

Development, validation, and utilization of localized sensory board for learners with special educational needs

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ABSTRACT

This study aimed to develop, validate, and utilize a localized sensory board for Learners with Special Educational Needs (LSENs). A mixed-methods research design was used to systematically develop, validate, and utilize the localized sensory board. The respondents and participants of this study were twenty-two LSENs and twenty-two parents of LSENs. A random sampling procedure was used to select twenty-two LSENs and twenty-two parents. The data were collected through document analysis, validation rubric, and interviews. Based on the findings of the study, the following results were drawn: 1) The academic performance of LSENs before the utilization of the sensory board were at the following markings: 22.73% at *Approaching Proficiency*, 50.00% at *Developing*, and 27.27% at *Beginning*, 2) The experts in special education validated the material as *highly acceptable* to the following dimensions: Quality, Usability, and Technical Design, 3) The academic performance of LSENs after the utilization of the sensory board were at the following markings: 63.64% at *Approaching Proficiency*, and 36.36% at *Developing*, 4) Based on the responses of the parents, the impacts of using the localized sensory board are as follows: motivates students to learn, develops mathematics and numeracy skills, serves as transition activity, functions as supplementary activity, encourages calming activity, and functions as manipulative material, and 5) The results of the sample t-test revealed that there is significant difference between the academic performance of the students before and after the utilization of the localized sensory board at a very high level.

KEYWORDS

development, instructional material, learners with special educational needs, localized sensory board

INTRODUCTION

Kasiglahan Village Elementary School – The Special Education Department recognizes the demands for innovative teaching and learning materials to meet the needs of the students despite the existence of the COVID-19 pandemic. As technology continues to dominate the educational system, it is vital to recognize that some customary instructional materials are deemed more appropriate in meeting the challenges of teaching learners with special educational needs. The Department of Education (DepEd) Order 39 Series of 2016 titled, “Adoption of the Basic Education Research Agenda,” encourages teachers to conduct an evidence-based study on different teaching strategies (DepEd, 2016). The DepEd also encourages teachers to innovate and develop materials that will enhance the teaching-learning process. Furthermore, DepEd targets to produce materials that have undergone thorough research to ensure that the developed materials are effective and valid. However, this initiative is not enough, as of the moment, public schools in the Philippines have limited instructional materials, as a result, there are growing unmet needs of diverse learners, especially learners with special educational needs (Robles & Acedo, 2019).

At present, there is limited literature that discusses the direct effect of using sensory boards in teaching learners with special educational needs. The sensory board is also expensive, consequently, this research develops a localized sensory board that is more cheap but as effective as the authentic sensory board. Likewise, the development, validation, and utilization of localized sensory boards for learners with special educational needs may offer SPED teachers and parents a responsive strategy to promote students’ learning and motivation that is appropriate to their needs. This action research further hopes to show that through using localized sensory boards, teachers/ parents/ guardians can support learners with special educational needs to self-regulate and become independent learners.

Sensory integration was defined as the neurological process that organizes sensation from one’s own body and the environment and makes it possible to use the body effectively within the environment (Ayeres, 1972). When children were able to learn using their senses, they were capable of academic success regardless of their abilities or economic status (Granke, 2007). In recent years, sensory integration has emerged as one of the most popular treatments for aggressive behavior in children with different disorders (Georgieva, 2021). In current practice, sensory integrations apply different theoretic constructs, focus on different goals, use a variety of sensory modalities, and involve markedly disparate procedures (Smith et al., 2014). Sensory integration strives to increase the ability to process incoming stimuli from the environment; this ability is the foundation for the successful development of a child’s motor abilities, organizational skills, attention, language, and interpersonal relationships (Buchner et al., 2014).

Research has shown that children have had success in classrooms with the incorporation of sensory integration materials that address sensory challenges (Roberts et al., 2007). The practitioners who used sensory integration had reported the following benefits to children with challenging behaviors: a) There was an increase in the ability to focus on relevant materials in different environments, including school, home, and social situations; and b) There was also a reduced rate of self-injurious behavior and a general improvement in the function of the nervous system, resulting in higher cognitive activity (Devlin et al. 2011). Providing sensory integration techniques can decrease the amount of negative behavior and improve children’s ability to learn, focus, and develop positive peer relationships (Hoyt, 2018). Research has shown that when children with sensory processing issues are provided with materials and sensory input at school in an environment outside of the classroom, they return to the classroom more focused and able to participate (Roberts et al., 2007). Allowing a child to learn to regulate themselves through the use of materials in the classroom may help promote independence and normalization, and allow the child to have a successful classroom experience both academically and socially (Hoyt, 2018).

Children who had difficulties with daily living skills such as organization, handwriting, and motor planning were not efficient in organizing the sensory input received by the nervous system (Granke, 2007). Children who display symptoms of avoiding experiences relating to the senses are



under-responsive, and children who excessively seek out experiences relating to certain senses are over-responsive (Granke, 2007). Over-responsiveness can be referred to as hypersensitivity, while under-responsiveness can be referred to as hyposensitivity. The hypersensitive children's brains will register sensations at a lower level than what is typical; these children may appear to be high energy because they are trying to receive extra sensations so that they can stay alert and focused. The hypersensitive children receive too much stimulation from the environment; these children become overstimulated, causing the children to either act out or withdraw from situations. Children may experience hyposensitivity in some of their senses and hypersensitivity in others, such as being hypersensitive to sound and hyposensitive to touch (Noddings, 2017).

Sensory-challenged children may tantrum often due to an inability to process the stimuli around them, and/or they may have difficulty transitioning from one activity to another. They may also have difficulty in dressing, eating, sleeping, and delays in toilet training (Critz et al., 2015). Other behaviors that can indicate sensory processing challenges in the classroom include throwing materials, physical and verbal aggression, touching other children or other children's work, bumping into furniture and other children, putting objects in the mouth frequently, inability to complete a work cycle, and delays in fine and gross motor skills (Roberts et al., 2007). Children exhibiting these behaviors can become socially isolated and they become disruptive in daily routines in the classroom. Many children with special needs are sensitive to sensory inputs so teachers and parents must utilize a variety of activities to help students build sensory regulation skills. There are a lot of sensory materials available in the market; however, the price is too expensive. Consequently, there are materials at home that can give sensory input and calm learners with special educational needs who may be over or under-stimulated (Watsons Institute, 2020). Instructional material is an integral part of the teaching and learning process. Validating instructional materials is imperative to ensure quality before widespread utilization.

Objectives

The main objective of this research study was to develop, validate, and utilize a localized sensory board for learners with special educational needs at Kasiglahan Village Elementary School – Special Education Department. Specifically, this study aimed to answer the following questions:

1. What is the academic performance of learners with special educational needs before the utilization of the localized sensory board?
2. What is the extent of validity of the localized sensory board as perceived by the SPED teachers and master teachers in terms of:
 - 2.1 Quality
 - 2.2 Usability
 - 2.3 Technical Design?
3. What is the academic performance of learners with special educational needs after the utilization of the localized sensory board?
4. What is the observation of the parents in the behavior of their child after using the localized sensory board?
5. Is there a significant difference between the academic performance of learners with special educational needs before and after the utilization of the localized sensory board?

Hypothesis

There is no significant difference between the academic performance of learners with special educational needs before and after the utilization of the localized sensory board.

METHODS

A mixed-methods research design is a methodology that provides directions for the collection and analysis of data from multiple sources in a single study (Dawadi et al., 2021). The use of mixed methods enables researchers to answer research questions with sufficient depth and breadth (Dawadi et al., 2021).

The participants and respondents of this study were twenty-two learners with special educational needs (sensory problems), twenty-two parents of learners with special educational needs, and five special education experts. The learners with special educational needs served as the users of the developed instructional materials, on the other hand, the parents served as the facilitators and observers while learners were using it. The expert-validators assess the validity of the developed material in terms of: Quality, Usability, and Technical Design. A random sampling procedure was used to select twenty-two learners and parents from the total population. Random sampling is one of the simplest forms of collecting data from the total population. Under random sampling, each member of the subset carries an equal opportunity to be chosen as a part of the sampling process (Lavrakas, 2008). Since the study used inferential statistics to test if there is a significant difference in the performance of the learners, the sample size was confirmed using the Raosoft calculator wherein the statistical parameters were set to: alpha error of probability of 5%; confidence level (1- β error prob) of 95%; population size of twenty-three; and a response distribution of 50%. It also required a twenty-two sample size, therefore the conclusive sample size is twenty-two learners and parents.

The data obtained through questionnaires, document analysis, observation, and interviews were analyzed using PPSPP GNU software both for descriptive and inferential statistics for quantitative results and MAXQDA software for qualitative results.

RESULTS/FINDINGS AND DISCUSSION

Table 1. Academic performance of learners with special educational needs before the utilization of the localized sensory board

Academic Marking	No. of Learners	Percent (%)
Proficient (P)	0	0
Approaching Proficiency (AP)	5	22.73
Developing (D)	11	50.00
Beginning (B)	6	27.27
Not Observed (NO)	0	0
Total	22	100.00

As reflected in Table 1, out of twenty-two learners with special educational needs, five of them, or 22.73% were at the *Approaching Proficiency* academic marking. It further reveals that eleven of them or 50.00% were at the *Developing* academic marking. Moreover, six of them, or 27.27% were at the *beginning* of academic marking. On the other hand, none of the learners were at the *Proficient* and *Not Observed* academic marking.

Table 2. Validity of the localized sensory board in terms of quality

<i>Aspect of Sensory Board in Terms of Quality</i>	<i>Mean</i>	<i>Verbal Interpretation</i>	<i>Standard Deviation</i>
1. It is suitable to the student's level of understanding.	4.80	Highly Acceptable	0.45
2. It is suitable for students with different learning styles and preferences.	4.60	Highly Acceptable	0.55
3. It is an essential tool that can achieve better retention of students' learning.	4.20	Moderately Acceptable	0.45
4. It reinforces or supplements concepts necessary for mastery.	4.20	Moderately Acceptable	0.45
5. It is suitable for the intended purpose.	4.80	Highly Acceptable	0.45
6. It is easy to navigate and efficient to use (one can learn a lot in a short period)	4.20	Moderately Acceptable	0.45
<i>Summative Mean</i>	4.47	Highly Acceptable	0.51
<i>*Legend</i>	5 [4.21-5.00] <i>Highly Acceptable</i> 4 [3.41-4.20] <i>Moderately Acceptable</i> 3 [2.61-3.40] <i>Acceptable</i> 2 [1.81-2.60] <i>Fairly Acceptable</i> 1 [1.00-1.80] <i>Poorly Acceptable</i>		

Table 2 reveals the extent of validity of the localized sensory board as perceived by the experts in terms of quality. In specific, Indicator 1 (M=4.80, SD=0.45) and Indicator 5 (M=4.80, SD=0.45) tied at the highest obtained mean, implying that the material is *Highly Acceptable* in terms of suitability in students' level of understanding and its intended purpose. Meanwhile, Indicator 2 (M=4.60, SD=0.55) obtained the second to the highest mean, which infers that it is also *Highly Acceptable* that the material is suitable for students with different learning styles and preferences. On the other hand, Indicator 3 (M=4.30, SD=0.45), Indicator 4 (M=4.30, SD=0.45), and Indicator 6 (M=4.30, SD=0.45), yielded the lowest means, which infer that the developed material is *Moderately Acceptable* as an essential tool that achieves better retention of students' learning. The material can also serve as a supplementary tool for mastery and it is also easy to navigate and efficient to use. To sum up, the experts in special education perceived that the validity of localized sensory boards in terms of quality (M=4.47, SD=0.51) is verbally interpreted as *Highly Acceptable*. In the study of Granke (2007), the sensory integration material must be able to encourage the learners to use their senses for the possible effectiveness of the sensory integration activity. Relative to the current study, the learners used their senses to feel the texture of the different materials; to identify the colors and names of the materials; and lastly, the learners used their sense of hearing to comprehend the instructions that were given by their guardians and/or parents. The definition of Ayres (1972) about sensory integration supports the findings of the study; it is defined as a process that organizes sensation from one's body. Experts in special education perceived that the developed sensory board achieved its main purpose which is to satisfy the senses of the learners and avoid overwhelming sensation when studying.

Table 3. Validity of the localized sensory board in terms of usability

<i>Aspect of Sensory Board in Terms of Usability</i>	<i>Mean</i>	<i>Verbal Interpretation</i>	<i>Standard Deviation</i>
1. It is an innovative material that can be used to reinforce students' learning.	4.40	Highly Acceptable	0.55
2. It is useful supplementary material for reinforcement and application of new learning.	4.20	Moderately Acceptable	0.45
3. It provides an opportunity to practice new concepts and skills.	4.40	Highly Acceptable	0.55
4. It promotes student engagement and active learning.	4.80	Highly Acceptable	0.45
5. It promotes the development of communication skills.	4.80	Highly Acceptable	0.45
6. It encourages student creativity.	4.60	Highly Acceptable	0.55
7. It encourages parent-student and/or teacher-student interaction.	5.00	Highly Acceptable	0.00
8. It allows/ encourages students to work independently	4.20	Moderately Acceptable	0.45
<i>Summative Mean</i>	4.55	Highly Acceptable	0.50
<i>*Legend</i>	5 [4.21-5.00] <i>Highly Acceptable</i> 4 [3.41-4.20] <i>Moderately Acceptable</i> 3 [2.61-3.40] <i>Acceptable</i> 2 [1.81-2.60] <i>Fairly Acceptable</i> 1 [1.00-1.80] <i>Poorly Acceptable</i>		

Table 3 discloses the extent of validity of the localized sensory board as perceived by the experts in terms of usability. Indicator 7 (M=5.00, SD=0.00), got the perfect and highest mean, entailing that the sensory board is *Highly Acceptable* as a tool that encourages parent-student and/or teacher-student interaction. On the contrary, Indicator 2 (M=4.20, SD=0.45) and Indicator 8 (M=4.20, SD=0.45) got the lowest means, concluding that the sensory board is *Moderately Acceptable* as a supplementary material for reinforcement and application of new learning. It is also 'Moderately Acceptable' that the sensory board allows students to work independently. A mean range of 4.80 to 4.40 revealed that the sensory board is also *Highly Acceptable* in the rest of the indicators. As a whole, the experts in special education perceived that the validity of localized sensory board in terms of usability (M=4.55, SD=0.50) is verbally interpreted as *Highly Acceptable*. The findings of the study are supported by the study of Buchner, Fortuna, and Lindsay (2014) suggesting that sensory integration materials strive to develop language and relationship skills, wherein the validators perceived that the localized sensory board encourages parent-student and/or teacher-student interaction. The study of Devlin et al. (2011) also affirmed the notion that sensory integration materials must increase the ability of the learners to focus in different social environments and situations. Parallel to the research findings of Hoyt (2018), emphasizing the concept that providing sensory integration techniques can improve the learner's ability to develop positive peer relationships. The results of the study of Roberts et.al (2007) concurred with the findings of the current study, learners who are provided with sensory inputs became more focused and able to participate in the classroom. This allows the learners to be more successful in the classroom both academically and socially.

Table 4. Validity of the localized sensory board in terms of technical design

<i>Aspect of Sensory Board in Terms of Technical Design</i>	<i>Mean</i>	<i>Verbal Interpretation</i>	<i>Standard Deviation</i>
1. Visual design is interesting.	5.00	Highly Acceptable	0.00
2. Users can easily employ the material.	4.40	Highly Acceptable	0.55
3. It is presented creatively it allows the students to understand vital concepts worth remembering.	4.20	Moderately Acceptable	0.45
<i>Summative Mean</i>	4.53	Highly Acceptable	0.52
<i>*Legend</i>	<i>5 [4.21-5.00] Highly Acceptable</i> <i>4 [3.41-4.20] Moderately Acceptable</i> <i>3 [2.61-3.40] Acceptable</i> <i>2 [1.81-2.60] Fairly Acceptable</i> <i>1 [1.00-1.80] Poorly Acceptable</i>		

Table 4 depicts the extent of validity of the localized sensory board as perceived by the experts in terms of technical design. As shown in the table, Indicator 1 (M=5.00, SD=0.00) garnered a perfect and highest mean, signifying that the visual design of the sensory board is *Highly Acceptable*. Furthermore, Indicator 2 (M=4.40, SD=0.55) obtained the second to the highest mean, denoting that the sensory board is also *Highly Acceptable* as the users can easily employ it. Deliberately, Indicator 3 (M=4.20, SD=0.45) yielded the lowest mean, suggesting that the sensory board is *'Moderately Acceptable'* in allowing the students to understand vital concepts worth remembering. Therefore, the experts in special education perceived that the validity of localized sensory board in terms of technical design (M=4.53, SD=0.52) is verbally interpreted as *Highly Acceptable*. The findings of Watsons Institute (2020), highlight that sensory material can give sensory input and calm learners with special educational needs who may be over or under-stimulated. The visual design of the localized sensory board was perceived by the experts as *highly acceptable*, visually interesting materials may address the under-stimulated learners.

Table 5. Academic performance of learners with special educational needs after the utilization of the localized sensory board

Academic Marking	No. of Learners	Percent (%)
Proficient (P)	0	0
Approaching Proficiency (AP)	14	63.64
Developing (D)	8	36.36
Beginning (B)	0	0
Not Observed (NO)	0	0
Total	22	100.00

As vividly shown in Table 5, out of twenty-two learners with special educational needs, fourteen of them, or 63.64% were at the 'Approaching Proficiency' academic marking. The table further reveals that eight of them or 36.36% were at the 'Developing' academic marking. It is noteworthy to highlight that none of the learners were at the 'Beginning' and 'Not Observed' academic marking.

Table 6. Observation of the parents in the behavior of their child after using the localized sensory board

<i>Theme</i>	<i>Verbal Transcription</i>	<i>Coding</i>
Impact of Using the Localized Sensory Board	<i>“When we use the board before we study, my son seems to become energetic. He enjoys studying more because he seems to play before studying”. -Parent 20</i>	Motivates Students To Learn
	<i>“It is good to use when the subject is math because the things on the sensory board are about color, shape, and counting”. -Parent 15</i>	Develops Mathematics And Numeracy Skills
	<i>“We use the sensory board whenever we finish an activity”. -Parent 16</i>	Serves As Transition Activity
	<i>“Before we answer a module, we use the board because that's what the worksheets are about”. -Parent 8</i>	Functions As Supplementary Activity
	<i>“When my son got tired of doing his worksheets, I let him use the sensory board first. After he used it, he went back to work and finished the activity”. -Parent 19</i>	Encourages Calming Activity
	<i>“Sometimes even though we are not studying, he uses the board, he enjoys it. When he is with his brother, he pretends to be the one teaching the things on the board”. -Parent 11</i>	Functions As Manipulative Material

Based on the responses of the parents, the impacts of using the localized sensory board are as follows: a) motivates students to learn, b) develops mathematics and numeracy skills, c) serves as a transition activity, d) functions as a supplementary activity, e) encourages calming activity, and f) functions as manipulative material. It was found that among the observations of the parents, the most common impact of using the localized sensory board is that, it motivates the students to learn. Similar to the study of Devlin et al. (2011), the research endeavor found that sensory integration could increase the students' ability to focus and reduce the rate of self-injurious behavior. If the behaviors of the students are regulated, it will result in higher cognitive functioning and excellent academic performance.

Table 7. Paired sample t-test on the academic performance of learners before and after the utilization of a localized sensory board

<i>Variable</i>	<i>Mean</i>	<i>Mean Difference</i>	<i>t value</i>	<i>Sig (2 tailed)</i>
Before the utilization	2.88	-.60	-10.50	.000
After the utilization	3.48			



Table 7 depicts the results of the sample t-test about the academic performance of learners with special educational needs before and after the utilization of the localized sensory board. The mean difference was found to be $-.60$, and the mean score after the utilization ($M=3.48$) was found to be greater than the mean score before the utilization ($M=2.88$) of the localized sensory board. Furthermore, the mean difference between the two variables was found to be significantly different at a very high level ($p<0.001$) from zero. Thus, it can be concluded that statistically, the respondents in the present study improved their academic performance after the utilization of the localized sensory board.

CONCLUSION AND RECOMMENDATION

The experts in special education validated the material as 'highly acceptable' to the following dimensions: Quality, Usability, and Technical Design. Based on the responses of the parents, the impacts of using the localized sensory board are as follows: motivates students to learn, develops mathematics and numeracy skills, serves as a transition activity, functions as a supplementary activity, encourages calming activity, and functions as a manipulative material. The results of the sample t-test revealed that there is a significant difference between the academic performance of the students before and after the utilization of the localized sensory board at a very high level. Therefore, the developed sensory board is deemed effective.

It is recommended that the developed sensory board be used as preliminary activities before teaching a lesson. It can also be used as supplementary material in teaching textures, colors, sizes, shapes, etc. Utilize the developed sensory board with a larger sample or population to further gain meaningful insights into improving the instructional material. The study may be replicated by other researchers, using an experimental research design with specific curricular competency to test its effectiveness. Future researchers are encouraged to develop localized sensory boards with cheaper and unique materials. This is to provide teachers, parents, and other practitioners an option in addressing the sensorial issues of learners with special educational needs. Revision and modification of the developed sensory board should be done regularly to fit in the individualized learning needs and abilities of learners with special educational needs. Validation of the level of effectiveness, acceptability, and practicability of the developed sensory board may be conducted using other expert validators. Further study is strongly recommended using other senses, factors, and variables to address sensorial issues.

REFERENCES

- Ayres, A. (1972) *Sensory Integration and the Child*. Los Angeles, CA: WPA. <https://sensoryproject.org/app/uploads/2021/06/SISIS1298.pdf>
- Buchner, T., Fortuna, J., & Lindsay N. (2014). Sensory Integration Interventions Used by Pediatric Occupational Therapists for Children Diagnosed with Autism Spectrum Disorder: A Systematic Review. *Occupational Therapy Graduate Research*. https://scholarworks.gvsu.edu/ot_pediatrics/4
- Critz, C., Blake, K., & Nogueira, E. (2015). Sensory processing challenges in children. *The Journal for Nurse Practitioners*, 11(7), 710–716. <https://doi.org/10.1016/j.nurpra.2015.04.016>
- Dawadi, S., Shrestha, S., & Giri, R. A. (2021). Mixed-Methods Research: A Discussion on its Types, Challenges, and Criticisms. *Journal of Practical Studies in Education*, 2(2), 25-36. <https://doi.org/10.46809/jpse.v2i2.20>
- Department of Education Order No. 39, s. 2016 – Adoption of the Basic Education Research Agenda. <https://www.deped.gov.ph/2016/06/10/do-39-s-2016-adoption-of-the-basic-education-research-agenda/>
- Devlin, S., Healy, O., Leader, G., & Hughes, B.M. (2011). Comparison of behavioral Intervention and sensory-integration Therapy in the treatment of challenging

- behavior. *J Autism Dev Disord*, 41(10):1303-20. [10.1007/s10803-010-1149-x](https://doi.org/10.1007/s10803-010-1149-x). PMID: 21161577.
- Georgieva, D. (2021). Sensory-Integration Therapy in the Treatment of Aggressive Behavior in Children with Multiple Disabilities. *International Conference on Innovations in Sciences and Education (Social Sciences)*. <https://doi.org/10.12955/pss.v2.211>
- Granke, J. (2007). Doors of perception: sensory integration for Montessori Classrooms. *NAMTA Journal*, 32(1), 231–243. <https://archivesdev.montessori-ami.org/do/10fo7oab-af4d-4313-a76f-d1f7ee482613#page/4/mode/2up>
- Hoyt, J. (2018). Including Sensory Integration Materials in a Montessori Classroom to Improve Behavior Outcomes. University of Wisconsin River Falls. <https://amshq.org/-/media/Files/AMSHQ/Research/Action-Research/Including-Sensory-Integration-Materials-in-a-Montessori-Classroom-to-Improve-Behavior-Outcomes.ashx>
- Lavrakas, P. J. (2008). Encyclopedia of survey research methods (Vols. 1-0). Thousand Oaks, CA: Sage Publications, Inc. <https://doi.org/10.4135/9781412963947>
- Noddings, A. (2017). When sensory sensitivity requires intervention: Assessment and treatment of sensory sensitive children. *Montessori Life*. <https://amshq.org/AboutMontessori/Montessori-Articles/All-Articles/When-Sensory-Sensitivity-Requires-Intervention>
- Roberts, J. E., King-Thomas, L., & Boccia, M. L. (2007). Behavioral indexes of the efficacy of sensory integration therapy. *The American Journal of Occupational Therapy*. PMID: 17944293 [10.5014/ajot.61.5.555](https://doi.org/10.5014/ajot.61.5.555)
- Robles, A. O. & Acedo, E. M. (2019). Development and Validation of Educational Video Tutorials for 21st Century Secondary Learners. *Asian Journal of Multidisciplinary Studies*, 2(2). <https://asianjournals.org/online/index.php/ajms/article/view/186>
- Smith, J., Weaver, L.L., & Fristad, M. A. (2014). A Systematic Review of Sensory Processing Interventions for Children with Autism Spectrum Disorders. *SAGE Journals*. <https://doi.org/10.1177/10534512221093786>
- Watsons Institute (2020). Sensory Input for Children with Special Needs. <https://www.thewatsoninstitute.org/senory-input-for-children-with-specialneeds/>