Omega Journal of Inclusive Education and Practice
ISSN (E): 3072-4694
Volume 01, Issue 02, May, 2026
Website: https://omegajournals.org

SENSOR INTEGRATION TOOLS AND REQUIREMENTS FOR THEIR USE

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Abstract
This article analyzes the theoretical foundations of sensor integration tools, their application in special educational institutions, and pedagogical requirements for their use. The study used methods of scientific source analysis, comparative analysis, and pedagogical observation. The results showed that sensor integration tools have a positive effect on the development of movement coordination, sensory processing, attention, motor skills, and learning activity.

Keywords: Sensor integration, special pedagogy, sensor tools, correctional education, occupational therapy, sensor environment.

Introduction

SENSOR INTEGRATSIYA VOSITALARI VA ULARDAN FOYDALANISHGA QO‘YILUVCHI TALABLAR

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Annotatsiya:
Mazkur maqolada sensor integratsiya vositalarining nazariy asoslari, ularning maxsus ta’lim muassasalarida qo‘llanilish imkoniyatlari hamda ulardan foydalanishga qo‘yiladigan pedagogik talablar tahlil qilingan. Tadqiqotda ilmiy manbalar tahlili, qiyosiy tahlil va pedagogik kuzatish usullaridan foydalanildi. Natijalar sensor integratsiya vositalari harakat koordinatsiyasi, sensor qayta ishlash, diqqat, motorika va o‘quv faolligini rivojlantirishga ijobiy ta’sir ko‘rsatishini ko‘rsatdi.

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Kalit so‘zlar: sensor integratsiya, maxsus pedagogika, sensor vositalar, korreksion ta’lim, ergoterapiya, sensor muhit.

Introduction

In recent years, there has been a growing interest in technologies aimed at supporting the sensory development of children in the special and inclusive education system. In particular, in children with intellectual disabilities, impaired sensory information processing causes a number of difficulties in reading, speech, movement, and social adaptation.

According to the theory of sensory integration, the child's central nervous system processes sensory inputs from the external environment and coordinates them with movement and cognitive processes. If this process is impaired, the child's educational opportunities also decrease.

In international studies, sensory integration technologies are recognized as one of the effective components of remedial education. However, there is a need to systematize unified pedagogical requirements for the selection and use of sensory integration tools in special educational institutions.

The purpose of the study is to analyze the pedagogical capabilities of sensory integration tools and justify the requirements for their effective use.

Methodology

Materials and Methods

This study was aimed at theoretically substantiating the importance of sensory integration tools in the special education process and the pedagogical conditions for their use. The methods of analysis of scientific and pedagogical literature, comparative and systematic analysis, synthesis, generalization, and pedagogical observation were used in the research process. The analysis of scientific literature made it possible to identify existing approaches to the formation of the theory of sensory integration, its role in special pedagogy, and its application in practice. Through comparative analysis, the experiences of using sensory integration tools in domestic and foreign studies and their specific features were compared.

The theoretical basis of the study was formed by the scientific works of foreign scientists working in the field of sensory integration, international scientific sources on occupational therapy, and modern research in the field of special pedagogy. Based on a systematic analysis, sensory integration tools were

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classified according to their functional functions into vestibular, proprioceptive, tactile, visual, auditory, as well as olfactory and gustatory groups. The impact of each group on the child's sensory development, motor coordination, cognitive activity, and social adaptation was assessed based on scientific sources.

Using the method of pedagogical observation, factors affecting the educational effectiveness of sensory integration tools in the process of using them were analyzed. The results obtained were summarized and the pedagogical conditions necessary for the effective use of sensory integration tools were substantiated, including criteria such as taking into account the individual sensory characteristics of the child, creating a safe learning environment, gradually organizing sensory load, ensuring the child's active participation in classes, and establishing multidisciplinary cooperation.

Results

The analysis revealed that sensory integration tools perform several important pedagogical functions.

First, vestibular tools (swings, balance boards, trampolines) develop motor coordination, balance, and attention.

Second, proprioceptive tools (weight vests, weighted blankets, resistance tools) increase muscle sensitivity, reduce hyperactivity, and improve movement planning.

Third, tactile tools (sensory box, kinetic sand, tactile panels) develop fine motor skills, hand movements, and sensory perception.

Fourth, visual and auditory stimulation tools are important in developing concentration, spatial perception, and visual-auditory integration.

The results of the study showed that the use of sensory integration tools should be based on the following pedagogical requirements:

- individual sensory diagnostics;
- strict adherence to safety requirements;
- step-by-step organization of classes;
- ensuring the child's active participation;
- control of sensory overload;
- organization of multidisciplinary cooperation.

Compliance with these requirements will increase the effectiveness of sensory integration training.

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Discussion

It was observed that the results obtained are consistent with international research. In particular, when sensory integration training is integrated with game technologies, high results are noted in children's independence, movement planning and social adaptation.

At the same time, sensory integration tools do not provide high efficiency on their own. Their effectiveness depends on taking into account the individual sensory profile of the child, the regular organization of classes, and the cooperation of a special educator, speech therapist, psychologist, and occupational therapist.

The quality of correctional education can be further improved by organizing a sensory room and sensory environment in modern special education institutions.

Conclusion

Sensory integration tools are an important correctional component of the special education process. Their targeted and systematic use serves to develop children's sensory processing abilities, coordination of movements, cognitive activity, and social adaptation. To achieve effective results, it is advisable to organize classes based on individual diagnostics, safety, gradualness, and an integrated approach.

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