

Effectiveness of OT in the School Environment



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Effectiveness of Occupational Therapy In the School Environment

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INTRODUCTION

The provision of occupational therapy services to students in the school system continues to be a growing area of pediatric practice in Ontario, through the School Health Support Services (SHSS) Programme, and elsewhere across Canada and the United States under varying service delivery and funding models. Recently, there has been an increasing demand for evidence-based practice. A review of the literature related to the effectiveness of school-based occupational therapy services was completed. It is hoped that by sharing this information, other providers of occupational therapy in the school system will be able to communicate confidently the effectiveness of their interventions with funding agencies, schools, families and children.

WHAT WE DO KNOW ABOUT THE EFFECTIVENESS OF

OCCUPATIONAL THERAPY IN THE SCHOOL ENVIRONMENT?

Occupational therapy (OT) is a health care profession that is concerned with a person's ability to perform the daily occupations they are expected to, need to do or want to do. Daily occupations include self-care, productive and leisure activities. The person's performance of their daily occupations is influenced by the environment in which they are performing the activity. Occupational therapists believe, and there is evidence to support, that a person's satisfaction with their occupational performance is an important determinant of health and well being and helps give meaning to life (Law, Steinwender & LeClair, 1998).

In the school setting, a student's occupational performance may be impaired by a physical, developmental, sensory, attentional and/or learning challenge. The social, attitudinal and cultural environment, along with the availability of supports (person support or equipment support), impacts on the student's occupational performance in the school setting.

GOAL OF OCCUPATIONAL THERAPY IN THE SCHOOL SYSTEM

The goal of OT in the school environment is to improve a student's performance of tasks and activities important for school functioning. This may involve direct intervention to improve, restore, maintain or prevent deterioration in the skills required for functioning in the school environment. Consultation and education of adults in the child's home and school environment may be necessary to ensure an understanding of and match between the child's skills and abilities and the expectations placed on them in the school setting. Recommendations of task adaptations, task modifications and assistive devices (e.g., mechanical lift, writing aid) may be necessary to optimize the child's performance in the school setting.

DOES OCCUPATIONAL THERAPY IN THE SCHOOL SYSTEM MAKE A DIFFERENCE?

Palisano (1989) conducted a six-month study with thirty-four children, ages six through nine years of age, with learning disabilities. They were divided into two groups, one receiving intervention twice weekly with the OT in a small and large group setting. The second group received consultation services from the OT through a weekly large group session in the classroom, and one half hour per week consultation with the teacher to provide a monthly lesson plan of follow-up activities to be performed three times per week. Intervention occurred over a six-month period. Both groups received an equal amount of therapeutic intervention each week (75-105 minutes). The children in both groups improved on the standardized assessments of gross motor and fine motor abilities, visual-motor integration and visual-perceptual skills. These skills are necessary for adequate school performance in the areas of reading, writing, mathematics, manipulation of tools (e.g., scissors and rulers) and performance in physical education.

A small study conducted by Dunn (1990) compared the results of direct intervention by an OT to collaborative consultation by the OT with the student's teacher over the period of one academic year. Fourteen children (ages 35 months to 79 months of age) with a developmental delay of at least one year in at least two areas of development participated. Children in both groups achieved nearly 75% of their goals

as identified on their Individualized Education Plan (IEP). The teachers reported that the OT contributed to goal attainment more in the collaborative consultation group than in the direct intervention group. This study supports the effectiveness of OT intervention, both in direct intervention and collaborative consultation models, on attainment of goals as identified on the IEP in students with developmental challenges. Collaborative consultation appears to be seen by teachers as impacting more on the OT's contribution to goal attainment than direct intervention alone.

Niehues et al. (1991) used qualitative methodology to study the nature of OT practice in the public schools with five expert school system practitioners. Results indicated that OTs play a role in "reframing" the views of the parents and teachers concerning discrepancies between students' performances in school and the expectations held for them. This enabled a more positive view of the student and provided a basis for developing new and more effective teaching and/or parenting strategies with students.

King et al. (1999) reported the results of a study on school-based therapy services conducted in London, Ontario with fifty children ranging in age from five through twelve, with a variety of special needs, including cerebral palsy, fine motor difficulties, developmental coordination disorder, spina bifida and/or speech/language delays. Direct therapy, monitoring and collaborative consultation between therapists, teachers and parents were used in the service delivery model. Twenty-one of these children had occupational therapy goals in the area of school productivity (written communication skills, organizational skills, functional fine motor/visual skills). Sixteen of the children had speech-language goals in the area of communication and 13 had physiotherapy goals in the area of mobility. Data were collected prior to therapy intervention, following therapy intervention and five to six months after therapy terminated. Standardized assessments, goal attainment scaling and satisfaction questionnaires were used to evaluate outcomes. Children with fine motor difficulties received OT twice a week for a three-month period. Ninety-eight percent of the fifty children made progress in their goals, with many gains maintained over the six-month follow-up period. Improvement on the standardized measures was clinically significant in the targeted area of school productivity. The rate of change for children receiving occupational therapy exceeded that expected due to maturation, suggesting that intervention was the reason for the improvement measured. The productivity goals were all educationally relevant, to support the premise that school-based therapy should support the student's performance in the school setting. Goals included copying from the board, holding a pencil correctly, keyboarding, cutting, colouring, use of a computer mouse, organizing a desk and focusing on a task, all of which underlie and support academic performance. Both parents and teachers reported a high degree of satisfaction with the services provided, supporting the use of a model combining collaborative consultation and direct intervention.

A study conducted in four Southern Ontario school boards (Fairbairn and Davidson, 1993) examined what 103 teachers in Ontario say they receive, need and expect from OTs, and examined the value placed by teachers on OT services. Results indicated that all the teachers valued the work of OTs in the schools, finding them knowledgeable, supportive and providers of practical programming, physical exercises and adapted equipment. Eighty-nine per cent reported that the OT programme enhanced the students' ability to learn and 80% said that the OTs eliminate problems that interfere with a child's ability to profit from instruction. Eighty-two percent of the teachers indicated that OTs could provide medical, physical and developmental information in educationally

relevant terms. Seventy-nine percent believed that OTs were able to translate assessment information into relevant programming and 96% believed the OT held a distinct place in the school setting. Over 60% of the teachers identified motor skills, psychosocial skills, assessment of student needs, daily living skills, sensorimotor skills, equipment needs and maintaining parent involvement as areas with which OTs could assist.

DO SPECIFIC CONDITIONS BENEFIT FROM OCCUPATIONAL THERAPY IN THE SCHOOL SYSTEM?

1) Developmental Coordination Disorder

The prevalence of Developmental Coordination Disorder (DCD) is estimated at 6% of the population, with boys more commonly affected (Fox and Lent, 1996). This disorder describes a child who lacks the motor coordination necessary to perform tasks that are considered to be appropriate for her/his age and may demonstrate significant difficulty with self-care tasks such as dressing and using utensils, with academic tasks such as handwriting and/or with leisure activities such as sports (Missiuna, 1996). Other neurological disorders must be absent for this diagnosis, but it commonly coexists with learning disabilities (particularly non-verbal learning disabilities) and attention deficit disorder.

As so many daily tasks can be difficult for a child with DCD, these children experience frequent failure, come to expect failure and the resulting lower self-confidence can affect their social, academic and physical performance (Fox and Lent, 1996). Fox and Lent go on to say that persisting coordination difficulties and neurological signs suggesting neuro-maturational delay have been recognized as predictive of many psychiatric disorders, including affective and anxiety disorders. They cite a longitudinal follow-up to age 16 of children identified at age 6 with deficits in attention, motor control and perception, which showed that nearly 60% had psychiatric, and personality disorders in mid-adolescence, 13% were substance abusers and 5% had attempted suicide. Fox and Lent (1996) state that strong scientific evidence now shows that most children's motor problems persist well into adolescence and studies have demonstrated that these children will display poor social competence, poor motivation, low self-esteem, unhappiness and reluctance to engage in physical activities with the result of poor physical fitness. The costs to the health care and social service systems in the future are staggering, which makes early intervention with these children essential. Fox and Lent (1996) state that OTs can quantify the disability, advocate for modifications, including changed expectations, assist in providing information to parents, teachers and children and offer intervention techniques related to school work, leisure and activities of daily living.

Dewey and Wilson (2001) cite literature stating that children with coordination difficulties are reported by teachers to have difficulties in physical education, writing, handling equipment in science classes and arts and crafts. They go on to cite studies demonstrating an association between poor motor coordination and social-emotional problems in childhood. Children with movement problems saw themselves as less socially competent and were more introverted and anxious than their peers. These children often withdraw from or avoid physical activity, which can lead to secondary health problems.

These children are often referred to OT through the school system due to "fine motor difficulties", "poor pencil grasp", "gross and fine motor

clumsiness" or "difficulty with printing." Missiuna (1999) states that 95% of OT referrals are due to "handwriting". She goes on to say that the majority of these students are experiencing difficulty with more than just handwriting. Closer observation reveals difficulty managing scissors, handling a ruler, doing up zippers and buttons, erasing, participating in gym class, getting ready for recess, playing games in the schoolyard and/or participating in sports and leisure activities. These children often have DCD but are not diagnosed, as many physicians remain unfamiliar with this diagnosis or are reluctant to "label" the child.

Early evidence for the effectiveness of "top-down" OT approaches in teaching specific tasks and in improving functional performance of children with DCD is beginning to appear (Mandich et al., 2001). Specifically, there is evidence that the Cognitive Orientation to Daily Occupational Performance (CO-OP) approach is effective in skill acquisition and the evidence is emerging that CO-OP also results in generalization and transfer of skills (Polatajko et al., 2001). When using the CO-OP approach, the evidence suggests that 12 one-to-one OT sessions of one hour in length are necessary. (This does not include the initial OT assessment, which is required to determine the child's specific strengths, needs and suitability for this approach, nor does it include the collaborative consultation time required with parents and teachers to ensure follow-through and support generalization of the skills.)

As summarized in the first section, children with fine motor and coordination difficulties were included in many of the studies that looked at the effectiveness of OT in the school system. CO-OP was not used as the treatment approach in these studies, but more traditional OT approaches were used and found to be effective in the development of skills and on goal attainment.

2. Written Productivity

Oliver (1990) examined the effects of occupational therapy on writing readiness skills. One of the groups involved in the study included five and six year olds with a discrepancy between their performance and verbal intelligence quotients. This is the typical profile of many of the children referred for OT in the schools. They often progress to be identified as having a non-verbal learning disability. This group received thirty minutes weekly occupational therapy for the duration of the school year. Therapy intervention focused on multisensory stimulation, large movement patterns and writing readiness skills such as attention to lines and designs. In addition, these children received ten minutes of additional programming three times per week by the teacher, aide or parent. This programming was designed by the OT and complemented the direct therapy through the use of structured work sheets and manuscript letter practice. Results demonstrated an improvement of 17 months in writing readiness over the year. This study supports the value of early occupational therapy intervention with children with delays in writing readiness.

Lockhart and Law (1994) examined the effectiveness of a multisensory cursive writing programme. Participants were nine through eleven years of age and had a diagnosis of a learning disability and had sensorimotor difficulties. The participants received one hour of occupational therapy every two weeks using a multisensory cursive writing programme. Results of the study yielded changes of statistical significance in writing quality in specific letter groups for all of the children following intervention. Teacher reports and an assessment of written language suggested that intervention may have had a positive effect on self-confidence in written output, and on the maturity of written expression

in some of the cases.

Case-Smith (2002) reported the results of a study on the effects of school-based occupational therapy services on students' handwriting. Twenty-nine students, aged seven through ten years of age with poor handwriting legibility and cognitive function within normal limits, received a mean of 16.4 sessions of direct occupational therapy services over the school year. Fifteen of the students had an educational diagnosis of learning disability, and eleven had a diagnosis of developmental disability. Ninety-five percent of the intervention was one-on-one and included a variety of therapeutic approaches individualized to the student's needs. The therapists reported a high level of collaboration with the teachers. When compared with students who did not receive services, the intervention group showed significant increases in handwriting legibility, in-hand manipulation and position in space scores. Legibility increased by 14.2% in the intervention group, and by 5.8% in the comparison group.

METHODOLOGY

The literature review was guided by the question, "Does occupational therapy make a difference in the school system?" As the majority of referrals to OT in the Ontario School Health Support Services Programme are for fine motor delay, clumsiness and/or written productivity difficulties, a secondary focus of the literature search was Developmental Coordination Disorder and written productivity.

Partnerships with the School of Rehabilitation Science at McMaster University and the CanChild Centre for Childhood Disability Research, along with the author's personal contacts through both formal and informal OT networks, resulted in access to the relevant literature. Information from these sources provided the author with relevant articles and links to other articles.

SUMMARY OF WHAT WE DO KNOW

In summary, research evidence to date supports the effectiveness of occupational therapy in the school setting with students experiencing occupational performance challenges. OT is effective in helping children attain goals and develop skills in areas underlying and supporting school performance. Occupational therapists help in reframing the views and expectations of the student by the adults in the environment. Collaborative consultation with parents and teachers appears to be an essential component of the service delivery to maximize effectiveness of and satisfaction with the intervention provided by the occupational therapist. The evidence presented relates to a variety of diagnoses and needs, including students with physical disabilities, developmental coordination disorder, fine motor difficulties, developmental delays and learning disabilities.

WHERE DO WE GO FROM HERE?

Occupational therapists need to share the evidence supporting the effectiveness of OT intervention in the school system with clients, educators and funding agencies. Evidence-based service delivery models need to incorporate direct client intervention with processes to facilitate and support collaborative consultation with parents and teachers to maximize effectiveness of and satisfaction with OT services.

Further research is recommended to identify effective methods for screening referrals to occupational therapy, to evaluate the effectiveness of OT in the prevention of secondary problems and to further evaluate both the clinical and cost effectiveness of various service delivery models with specific client groups.

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