Defining the Role of Occupational Therapy To Support Literacy Development

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Webster's (1999) defines *literacy* as "the state or quality of being literate; specifically, ability to read and write." Both the recent reauthorization of the Individuals With Disabilities Education Act (IDEA, 2004; Public Law 108–446) and the No Child Left Behind Act (NCLB, 2001; Public Law 107–110) emphasize the need to better address literacy for children in public schools. In addition, Part C of the reauthorized IDEA requires that preliteracy skills be addressed for the very young child. As the emphasis on literacy increases within the educational system, the following question arises: Is there a role for occupational therapy evaluation and intervention to support student outcomes in this area?

In many school systems, occupational therapists and occupational therapy assistants are faced with new challenges because of this increased emphasis on literacy and accountability for student achievement. For example, teachers are reluctant to have students removed from their classrooms during key literacy activities, thus making occupational therapy scheduling difficult. While this increasing emphasis on literacy does not change the overall role of occupational therapy in the schools, it does require that occupational therapists and occupational therapy assistants understand the impact of literacy on a student's occupational roles in school. Although they are not reading and writing teachers, therapists can support student achievement in literacy in many ways. However, to succeed in this effort, therapists must understand literacy and be able to relate it to our unique skills and expertise.

Literacy and Student Achievement

The increased emphasis on literacy and accountability in federal legislation responds to recent data regarding student achievement in schools and the poor performance of many students in the area of literacy (NAEP, 2000; National Center for Education Statistics, 2001a; Kafer, 2002); including an achievement gap between high and low performers (NAEP, 2001b). Education systems across the United States are mandated to close this achievement gap and to demonstrate annual progress in achievement scores related to literacy. Occupational therapy may help students with disabilities to achieve a higher functional performance in school as well as in the community, including supporting pre-literacy and literacy skills; for example, bringing a holistic approach to a learning environment that provides knowledge about strategies involving technology, body mechanics and sensory processing that support performance in the area of literacy.

Literacy encompasses important aspects of a student's occupational performance across all environments, including school, community, and work settings. These skills are needed to participate not only in the role of student, but also in other chosen occupations outside of the school day as well as life beyond school: "Literacy ranges from the basic ability to read and write (or functional literacy), required in every day life, to advanced literacy, reflecting knowledge of significant ideas, events and values of a society" (Henry, 2003, p. 3). According to Swinth and Handley-More (2004), literacy is embedded within all areas of occupational performance: activities of daily living, instrumental activities of daily living, education, work, play, leisure, and social participation. For example, difficulty in the area of literacy may prevent a person from completing a job application; reading directions, product labels, or bus schedules; and writing directions to get to a specified place. Thus, over time, difficulties with literacy "may affect the student's ability to perform tasks that are essential for independent living" (Swinth & Handley-More, 2004, p. 3).

Literacy Readiness and Literacy Skill

Readiness is a critical aspect of literacy success. As defined earlier, literacy is the ability to be able to read and write. Readiness then refers to the underlying skills that prepare a student to be able to learn to read and write. Occupational therapists may be involved in supporting readiness at a systems level or an individual student level. At a systems level, it is important to work with the educational team to ensure that appropriate curriculums are used and to consider ergonomic or behavioral needs and the sensory demands of a classroom. Additionally, successful implementation of a literacy curriculum can be affected by the sequence in which a lesson is taught, the complexity of directions, and the modalities the teacher uses. Occupational therapists may provide input to any one or more of these areas.

At the individual student level, the "use of oral language, fine and gross motor skills, general intelligence, concepts of print, and basic perceptual-motor skills all play a part in reading readiness" (Henry, 2003, p. 11). Fearn (2003) defined specific readiness skills for literacy and written communication, including auditory discrimination (ability to hear a sound or series of sounds and write them), visual discrimination (ability to recognize and interpret a letter and word), ability to attend, seriation (ability to put letters, words, sounds, etc., in correct sequence), classification (ability to recognize how objects relate to one another), and ability to understand space (to conceptualize the size, orientation, and placement of letters, words, etc., in relationship to one another and the page or paper). Finally, the recognition that vision is more than just acuity has resulted in professionals needing to consider how vision affects student performance.

Additionally, the ability to generate text efficiently through fluent letter formation and legible handwriting or keyboarding is a prerequisite to fluent composition. According to Edwards (2003), "Students' early development of fluent handwriting and spelling skills may prevent difficulties with writing performance in the later grades" (p. 137). All these skills may be considered and addressed through occupational therapy evaluation and intervention.

Occupational Therapist Role in Literacy

Browning (2002) stated that "occupational therapists enable the development of early literacy skills in individuals with physical disabilities by providing information, offering support, and access to adapted materials and technology" (p 180). With the increased demand for improved literacy in our schools for all children (including children with disabilities), occupational therapists have much to offer the educational team.

The Domain of Occupational Therapy and Literacy

Occupational therapists as well as other education professionals continue to ask the question: Is there a role for occupational therapy to support student outcomes in the area of literacy? It is clear that that literacy affects all areas of occupational performance across many contexts. When considering the domain of occupational therapy, including *performance skills, performance patterns, contexts, activity demands,* and *client factors* (American Occupational Therapy Association [AOTA], 2002) it is clear that issues related to readiness and literacy skills cross each of these areas (see Table 1).

Occupational therapy is not primarily responsible for teaching students to read or write; but may address a variety of performance skills directly or in collaboration with the teacher to support student literacy outcomes. The educational team should be able to access the occupational therapist's expertise at any time during the student's literacy skill development to provide materials, information about underlying skills that may affect performance, and information about contextual considerations.

The Occupational Therapy Process

Through the occupational profile, analysis of occupational performance, and intervention planning (including targeted outcomes), school-based occupational therapists are able to support student literacy through student role development and participation within desired environmental contexts. According to the *Occupational Therapy Practice Framework: Domain and Process* (AOTA, 2002), "Engagement in occupation to support participation" (p. 614) is the foundation on which occupational therapists should base their intervention plans, which include helping students to reach literacy goals.

Occupational Profile. The occupational profile includes information gathered about the student's history and experience with written language and literacy activities as well as the student's interests, values, and needs in this area (Swinth & Handley-More, 2004). It can be developed

Table 1. The Domain of Occupational Therapy (AOTA, 2002)

Area and Definition	Example
Performance skills: "Features of what one does, not what one has, related to observable elements of action that have implicit functional purposes" (p. 632).	As a student participates in literacy activities in the classroom, the occupational therapist identifies specific performance skills that are effective or ineffective (e.g., trunk stabilization, arm position, coordination of arm movements, force and speed used when writing, ability to follow environmental cues, initiation of task sequence, organization of task space, orientation of body in space, social interaction).
Performance patterns: "Patterns of behavior related to daily life activities that are habitual or routine" (p. 632).	As a third-grade student completes a written assignment, the occupational therapist identifies the specific habits and routines that are supporting or interfering with the student's performance in this role (e.g., ability to follow routine, how the student approaches the task).
Context: Context, including cultural, physical, social, personal, spiritual, temporal, and virtual, "refers to a variety of interrelated conditions within and surrounding the client that influence performance" (p. 630).	A kindergartener is having difficulty during written language activities. The occupational therapist may talk with the teacher about how the following interrelated conditions influence performance: student's age and developmental status (personal, temporal), time of day (temporal), types of tools used (physical), location of desk (physical), and classroom expectations (cultural).
Activity demands: "The aspects of an activity, which include the objects, space, social demands, sequencing or timing, required actions, and required underlying body functions and body structures needed to carry out the activity" (p. 630).	Occupational therapy has been requested because the student has difficulty with reading and writing. The occupational therapist observes the student in the classroom at three different times during the day. The student is able to manipulate books and paper but has difficulty manipulating the writing utensil. The student is easily distracted and unable to sequence directions. The teacher reports that the student has difficulty with changes in routines and seems to have difficulty reading from a chalkboard.
Client factors: "Those factors that reside within the client and that may affect performance in areas of occupation" (p. 630).	A student with cerebral palsy and vision loss attends preschool. The occupational therapist considers evaluation and intervention to address the student's difficulty with coloring and recognizing simple shapes, matching simple pictures, staying on task, and manipulating materials.

by talking with the student, family members, and teacher and other additional educational team members. Listening to the student's, family's, and teacher's concerns about literacy performance and anticipating outcomes is essential because difficulties with literacy may also affect the student's self-esteem and motivation.

Analysis of Occupational Performance. Occupational therapists often use specific evaluation strategies and assessments to help with developing the occupational profile. The therapist may use such strategies as observation, interview, and review of work samples as part of the analysis of occupational performance. Additionally, specific assessments, such as a visual-perceptual or visual-motor tests, may help the therapist to determine specific underlying issues affecting the student's ability to read or write. The occupational therapist also should review assessments completed by other members of the educational team.

Intervention Plan. As the individualized education program (IEP) team collaborates to determine a student's educational goals, the occupational therapist provides information that helps to support student achievement. Specifically in the area of literacy, occupational therapists should consider the literacy readiness skills and literacy skills. These data will help the IEP team to determine the student's needs and desired goals for the IEP.

If the team recommends the support of an occupational therapist to help the student reach the targeted outcomes, an occupational therapy intervention plan should be developed and implemented. This plan outlines how the occupational therapy intervention will be provided to assist the student to achieve the identified goals. It should include

objectives to be achieved and be based on appropriate frames of reference, an appropriate intervention approach based on theory and evidence, mechanisms for service delivery, discharge needs and plans, anticipated outcomes, and recommendations.

Occupational Therapy Intervention. For students to reach their desired goals, the therapist should work with the teacher and other educational professionals to create an environment that promotes learning. An occupational therapist also can create opportunities for the students to perform in natural contexts (i.e., filling out job applications, going to the grocery store, reading a menu). They can help students to adapt to their learning environment. Therapists should collaborate with teachers to identify ways to decrease distractions in the classroom or grade a reading or writing activity (i.e., changing the size of the text for students with visual-perceptual difficulty).

Occupational therapists can use their knowledge of foundational skills such as visual perception or grasp on a writing utensil to encourage and assist students in developing their ability to read and write more efficiently. They can use their knowledge of activity analysis, task grading and modifications/adaptations in order to create an environment that promotes learning so that students are motivated and can have the opportunity to maximize their literacy potential. By working with the team to give students the feeling of success and confidence, occupational therapists reinforce self-esteem and help to promote a willingness to participate in desired contexts. A systematic review of the intervention plan and appropriate service delivery strategies is important to ensure that students are making progress toward outcomes identified in their IEPs.

Intervention Considerations Specific to Literacy Skill Development

A variety of intervention considerations exist that may help to support literacy development for students with disabilities. Under the IDEA (2004), occupational therapy can be a related service or a supplemental aid and service and can be provided to the child on behalf of the child or as a support to the teacher. When addressing literacy needs of students as part of the educational team, occupational therapists might focus more on collaboration on behalf of the child, such as providing supplemental aids and services and accommodations and adaptations (Swinth & Handley-More, 2004). Thus interventions may first address environment supports for student participation, unless there are specific sensory, and/or assistive technology needs.

Environment

Through consultation with teachers and other school professionals, occupational therapists consider whether the environment should be modified to facilitate an atmosphere for learning. This aligns with the principle of least restrictive environment and implementing intervention strategies that are the least intrusive. Modifications may include dimming the lights and decreasing extraneous noises to limit the amount of distractions in the classroom or enlarging or changing the font size and style of printed materials to assist students with visual-perceptual difficulties.

Multisensory Approach

Supporting a student's sensory needs within the classroom routine can help students achieve the "just right" state of attention and focus in order to read and write. A student with attention difficulties may need more sensory input to adjust or modify his or her body's state so that he or she is able to pay attention to literacy tasks for longer periods. Providing intervention for this student outside of the classroom environment may result in lost learning opportunities and make it difficult for the student to generalize the use of sensory strategies. Addressing the needs within the classroom ensures the use of appropriate sensory strategies and allows the occupational therapist to monitor and adapt strategies as needed. Unfortunately, there is limited evidence supporting many of the specific sensory strategies typically utilized by occupational therapists; for instance, fidget toys to help increase attention to reading tasks for longer periods, a "hug" (weighted sweatshirt filled with beans)

to provide increased proprioceptive input, or the use of ball chairs. However, there appears to be some evidence supporting the use of these strategies (Fertel-Daly, Bedell, & Hinojosa, 2001; Mulligan, 2001; Olson, & Moulton, 2004; Schilling., Washington, Billingsley, & Deitz, 2003; VandenBerg, (2001) but it is important that performance data are taken and evaluated to ensure that the multisensory strategies are supporting the targeted outcomes related to literacy performance.

Assistive Technology

Assistive technology can be divided into two types: high technology and low technology. Low technology can sometimes be overlooked because of an overemphasis of computerized technology in today's business and educational society. However, low technology adaptations may be just as helpful as high technology adaptations. Some examples of low technology adaptations would be changing the color of paper used for work sheets to make words stand out more clearly; using color transparencies to increase the contrast of words on the paper; and providing pencil grips to assist students with grasp during writing tasks.

Occupational therapists also can share information about high technology products that are based on computer software with the educational team. Numerous literacy programs are geared toward helping students increase their literacy skills. Each software program approaches literacy in a different way. Balanced Literacy (Intellitools®, Petaluma, CA) Petaluma, CA), approaches literacy through a multisensory approach, using sounds and visual pictures to engage the students in literacy tasks. Another software program for writing, Inspiration® (Inspiration Software Inc., Portland, OR), uses organizational strategies to help students brainstorm and outline their ideas in order to structure their writing in a clear, well-thought-out manner. These programs can be adapted or modified in order to support students with a variety of disabilities (learning or physical disabilities) and therapists can help teachers and students learn about these products and begin the implementation of the most efficient and effective product into the classroom.

Occupational Therapy Outcomes and Conclusion

The occupational therapist understands that literacy affects all areas of occupational performance, and the skills that a student learns in school will affect later life roles. This article has focused on exploring the occupational therapist's role to support literacy development. Occupational therapists not only have the knowledge and expertise to support a student's literacy program, but also bring unique skills and expertise to facilitating the student's occupation and independence in school and the community. Occupational therapists must advocate for their involvement with literacy skill development for students with disabilities, which may include sitting on curriculum committees, providing in-services to teachers, and being willing to do more collaborative and consultative service versus direct service delivery when addressing literacy skills. To convey the meaning behind occupational therapy interventions and adaptations to support literacy, we must have a clear definition of our roles and how to deliver the appropriate services. ∎

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