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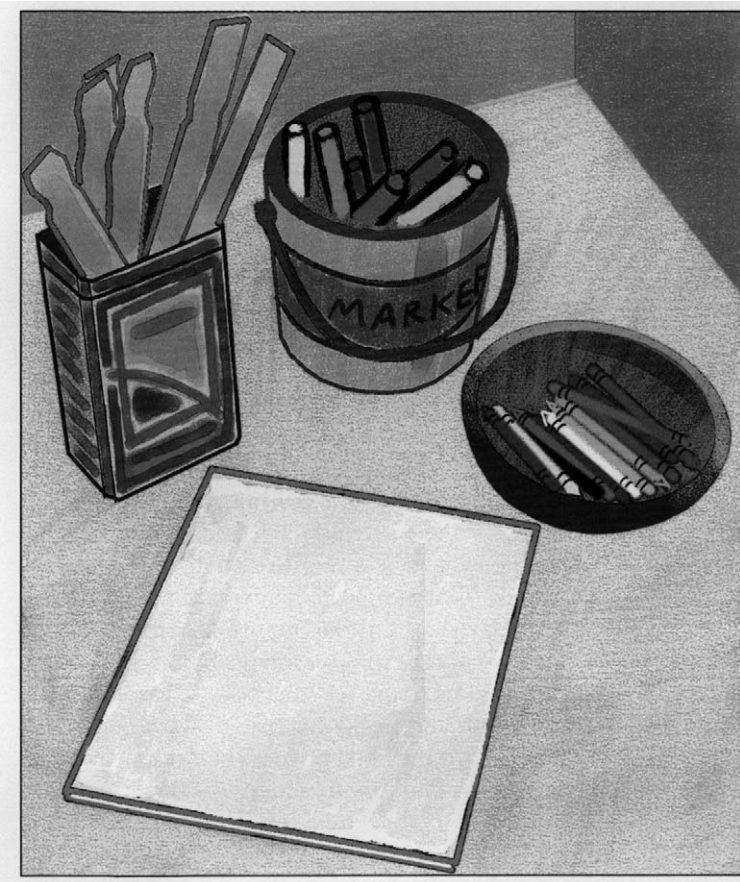
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Handwriting Club:

Using Sensory Integration Strategies to Improve Handwriting

MELISSA KELLER

Handwriting is a complex skill that is not often taught directly. It is not unusual for some students with disabilities to have difficulty with handwriting. These students may also have sensory integration problems. Handwriting Club is a format that provides direct instruction in handwriting combined with sensory integration activities. This article describes all the steps and materials necessary to organize and conduct a handwriting club.

Handwriting was a subject that I didn't believe I had time to teach. As a teacher of students with behavior disorders and learning disabilities, I felt more responsible for teaching the basic skills. I did not have time to "do" handwriting.

Then last year another teacher in my building told me about the Handwriting Club she had conducted at a school where she previously taught. The club met for a few weeks with the teacher and the occupational therapist (OT) and incorporated sensory activities with handwriting instruction. I was interested because I had begun working on some sensory integration activities using the *How Does Your Engine Run?* program (Williams & Shellenberger, 1996) with my students with behavior disorders. Handwriting Club sounded like a great way to combine sensory integration and handwriting.

In *Sensory Integration and the Child*, A. Jean Ayres, PhD, OTR, FAOTA (1979), wrote,

Sensory integration is the organization of sensation for use. Our senses give us information about the physical conditions around us. Sensations flow into the brain like streams flowing into a lake. Countless bits of sensory information enter our brain at every moment, not only from our eyes and ears, but also from every place in our bodies. The brain must organize all of these sensations if a person is to move and learn and behave normally. The brain locates, sorts, and orders sensations—somewhat as a traffic policeman directs moving cars. When sensations flow in a well-organized or integrated manner, the brain can use those sensations to form perceptions, behaviors, and learning. When the flow of sensations is disorganized, life can be like a rush-hour traffic jam. (p. 47)

The seven sensory systems that deliver this flow of information are tactile, vestibular, proprioceptive, olfactory, visual, auditory, and gustatory. Ayres (1979) described the sensory inputs and end products in her chart entitled, "The Senses, Integration of Their Inputs, and Their End Products." The integration of the auditory and vestibular senses results in speech and language. The integration of vestibular and proprioceptive senses results in eye movements, posture, balance, muscle tone, and gravitational security. Body perception, coordination of two sides of the body, motor planning, activity level, attention span, and emotional stability result from the integration of vestibular, proprioceptive, and tactile senses. The vestibular, proprioceptive, tactile, and visual senses result in eye-hand coordination, visual perception, and purposeful activity. All of the senses together are required for the end products—concentration, organization, self-esteem, self-control, self-confidence, academic learning, abstract thought and reasoning, and specialization of each side of the body and the brain (Ayres, 1979).

Handwriting is a very complex skill that requires many of these systems to work well together. Dobbie and Askov (1995) described the processes necessary for handwriting:

- visual, auditory, and visuomotor perception;
- gross and fine motor coordination;
- directionality;
- sequencing skills;
- recall;
- letter knowledge;
- tool hold;
- lines;
- sitting and paper position;
- cursive script;
- tracing and copying;
- joining letters;
- self-evaluation; and
- numerals.

Our district OT found that students with difficulties in sensory processing, sensory awareness, and/or perceptual skills usually have handwriting problems. For example, a student with proprioceptive problems may hold the pencil too tight and push too hard while writing. Our premise for the Handwriting Club was that combining sensory activities with direct instruction in handwriting would be an effective way to address both areas.

Handwriting Club Format

The students we chose for the Handwriting Club were all third- and fourth-grade boys who had handwriting and social skill deficits. They had special education labels of learning disabilities, other health impaired (Attention-Deficit/Hyperactivity Disorder), or behavior disordered.

Our goals were to

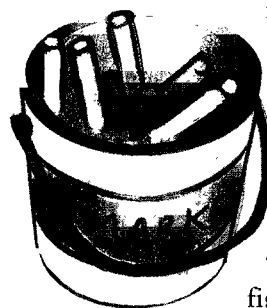
- improve students' cursive handwriting skills,
- improve their abilities to work with peers in a somewhat loosely structured and stimulating situation, and
- help teach them to identify some of their own individual sensory needs and strategies in order to address those needs.

Most club meetings followed the same basic format. We designed Handwriting Club activities to address all seven of the sensory areas, but we didn't have the students engage in every activity at every club meeting.

Our first club meeting was an informational one to tell the students about the club and our goals. Because these were all students who hated writing, they were not enthusiastic about a club just for writing. We made participation voluntary, however, and described the club so that it sounded somewhat like a privilege. The students were responsible for designing the club rules, which they wrote and we saved as a preintervention writing sample. We also made a chart of the rules to post at each meeting. The biggest selling point for the boys was choosing a name for the club and designing a logo for the T-shirts they would get after they had proven themselves to be serious Handwriting Club members. All of our candidates agreed to join the club. They voted to call themselves "The Pythons" and agreed on the logo for their shirts.

We met twice a week from October through early May. Each club meeting usually lasted 30 minutes, which really wasn't quite long enough. Forty-five minutes would have been ideal. We started each meeting with some gross motor activities, such as jumping jacks, yoga poses, or chair push-ups, to warm up. Next, the students did fine

motor warm-ups, like squeezing a foam ball or shaping clay, before one of the teachers introduced the letter to be taught. We used the "Handwriting Without Tears" system as recommended by our OT. It uses only two writing lines, which is visually less complicated for students.



This is helpful for students with figure-ground deficits (Clark-Wentz, 1997). It also uses a vertical (not

slanted) writing style for cursive handwriting. Some research has supported that using the vertical style aids significantly in the legibility of students' handwriting (ERIC Digest, 1997). The students then participated in a variety of guided practice activities before finally writing in the actual handwriting book. They were relieved to discover that the Handwriting Club consisted of 20 to 25 minutes of "other" activities and only about 5 to 10 minutes of real paper and pencil work. The final stage of the club meeting entailed independent practice or homework (see Figure 1).

Social Skills

Social skills were addressed as the situations demanded. The guided practice activities were set up as “stations,” which required students to rotate through and take turns. One adult was at each station to provide assistance. Some equipment was highly desired, such as the Wiggle Pen (a battery-operated pen that rapidly vibrates when activated). Students had to learn to delay access to it and also to not keep using it longer than appropriate. Students had to be able to use exciting materials, like shaving cream, without getting out of control (students squirt it on their desk areas, smooth it out, and use their index fingers to practice forming letters). They also had to learn to participate in activities that they didn’t want to do at times (some of them didn’t like the gross motor activities). They needed to be able to ask appropriately for what they wanted or needed from teachers and peers. (Several of the students had typically acted out under such circumstances in the past.) One rule was that only students who could follow directions were able to be Handwriting Club participants. Noncompliant students were sent to the other resource classroom. This was not a punitive action. These particular students were always asked to leave with great empathy from the adults because we genuinely realized (and let the student know) that the demands of the Handwriting Club at that time were “too much” for the student and that he would probably get in trouble if he stayed in the room during the activities. Students were encouraged to return as soon as they had regained control of themselves. T-shirts were not given out until we had several successful (in which no one had to leave the room) club meetings. That was motivating for the boys; we told them that the shirts were only for the very serious handwriters and that we had to make sure that no one was going to drop out before we awarded T-shirts to the group.

Handwriting Strategies

Physical Strategies

It is important for students to learn correct posture when writing. Chair height should be adjusted to fit the desk or table height. The table or desk should be at the student’s chest level, and elbows should be able to rest comfortably on top. The student needs to have his or her back against the back of the chair and feet on the floor. Knees, hips, and ankles should be at a 90-degree angle (Clark-Wentz, 1997). Some chair legs were fitted with tennis balls (make a 3-inch slice in the ball and squeeze to slide over chair leg) on catty-corner legs to allow the chairs to rock slightly. Padded seats were placed on some chairs. Occasionally students were allowed to take turns sitting on a large therapy ball instead of a chair. These strategies

Typical Club Session Format and Sample Activities

1. Gross Motor Warm-up Activities (5 minutes)

- Do jumping jacks
- Do crab walk
- Perform push ups on floor
- Chair push-ups
 1. Seated student places hands on either side of chair next to thighs.
 2. Straightens arms and lifts bottom off the chair
- Balance on one leg with eyes closed
- Walk toe-to-heel on a masking tape line on the floor

2. Fine Motor Warm-up Activities (5–10 minutes)

- Rub hands together
- Squeeze tennis balls
- Rub hands in circles on the carpet
- Play with Wikki Stix
- Build with small Lego blocks
- String small beads
- Roll clay between fingers
- “Walk” fingers up and down the pencil

3. Letter Introduction (2–3 minutes)

- The teacher models writing the letter on the board and describes the steps.
- The students imitate by writing in the air using large arm movements and repeating steps aloud.
- The students then continue to say the steps while writing on the table with pointer finger.

4. Guided Practice Activities (10 minutes)

- Write on board (white or chalk) while wearing wrist weights.
- Write on another student’s back and have him or her guess the letter.

Write with:

- | | |
|---|-----------------------|
| Color Change Markers | Scented markers |
| Magna Doodle™ | Battery-operated pens |
| Paint | Chalk on sidewalk |
| Finger paint, pudding or shaving cream | |

Write in:

- | | |
|-----------|--------------------------|
| Clay tray | Salt, rice, or sand tray |
|-----------|--------------------------|

5. Semi-independent Practice (5–10 minutes)

- Students write in their handwriting books with teachers monitoring

6. Independent Practice

- Homework
- Additional activities: Writing for a purpose (i.e., make holiday cards or write thank-you notes)

Figure 1. Typical handwriting club activities. Choose 2 to 3 activities from 1, 2, and 4; complete all steps from 3, 5, and 6.

address the theory that rocking and swaying are calming activities (Kranowitz, 1998). A slant board was also available for students who chose to use it.

External Stimulants

Relaxation music was sometimes played in the background to help integrate the auditory system, and self-talk during writing practice was also used as an auditory system strategy. Dobbie and Askov (1995) found that students trained with perceptual prompts and verbalization of stroke sequence perform better than students who simply copy models. Using scented markers while practicing may help students to remember the letter formation because the olfactory system has neuronal connections to the memory system (Clark-Wentz, 1997). The students especially enjoyed the gustatory system activities. We provided hard candy, gum, Twizzlers™, and straws to have students assess if keeping their mouths busy helped concentration. Tear Jerkers™, Pop Rocks™, and Warheads™ were used to provide extremes in oral sensations. Kranowitz (1998) recommended chewing and sucking activities as calming or organizational sensory activities. Equipment that helps with proprioception are wrist weights, Wiggle Pens, and a weighted pencil holder. Some students needed help with their tripod grasp. Pencils were marked with dots to indicate where the fingers should be placed, or sometimes commercial pencil grippers were used. Balancing exercises were used to integrate the vestibular system. Most other activities used were designed for integration of the visual and tactile sensory systems (see Figure 1). Some students found that using Right Line™ paper, which has raised green lines, was helpful. It is ideal for helping students stay within the lines because it provides both visual and tactile cues.

Conclusion

I now realize that handwriting is a more important skill than I had previously believed. Our students' inability to communicate legibly puts them at a disadvantage in several ways. Unreadable academic assignments, even though they may be accurate, often result in poorer grades due to negative teacher bias. Employers are also biased against job applications that are messy and illegible. Finally, personal handwritten correspondence will be a struggle for these students (Greenland & Polloway, 1994). I found that it is not realistic and productive to take the time to teach this skill directly.

Research has not been clear in supporting sensory integration. The activities are hypothesized to work through

influencing brain organization and, consequently, result in brain change. Brain change is not directly observable, so it is difficult to conclude that a sensory activity has changed the brain simply because a child performed the activity. Instead, it could perhaps be inferred that a change has occurred if a directly observable change has occurred in the child's performance (Cermak & Henderson, 1990). We are certainly unable to conclude that we made significant brain changes in these students; however, there were obvious differences in performance that may have resulted at least in part from the sensory integration activities.

The Handwriting Club met the goals that we set. The students did improve their cursive writing skills, social skills were practiced and improved upon at each club meeting, and the students learned which sensory activities seemed to help them focus and self-regulate themselves. Additionally, because of their success, they felt more confident in their handwriting abilities.

Melissa Keller, MS, is a behavior specialist for the Gardner-Edgerton school district in Gardner, Kansas. She earned her MS from the University of Kansas and has begun work in the special education doctoral program. She wants to give special thanks to her Handwriting Club coteacher Anna Friend, who first thought of the idea, and also to occupational therapist Lisa Mayer for her assistance. Address: Melissa Keller, PO Box 97, Gardner, KS 66223.

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