

# Improving Visual and Auditory Perception in Students with Specific Learning Disorder with Impairment in Reading through a Multisensory Educational Package

Dariush. Sadeghi<sup>1</sup>, Marzieh. GholamiToranposhti<sup>2\*</sup>, Samira. Vakili<sup>3</sup>

<sup>1</sup> PhD Student, Department of Psychology and Education of Exceptional Children, SR.C., Islamic Azad University, Tehran, Iran

<sup>2</sup> Assistant Professor, Department of Psychology and Education of Exceptional Children, ShB.C., Islamic Azad University, shahrbabak, Iran

<sup>3</sup> Assistant Professor, Department of Psychology and Education of Exceptional Children, SR.C., Islamic Azad University, Tehran, Iran

\* Corresponding author email address: gholamitooranposhti@iau.ac.ir

### Editor

Seyyed Mohsen Asgharinekah<sup>1</sup>  
Associate Professor, Department of Counseling and Educational Psychology, Faculty of Education and Psychology, Ferdowsi University of Mashhad, Mashhad, Iran  
asghari-n@um.ac.ir

### Reviewers

**Reviewer 1:** Abotaleb Saadati Shamir<sup>1</sup>  
Assistant Professor, Department of Educational Sciences, University of Science and Research, Tehran, Iran. Email: psychology@iau.ac.ir  
**Reviewer 2:** Karim Afshariniya<sup>1</sup>  
Assistant Professor, Department of Psychology, Kermanshah Branch, Islamic Azad University, Kermanshah, Iran Email: k.afsharineya@iauksh.ac.ir

## 1. Round 1

### 1.1. Reviewer 1

Reviewer:

The statement “SLD ... is among the most prevalent neurodevelopmental conditions affecting children’s academic performance and overall psychosocial adjustment” should be supported with an updated prevalence reference beyond Sedaghati et al., 2010, ideally citing global 2023–2025 epidemiological data for context.

While the design is clearly described, the authors should clarify whether randomization was simple or stratified and how allocation concealment was ensured. The term “randomly assigned” needs methodological substantiation.

The Frostig and Wepman tests are described well, but the authors should report Cronbach’s alpha or test–retest reliability from the present sample, not just rely on previous validation studies (Kord Noghabay & Dortaj, 2007).

The description “The package included eighteen colored cubes ... two sound-producing cubes ... two sets of flashcards” is thorough but lacks mention of session objectives or skill mapping across sessions. Including a summary table showing goals per session would enhance reproducibility.

The sentence “families were instructed to practice the skill-based games at home for at least 30 minutes daily” raises potential confounds; differing home compliance rates could bias results. The manuscript should describe how parental adherence was monitored or controlled.

The authors correctly tested assumptions (normality, homogeneity, sphericity), yet they should indicate whether Greenhouse–Geisser correction was applied uniformly when Mauchly’s test was violated, not only for “Form Constancy.”

While comprehensive, the table mixes Shapiro–Wilk values with descriptive statistics, making it difficult to interpret. It is recommended to separate normality testing into an appendix or a separate table for clarity.

Authors revised the manuscript and uploaded the document.

## 1.2. Reviewer 2

Reviewer:

When describing neurobiological correlates such as “differences in cortical thickness and white matter integrity,” the authors might include a figure or schematic summarizing these cortical networks (occipito-temporal and temporo-parietal) for clarity to non-neuroscience readers.

The authors cite multiple studies supporting multisensory learning efficacy (e.g., Fatimah et al., 2025; Kunasegran & Subramaniam, 2024). However, the paragraph could distinguish between short-term and long-term outcomes, as this distinction later becomes central to the results section.

The sentence “Technological innovation has significantly advanced the possibilities of multisensory teaching” effectively introduces digital aspects, yet no clear link is made between these digital systems and the non-digital Colored Cubes intervention used. Consider clarifying why a low-tech approach was chosen despite highlighting high-tech alternatives.

The sentence “the effect of the independent variable on all components ... was statistically significant” would benefit from explicitly stating the multivariate test statistic (Wilks’  $\Lambda$ ,  $F$ ,  $p$ ,  $\eta^2$ ) in text rather than relying solely on table reference.

The statement “participants demonstrated balanced progress in both visual and auditory modalities” is compelling, but it would be strengthened by referencing the interaction plots in Figure 1, perhaps reporting slope differences to empirically substantiate “balanced progress.”

Authors revised the manuscript and uploaded the document.

## 2. Revised

Editor’s decision: Accepted.

Editor in Chief’s decision: Accepted.