



International Virtual Colloquium on Multi-disciplinary Research Impact (2nd Series)

Organised by Research Nexus UiTM (ReNeU)
Office of Deputy Vice Chancellor (Research and Innovation)
Universiti Teknologi MARA 40450 Shah Alam, Malaysia, 15 Oct 2021



Significance of Sensory Activities among Toddlers for Sensory Skills Development

Anis Sofia Zainal Abidin ¹, Siti Norfatulhana Ishak ², Ruhil Nadiah Abu Bakar ², Andrialis Abdul Rahman ³

¹ College of Creative Art, Universiti Teknologi MARA, 40450 Shah Alam, Malaysia, ² Creative Photomedia, College of Creative Art, Universiti Teknologi MARA, Kampus Puncak Alam, 42300 Puncak Alam, Malaysia, ³ Akademi Pengajian Bahasa, Universiti Teknologi MARA, Cawangan Negeri Sembilan, Kampus Seremban, 73000 Seremban, Malaysia

sitiorfatulhana@uitm.edu.my, anesafea94@gmail.com, ruhil6189@uitm.edu.my, andrialis@uitm.edu.my
Tel: +6019 3131 348

Abstract

The excessive use of gadgets takes away so much time and robs of all the fun from children. It affects children's cognitive, emotional, and social skills. Hence, by exposing children to various sensory experiences, they can develop proper sensory processing capabilities. This can be done by learning through play. The purpose of this descriptive research is to encourage children to interact with peers through sensory play activities. This study analyses videos using the framework of Feldman's theory by creating a sensory board game. The result shows that it can help stimulate children's sensory skills development and enhance active interaction.

Keywords: Toddler; Sensory activity; skills development; board game

*eISSN: 2398-4287 © 2022. The Authors. Published for AMER ABRA cE-Bs by e-International Publishing House, Ltd., UK. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers), ABRA (Association of Behavioural Researchers on Asians) and cE-Bs (Centre for Environment-Behaviour Studies), Faculty of Architecture, Planning & Surveying, Universiti Teknologi MARA, Malaysia.
DOI: <https://doi.org/10.21834/ebpj.v7iSI7.3760>*

1.0 Introduction

As we know, most children no longer want to go out to play and interact with others because they are too focused on their gadgets like phones, tablets, and games as they are part of a digital generation. They grow up in a world surrounded by technology with unlimited internet speed. Some of the most popular technology tools for children are mobile phones, tablets, computers and video games daily. Parents have the tendency to turn to gadgets as one of the methods to calm their children down when they are too busy and does not have much time to play with their kids. Because of that, children are more comfortable playing alone, focusing on the gadgets rather than engaging in real-life conversation or situations with their peers and even adults. Therefore, a playing time between parents and children is important because it could strengthen the bond and helps parents to get to learn more about their child uniqueness and behavior. Parents can identify their children's strengths and weaknesses in various aspects that could help them cater to their needs.

Moreover, spending time with family could be a great stress reducer, especially for overworked parents. Besides parents, pre-schoolteachers also play an essential role in developing and educating children, especially in their first year. Equipped with intensive training, teachers can do more than just facilitating art and craft projects in school. They can help children learn about their senses and how they can help them develop their learning. Besides providing structures to develop reading and writing skills, preschool teachers

*eISSN: 2398-4287 © 2022. The Authors. Published for AMER ABRA cE-Bs by e-International Publishing House, Ltd., UK. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers), ABRA (Association of Behavioural Researchers on Asians/Africans/Arabians) and cE-Bs (Centre for Environment-Behaviour Studies), Faculty of Architecture, Planning & Surveying, Universiti Teknologi MARA, Malaysia.
DOI: [https://doi.org/10.21834/ebpj.v7iSI7%20\(Special%20Issue\).3760](https://doi.org/10.21834/ebpj.v7iSI7%20(Special%20Issue).3760)*

are also responsible for assisting children in interacting with their peers, sharpening their fine motor skills, and motivating them to be independent as a preparation for primary schools.

2.0 Background Research

According to Khan, A. A., and Umair, S. (2018), most people in this 21st century are heavily dependent on gadgets in their daily lives because the versatility of the devices helps them to connect with the world. In addition, some research argues that the use of gadgets and screen time affects children's social, behaviour, and health problems such as eyes problem and speech delays. The younger generation uses gadgets more often than before. Gadgets are communication devices for entertainment and education among young children. Apart from lacking physical activity, they prefer playing with gadgets and communicating with the screen rather than with their parents and friends. Parents nowadays spend most of their time performing their professional roles, while they dedicate less and less time and communication with their family members, especially children. Senses play an essential role in brain development because sensory stimulation is vital for developing and strengthening sensory-related synapses and functions. Playing, either sensory-centred or not is helpful to a child's development. Exposing children to various sensory experiences is significant for the young brain to develop the proper sensory processing capabilities. Sensory play is the type of play activity that can stimulate children's senses. Most sensory plays focus on enabling touch, sight, and hearing because it is more accessible. It is also can enhance the development of the child's brain. Children explore and manipulate objects through their senses as they develop strategies for problem-solving. Drawing, guessing, experimenting, and testing assumptions are all foundations for the scientific method. Children learn about the world around them with their senses and body responses through the senses. Neural pathways in the brain are being created when the senses are engaged. These neural pathways are what will help your child in learning throughout their life.

There are five main areas of development during toddler years: physical, cognitive, emotional/social, language, and sensory/motor skills. The play has an essential role in sensory learning. Young children develop cognitive skills to explore the world around them, interact with others, and play together. In early childhood, the most critical period is when children are allowed to use a variety of senses to complete the task. They will learn more from experience and get information. Children become more creative by playing, and through sensory play, they can build their cognitive, linguistic, social and emotional skills. Learning through the five senses remains beneficial even in the toddler, preschool or elementary school years and for grown-ups. It's a gentle and fun way to bond with kids. Sensory play maybe a famous phrase at the moment, but that does not mean that it is just a passing phase. More research will continue to point out the benefits of sensory play, and it will only increase in prevalence among early childhood educators and parents.

3.0 Literature Review

3.1 Early Childhood Care & Education (ECCE)

In Malaysia, ECCE is divided into two age groups, which are 0 to 4 years and 4 to 6 years old. The first group under the Ministry of Women, Family and Community Development (MWFCD) is for 0 to 4 years children, which coordinates national programs on the growth and development of children. The second group comes under three ministries/agencies: the Ministry of Education, the National Unity Department, and the Ministry of Rural and Regional Development, children aged 4 to 6 years old in preschool education. According to Former Prime Minister YAB Dato' Sri Mohd Najib Tun Abdul Razak (2009), every child is precious and an asset to our society. Children are the most valuable resource of the nation. Parents have to ensure a child has the opportunities to develop. Still, it is also the government's responsibility to help parents realize the potential because creating a nation and people begin with early childhood education.

According to Bartolo, Björck-Åkesson, Giné, and Kyriazopoulou (2016), early childhood is a crucial period of learning and development, preparing the child for lifelong learning and participation. At the same time, it is a window of opportunity to prevent potential delays and difficulties. ECCE has a significant impact on children's development. A good start in life is related to many factors and depending on the interaction between the child and its environment in the broadest sense. For most small children, everyday life is spent in the home environment and an atmosphere of education. Still, some youngsters spend most of their weekdays outside the home in caretaking and educational settings. Kaplan (1975) said children and youngsters with low self-esteem seek out various forms of antisocial behaviour to enhance their self-worth. Children's skills are assessed collectively, and children who do not meet the specified goals are labelled as slow learners or children with learning difficulties. Pressure on children to meet the expectations of parents and teachers when they are not ready can affect the development of children's low self-perception of poor quality of learning and lost interest in the learning process at all.

3.2 Sustainable Development Goals (SDGs) (Goal 4: Quality Education)

Sustainable development has been defined as a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The emphasis under this aim is universal coverage of quality education from preschool through at least secondary education, and then to more advanced skills training (Sachs, 2015, p. 487). The fourth goal of sustainable development is to ensure that quality education is comprehensive, reasonable and improve lifelong learning opportunities for all. The fourth goal of sustainable development (4. A) is to build and upgrade children's educational facilities, disability, and gender-sensitive and provide a safe, non-violent, inclusive, and effective learning environment for all. Based on the goals of development in 2019,

regardless of the educational and participation growth of approximately 262 million children between the ages of 6 and 17 who are out of school in 2017. Many developing countries still lack basic facilities and infrastructure to provide a learning environment for students.

3.3 Sensory Development

Children's development is shaped by their experiences from the outside world, including using five senses such as hearing, sight, smell, taste, and touch. Sensory play an essential role in children's development as it promotes independent discovery and thinking and inspires imagination and creativity. It is the best process for children and adults to learn and get information when it involves senses. Lindstrom (2005, p.142) found that senses are even more effective when combined. Sense helps us understand the world. Drawing children's attention to the five senses and discussing it can enhance the understanding and communication about things around them. Sensory processing refers to the ability of the brain to receive, interpret, and apply information through all senses and motion detection.

3.4 Cognitive and Motor Development

Sensory play support children's cognitive growth enhances their thinking and understanding. When children manipulate new materials, they learn to understand new concepts such as sinking and floating. Smith (2013) said cognitive development is interrelated with the social, cultural, emotional, and physical environments in which people live and intricately interrelated with other learning domains, including movement and motor development. Based on Piaget's Cognitive Developmental Theory, the cognitive theory is concerned with developing one's thinking process and how these thought processes influence our understanding and interaction with the world because children think differently than adults.

Motor skills are typically divided into gross and fine motor skills. According to Haibach-Beach, Reid, and Collier (2011), gross motor skills require coordination of an individual's arms, legs, and other large body parts for actions such as running, jumping, and throwing. Gross motor skills involve the muscles of the larger of the arms and legs. An important factor when evaluating gross motor skills identified by experts is strength, muscle tone, range of motion, and quality of movement. Based on Piek, Dawson, Smith, and Gasson (2008), fine motor skills of smaller moves require coordination between the fingers, hands, and feet. Actions that require fine motor skills tend to be more complicated, such as painting, writing, throwing, drawing objects, waving, and catch.

4.0 Visual Analysis

This research used the framework of Feldman's Theories as a method for visual analysis. Based on Feldman's Theories, four steps structure to visualize picture or artwork: description, analysis, interpretation, and judgment. Descriptive refers to everything seen through the artwork, such as title, artist name, and date. In contrast, analysis is related to the element and principles of art and design, such as colour, texture, shape, and size. Interpretation indicates the idea and feeling from the picture or artwork and the relationship between the title and the artwork's meaning. Judgment is the final step in the process of critique, where people can judge or view the artwork whether or not the artwork is liked or the artist can convey the right message behind the artwork.

4.1 Video from YouTube

The researcher analyses 20 videos from YouTube using Feldman's theories. The videos selected are based on the main objective of sensory play, sensory activities, and five senses.



Figure 1. Compilation of all 20 videos from Youtube

Table 1.1 Analysis's YouTube video using Feldman's theories

No	Video	Creator	Process	Characteristic
1	VIDEO 1 The Value of Play: Sensory	Reynoldstx	Description	This activity develops cognitive, emotional and social skills.
			Analysis	Texture Shape Colour Size Form
			Interpretation	Daily life activity
			Judgement	They will learn about social skills, teamwork, problem solving and decision making.
2	VIDEO 2 Animals Quietbook For Kids 1-6 Year Olds	Ti An Sweethome	Description	Book Animals Sensory
			Analysis	Contrast Line Texture Shape Color
			Interpretation	Easy Fun Learning
			Judgement	Good for toddlers critical thinking and motor skills development
3	VIDEO 3 DIY Busy Board	Lunazole	Description	Board Children Alphabet Toys
			Analysis	Texture Shape Colour Line
			Interpretation	Love to explore
			Judgement	Does not have much content and explanation
4	VIDEO 4 DIY Photographic Memory Game	Mommy 'n Dea	Description	Wooden Block Book
			Analysis	Shape Colour Form
			Interpretation	Self-confidence
			Judgement	Good for toddler memory recall and retain information given
5	VIDEO 5 DIY Textures Sensory Board	Sofana Sopian	Description	Board Different type of texture
			Analysis	Texture Shape Colour Line Contrast Repetition
			Interpretation	Natural curiosity Exploration
			Judgement	Provide solid basic education
6	VIDEO 6 Interactive Learning Posters	Jady A	Description	Interactive Posters Toddlers
			Analysis	Shape Colour Line Form
			Interpretation	Enjoy learning
			Judgement	Through interactive posters, they will enjoy learning because it is fun and easy method for education.

Table 1.1 Analysis's YouTube video using Feldman's theories (continue)

7	VIDEO 7 Montessori Sensory Activity	CherEbooks- Kids Learning	Description	Books Numbers Sand Bubble foam
			Analysis	Texture Shape Colour Line Space Repetition Balance
			Interpretation	Animals and vegetable represent numbers
			Judgement	A lot of activity can be done with Montessori method
8	VIDEO 8 Toddler Learning Folder	Jady A.	Description	Body part Card
			Analysis	Shape Colour Form Balance
			Interpretation	Different level of difficulty
			Judgement	It is great for early intervention for special needs students and students with delays.
9	VIDEO 9 Have You Ever Thought	Preschooler Play-ym	Description	Board Sensory Integration
			Analysis	Texture Shape Colour Line Form
			Interpretation	Explore the world through senses
			Judgement	Good for learning experiment
10	VIDEO 10 Math, Literacy Logic Activities	Jady A.	Description	Sorting Counting money Matching Shape
			Analysis	Texture Shape Colour Space Repetition Balance Form
			Interpretation	Toddler play while thinking before solving the problem given
			Judgement	Good for toddler memory and recognition
11	VIDEO 11 Montessori At Home	Hapa Family	Description	Animal Insect Book Card
			Analysis	Texture Shape Colour Form Pattern
			Interpretation	Encourage toddler touch a thing such as insect
			Judgement	An effective progress for development
12	VIDEO 12 Montessori Inspired Activities	Jady A.	Description	Toys organ Card Insect Body part
			Analysis	Texture Shape Colour Form Repetition
			Interpretation	Self-correcting
			Judgement	Children would love to do all of this activity because it was fun and exciting especially toddlers.

Table 1.1 Analysis's YouTube video using Feldman's theories (continue)

13	VIDEO 13 Preschool Inspired Montessori Activities	Judy A.	Description	Math Reading Sand
			Analysis	Texture Shape Colour Form Repetition Space
			Interpretation	Critical thinking
			Judgement	This activity can make toddlers sit still and focus until they finished all the activities because it needs critical thinking to solve the problem.
14	VIDEO 14 Rainy Seasons Craft	Anki Art and Craft	Description	Rain Cloud
			Analysis	Texture Shape Colour Repetition Line
			Interpretation	Awareness about pollution and nature
			Judgement	Educative craft Good for toddler motor development
15	VIDEO 15 Sensory Board	5 Little Bear	Description	Sensory Board Different type of texture
			Analysis	Texture Shape Colour Repetition Line
			Interpretation	Sensory board as toddler exploration
			Judgement	Good for toddler development and concentration
16	VIDEO 16 Preschool Task Boxes for Early Learning	Judy A.	Description	Colour Recognition Visual Judgement
			Analysis	Texture Shape Colour Repetition Line
			Interpretation	Vocabulary development
			Judgement	Suitable for toddlers to improve their memory strength
17	VIDEO 17 Sensory Cards for Babies and Toddlers	Judy A.	Description	Sense of touch Sense of sight Sense of Sound
			Analysis	Texture Shape Colour Repetition Line Pattern Balance
			Interpretation	Simulate sensory skills
			Judgement	Suitable for toddlers At this age, they become curious about all things around them.
18	VIDEO 18 Toddler Sensory Book	Oleand Mia	Description	Fabric Rusting element Book
			Analysis	Texture Shape Colour Variety Line
			Interpretation	Safe for toddlers
			Judgement	Good for parents and teacher play with child

Table 1.1 Analysis's YouTube video using Feldman's theories (continue)

19	VIDEO 19 Five Senses Fun	The Balanced Literacy Diet	Description	All five senses
			Analysis	Texture Shape Colour Repetition Line
			Interpretation	Engage their learning
			Judgement	The interaction between teacher and student are so good
20	VIDEO 20 The Five Sense Interactive Bulletin Board	Daniell Oalloway	Description	Bulletin board All five senses
			Analysis	Texture Shape Colour Pattern Line
			Interpretation	Stimulate sensory skills
			Judgement	Good for early learner. The efforts of teachers to attract children to recognize five types sensory is very impressive.

5.0 Findings

The researcher has conducted research observations to collect data visual analysis. Based on 20 videos that have been analyzed, most of the activities use DIY as their method of playing with sensory but not all these videos incorporated all five senses in one activity. From all 20 videos, a different approach has been employed when playing with sensory activities: book, board, card, box, interactive poster, and craft. Unfortunately, not all from this video use all five senses in their activities. Most of the senses used in all videos are sight and touch. There are only three out of twenty videos that applied all senses in their activities.

5.1 Pre-Test Analysis

The researcher conducted a pre-test to collect data and verify the necessity of employing senses in early childhood education. Researchers conducted observations and experiments related to the five senses at Tadika Ilmuan Sayang, Rawang, Selangor. Small groups are formed, and children aged between three and four years are selected for the pre-test. The researchers bring DIY materials that represent all the senses.

5.1.1 Sense of Sight

The first experiment is related to the eyes, which is a sense of sight. The researcher had prepared all the material needed for this activity: a plate, milk, dish soap, and food colouring (red, blue, and yellow). Based on Figure 2, the title of this activity is "Magic Milk". These activities can stimulate and enhance their sight senses. In addition, these activities can also teach them something new when the colour of food colouring is poured into the milk and then touched by a soap dish, and the colour will spread and result in attractive colours and stunning movement. Based on observation during the experiment been conducted, the researcher found that participants were very interested in doing this experiment. Throughout this activity, all participants were enthusiastic and paid full attention. Although children tend to have a short attention span, they have displayed interest and admiration when these events take place.



Figure 2. Toddlers are engaged in activities involving the sense of sight.

5.1.2 Sense of Taste

Based on Figure 3, the title of this activity is “Guess a taste”. The materials that need to be prepared are plates and foods with different flavours, such as sweet and sour candy, coffee powder, and salt. Tastes are what we detect with the taste buds in our mouths. Through the activity, they can distinguish between sweet, sour, bitter, and salty taste. Taste plays a vital role in helping toddlers determine the taste of food and other ingredients in their daily life. Based on observation during the experiment, the researchers found that the participants were curious about everything. If possible, they want to try everything around them. This activity is an excellent approach to stimulate their taste senses.



Figure 3. Toddlers are engaged in activities involving the sense of taste.

5.1.3 Sense of Touch

The researchers prepared all the material needed for this activity which is a sensory board. This sensory board has various texture types, such as a sponge, cotton, sandpaper, and artificial grass. Based on Figure 4, the title of this activity is “Feel and Touch”. Through this activity, they can touch and guess the texture and their feeling when touching it. Throughout observation on this experiment, the researcher found that the participants were curious about their touch texture. This activity can develop their sensory skills and answer questions about the texture playing on their minds before.



Figure 4. Toddlers are engaged in activities involving the sense of touch.

5.1.4 Sense of Sound

The fourth experiment is related to ears which is the sense of sound. The researcher prepared all the material needed for this activity: a small box filled with objects that produce sounds such as rice, pebbles, and screw. Based on Figure 5, this activity title “What sound is this?”. Through this activity, the participant needs to make a guess based on the sound they heard. Observations showed that participants were excited to guess the sound and very focused on hearing every sound produced by shaking the boxes and then matching a small box with the same object but have been wrapped up by the researchers as a guessing process. This activity can sharpen their hearing skills and develop their sensory skills.



Figure 5. Toddlers are engaged in activities involving the sense of sound.

5.1.5 Sense of Smell

Based on Figure 6, this activity tile is “Smelling and Guess the smell”. The participants must guess the scent by smelling the box wrapped in aluminium foil with a few small holes so they cannot see the material contained in the box but could still smell it well. This activity can boost their olfactory senses. Throughout observation on this experiment, the researcher found that smelling can activate and stimulate more brain parts than the eyes.



Figure 6. Toddlers are engaged in activities involving the sense of smell.

6.0 Result and Discussions

As a result, the researcher has created a new product which is sensory board games. Based on observations and analyses conducted, the researchers found that board games specifically designed for these sensory game activities have not been introduced, especially in Malaysia. The results showed that not all sensory games performed out there meet these five senses. Therefore, this sensory board game can run all five senses in just one game with the presence of this sensory board game. This

game requires two to three participants between the ages of three to four years. Through this game, children can learn and develop sensory skills while playing. In addition, children can play with their friends and develop a healthy competitive spirit. They can also communicate and interact well during the playing of this game. This game requires a guardian to guide their play to get this game to run smoothly. The colour represents each sense; purple for sight, blue for smell, green for sound, pink for touch, and orange for taste.

6.1 Prototype



Figure 7. Board Games Box



Figure 8. Board Game

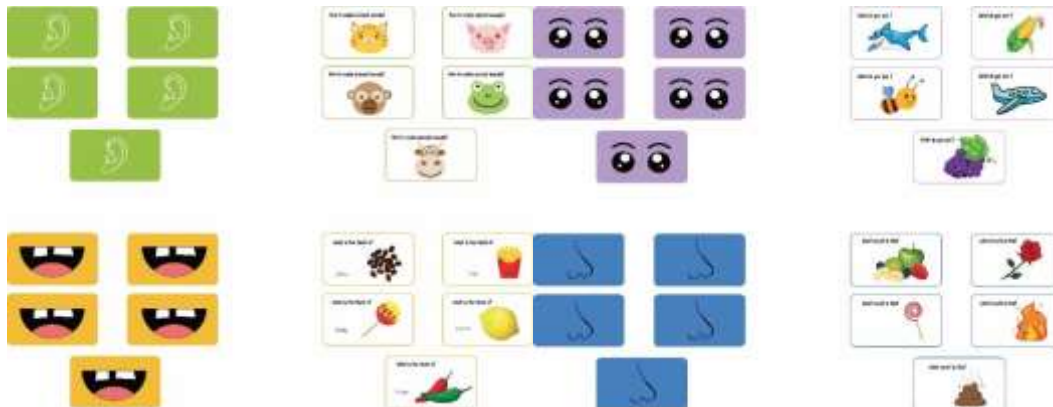




Figure 9. Game Card



Figure 10. Reward Card



Figure 11. Game Instruction



Figure 12. Answer Sheet

7.0 Conclusion

In conclusion, based on this research, children's basic learning and growth development starts from active motor interaction and experiencing senses with the world. It is because this research identifies that there is no sensory function work separately. After all, senses are dependent on one another. The result showed the significance of sensory learning for early childhood and the need to create a new sensory board game specifically designed to meet the five senses in one game. Playing and learning through this sensory board game could assist children in encouraging them to engage in active interactions among peers, parents, and teachers, which could help them reduce the amount of time spent on gadgets. Future research could add different approaches and methods to the existing sensory board game to help children learn about senses and benefit from them.

Acknowledgements

I would like to acknowledge everyone who played a role in this research accomplishment. This research is gratefully supported by Faculty Art & Design, Universiti Teknologi MARA. A debt of gratitude is also owed to Tadika Ilmuan Sayang, Rawang, and each of whom has provided patient advice and guidance throughout the research process. Thank you all for your unwavering support.

References

- Ali, A., Pigou, D., Clarke, L., & McLachlan, C. (2017). Literature Review on Motor Skill and Physical Activity in Preschool Children in New Zealand. *Advances in Physical Education*, 07(01), 10–26. doi: 10.4236/ape.2017.71002
- Bartolo, P. A., Björck-Åkesson, E., Giné, C., & Kyriazopoulou, M. (2016). Ensuring a Strong Start for All Children: Inclusive Early Childhood Education and Care. *Implementing Inclusive Education: Issues in Bridging the Policy- Practice Gap International Perspectives on Inclusive Education*, 19–35. doi: 10.1108/s1479-36362016000008003
- Batshaw, M. L. (1997). *Children with Disabilities*. Baltimore: Paul Brookes.
- Bernama. (2019, September 7). DPM expresses concern over gadget addiction among people. Retrieved from <https://www.nst.com.my/news/nation/2019/09/519527/dpm-expresses-concern-over-gadget-addiction-among-people>.
- Mettam, G. R., & Adams, L. B. (1999). How to prepare an electronic version of your article. In B. S. Jones & R. Z. Smith (Eds.), *Introduction to the electronic age* (pp. 281–304). New York: E-Publishing Inc.
- Brasic-Royeen, C. (1997). Play as occupation and as an indicator of health. In B. Chandler (Ed.), *The essence of play* (pp. 1-16). Bethesda, MD: American Occupational Therapy Association.
- Dea, M. n'. (2016, September 8). Diy photographic memory game suggested in shichida class. Retrieved from https://youtu.be/DCbS_MLICH0.
- DIY Busy Board. (2018, November 9). Retrieved from <https://youtu.be/GF18nbfZTBQ>.
- DIY TEXTURED SENSORY BOARD. (2017, December 14). Retrieved from <https://youtu.be/WcQshfyeP18>.
- DuBois, S. A. (1997). Playthings: Toy use, accessibility, and adaptation. In B. Chandler (Ed.). *The essence of play* (pp. 107–130). Bethesda, MD: American Occupational Therapy Association.
- Early Childhood Physical Development: Gross and Fine Motor Development. (n.d.). Retrieved from <https://www.gracepointwellness.org/462-child-development-parenting-early-3-7/article/12755-early-childhood-physical-development-gross-and-fine-motor-development>.
- Egger, H. L., & Angold, A. (2006). Common emotional and behavioral disorders in preschool children: Presentation, nosology, and epidemiology. *Journal of Child Psychology and Psychiatry*, 47(3-4), 313-337. doi:10.1111/j.1469-7610.2006.01618.x
- Ginsburg, K. R. (2007). The Importance of Play in Promoting Healthy Child Development and Maintaining Strong Parent-Child Bonds. *Pediatrics*, 119(1), 182–191. doi: 10.1542/peds.2006-2697
- Grossman, H. (1995). *Special education in a diverse society*. Boston: Allyn & Bacon.
- Harris, M. J., Milich, R., Corbitt, E. M., & Hoover, D. W. (1992). *Journal of Personality and Social Psychology*, 63, 41–50.
- How to teach your 1- 2 year old toddler? (2018, February 16). Retrieved from <https://youtu.be/CRAzwiWBJM4>.
- Kagan J. (1971). *Change and continuity in infancy*. New York: Wiley (293 p). Department of Psychology. Harvard University, Cambridge, MA
- Kartini Ilias, Ponnusamy, S & Normah, C. D. Parental stress in parents of special children: The effectiveness of psycho education program on parents' psychosocial well beings.
- Learn Numbers 1 to 10 in English | Montessori Sensory Activity. (2018, November 8). Retrieved from <https://youtu.be/yekkUz-pP2A>.
- Li, P. L. P., Khan, T. H., Hussein, A. H. B., & Mei, H. J. (2015). Application of Available Attributes and Physical Characteristics for Learning through Play in Malaysian Preschools. *World Journal of Social Science Research*, 2(2), 307. doi: 10.22158/wjsr.v2n2p307
- Simposium Sains Kesihatan Kebangsaan ke 7 Hotel Legend, Kuala Lumpur, 18 – 19 Jun 2008: 205 – 21.

- Knox, S., & Mailloux, Z. (1997). Play as treatment and treatment through play. In B. Chandler (Ed.), *The essence of play* (pp. 175-206). Bethesda, MD: American Occupational Therapy Association.
- M, S. (2017). The Impact of using Gadgets on Children. *Journal of Depression and Anxiety*, 07(01). doi: 10.4172/2167-1044.1000296
- Malay Mail. (2015, January 31). Smartphones, tablets make bad babysitters, parents told: Malay Mail. Retrieved from <https://www.malaymail.com/news/malaysia/2015/01/31/smartphones-tablets-make-bad-babysitters-parents-told/831185>.
- Metz, A., Imwalle, M., Dauch, C., & Wheeler, B. (2017). The Influence of the Number of Toys in the Environment on Play in Toddlers. *American Journal of Occupational Therapy*, 71(4_Supplement_1). doi:10.5014/ajot.2017.71s1-po1075
- Nugraha, A., Izah, N., Hidayah, S. N., Zulfiana, E., & Qudriani, M. (2019). The effect of gadget on speech development of toddlers. *Journal of Physics: Conference Series*, 1175, 012203. doi: 10.1088/1742-6596/1175/1/012203
- Pierce, D. (2000). Maternal Management of the Home as a Developmental Play Space for Infants and Toddlers. *American Journal of Occupational Therapy*, 54(3), 290-299. doi:10.5014/ajot.54.3.290
- Quest International Journal of Medical and Health Sciences. (n.d.). Retrieved from <https://www.qiup.edu.my/qijmhs/archive/volume-1-issue-2/2018-8/>.
- Russ, S. W. (n.d.). Pretend play and creativity: An overview. *Pretend Play in Childhood: Foundation of Adult Creativity*, 7-28. doi: 10.1037/14282-002
- Sweethome, T. A. (2017, September 10). ANIMALS QUIETBOOK for kids 1-6 year olds. Retrieved from <https://youtu.be/B0feBmeJf98>.
- The Values of Play: Sensory. (2016, May 30). Retrieved from <https://youtu.be/0w-bCKTB9LY>.
- Thompson, S. D., & Rains, K. W. (2008). Learning About Sensory Integration Dysfunction: Strategies to Meet Young Childrens Sensory Needs at Home. *Young Exceptional Children*, 12(2), 16-26. doi: 10.1177/1096250608328242
- Tremblay, R. E., Pihl, R. O., Viatro, F., & Dobkin, P. L. (1994). Predicting early onset of male antisocial behavior from preschool behavior: A test of two personality theories. *Archives of General Psychiatry*, 51, 732-738.
- WebWay E Services. (n.d.). Retrieved from https://www.schoolmalaysia.com/resources/education_system.php.
- Wentzl, K. R. (1993). Does being good make the grade? Social behavior and academic competence in middle school. *Journal of Educational Psychology*, 85, 357-364.
- Wilmshurst, L., & Brue, A. W. (2005). *A parent's guide to special education*. New York: AMACOM.
- Wiskind, J. (2007). Do today's toys allow children to be creative? *ADVANCE for occupational therapy practitioners*, November 12, 16-20.
- Yang, C., & Wang, S. J. (2017). Sandtime: A Tangible Interaction Featured Sensory Play Installation for Children To Increase Social Connection. *EAI Endorsed Transactions on Creative Technologies*, 4(10), 153056. doi: 10.4108/eai.4-9-2017.153056