-OP's problem-solving strategy of Goal-Plan-Do-Check. The steps of problem solving are reframed to represent the role of the OT during these steps:

- Goal: Best-practice & Evidence-based Services to promote Participation in School
- Plan: Using the Principles
- Do: The Principles in Practice
- Check: Re-assessment

Goal: Best-practice & Evidence-based Services to Promote Participation in School

An OT has the responsibility to follow AOTA's Practice Framework and provide client-centered, and occupation-focused occupational therapy (AOTA, 2020). In addition, AOTA's Practice Framework directs an OT to utilize the knowledge and evidence in their practice area, i.e., to use best practices (AOTA, 2020). This guideline is designed to assist with both. Please refer to Appendix A for additional information regarding best practices versus current practices.

Many school-based OTs continue to use a medical model of intervention which often is neither client-centered nor occupation focused (Bolton & Plattner, 2020; Clough, 2019). P4P is premised on the assumption that an OT may want to provide best practices and evidence-based services but may not have the information or tools to do so. P4P uses principles from the Cognitive Orientation to daily Occupational Performance Approach (CO-OP; CO-OP Approach^{TM})

to frame school-based practice using a top-down approach to skill development. CO-OP is an evidenced based, client-centered, complex intervention focused on improving occupational performance (Polatajko & Mandich, 2004). P4P provides a means for a school-based OT to apply the principles inherent in the CO-OP Approach^{TM} to support their school-based practice following AOTA's Practice Framework (AOTA, 2020; Novak & Honan, 2019). P4P is designed to be flexible to meet the spectrum of school-based occupational performance issues.

Best practices

In addition to following AOTA's Practice Framework, an OT is directed to utilize the knowledge and evidence in their practice area (AOTA, 2020). Best practices for a school-based OT includes providing strength-based services in the least restrictive environment, across settings, and by collaborating with the student (Florek Clark & Chandler, 2014). The focus of school-based OT is enabling the student to participate in the educational and social aspects of the school environment (see Appendix B) (Florek Clark & Chandler, 2014). The evidence indicates that the most effective interventions are top-down and include child-selected goals, real-life activities in their natural context, repetition, and scaffolding of the skill with the child participating in the problem solving (Novak & Honan, 2019). Interventions that meet these criteria (Novak & Honan, 2019) include CO-OP, Social Skills Training, and task training. P4P utilizes principles derived from the CO-OP Approach to frame a top-down approach for school-based practice that meets both the criteria set by AOTA (2014), Florek Clark and Chandler (2014) and Novak and Honan (2019).

Why frame practice in principles from the Cognitive Orientation to daily Occupational Performance (CO-OP) Approach^{TM}?

The Cognitive Orientation to daily Occupational Performance, known as the CO-OP Approach^{TM}, emerged in the 1990s as a result of a search for an effective means of improving the functional performance of children with developmental coordination disorder (DCD). The CO-OP Approach is now used with these children and a variety of populations including people with Autism Spectrum Disorder, intellectual disability, cerebral palsy, acquired brain injury, and other developmental disabilities (Polatajko, 2017). The European Academy for Childhood Disabilities has now endorsed CO-OP as a treatment of choice for children with DCD (Rainer et al., 2019).

CO-OP, created as an alternative to the bottom-up approaches prevalent at the time; is a top-down approach embedded in a learning paradigm. The approach is focused on client-chosen skill acquisition, generalization, and transfer, through the use of a metacognitive, problem-solving strategy tailored to the client and their performance needs. The instructional mode in CO-OP is guided discovery, an intermediate between direct instruction and discovery learning, which enlists the client in collaborative problem-solving. This approach facilitates not only skill acquisition but importantly, generalization and transfer of skills from therapy to the real world.

CO-OP is comprised of seven key features that give name to the principles that underly the Approach. P4P draws on these principles (client-centered and occupation-based goals, dynamic performance analysis, cognitive strategy use, guided discovery, enabling principles, supportive adult and intervention format) (Polatajko & Mandich, 2004) to present a framework that is consistent with AOTA school-based best practices and contains the qualities of the preferred, top-down interventions (see Table 1) (AOTA, 2020; Florek Clark & Chandler, 2014;

Novak & Honan, 2019). It is important to note that the CO-OP Approach^{TM} is a complex intervention and requires specific training for the OT to utilize the essential elements of the intervention rather than follow a specific protocol (Skidmore et al., 2017). P4P is NOT intended to teach the reader how to do CO-OP intervention. For that, the reader is directed to https://icancoop.org/. Rather, P4P provides a framework for the use of the CO-OP principles in elementary school-based practice.

Table 1

Comparison of AOTA best practices, the CO-OP Approach^{TM}, and evidence-based practice

AOTA Practice Framework and Best-Practices (AOTA, 2020; Florek Clark & Chandler, 2014)	CO-OP	Evidence-based Interventions (Novak & Honan, 2019)
Client-centered	☑	
Occupation-focused	☑	
Strength-based	☑	
Supports ability to provide services in the least restrictive environment	☑	
Applicable across setting	☑	
Includes collaboration with the student	☑	
	☑	Top-Down
	☑	Child-selected goals
	☑	Real-life context
	☑	Natural context
	☑	Repetition of task
	☑	Scaffolding of task
	☑	Child takes part in problem solving

Plan: Using the principles

The CO-OP Key Features: Principles for Practice

The CO-OP Approach has seven key features, or practice principles, that can be used to implement a top-down approach with school-aged children. These principles contain the qualities of the preferred, top-down interventions as determined by Novak and Honan (2019) including using child-selected goals, real-life activities in their natural context, repetition, and scaffolding of the skill with the child participating in problem-solving and strategy development.

The use of CO-OP principles also provides a means for ensuring OT practice meets AOTA's best-practice guidelines of being client-centered, collaborative, occupation-focused, strength-based, services provided in the least restrictive environment, and across settings (AOTA, 2020; Florek Clark & Chandler, 2014). P4P provides a framework for utilizing CO-OP principles in a top-down approach with school-aged children.

Each principle is presented with the following headings to help guide the reader:

- What: explains the principle
- Why: provides the rationale of the principle
- How: provides information to implement the principles in practice

Client-centered and Occupation-focused

What

The first principle of CO-OP supports an OT in following AOTA's Practice Framework by providing a method for being client-centered, occupation-focused, and requiring collaborating with the student (see Appendix A) (AOTA, 2020; Florek Clark & Chandler, 2014). Being student-centered means that the OT takes the time to find out and understand what is important or meaningful to the student. Meaningful occupations include activities that the student wants, needs, or is expected to do within the context of school or home (see Appendix B) (AOTA, 2020). Occupation-focused means that the focus of evaluation and intervention is occupational performance and engagement. Evaluating and treating performance components such as increasing strength or coordination in order to improve occupation is not considered occupation-focused (Fisher, 2014).

Goal setting in the school-system may include goals required through the IEP process or other related goals that impact a student's school performance. Involving a student and family in the IEP goal writing process may include collaborating to determine how the student will demonstrate growth in a particular area. For example, if a student is identified through academic testing as being delayed in writing, the student may be involved in determining what part of writing they want to improve on and whether their writing will be monitored during a journal time or during a more structured writing time. In order to meet the requirements for what is considered best practices, goals should be written for and monitored within the natural context that they are performed (Florek Clark & Chandler, 2014).

Why

The CO-OP principle of student-centered and occupation-focused is based on the fact that individuals, including students, learn best when they are actively engaged and are more actively engaged when they are working towards goals that are meaningful to them (Ziviani et al., 2015). An individual, rather than an OT or other professional, is best able to identify what is meaningful to them as a person (Ziviani et al., 2015). Acknowledging and addressing student-identified goals demonstrates respect for the student's knowledge, values, and experiences and helps build autonomy (Ziviani et al., 2015). If a student is working towards a self-selected goal and also selecting the strategies, they will be more likely to persist through challenges and practice with more frequency and intensity, which is important in changing behavior (Ziviani et al., 2015). As a student reaches their goals, their self-efficacy grows; they not only feel the satisfaction of reaching a specific goal but also grow in their willingness to attempt new activities in the future (Bandura, 1997). Studies using CO-OP with children measured an increase in positive statements (Cameron et al., 2016) and self-efficacy (Gimeno et al., 2021). Finally, increases in positive self-efficacy (McEwen et al., 2015; Poulin et al., 2016), and decreased negative self-efficacy (Houldin, 2018) has a positive effect on generalization and transfer.

How

Being student-centered means that the OT must collaborate with the student throughout the evaluation and intervention process. Contrary to traditional approaches to assessment in OT (see Appendix D) that require the OT to assess underlying performance components e.g. visual motor skills and set goals to improve in areas of deficits, e.g., improve visual perceptual skills, this principle of CO-OP of being client-centered and occupation-focused puts goal setting first; the goals are then used to direct assessment and intervention. In the CO-OP Approach, the COPM is used to assist in this process.

The Canadian Occupational Performance Measure (COPM) (see Appendix D) is used to assist the student in identifying goal areas that are occupation focused. Once goal areas are identified, the student rates their current ability to perform the chosen goal and their satisfaction with their performance (Law et al., 2019). Because the COPM is a semi-structured interview, the OT can guide the student to select school-based goals that are meaningful to them and are expected or required in the classroom rather than goals being developed solely by the education team. In addition to, or in relation to the longer-range goals required by the IEP process, the student may identify short term goals that are important to them at the moment. Using the principle of client-centered and occupation-based, the OT works with the student, teachers and family to help them meet the self-identified goals. Goals that are developed by actively engaging the student in the process promotes learning, and increases internal motivation (Ziviani et al., 2015). Meeting self-identified goals improves feelings of self-efficacy and competence (Bandura, 1997).

Not all school-based OT goals can be developed by the student. However, the student can still have input on goals through collaboration in how the goal will be met, monitored and prioritized. If there are many goals identified by the teacher or other stakeholders that are essential to the student's success at school, the student can determine which is the most important to them and therefore should be addressed first (Ziviani et al., 2015). The OT may also guide the student to break broader or challenging goals into smaller, more attainable goals that can help build self-efficacy and motivation to reach their ultimate goal.

Problem Solving: Goal-Plan-Do-Check and Dynamic Performance Analysis

What

The second principle of CO-OP supports an OT in following AOTA's Practice Framework by providing a framework for being client-centered, occupation-focused, strength-based, and collaborating with the student. Goal-Plan-Do-Check (GPDC) and Dynamic Performance Analysis (DPA) together support solving the performance problems experienced by students. GPDC is a problem solving strategy central to the CO-OP Approach^{TM} (Polatajko & Mandich, 2004). It is used to engage the child in the problem solving process by structuring it with the four words "Goal-Plan-Do-Check". The student identifies a "Goal", DPA is used to create a "Plan", the student "Do(es)" the task, followed by, "Check", or reflection on the performance (Polatajko & Mandich, 2004). DPA is the process of observing actual occupational performance (Do) and determining where the breakdowns lie in the student's performance: the student, the task, or the environment, or some combination thereof (Polatajko & Mandich, 2004). An initial DPA is completed by the OT observing the student perform the actual task (Goal), preferably in the natural environment, without assistance to identify performance breakdowns and to score the Performance Quality Rating Scale (PQRS) (see Appendix D, Figure 3). DPA is an iterative process carried out by the therapist, but the student can also be encouraged to consider their own performance and reflect on what Is working well and what Is not (Polatajko & Mandich, 2004). In summary:

- The student identifies a **Goal**.
- DPA is used along with other principles to create a **Plan.**
- The student performs, or **Does**, the task.
- Followed by reflection on performance, or **Check**. "Check" provides the student and OT an opportunity to evaluate the effectiveness of the identified strategies.

Why

The DPA and GPDC processes provide the opportunity to include the student beyond goal setting. Involving the student in problem-solving and plan development facilitates engagement and internal motivation (Ziviani et al., 2015). DPA is reflective and requires the student, to "Check," or think about their performance and the effectiveness of the plan they develop. DPA is iterative and ongoing with the student defining their goal performance and determining when they are satisfied. The iterative nature of the DPA process is one of the ways of promoting learning including generalization and transfer (see Appendix C) (Polatajko & Mandich, 2004; Skidmore et al., 2017). DPA not only improves the ability of a student to modify their performance but it may also improve their competence and their beliefs that they can achieve their own goals (Ziviani et al. 2015).

How

GPDC is used to frame the problem solving process. When the CO-OP approach is used, the student is explicitly taught this strategy and encouraged to use it. For the purposes of this guideline, the therapist is encouraged to frame their work with the student using this problem solving pattern. DPA is used in the context of GPDC. A goal is identified by the student, the OT observes the student performing the actual occupation of interest and notes the breakdowns in the performance rather than performance components (i.e. dropped lunch tray vs. decreased sustained grip strength). If possible, the OT should observe the student performing the task in the actual context it is performed to identify how the classroom environment supports or deters performance. Environmental factors such as noise, position of student in classroom, and peers may impact performance. If direct observation is not possible, the OT still observes the actual performance, but will need to guide the student to consider how performance will translate to the natural environment. For example, if a student develops a plan/way of using scissors to open a chip bag, the OT will guide them to consider how to apply that in the lunchroom. As effective strategies are discovered, they are written down in the student's own words to serve as their "Plan" for future attempts. This "Plan" provides a reference for the student and for others who will provide support in reaching this goal. Plans are always able to be changed and can be represented in any way that it is meaningful for the student (Polatjko & Mandich, 2004).

An essential part of the DPA process, the OT must determine if the student is motivated to complete the task, understands the task, and is able to perform it competently (see Figure 2) (Polatajko & Mandich, 2004). If the child is not motivated to complete the task, the OT must reconsider whether or not the goal is client-centered. If the goal is not client-centered, the OT will need return to the goal setting process with the child. If the goal is indeed something the child wants, needs, or is expected to do, but they are apprehensive about trying it, the student may need help modifying the goal to make it manageable for them. Likewise, if the student does not know how to do the task, that's where top-down intervention starts! Finally, if the student is motivated and has some sense of how to perform the task Intervention starts where the student Is having performance difficulties (Polatajko & Mandich, 2004).

Problem Solving: Guided Discovery

What

Guided discovery provides the opportunity for the student to be the "expert". The guided discovery principle of CO-OP supports an OT in following AOTA's Practice Framework by providing a framework for being client-centered, occupation-focused, strength-based, and collaborating with the student (AOTA, 2020; Florek Clark & Chandler, 2014). Guided discovery is the instructional style used throughout the CO-OP process (Polatajko & Mandich, 2004). For the purposes of this guideline, guided discovery sets the nature of the interactions with the student as client-centered, working in partnership with the student to improve task performance.

An OT is skilled in making adjustments and setting up a task so that the student is successful. While these adjustments may make the student achieve success at the time, they do not set them up for success in the absence of the therapist. Guided discovery serves to facilitate the student to become actively involved in the intervention. Guided discovery, used by the OT to promote collaboration and self-discovery, lies between direct instruction and discovery learning and is used throughout the DPA process (Polatajko & Mandich, 2004). Through the DPA process, the OT will identify whether the student knows what to do, is internally motivated to perform the task or if there are performance breakdowns preventing the child from reaching their goal (see Figure 2). The OT then uses questions or guiding statements to guide the student towards noticing the breakdown and discovering their own strategies to address it rather than telling the student what to do (Polatajko & Mandich, 2004). Guiding comments and questions will be adjusted to meet the needs of the student at the time. As a student becomes more skilled at DPA, they will likely need less scaffolding (Ziviani et al., 2015).

Why

Enabling the student to come up with their own strategies through the use of guided discovery promotes a sense of control and competence in the student. The skilled combination of guided discovery and enabling principles (see Figure 2) helps a student learn and remain motivated through the often frustrating process of reaching a goal (Ziviani et al., 2015).

How

In order to use guided discovery, the OT must take a step back and let go of any internal pressure to be the “expert”. They must practice using words, gestures, and other actions to keep the student motivated and to guide the student towards their own solutions, which become part of their “Plan” (Polatajko & Mandich, 2004). When an OT is able to guide the student into discovering their own solutions, the student is able to attribute the success of their plan as their own, building self-efficacy and promoting learning, generalization, and transfer (see Table 2) (Polatajko & Mandich, 2004).

Table 2

Examples of how to reframe the OT as an "expert" to the student as the "expert"

OT “Expert’	**Student “Expert’**
The student isn’t holding the paper with their non-writing hand. The OT tapes the paper down so that it doesn’t move when the student writes.	“Is it hard for you to write?” “I wonder how you can keep the paper from moving when you write?”
The student can’t hold onto the zipper to pull it up. The OT provides a zipper pull and places it on the student’s coat without the student present.	“Is the zipper getting stuck?” “Could you add something to the zipper to make it easier to hold?” "Would something like this work?"

Problem Solving: Enabling Principles

What

The enabling principle of CO-OP supports an OT in following AOTA’s Practice Framework by providing a structure for being client-centered, strength-based, and collaborating with the student. Enabling principles guide the OT in how to support skill learning, generalization and transfer; the information the OT draws on to do things such as engage the student, support memory, and modify the task. An OT is an expert at making learning fun and presenting activities as reachable challenges. Enabling principles are the **thinking behind the actions** the

OT takes to keep the student engaged in the task and learn. This may include using humor, providing information about the task to promote success, and other actions to keep the student engaged and promote learning (Polatajko & Mandich, 2004).

Why

Top-down intervention is based on the premise that skills are learned and that improving a student's skill performance means supporting their skill learning. This is a fundamental concept in CO-OP and the basis of enabling principles. The OT devises techniques that are used specifically to engage a student in occupation-based interventions and promote learning and collaboration through DPA and guided discovery. Even when a student has identified a goal, the OT will use enabling principles to help them keep the student engaged in learning without becoming overly frustrated. This is achieved by providing scaffolding and guiding them towards a possible solution (Polatajko & Mandich, 2004; Ziviani, 2015).

How

The OT uses their knowledge of the student, the occupation, and learning to promote learning, generalization and transfer. Table 3 provides examples of enabling principles (the OTs thoughts behind their actions) (Polatajko & Mandich, 2004).

Table 3

Examples of enabling principles in action

Challenge	OT's Thoughts
The student does not write neatly. The student's paper moves while writing.	The OT may wonder if the child is aware of the moving paper and its effect on writing- they may ask about the moving paper; they may model writing in two ways and ask the child to notice the differences.
The student does not consistently perform an occupation. Sometimes they skip a step(e.g. does not use soap when washing their hands after going to the bathroom).	The OT may wonder if the task has been thoroughly learned, may think if there has been enough practice, or if a memory support is needed such as pictures or words to help them remember the steps.
The OT is not able to regularly see the student in the natural context that the goal will be performed. e.g., they work on writing in a quiet room.	The OT constantly keeps issues of generalization and transfer in mind when considering plans they wonder about the effect of the noise of the classroom on writing performance.

Involvement of a Parent or Supportive Adult

What

Involvement of a parent or supportive adult is another important CO-OP principle supporting the AOTA Practice Framework and best practices of being client-centered, working across settings, and collaboration (AOTA, 2020; Florek Clark & Chandler, 2014). Collaboration with the student and other adults is fundamental in promoting generalization and transfer (Polatjko& Mandich, 2004). An OT working in the schools may recruit the student's teacher, a paraprofessional, parent, or other supportive adult. This support person should be someone who is likely to be present when the student performs the occupation.

Why

Involving a supportive adult provides another opportunity to promote learning, including generalization and transfer (Polatajko & Mandich, 2004). Collaboration with the student and others is both best practice and part of an evidence-based approach (AOTA, 2020; Florek Clark & Chandler, 2014; Novak & Honan, 2019)

How

A supportive adult should be involved at all steps of goal setting, assessment and intervention. In the school setting, a teacher or parent may suggest goal areas that represent tasks the child wants, needs, or is expected to do (Polatjko & Mandich, 2004). The supportive adult is also involved in the intervention process by providing homework. The plan, written or otherwise, is one of the products of DPA and is one way in which supportive adults ought to be included. For example, the OT collaborates with the student to create a written plan that can be referred to throughout the week which serves as a reminder for the student and a way to communicate with other supportive adults. The OT can also model the use of guided discovery to a parent, teacher, or paraprofessional to help them provide the student with the appropriate support to follow their plan and reach their goal (Polatajko & Mandich; Skidmore et al., 2017). This supportive adult can also provide valuable feedback to the OT to help identify things that support or hinder performance in other contexts to further support collaboration.

Intervention Format

What

The OT working in the schools uses a number of different service delivery models; the intervention format, as a principle, requires the OT to consider the mode of delivery, direct or consultative, and how to adjust and adapt their practice accordingly.

Consultative Services: An OT who works in the school system may use their expertise to address goals including occupational performance and participation without having face to face interactions with a particular student. The expertise of the OT is used to address the educational environment and is aimed at the needs of one or more students, professionals, or the system as a whole (Dunn, 2020). For example, if a group of students is having difficulty writing or performing another school-based occupation, the OT may recommend strategies such as providing a model, using explicit language, or ways to modify the task in collaboration with another professional. An OT wishing to use CO-OP principles with solely consultative services will need to develop tools for other professionals to ensure that there are ways for the student to participate in goal setting and problem solving to facilitate learning, e.g. goal setting and problem solving visuals or worksheets.

Consultative and Push-In Services: Best practices indicate that direct service be provided within the natural context of the student and task (Florek Clark & Chandler, 2014). Rather than being uncomfortable in the perceived role of “aide or paraprofessional” (Clough, 2019), the OT will use the opportunities they have to work within the natural environment to observe actual performance and determine breakdowns. The principle underlying DPA, makes this the preferred environment! The entire assessment and intervention may be able to be carried out within the classroom. The OT also may choose to record the student's performance and review it with the student in a more private manner. The OT is easily able to leave a written plan behind to allow for practice and communicate with the teacher to promote collaboration. This type of mixed model is ideal for the use of CO-OP principles. In order to include the student, the OT must have direct access to the student to create student-centered goals, facilitate problem solving, learning, and collaboration.

Do: The Principles in Practice

Set the goal prior to assessment

The goal must be client-centered and occupation-focused. Evaluation starts by observing performance, so the goal must be set first. The use of the COPM (see Appendix D) or the completion of an Occupational Profile (AOTA, 2020) is recommended to elicit goals that are important to the student. The COPM is recommended as an outcome measure for the student's perception of performance and satisfaction with performance (Polatjko & Mandich, 2004). However, a goal can be set at any time as long as it something the student wants, needs, or is expected to perform. Occupation-focused goals are set to perform a specific occupation or task, not to improve performance components. Typical school occupations include handwriting, cutting, routines, and task completion goals (see Appendix B). The OT should probe the student to obtain specific information regarding the goal and guide the student to set a goal that is obtainable. For example, a student who wants, needs, or is expected to improve their handwriting may set a goal of keeping their letters between the lines of the paper.

Collect Practice-based Evidence

An OT who is used to assessing performance components is not always able to demonstrate or document real change. Using the PQRS (see Appendix D, Figure 3), the OT can demonstrate growth by collecting evidence pre and post-intervention (Polatjko & Mandich, 2004). The PQRS and COPM can be used to provide outcome measures for occupational performance as well as the student's perception of and satisfaction with their performance.

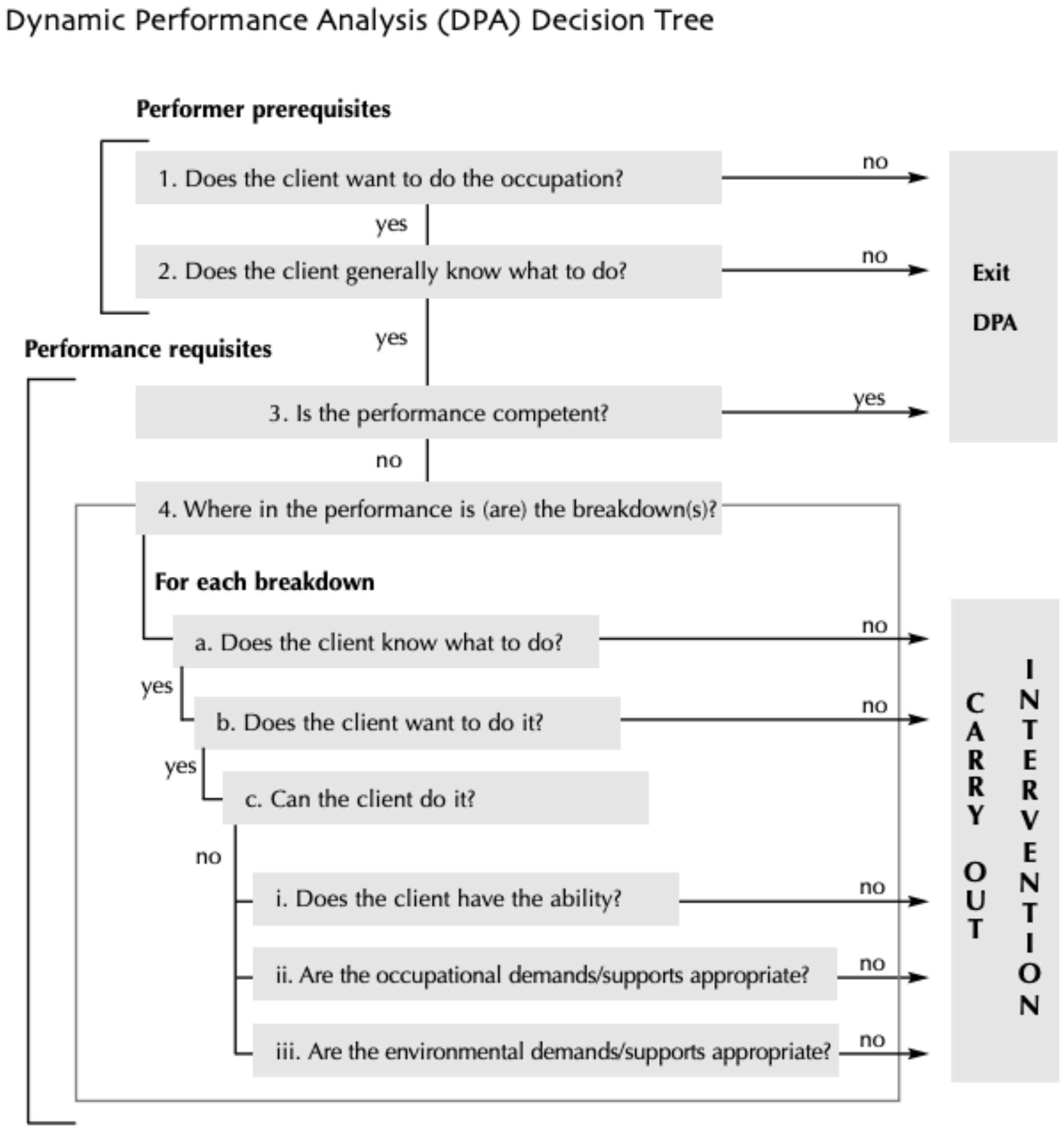
DPA

DPA requires the OT to use their observation skills to identify breakdowns interfering with the performance of the specified task (Polatjko & Mandich, 2004). These breakdowns are recorded as the behavior that is observed rather than as a performance component. For example, if the student drops something during the observation, the OT would write, "dropped pencil as they erased", rather than "poor grip strength"(Polatajko & Mandich, 2004).

The DPA process is repeated, with adjustments made to the plan as often as necessary. The following decision tree can be used to support the therapist throughout the DPA process(see Figure 2).

Figure 2

Decision tree taken from Polatjko & Mandich (2004); included with permission as an academic paper.


Dynamic Performance Analysis (DPA) Decision Tree
Performer prerequisites
1. Does the client want to do the occupation?
no
yes
2. Does the client generally know what to do?
no
Exit DPA
yes
Performance requisites
3. Is the performance competent?
yes
no
4. Where in the performance is (are) the breakdown(s)?
For each breakdown
a. Does the client know what to do?
no
yes
b. Does the client want to do it?
no
yes
c. Can the client do it?
no
i. Does the client have the ability?
no
ii. Are the occupational demands/supports appropriate?
no
iii. Are the environmental demands/supports appropriate?
no
CARRY OUT INTERVENTION

Homework and Involvement of Supportive Adult

Part of best practices are to collaborate with the student to create a plan that the student will follow when they are not present to support them in reaching their goal on a consistent basis. Collaboration with the supportive adult should include the methods that the OT has devised to keep the student engaged and promote practice in different contexts. The OT will support the adult in ways to coach the student and guide the student rather than adjusting or telling the student what to do (Polatajko & Mandich, 2004). Homework is central to the role of the supportive adult and is essential for learning, practice, generalization and transfer (Polatajko & Mandich, 2004).

Homework is provided at each session. The OT will encourage the student to notice and report back if there are other tasks that they can use their plans to promote generalization. Homework is essential for practice and learning and supports collaboration with other adults. It is essential for the OT to communication, collaborate, and guide the supportive adult in how to best enable the student to learn.

Check: Re-Assessment

Reassessment

Reassessment is required to document growth and effectiveness of interventions (see Appendix D).

COPM

The COPM is an outcome measure that can be used to document the student's perception of their changes in performance and satisfaction with their performance over time (Law et al., 2019).

PQRS

The PQRS is readministered and scored to assess and document the effectiveness of the intervention (see Appendix D, Figure 3). In addition, the PQRS may be completed periodically through observation to monitor the effectiveness of the student's plan (Polatjko & Mandich, 2004).

Standard OT measures

An OT typically uses a variety of assessments to qualify a student for services and document delays in specific performance component such as the Beery-Buktenica Test of Visual Motor Integration (Beery & Beery, 2010), Sensory Processing Measure (Parham et al., 2007), and the Motor-Free Visual Perception Test-fourth edition (Colorusso & Hammill, 2015). These and other commonly used assessments and their usefulness for providing evidence of intervention effectiveness can be found in Table 5 of Appendix D. As will be seen, many of these are useful in describing the student's normative status in a component skill but are not useful in documenting change.

Conclusion

As an OT strives to follow best-practices and provide evidence-based services and interventions it can be hard to how to best incorporate these principles into their current practice. The list of requirements of evidence-based best-practices can be daunting. However, providing client-centered, occupation focused, strength-based and services within the least restrictive environment in a collaborative manner can be achieved using a top-down approach guided by the principles that are inherent in the CO-OP Approach^{TM}. Using CO-OP principles enables the OT to reflect on how they are currently practicing within the elementary school environment and ensure that their practice is best practice.

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Appendix A: Best Practices vs Current OT School-based Practices

An OT provides services in the schools based on a multi-tiered system of support that includes interventions at three levels (AOTA, 2016). The broadest level, **Tier one**, includes interventions provided to an entire school or classroom (Smith & Okolo, 2010). Tier one interventions are designed to support all students such as curricula or iPads to complete work. **Tier two** interventions target a smaller group of students who require more support than is provided to the classroom students as a whole (Smith & Okolo, 2010). These interventions include strategies like small group instruction and increased opportunities for practice. **Tier three** interventions are intensive, individualized services provided through the individualized education program (IEP) process (Smith & Okolo, 2010). Tier three interventions may include alternate curricula and specialized instruction planned for the specific student. An OT provides interventions at all three tiers for students demonstrating difficulties functioning and participating within the school environment.

A school-based OT supports a student's performance of daily routines and school-related occupations that support learning. Outcomes focus on participation in both academic and non-academic activities (see Appendix B) (AOTA, 2016). Best practices guidelines for school-based practices direct an OT to provide strength-based services within the least restrictive environment, across settings, and by collaborating with the student. These interventions must be focused on enabling the student to participate in the educational and social aspects of the school environment (Florek Clark & Chandler, 2014). Collaborating with the student and their team is the most effective way to provide OT, speech, and other services in the school setting (Bazyk & Cahill, 2015). An OT is frequently told that best practices are strength-based, focused on participation in occupations, and that interventions should occur in the least restrictive or natural environment; however, they are not explicitly taught how to do so. While an OT may know or be aware of what constitutes best practices in the school-system, they may not know how to translate this knowledge into practice.

Many school-based OTs utilize a traditional, medical model of intervention (Clough, 2019; Bolton & Plattner, 2020). The traditional model is a bottom-up or impairment based model focused on improving performance components assuming that this will improve occupational performance (Clough, 2019). However, when an OT uses strength-based top-down approaches, their clients often make bigger gains as shown in a systematic review of 129 studies (Novak & Honan, 2019). The studies examined both bottom-up and top-down interventions divided into 52 categories. Forty of the 52 interventions were recommended based on the review criteria. The researchers determined that the most effective approaches used with children were top-down interventions that include child-selected goals, real-life activities in their natural context, repetition, and scaffolding of the skill with the child participating in problem-solving. Interventions that meet this criteria are CO-OP, Social Skills Training, and task training (Novak & Honan, 2019).

How can an OT use this information to transform and shape their practice so that it is consistent with the AOTA framework and best practices? OTs that participated in a recent qualitative study reported that their responsibility lies in developing classroom skills and components of those skills. They did not find value in providing support in the classroom and reported that their planned interventions were not always in sync with what is going on in the classroom. Instead, OTs saw more value in providing their planned interventions through services outside of the classroom. Their interventions utilized a bottom-up approach using specially designed tasks to work on improving performance components such as fine and visual motor skills with little concern for what was happening in the classroom. The services they provided assume that the skills the student developed in a one on one setting would transfer to the classroom without collaborating with the teacher (Clough, 2019). This type of service delivery is common in the schools but, unfortunately, is not supported by evidence and does not meet the requirements of what is considered best practices in school-based OT.

The OTs in the Clough (2019) study, like many school-based OTs, assumed that providing services within the classroom impeded their ability to target performance components. They described push-in services as sitting next to the student to support them in whatever was happening at the time or providing alternate activities at the side of the classroom. The respondents did not identify classroom level or system level collaboration in their responses. Rather than describing collaboration with teachers to support the student's ability to participate, they described the teacher's role as carrying out specially designed OT interventions throughout the week. Consultative OT services were described as a bridge to introduce newly acquired skills (not occupations) into the classroom setting (generalize) and as a way to phase out direct services. The researcher identified the need for OTs to educate themselves on inclusive and collaborative practices (Clough, 2019). School-based OTs would benefit from more than just knowledge to implement what are considered best practices. OTs would benefit from a guideline that provides them with a plan.

In another study of OT's role in the schools, 87 elementary school teachers and school-based OTs responded to an online survey about their role in the school system (Bolton &

Plattner, 2020). This survey included questions about OT's involvement in the classroom and how services are delivered. Ninety-five percent of the OTs reported that they like consulting with teachers or providing services within the classroom; however, 75% of them utilized a pull-out model for more than half of their caseload. The researcher did not identify barriers or specific reasons why OTs continue to use a more traditional, bottom-up model. What can be done to help OTs who like the idea of providing more collaborative and inclusive services actually implement them?

A school-based OT may be aware that strengths-based, collaborative, and inclusive services are considered best practices but might not be confident in how to implement this in their own schools. If an OT uses a traditional, bottom-up approach within the classroom or assumes that inclusive services are sitting next to a student providing support in the moment without a plan for generalization, they may consider it easier or more effective to provide pull-out services. An OT may not be aware that CO-OP principles can be used, indeed are optimally used, in the natural context and that generalization and transfer are outcomes of the CO-OP Approach^{TM} (Houldin, 2018). If an OT considers collaboration and consultation with the teacher as having the teacher implement OT activities throughout the week that do not support occupational performance, they may not see the value in providing services in a more inclusive top-down manner. An OT may not realize the important role that supportive adults play in the learning, practice, generalization, and transfer of skills (Polatjko & Mandich, 2004). School-based OTs need a guideline that provides a means of implementing a top-down approach in the school setting that allows for an OT to be strengths-based, inclusive, and collaborative. The CO-OP Approach is a strength-based, client-centered, occupation focused, evidence based pediatric

OT intervention (Polatajko & Mandich, 2004). The CO-OP Approach also includes elements that promote the generalization and transfer of skills across settings and occupations (Polatajko, 2017).

Appendix B: Activity and Participation

School-based OT outcomes are focused on participation in both academic and non-academic activities (occupations) (AOTA, 2016). Participation is defined as being actively involved in daily life activities (occupations) that are purposeful and meaningful to the student (AOTA, 2020). In OT, the terms activity and occupation are often used interchangeably to indicate what a student wants, needs, or is expected to do throughout their school day (AOTA, 2020). Participation in school requires a student to be able to perform occupations in a variety of environments and contexts. Table 4 provides a list of some typical environments and the possible occupations that the student wants, needs, or is expected to do within that environment in order to optimally participate.

Table 4

Typical elementary school environments and possible occupations

Environment	Possible Occupations
Hallway	Managing outerwear, packing and unpacking backpack, managing belongings, traveling on own or with a group…
Classroom	Managing supplies, drawing, handwriting, using a computer or tablet, cutting with scissors, obtaining and placing supplies and books, working with a group…
Art Room	Drawing, cutting, painting, using multiple materials to create, using clay…
Gym	Exercising, playing sports, using equipment including balls…
Music Room	Playing instruments and movement activities…
Lunchroom	Opening lunchbox and containers, buying lunch, cleaning up after lunch…
Playground	Using equipment (climbing, sliding, swinging), playing games with peers, moving as a group, playing independently…
Library	Locating a book, obtaining a book from a shelf, replacing unwanted books, checking out books, returning books…

Appendix C: Generalization and Transfer

The terms generalization and transfer are often used interchangeably when discussing the desired outcomes of OT but there are important differences. When a student is able to generalize a skill, they are able to perform that skill in different contexts such as being able to zip their coat at home and in a crowded school hallway (McEwen & Houldin, 2017). A student is able to transfer a skill when they are able to apply what they learned to a new skill (McEwen & Houldin, 2017). For example, if that same student was able to transfer what they learned from zipping, i.e., stabilizing the coat with one hand while manipulating the zipper with the other, to then buttoning their coat or another task, transfer of skills has occurred. The student must learn a skill prior to being able to generalize or transfer performance of that skill to a new environment or task (McEwen & Houldin, 2017).

Many current, bottom-up practices have not been shown to support improved task performance or generalization and transfer (Novak & Honan, 2019). When an OT uses a bottom-up approach it requires the student to generalize and transfer the skills learned through one activity to another, independently. For example, an OT observing a child handwriting may notice that a student has a weak pencil grasp. The OT using a bottom-up approach is focused on building performance components or the capacity (strength) to do a task but do not actually work on the skill (handwriting) expecting a functional outcome (improved handwriting), but this requires generalization and transfer, both notoriously difficult to achieve (Skidmore et al., 2017). An OT who is a top-down or using occupation-based interventions but is pulling a student out of their classroom to provide services is requiring the student to generalize, which is also difficult for some students to achieve. Generalization and transfer are most supported when there are similarities between the learned task and the desired task or when incorporating cognitive strategies (McEwen & Houldin, 2017). Generalization and transfer are facilitated when there are opportunities for: variable practice; building self-efficacy, combining both motor and mental practice; self-discovery; involvement of a significant other and homework(McEwen & Houldin, 2017). If an OT wants to improve functional performance, they should support students using an occupation based (top-down approach) in the context that the task will be performed and teach them to the cognitive process of setting goals, reflecting on their performance, and generating their own solutions. In CO-OP this is done within the cognitive strategy of Go-Plan-Do-Check so that a student can internalize and use the strategy when working in new environments or approaching novel activities (Polatajko & Mandich, 2004). The most effective top-down approaches use child-selected goals, real-life activities in their natural context, repetition, and scaffolding of the skill with the child participating in problem-solving, one of these approaches is CO-OP (Novak & Honan, 2019).

A literature review by Houldin (2018) of 39 articles using CO-OP as an intervention identified 25 studies that included generalization and/or transfer as outcomes. The researcher found that all studies reported that CO-OP resulted in clinically significant results in at least one measure of generalization and/or transfer (Houldin, 2018). Therefore, P4P draws on the principles underlying the CO-OP Approach^{TM} to frame elementary school-based OT practice that meets the AOTA guidelines of being client-centered, occupation-focused, strength-based, and enables collaboration with the student.

Appendix D: Assessment and Reassessment

Assessment

CO-OP is different than other OT approaches. Its top-down framework stands in contrast to the typical, bottom-up, medical frameworks where underlying problems are attended to. In a bottom-up approach, typically, an OT chooses specific assessments that provide standardized scores indicating a student's ability on specific skill components such as visual perception or visual motor integration. Goals are then created based on identified areas of deficit. Instead, using a top-down approach, the OT helps the student identify goals and once goals are set, the OT observes the student's performance to identify performance breakdowns and establish baseline performance. If a standardized score is required to qualify a student for services, the OT may use assessments for specific component areas that capture potential sources of the breakdowns.

The CO-OP Approach^{TM} is evidence-based and also provides a structure for the OT to collect evidence as they practice (Polatajko & Mandich, 2004). The Canadian Occupational Performance Measure (COPM) (Law et al., 2019) and the Performance Quality Rating Scale (PQRS) (Polatajko & Mandich, 2004) are utilized with the CO-OP Approach (and this guideline) (Polatajko & Mandich, 2004) to quantify performance and measure change. The COPM is used to help a student identify goals prior to assessment and provides the means for an OT to discover what is important to the student. This valuable information identifies occupations that need to be assessed and helps formulate meaningful IEP goals. Once the goal is set, the use of the PQRS provides an objective way to rate performance and provides a way to reassess and document improvements in performance (Polatajko & Mandich, 2004). The use of the COPM and the PQRS to measure outcomes and changes in performance allows the OT to use a truly top-down/occupation-based approach to school-based intervention and collect meaningful data related to client-centered goals.

COPM

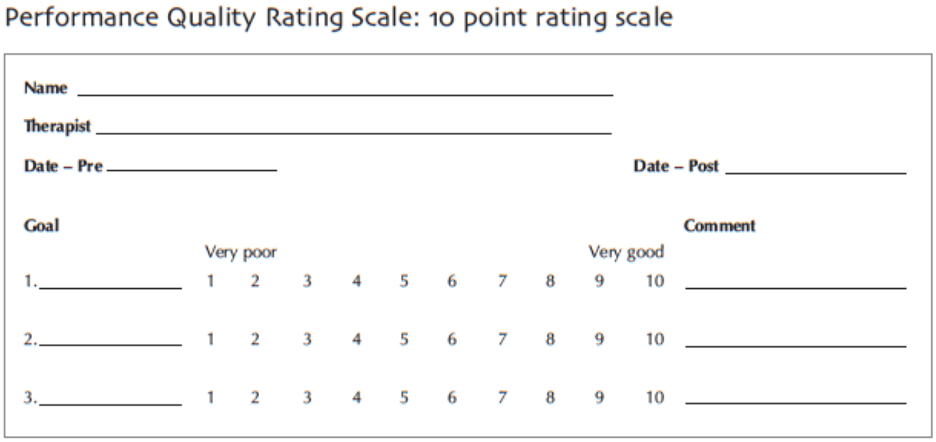
The completion of the COPM ensures that the OT collaborates with the student to set goals that the student wants, needs, or is expected to do in the school setting (see Appendix B) (Law et al., 2019). The COPM is an outcome measure that can be used to help a student identify challenges in occupational performance areas. The COPM is client centered and provides a means for the OT to assist in setting meaningful goals selected by the client or a caregiver in the areas of self-care, productivity, and leisure. The COPM is completed as a semi-structured interview that consists of problem identification followed by rating the importance of the problem. (Law et al., 2019). This process is often facilitated for children using a “Daily Activity Log”, which provides the context of a typical day to help a student identify areas of desired or needed growth (Polatjko & Mandich, 2004). Once this is completed, the COPM process includes identifying five problem tasks and rating their performance and satisfaction with their performance. These numbers are recorded and used as a comparison for reassessment (Law et al., 2019). Completing the COPM with the student or caregiver requires collaboration in order to develop meaningful goals and is essential for using the CO-OP principles.

PQRS

The PQRS is used by the OT as an observational tool to evaluate the occupational performance of the identified goal (Polatjko & Mandich, 2004). The PQRS (see Figure 3), created for use in CO-OP, is a ten-point observational scale used to evaluate occupational performance in the context it is performed (Polatajko & Mandich, 2004). A score of “1” indicates that the activity was not able to be performed at all and a score of “10” indicates that the activity was performed fully and with good quality. If the student will be seen by multiple OTs, operational definitions for each rating can be added to improve precision and make it more reliable across OTs (McEwen et al., 2010; Polatajko & Mandich, 2004). The PQRS provides a solution for an OT who values student observation as a means of collecting valuable information but has struggled with turning that information into objective data. If peer comparison is important, the OT could also include PQRS ratings of other students in the same context.

Figure 3

PQRS form taken from Polatajko & Mandich (2004)



Performance Quality Rating Scale: 10 point rating scale

Name ______

Therapist ______

Date – Pre ______ **Date – Post** ______

Goal	Very poor								Very good		**Comment**
1.______	1	2	3	4	5	6	7	8	9	10	______
2.______	1	2	3	4	5	6	7	8	9	10	______
3.______	1	2	3	4	5	6	7	8	9	10	______

Standard OT Measures

An OT typically uses a variety of assessments to qualify a student for services and document delays in specific component skills. Some commonly used assessments and their role in a top-down approach can be found in Table 5.

Table 5

Standard OT Measures and how they related to best-practices and collecting evidence of intervention effectiveness. References for assessments are found in the reference section.

Assessment	**Description**	**Client-Centered?**	**Top-Down**	**Sensitive to changes in Occupational Performance**
Canadian Occupational Performance Measure	Semi-structured interview to determine client-centered goals. Client rates performance and satisfaction of identified goal occupations.	Yes	Yes	Yes, the COPM is responsive to change in occupational performance when used pre- and post-intervention. It was developed as an outcome measure and measures change in client's perceived performance of an occupation and their satisfaction with that performance.
Performance Quality Rating Scale	10-point scale, therapists observes occupational performance of selected goal area in context without guidance or intervention from the therapist.	Yes	Yes	Yes, therapist uses a 10 point scale based on their knowledge or can provide operational definitions. The PQRS measures actual performance in context and can be used pre- and post- intervention to measure change in performance.
Beery-Buktenica Developmental Test of Visual-Motor Integration-6th Edition	Identifies delays in visual motor integration.	No	No, assesses performance components	No, designed to identify deficits in visual - motor integration not to assess change in performance. Not Sensitive to changes in handwriting (Pfeiffer et al., 2015).
Motor-Free Visual Perception Test	Identifies delays in visual-perceptual skills.	No	No, assesses performance components	No, designed to identify deficits in visual perception not to assess change in performance. Not sensitive to change (Brown & Peres, 2017).

Assessment	**Description**	**Client-Centered?**	**Top-Down**	**Sensitive to changes in Occupational Performance**
School Function Assessment	Measures a student’s performance on functional tasks.	Potentially if used to guide discussion with the student regarding goals.	Yes	Good potential, designed as an outcome measure for overall functional performance but not sensitive to change for specific occupations - e.g., the student's goal
Sensory Profile-2 Sensory Processing Measure	Used to identify areas of sensory processing dysfunction that are affecting functional performance.	Maybe, could be used to gather information to guide student towards a specific goal area.	No	No, designed to inform interventions not as an outcome measure. Not a sensitive measure of change
The Print Tool	Used to quantify legibility, speed, and other components of handwriting.	Maybe, could be used to gather information prior to the DPA.	Yes	Yes, can be used to assess change in handwriting.
Peabody Developmental Motor Scale Bruininks-Oseretsky Test of Motor Proficiency-2nd Edition	Assesses fine and gross motor skills. A therapist may use clinical reasoning and the information gained as information to guide student, teacher, and parent interviews and identify client-centered goals.	No	No, measures performance components	No, designed to identify deficits in fine and gross motor skills which are combined into composite scores. Does not provide information regarding growth in occupational-performance or sensitivity to change.

Glossary of Terms

These terms are used within the document and are included for reference.

Activity: Used interchangeably with the term occupation(AOTA, 2020) to refer to something the student wants, needs, or is expected to do during their school day.

Evidence-based: An intervention approach that is based on best practices and on available evidence (AOTA, 2020).

Generalization: The ability to use perform an occupation, use a skill, or strategy across settings without the presence of the OT (Polatajko & Mandich, 2004).

Occupation-based: The use of occupation in assessment and intervention. An occupation-based assessment involves observation of the client engaged in occupation. (Fisher, 2014).

Occupation-based intervention: Engagement in the occupations of interest is the intervention (Fisher, 2014).

Occupation-centered: Refers to occupation being the lens through which OTs, as a profession, see their clients and their needs. Occupation is the core domain of OT and the center of OTs research, education and practice (Fisher, 2014; Townsend and Polatajko, 2013)).

Occupation-focused: The focus of OT is to evaluate and improve occupational performance. We must evaluate occupation to be occupation-focused. Evaluating and treating underlying conditions in order to improve occupational performance is not occupation-focused (Fisher, 2014).

Occupational Performance: The actual performance of an activity (occupation) within the natural context. The relationship between the individual (student), the occupation, and the environment (AOTA, 2020; Polatajko & Mandich, 2004).

Participation: Participation is defined as being actively involved in occupations in daily life activities (occupations) that are purposeful and meaningful to the student (AOTA, 2020).

Self-efficacy: Confidence in the ability to achieve a specific outcome (Bandura, 1997).

Strength-based: Focusing on the strengths or abilities of a student vs focusing on a student's disability or limitations (AOTA, 2012).

Transfer: The ability of the student to use the skills and strategies to learn new occupations in their daily lives Polatjko & Mandich, 2004).

Abbreviations

COPM: The Canadian Occupational Performance Measure

DSS: Domain Specific Strategies

GPDC: Goal Plan Do Check

PQRS: Performance Quality Rating Scale