Impact of Sensory-Based Strategies on Teachers' Perceptions of Behavior and Learning in Elementary-Aged Children

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*Note. This project was conducted as program analysis, not research, and is not intended to be generalized.

Background

Needs Assessment

- Teacher sensory modulation assessment
- 12 week intervention including movement in the classroom
- 4 teachers and students (classroom)

As educational demands continue to increase, so does burnout rates among teachers. Sensory-based strategies such as seating, temperature, visual and auditory can also positively impact student learning. Important structure for learning (Ivry, 1997). Environmental modifications including sensory integration (SI) is the way the brain organizes and filters sensory input, allowing for appropriate behavior and function.

Sensorimotor opportunities have been shown to decrease off-task behavior and improve attention and behavioral self-regulation (Parham & Mailloux, 2015). However, without a proper foundation, Ayres postulates that brain function is a critical factor for human behavior (Parham & Mailloux, 2015). According to Ayres, brain function is enhanced through sensory opportunities, especially those including vestibular, proprioceptive, and tactile input (Miller, 2014). Development of these sensory systems is necessary for sensorimotor development so children are able to develop higher order skills (Parham & Mailloux, 2015). However, without a proper foundation, Ayres postulates that higher order functions such as attention, behavioral regulation and academic achievement will not be supported (Parham & Mailloux, 2015).

Person-Environment-Occupation (PEO) Model

The PEO model was developed by Mary Law in 1996 (Law et al., 1996). This model suggests that occupational performance is the result of the dynamic relationship between three constructs including the person, environment, and occupation. This dynamic relationship is coupled throughout the lifespan and impacts occupational performance (Law et al., 2016). Increased congruence between these three constructs represents more optimal occupational performance (Case-Smith, 2015). OT's utilize strategies regarding the workplace and classroom to identify various factors in the person, environment, or occupation that facilitate or hinder occupational performance (Case-Smith, 2015). OT intervention focuses on increasing congruence and facilitating changes to any of the three constructs to improve occupational performance (Case-Smith, 2015).

Theoretical Background

Ayres Sensory Integration (SI) Theory

Ayres SI theory was developed by A. Jean Ayres in the 1960’s and 1970's (Parham & Martin, 2017). This theory is a neurological approach and postulates that brain function is a critical factor for human behavior (Parham & Mailloux, 2015). According to Ayres, brain function is enhanced through sensory opportunities, especially those including vestibular, proprioceptive, and tactile input (Miller, 2014). Development of these sensory systems is necessary for sensorimotor development so children are able to develop higher order skills (Parham & Mailloux, 2015). However, without a proper foundation, Ayres postulates that higher order functions such as attention, behavioral regulation and academic achievement will not be supported (Parham & Mailloux, 2015).

Results

Frequency and descriptive statistics were analyzed using IBM SPSS 24.0 to determine frequency of reported barriers, benefits, number of days incorporating movement pre- to post-test. A paired samples t-test was conducted to determine the impact of the workshops on pre- and post-sensory modulation assessment scores. Phenomenological methods were utilized to analyze qualitative data from the qualitative classroom questionnaire.

Findings

- The frequency of reported benefits did not change from pre-to post-program assessment. However, one teacher reported less benefits and one teacher reported more benefits (Table 1). Frequency of teacher reported barriers increased from pre- to post-program assessment. Barriers increased for two teachers (see Table 2). Three out of four teachers reported an increase in movement each day, with three reporting “daily” post-program. The number of minutes incorporating movement each day increased for three of four teachers. All teachers reported they would continue incorporating movement in the classroom.
- Two themes were established for positives and challenges reported in the final classroom questionnaire. Positive themes included health benefits and learning benefits. Challenges reported included time commitment and negative student response.
- One-hundred percent of attendees responded “yes” to all questions in the final workshop survey. This indicates that attendees found the information presented in the workshops educational and that workshops added to their understanding of the topic. Furthermore, they planned to utilize strategies discussed in the presentation into the school and classroom setting.

Discussion

Participants from a similar study conducted by Martin and Murtagh (2017) reported benefits such as enhanced student learning, improved teaching, and reinforcement of curricular content. Participants from a similar study reported that movement increased on-task behavior (Webster et al., 2017). Additionally, results of this program supports results from Dinkel and colleagues (2017) where teachers reported student enjoyment. Barriers reported are similar to other studies including time, lack of space, and negative student attitude (Dinkel et al., 2017). Martin and Murtagh (2017) recorded the following additional barriers with teachers in their study. Some of the barriers included decreased on-task behavior, decrease in student enjoyment, and decreased student participation. However, without a proper foundation, Ayres postulates that brain function is a critical factor for human behavior (Parham & Mailloux, 2015). According to Ayres, brain function is enhanced through sensory opportunities, especially those including vestibular, proprioceptive, and tactile input (Miller, 2014). Development of these sensory systems is necessary for sensorimotor development so children are able to develop higher order skills (Parham & Mailloux, 2015). However, without a proper foundation, Ayres postulates that higher order functions such as attention, behavioral regulation and academic achievement will not be supported (Parham & Mailloux, 2015).

Program Benefits

- Increased on-task behavior
- Decreased off-task behavior
- Improved student enjoyment
- Improved teacher enjoyment
- Improved student attitude
- Improved teacher attitude
- Improved student participation
- Improved teacher participation
- Improved student motivation
- Improved teacher motivation
- Improved student engagement
- Improved teacher engagement

Program Barriers

- Lack of Resource
- Time
- Space
- Negative Student Response
- Other: calming effects
- Other: Movement and Missions

Table 2 - Program Benefits

<table>
<thead>
<tr>
<th>Program Benefits</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased on-task behavior</td>
<td>Pre</td>
<td>M=3.71, SD=.51</td>
</tr>
</tbody>
</table>

Table 3 - Program Barriers

<table>
<thead>
<tr>
<th>Program Barriers</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Resource</td>
<td>Pre</td>
<td>M=1.5, SD=.6</td>
</tr>
<tr>
<td>Time</td>
<td>Pre</td>
<td>M=2.0, SD=.5</td>
</tr>
<tr>
<td>Space</td>
<td>Pre</td>
<td>M=1.0, SD=.0</td>
</tr>
<tr>
<td>Negative Student Response</td>
<td>Pre</td>
<td>M=2.0, SD=.5</td>
</tr>
<tr>
<td>Other: calming effects</td>
<td>Pre</td>
<td>M=2.0, SD=.6</td>
</tr>
<tr>
<td>Other: Movement and Missions</td>
<td>Pre</td>
<td>M=2.0, SD=.5</td>
</tr>
</tbody>
</table>

References


Preventive Medicine, 81, 120-121.


