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Changes in the Reading ability of Children with Borderline Intelligence By Task-Oriented Multi-Sensory Exercise Programs

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ABSTRACT

The purpose of this study was to investigate the change in Reading ability after applying a , multi-sensory exercise programs to children with Borderline Intellectual. A Task-Oriented multi-sensory exercise programs was implemented to children with Borderline Intellectual. K elementary school. The research proceeded in the order of a pre-test, Task-Oriented multi-sensory exercise programs intervention, and a post-test. The first session involved a pre-test, in which the children's Reading ability were examined using type 'A' KNISE-BAAT Reading test. The Multi-Sensorimotor program intervention was conducted for a total of 8 sessions. In the last session, a post-test was conducted using type 'B' KNISE-BAAT Reading test. Data collected from the tests were analyzed using SPSS Statistics 18. According to the tests taken before and after implementing the Task-Oriented Multi-Sensorimotor Program, there was a significant improvement in Reading ability(Understanding words, Vocabulary selection, Vocabulary arrangement, Understanding short text). However, there was no statistically Oral Reading, Completion sentence difference in literacy. Task-Oriented multi-sensory exercise programs may be used as a beneficial measure to improve the Reading abilities of children with Borderline Intellectual. It is necessary to design various intervention models by combining educational media based on a multisensory approach.

Keywords
Borderline Intellectual, Task-Oriented, multi-sensory exercise programs, Reading Ability

1. Introduction

Borderline intelligence refers to those showing IQs between 70 and 85 in the IQ test. They account for 13.59% of the total population in a normal distribution [1]. Although accurate statistics on students with borderline intelligence have not been reported in South Korea, estimated that approximately 800,000 students out of all school-age students would have borderline intelligence. As a result, their social needs and interests are attracting more attention [2].

Due to this social demand, the Elementary and Secondary Education Act was revised in February 2016, and Article 28 of it clearly stipulated educational support for students with borderline intelligence [3]. It also led to the establishment of a new legal basis for developing programs and supporting budgets for intervention. However, there is still insufficient understanding and support for children with borderline intelligence in the front-line education field [4].

The overall performance of children with borderline intelligence is lower than that of children with normal development, but higher than that of children with mild intellectual disability [1]. As a result, most children with borderline intelligence do not reach the academic achievement level required in the general education curriculum without any special attention or support and they

show various problems including learning delay because they experience repeated failures [5]. Children with borderline intelligence clearly show a deficit in reading ability, one of the necessary elements for successful academic achievement. This is because the cognitive-behavioral characteristics of children with borderline intelligence are a key causal factor of delaying their reading ability [6].

Reading ability refers to the ability to perceive text through sight, convert the perceived text into spoken language, understand the meaning of it, and analyze, criticize, accept, and apply it [7]. It is the reading comprehension ability to convert text into meaning and thinking about the arranged//listed words, as well as decoding ability that reads a syllabic block or word aloud. therefore, it requires a metacognitive ability in the central nervous system [8]. Moreover, a person must be able to remain focused on the reading task and to continuously maintain the learning motivation to continue reading while solving various problems [9]. However, it has been reported that children with borderline intelligence have greater deficits in reading ability than average children because they have poor meta-cognitive ability to infer through abstract thinking [10-11]. This deficiency in reading ability can adversely affect learning in//of other subjects and can make social relationships and daily life difficult [12]. Children with intellectual deficits show distinct deficits in sensory and motor functions that are required for learning such as reading. Therefore, they need to receive sensory-motor function training prior to learn [13].

A. Jean Ayres (1972), who developed the sensory integration theory, assumed that hypothesized that delay in learning such as reading, writing, or speaking was because upper motor neuron was not able to control the lower sensorimotor lower motor neuron of the nervous system [14]. Consequently, she argued that the development of sensorimotor was an important foundation for learning and meaningful sensorimotor activities could change the nervous system. The multisensory approach, one of the sensorimotor approaches, is to elicit desirable feedback, such as reading or writing appropriately words in time by providing various sensory materials (e.g., art materials, sensory aids, and sensory media) to help the child's nervous system efficiently organize sensory information [15-16].

As the importance of intervention in the reading ability of children with borderline intelligence has been emphasized, many studies have evaluated this topic[6, 17-19]. However, most of them used methodological approaches to examine the different personal characteristics between learners and functional reading performance elements. Only a few studies evaluated the changes in reading ability related to the academic achievement of children with borderline intelligence. This study reviewed recent studies on the academic achievement of children with borderline intelligence published in South Korean journals using South Korean academic databases and found only two studies. Kim and Kim(2007) evaluated the changes in the academic achievement of elementary school students with borderline intelligence by grade. Kim and Kim(2016) examined the characteristics of each sub-domain of reading ability using the academic achievement test of children with borderline intelligence [6, 20]

Therefore, this study tried to understand changes in reading abilities (oral reading ability and reading comprehension) by devising and applying a task-oriented multisensory exercise program model for improving the reading ability of children with borderline intelligence. It is expected that the results of this study will provide a way to effectively improve the reading ability of children with borderline intelligence.

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2. Methods

2.1 Study subjects and period

This study was carried out from April to June 2018 as a part of the "Individual Student Treatment Support" project upon the request and commission of the K City Office of Education, Gyeongsangbuk-do. The projected referred ten children with borderline intelligence without hearing or vision problems attending K Elementary School located in K City. This study selected eight children as study subjects after excluding two students who voluntarily gave up their participation in the program after screening. The specific selection criteria are as follows: First, children who had overall IQ in the Korean Wechsler Intelligence Scale for Children (K-WISC-Ⅲ) between 71 and 84; Second, children whose raw score in the reading domain of the Korean National Intelligence for Special Education-Basic Achievement Test (KNISE-BAAT) was 84 points or lower and who showed learning delay (bottom 15% or lower); and Third, children who were not taking psychoactive drugs and not receiving treatments related to borderline intelligence or attention deficit and whose parents agreed to have them participate in the program. Specific information about the subjects is as follows(Table 1).

Table 1. Participants Information

Number	Gender	School year	Intelligence Quotient	KNISE-BATT
				Reading ability
1	M	4	78	82
2	M	5	79	83
3	M	4	81	82
4	M	5	82	79
5	M	4	84	81
6	F	4	82	82
7	F	4	80	83
8	F	5	83	84

2.2 Reading ability assessment

This study used the KNISE-BATT to measure the reading ability of the subject. The KNISE-BATT was developed by Park to screen and diagnose children with poor reading and writing performance in school learning, identify areas where they showed poor performance, and understand their levels in each area [21]. It is a tool consisting of two types of equivalent tests, type "A" and type "B". This study used the type A reading test and type B reading test as pre- and post-test tools. The reading area is composed of three domains (prerequisite function, oral reading ability, and reading comprehension ability) and 20 sub-domains. This study used oral reading ability and reading comprehension ability among them, except for prerequisite function. The coefficient of internal consistency reliability, the reliability of the tool, was .82. Specific sub-domain and evaluation contents are as follows(Table 2).

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Table 2. KNISE-BAAT Examination questions

Area		Questions
Oral Reading		Read a letter
		Word reading 1 ~ 3 syllable words
		Read sentence
Reading ability	Understanding words	Antonym, Similar words, analogy, Polite word
		Similarity of words, Quantities
	Completion sentence	Look at the picture and complete the sentence
		Complete the sentence
	Vocabulary selection	Agreement, relationship of response
		Conjunctions, Understand the Meaning and Select the Appropriate Vocabulary
	Vocabulary arrangement	Arrange sentences
	Understanding short text	Reading and answering key facts
		Read and distinguish fact, feeling, and opinion
		Read sentences and understand figurative or symbolic expressions
		Find the topic of your post
		Understand the proverb
		Read and compare results
		Read and criticize

Reference: Korea National Institute for Special Education(2009)

2.3 Task-oriented multisensory exercise program

The task-oriented multisensory exercise program used in this program was newly devised by modifying and supplementing the multisensory exercise program of Kwag and Roh [22]. It is composed of task-oriented content that is grafted with educational media that can make students with borderline intelligence interested and familiarized by combining tactile, proprioceptive, and vestibular senses, the basic senses of sensory integration theory. The program contents are as follows(Table 3).

Table 3. Multi-Sensorimotor Activity Program

Stage	Subject	Material	Process	Sensory Stimulation
1	Advertise Me	Magazine, Scissors, Sketchbook, Crayon	- Paste the magazine - Expressing oneself - Present yourself	-Tactile -Vision -Proprioception

2	Creating Food (Sandwich & Canafé)	Bread, biscuits, Cheese, Strawberry Jam, Ham, Canned tuna, Mayonnaise, Corn, Shredded cabbage	-Experience a sense of achievement by making and tasting food. -Experience support and satisfaction by enjoying the positive feedback from T and the food you create.	-Tactile -Vision -Taste -Smell -Proprioception
3	Create Hope Flower	Decorating materials such as wood, Plastic disposable cups, Foamclays, Bells and needles, Autograph pens, Glughans, Ribbons, and spins	-On prepared paper leaves, say what you want to do or what you want to be, and attach it to a tree. -the belief that one can achieve results	-Tactile -Vision -Proprioception
4	Walking carts	Folding Mat, Tape, Handkerchief	- Maintain a 4-foot device - In pairs, move mats using arms and arms	-Tactile -Vision -Proprioception
5	Sandpaper Print Making	Sandpaper, Crayon, Drawing paper	- Draw with crayons on sandpaper - Put a white drawing on top of the painting. - Press and hold to take a picture	-Tactile -Proprioception
6	Body line and Decorating	Drawing paper, Stickers, Cellophane tape, Colored shavings, Stickers	- Spread drawing paper on the floor. - Lie down in the desired pose. - Team member draws a physical outline. - Decorate a picture together	-Tactile -Vision -Proprioception
7	Find treasure	Paper with Goods, School Supplies, Sweets, Word Treasure map	- Hide the note with the name of the treasure in the classroom or playground. - Group of treasure maps with hints on them. - Collaborate with others	-Tactile -Vision -Proprioception
8	Create Text with Shading Form	Shavingform, French pen, Water, Tissue, Astage	- Teachers and children naturally touch the shaping form to create a sense of intimacy. - Shaving foam is a media that can attract children's interest and lead to a more aggressive treatment posture. - If interest is low, use a French pen to color.	-Tactile -Vision -Taste -Proprioception

2.4 Social validity of intervention program

Social validity was measured to evaluate whether the goal setting and method of the task-oriented multisensory exercise program devised to change reading ability were socially valid. It was

measured before conducting the intervention using three occupational therapists and two special education teachers who had at least 5 years of sensory integration therapy experience. The social validity test was conducted by modifying and supplementing Shin [12]. It was composed of six items: two items of intervention usefulness, three items of appropriacy, and one item on the degree of recommendation for intervention. Each item was evaluated on a 5-point Likert scale (1 point: strongly disagree - 5 points: strongly agree). Occupational therapists showed 4.51 points and special education teachers had 4.11 points(Table 4).

Table 4. Social Relevance

Category	Stage	Occupational Therapist	Special Teacher
Intervention Usability	2	4.5	4
Intervention Adequacy	3	4.33	4.33
Intervention Recommendation degree	1	4.67	4
Sum(Mean)	6	13.53(4.51)	12.33(4.11)

2.5 Research procedure

In this study, the task-oriented multisensory exercise program was an independent variable, and the change in reading ability after applying the program was a dependent variable. It used a pretest-posttest experimental design(Fig 1). The experiment was conducted in the "classroom of K Elementary School" located in K city, Gyeongsangbuk-do. This study carried out ten intervention sessions for eight children with borderline intelligence from April to June 2018. This study performed the program by collecting opinions on matters to be considered during the intervention by composing a multidisciplinary team with two occupational therapists, one speech therapist, and one special education teacher. It was conducted in the order of pre-examination (one session), program intervention (eight sessions), and post-examination (one session). This study used the type "A" reading test of the KNISE-BAAT as a pre-test in the first session. The task-oriented multisensory exercise program intervention was conducted once a week (80 minutes) for a total of 8 sessions. A post-test was conducted using the type "B" reading test of the KNISE-BAAT in the tenth session. The intervention program (60 minutes per session) consisted of introduction (10 minutes: greetings and program introduction), main activity (40 minutes), and closing (10 minutes: sharing feelings and impressions).

Intervention Social Relevance Test (September 3~7)

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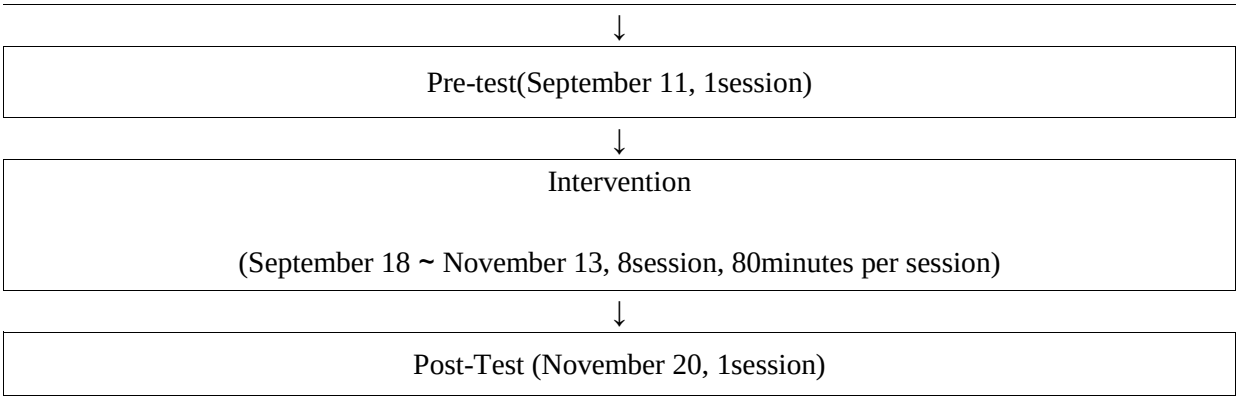


Fig 1. Research Procedure

2.6 Analysis methods

This study used SPSS version 18 to understand the effects of the task-oriented multisensory exercise program intervention on the reading ability of children with borderline intelligence. Since this study used eight subjects, which made it difficult to satisfy the normality assumptions, this study used non-parametric statistical methods. This study described basic information to understand the general characteristics of the subject. This study used Wilcoxon signed-rank test to evaluate the effect of the intervention on reading ability by comparing before and after the intervention, The significance level (a) of this study was set to 0.05.

3. Results

3.1 Changes in oral reading ability within the group between pre-test and post-test

Oral reading ability was not significantly different. However, there were some changes in the pre-test mean and post-test mean(Table 5).

Table 5. Oral Reading Pre-Post Comparison

Division	Pre		Post		z	p
	M	SD	M	SD		
Oral Reading	19.50	3.34	20.75	2.96	-1.802	072

3.2 Changes in reading ability within the group between pre-test and post-test

Word comprehension, vocabulary selection, vocabulary arrangement, and short passage comprehension, sub-domains of reading ability, were significantly different within the group. Although the sentence completion domain did not show a significant difference, the pre-test mean and the post-test mean was different(Table 6).

Table 6. Reading ability Pre-post Comparison

Division	Pre	Post	z	p

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	M	SD	M	SD		
Understanding words	12.13	3.40	13.87	3.48	-2.558*	.011
Completion sentence	7.75	1.98	8.25	1.58	-1.633*	.102
Vocabulary selection	6.25	1.39	7.50	1.85	-2.428*	.015
Vocabulary arrangement	6.13	1.73	6.87	1.81	-2.121*	.034
Understanding short text	7.88	0.64	8.75	0.88	-2.070*	.038

*p<.05

4. Discussion and Conclusions

This study examined changes in reading ability and compared the results by devising and applying a task-oriented multisensory exercise program model for improving reading ability related to academic achievement for children with borderline intelligence. This discussion is based on them.

First, the task-oriented multisensory exercise program did not significantly affect the oral reading ability, a sub-domain of the reading ability test of children with borderline intelligence. However, the post-test mean (20.75) was slightly higher than the pre-test mean (19.50). Kim (2004) reported that the application of visual, auditory, tactile, and motor senses to 6th-grade elementary school students improved their English oral reading ability [23]. Moreover, Son (2013) showed that multisensory exercise activity combined with picture book media enhanced the expressive vocabulary and communication skills of 2-year-old normal infants. Providing various senses means that it is possible to form new synapses in the child's nervous system or actively generate neurotransmitters based on the neural plasticity theory [24], the foundation of the sensory integration theory. The results of this study were in the same line with the results of the previous studies. On the other hand, Shin (2016) compared changes in oral reading skills by using the play script-making program as an independent variable for children with intellectual disabilities. However, Shin did not show significant changes, although there was a slight improvement, which was similar to the results of this study [12]. Oral reading ability is simply defined as reading words, reading a combination of "initial phoneme+middle phoneme" words and "initial phoneme+middle phoneme+final phoneme" words, reading meaningless words, or reading a paragraph or a sentence aloud [19]. Nevertheless, oral reading has many implications for children with borderline intelligence in guidance and evaluation of reading because it is possible to assess the overall reading level through the oral reading errors that appear when reading aloud [27]. It is believed that children tended to read aloud while imitating the pronunciation of celebrities due to frequent exposure to media such as TV or Internet one-person media broadcasting. Since they often experience difficulties in pronouncing complex vowels or similar words, it will be hard to correct the oral reading habit with a short-term intervention. Consequently, therapeutical and

educational support and mid-to-long-term intervention are necessary to improve their reading ability.

Second, the task-oriented multisensory exercise program significantly changed word comprehension, vocabulary selection, vocabulary arrangement, and short passage comprehension, sub-domains of the reading ability pre-test and post-test of children with borderline intelligence. "Word comprehension" refers to the ability to infer the meaning of words and their relations with other words in the context. Vocabulary selection refers to the ability to select words that are suitable for tense and agreement and to come up with appropriate words for sentences. Vocabulary arrangement means the ability to organize a sentence with various words and arrange [7]. Short passage comprehension refers to answering main facts after reading sentences or distinguishing facts, feelings, and opinions. Previous studies used sensorimotor as a medium for learning (e.g., reading) for children with central nervous system problems. Zentall (1993) reported that children with ADHD performed complex word tasks or text tasks better when visual stimulation was provided [27]. Moreover, Hilliard and Tolin(1979) and Parente (1976) revealed that the provision of familiar auditory stimuli positively affected academic task performance [28-29]. The reading ability results of this study also followed the context of these previous studies. Although it seems like choosing and arranging appropriate words and vocabularies and understanding short passages are very simple processes, it requires the word recognition process, which is one of the complex nervous system activities of the brain, in advance and a meta-cognitive process function that can determine the role of each word in a sentence [30]. It is believed that the sensorimotor activity applying multisensory, such as proprioception, vestibular, and tactile senses, the intervention program of this study, improved the reading ability of children with borderline intelligence, related to academic performance by enhancing their ability to regulate and organize the nervous system by themselves. Consequently, the results of this study implied that the task-oriented multisensory exercise intervention could be a beneficial method to improve reading ability.

On the other hand, sentence completion ability, one reading ability sub-domain. was not significantly influenced. The sentence completion ability of this study refers to the ability to complete a sentence by looking at a presented picture or filling a blank with an appropriate word [12]. Therefore, it is believed that future studies are needed to devise various intervention models incorporating teaching media based on the sensorimotor approach to improve the sentence completion ability. In modern society, the acquisition of knowledge is a bare essential to have a decent human life. Children with disabilities must also gain the knowledge needed to have a decent humane life, and the acquisition of such knowledge must be achieved through education. Reading education for children with borderline intelligence should consider the universality of the general curriculum and their individual needs [31]. Moreover, these individual needs should be appropriately addressed and implemented with the support of experts in related fields, including teachers. From this point of view, it is believed that the importance of this study was to make an attempt to solve the educational problems of children with borderline intelligence through a multidisciplinary team approach. This study has two limitations: it is difficult to generalize the results of this study because the number of subjects does not meet the normal distribution and this study could not exclude the learning effect of regular education during the intervention. Therefore, future studies need to make new attempts to overcome these limitations.

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Received 20 August 2021; Accepted 10 September 2021.

References

[1] Peltopuro, M., Ahonen, T., Kaartinen, J., Seppälä, H., & Närhi, V. (2014). Borderline inte llectual functioning: a systematic literature review. *Intellectual and developmental disabil ities*, *52*(6), 419-443.

[2] Kim, H. R. (2018). *The Study on the Parenting Experiences of Mothers with Borderline Intellectual Functioning Adolescents.* Seoul, Republic of Korea, Kwangwoon University.

[3] Korea Ministry of Government Legislation. (2016). Article 28 of the Act on Elementary and Secondary Education. Sejong, Republic of Korea. http://www.law.go.kr

[4] Lee, K. J. (2017). A Study used Q-methodology on the Subjective Cognition-Patterns of S chool Aged Children with Borderline Intelligence Function to the School. *The Journal of t he Korea Contents Association*, *17*(2), 384-393.

[5] Jung, H. K. (2015). A Study Border Intelligence Enhancements for Elementary School Students. *The Study of Child-Family Therapy. 14*(1), 135-143

[6] Kim, J. Y., & Kim, J. K. (2016). Reading Subdomain Characteristics of School-Aged Children with Borderline Intellectual Functioning. *Korean Speech-Language & Hearing Association. 25*(1), 67-76.

[7] Korea National Institute for Special Education. (2014). 2014 Special Education Status Survey. Asan, Republic of Korea. https://www.nise.go.kr

[8] Polloway, E. A., & Smith, T. E. (1992). Language instruction for students with disabilities. Love Publishing Co., 1777 S. Bellaire St., Denver, CO 80222.

[9] Lee, S. Y., & Sin, T. S. (2013). Relations among Writing Achievement Goal Orientations, Writing Self-Efficacy, Writing Meta-Cognitive Strategies and Writing Ability. *Korean Journal of Educational Research*, *5*(2), 89-116.

[10] Jung, H. J., & Lee, J. Y. (2008). The characteristics of borderline intellectual functioning children. *Korean Journal of Special Education*, *42*(4), 43-66.

[11] Reis, S. M., McGuire, J. M., & Neu, T. W. (2000). Compensation strategies used by high-ability students with learning disabilities who succeed in college. *Gifted Child Quarterly*, *44*(2), 123-134.

[12] Shin, H. S. (2016). *Activity of Drama for Education using Graphic Organizers on Middle School Students with Intellectual Disabilities' Reading and Writing Ability*. Gyeongju. Republic of Korea, Uiduk University.

[13] Ministry of Education. (1996). *sensory and athletic functionsl.* Chungnam, National Textbook Corporation.

[14] Schaaf, R. C., & Miller, L. J. (2005). Occupational therapy using a sensory integrative approach for children with developmental disabilities. *Mental retardation and developmental disabilities research reviews*, *11*(2), 143-148.

[15] Feder, K. P., & Majnemer, A. (2007). Handwriting development, competency, and intervention. *Developmental Medicine & Child Neurology*, *49*(4), 312-317.

[16] Ham, B. H., Kim, S. K., Lee, J. S., & Jeon, B. J. (2012). The effects of sensory integration treatment on handwriting performance in children with attention deficit hyperactivity disorder. *The journal of korean society of occupational therapy*, *20*(2), 55-71.

[17] Kang, O. R., Kim, Y. O., Woo, J. H., & Byun, C. S. (2014). A Study of Comparison of Reading Characteristics among Students with Dyslexia at Risk, Underachievers in Reading, and General Students by Using a Dyslexia Screening Checklist. *The Korea Leaming Disabilities Association, 11*(3), 93-116.

[18] Kim, H. J. (2017). *Reading Comprehension according to the Structure of Explanatory Te xt in School-aged Children with Borderline Intelligence.* Yongin, Republic of Korea, Dan kook University.

[19] Lee, S. D., Kim, S. M., & Lee, U. J. (2017). The effect of vocabulary glosses on exposito ry texts comprehension and vocabulary learning in school-aged children with borderline i ntelligence. *Journal of the Korean Society of Special Education, 51*(4), 209-228.

[20] Kim, K. H., & Kim, D. I. (2007). Grade level differences in academic achievements of el ementary students with borderline intellectual functioning. In *Proceedings of Fall Confere nce on the Korean Society of Special Education.* 73-97.

[21] Park, K. S. Chung, D. Y., Jung, I. S., Kim, G. O., & Song, Y. J. (2009). *KNISE-BATT. Seoul,* Korea National Institute for Special Education.

[22] Roh, H. L., & Kwag, S. W. (2018). The effect of task-oriented multi-sensory movement

program on self-efficacy and writing ability of children with ADHD tendency accompanie d by learning delays. *The Journal of Korean society of community based occupational the rapy*, *8*(2), 1-14.

[23] Kim, M. O. (2004). *Impacts of Chant Learning in English Listen by Elementary School Chlidren.*, Seoul, Republic of Korea, Donggok University.

[24] Son, S. M. (2014). *Effects of Sensory Activity Utilizing Picture-Book Reading on Vocabulary and Communication Ability of 2-Year Old Infants.* Sowon, Republic of Korea, Kyonggi University

[25] Lee, M. S. (2010). *ADHD The relationship between sensory profile and functional activities in school for children with ADHD.* Yongin, Republic of Korea, Dankook University.

[26] Park, K. S., Kim, K. O., Song, Y. J., Jung, D. Y., & Jung, I. S. (2004). *A Study on the Development of KISE-BAAT. Seoul*, Korea National Institute for Special Education.

[27] Zentall, S. S. (1993). Research on the educational implications of attention deficit hypera ctivity disorder. *Exceptional children*, *60*(2), 143-153.

[28] Hilliard, O. M., & Tolin, P. (1979). Effect of familiarity with background music on perfo rmance of simple and difficult reading comprehension tasks. *Perceptual and Motor Skills*, *49*(3), 713-714.

[29] Parente, J. A. (1976). Music preference as a factor of music distraction. *Perceptual and motor skills*, *43*(1), 337-338.

[30] Ryu, H. J., Park, H. S., Ahn, H. J., & Do, K. S. Diagnosis and Intervention of Reading D isability in the Whole Brain Interactive Approach. *Research Psychology*, *1*(1), 19-39.

[31] Kwag, S. W., Nam, Y. S., & Roh, H. L. (2013). Developing an Instructional Medial Selection Attributes Check list for Students with Intellectual Disabilities. *Journal of Special Education & Rehabilitation Science*, *52*(4), 305-319.