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# Sensory Garden Approach to Increase Autism Students' Learning Focus in Primary Schools

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**Abstract:** Visual, Audio, Kinetic and Tactile (VAKT) sensory garden approaches in learning are a must to increase the multisensory stimulation of autism students in primary school. The purpose of this study was to examine how autism students' learning focus affected the learning approach in the sensory garden. This study was conducted through qualitative methods using the survey method design. A total of 9 students over the age of 11 were selected in this study from one of the schools of Integrated Special Education Program (PPKI) in Bandar Baru Bangi. The study data were collected through observations and structured interview protocols. The study period is 14 days. The results show that the sensory garden approach to autism students can improve language and communication skills, change behaviors and enhance learning focus. Implication and suggestion, the researcher proposes that further studies may be conducted on other special education students, pre-schoolers and mainstream students.

**Keywords**: autism, VAKT, multisensory, sensory garden, special education

## INTRODUCTION

Autism Spectrum Disorder (ASD), also known as 'Autism', is a developmental disorder that affects a child's development. It is usually detected before the age of three (American Psychological Association, 2016). Children with autism suffer from neuropsychological or psychological deficits that affect their behaviour, communication and social interactions (Norfishah, 2015). The inability to communicate makes it difficult for autism children to interact with others thus hindering the process of social interaction with outsiders (Hasnah Toran, Salmiah Bujang & Fadliana Chiri, 2013; Norfishah, 2015). Autism often presents difficulties with social interactions, verbal and non-verbal communication and repetitive behaviours (Autism Speaks, 2013). As language and communication are key to establish social interaction in human life, an approach must be taken to help children with autism be able to communicate verbally or non-verbally (Flippin, Reszka & Watson, 2010).

### Sensory Garden

According to Hussein (2011), sensory gardens are parks where all components such as landscape, colour and texture are carefully designed to provide maximum sensory stimulation. Therefore, approaches in the sensory garden can enhance children's multisensory stimulation to stimulate their senses. Design elements and colourful plants in the garden provide sharp visual contrast and a more enjoyable experience in terms of hearing, sight, touch, smell and taste (Wysocki, 2003; Dabski and Dudkiewicz, 2010; Wysocki, 2010; Worden Moore, 2013).

Besides that, the surrounding environment affects the developmental process of children's learning in which they use direct experience and quickly learn it (Ramadhani, 2016). School-accessible sensory garden makes it easy for children to play, explore (Titman, 1994). According to Titman (1994), he has identified four elements of children's learning in the school garden. The places are a place for physical activity space; a place to think intellectually, a place to express feelings and a place to be independent. A green space for children should be provided for all activities described above.

**VAKT models (Visual, Audio, Kinaesthetic and Tactical)**

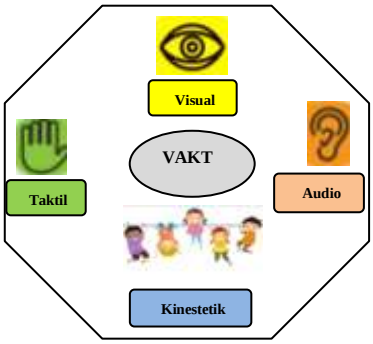


**Figure 1.**VAKT Models (Visual, Audio, Kinaesthetic and Tactical)
(Adapted and modified from Fleming VAKT Model, 1987)

Based on the VAKT (Visual, Audio, Kinesthetic and Tactile) model, it was introduced by Neil D. Fleming. Researchers refer to his study to implement learning in the sensory garden using 5 multisensory basic senses of touch, smell, taste, vision and hearing. This statement was supported by the Sensory Trust, Worden & Moore (2013) where the sensory garden works to stimulate the five stimulations of human's senses for greater awareness.

**Table 1**.Effects of Children's Senses on the Environment

| Senses | Senses Characteristic |
|---|---|
| Visual | * It encourages the child to touch the elements of the environment and to prepare the child to face other senses (Day, 2007).<br>* It is the key senses for storing memory from the surroundings |
| Smell | * Smell is used to enhance mood, change people's perspective on the environment and the way they think. Aroma reduces stress, improves mood and power in children (Augustin, 2009).<br>* According to Quercia et al. (2015), he argues that the influence of sense of smell in an environment (smellscapes) can shape the identity of the environment. As such, the sense of smell can reinforce memory through the child's actual experience. |
| Audio | * According to Prabowo (2015), the most powerful element of influence is sound.<br>* Kids enjoy incredible sounds (tunnels, caves, walls that reflect sound) as they enhance their imagination.<br>* Acoustic confusions in space reduce children's comprehension (Spencer & Blades, 2006)<br>* Broto (2010) argues that sensory experiences such as friction between grass and bamboo stalks enhance children's curiosity to seek the direction of the sound. |
| Taste | * Children feel objects repeatedly with their tongue; it is a natural response to better understand the environment (Day, 2007). |
| Touch | * It has a significant relationship with the child's feelings and emotions and the child has a tendency to touch objects.<br>* Environmental elements affect the learning process for children (Day, 2007).<br>* According to Masiulanis and Cummins (2017), outdoor areas can be divided into pavement (concrete and stone), small areas (rubber, sand and gravel) and garden areas (grass, shrubs and other plants). |

(Source: Adapted from Reihana Nikravesh & Seyedeh Marziah Tabaeian, 2015)

In teaching through a multisensory sensory approach, learning processes benefit various sensors to enhance memory and learning processes such as auditory (listening), visual (vision) and kinesthetic-tactile (movement, tactile). The sensory garden can stimulate all sensory systems such as auditory (listening), proprioceptive (muscle), tactile (touch), olfactory (smell), gustatory (observation), visual (vision) and (movement-balance) of the human body (Delaney, 2010; Haliimah, 2014). This finding is also supported by Sibermann (2010) that weak sensory parts support each other when multisensory stimulation processes occur.

## LITERATURE REVIEW

Pauline's (2013) study of sensory garden found that various activities outside of sensory garden can stimulate multisensory and direct experiences as children's learning processes. These approaches are more beneficial than reading books. This statement was also supported by Linda Balode (2013) who says that the sensory garden provides aesthetic enjoyment and serves as a therapeutic tool for enhancing all five basic human senses: hearing, vision, touch, smell and taste.

According to Hazreena Hussein's (2014) study, the sensory garden is a space for children to play and explore outside through physical mobility, social skills and sensory stimulation among children with special needs. Similarly, Blakesley, Rickinson and Dillon (2013) titled Autism Students' Involvement Through Nature Environment argued that outdoor learning involvement for autism children through environment proved 7 beneficial activities for autism children including gardening and horticultural activities, landscape design, summer camps, physical exercise, farm experience, animal therapy and live experience through the environment. This study was also supported by Blakesley and Payne (2012) that learning outside through the natural environment enhances better understanding and provides a direct experience for children with autism.

Furthermore, a study (2014) titled The Need of Sensory Garden Outside the Autism Centre's Classroom demonstrates that positive behaviour changes for people with sensory system disorders in hypersensitive and hyposensitive autism children. Hyposensitive therapy parks are provided for children to be active, challenging and have ample play space. While hypersensitive therapies are provided for children who are too active to be at ease (Wilson & Johnson, 2007; Blakesley et al., 2013 and Wahyuni, 2015). Haliimah's study shows that the preparation of both softscape and hardscape material through the elements, physical shape and structure of the garden can influence the behaviour between hypersensitive and hyposensitive.

Further, some researchers say the park serves as a therapy for children with disabilities, the elderly and patients for healing process (Ahmet Tugrul Polatc, 2017) in their study of therapeutic gardens design in Turkey. According to Detweiler et al. (2012), "healing parks" or "therapeutic parks" provide space for physical movements (Ghazali and Abbas, 2012). Polatc's study result shows that therapeutic gardens can heal a person and can help relieve stress, soothe emotions and restore mental health (Pouya and Demirel, 2015). He also argued that landscape engineers should work together in a team to learn how to plan the criteria for therapeutic garden environment design for children with disabilities to meet their needs (Marcus and Sachs, 2014).

Monika Trojanowska (2014) conducted a study on sensory garden design for visually impaired users in Poland. However, the study found that there is a need for specialized design that complies with safety standards in sensory gardens for multisensory stimulation for all children in special schools. This study was also supported by R. Nikravesh & S. M Tabaeian (2016). In their study, they found that some of these sensory garden designs need to take into account the environment, safety level, active participation, access to various activities, green garden space, individual activities and group, social interaction, observation and understanding and the different colours of space.

In conclusion, sensory garden benefits the environment, focus on learning and enhance the social interaction of autism students. Besides that, the sensory garden is a natural space with many elements including colours, textures and so on to stimulate children's senses. The learning process has a positive impact on autism students' academic achievement. Therefore, learning process through hands-on and discovery inquiry can also enhance students' understanding, focus and knowledge as well as multisensory senses through activities in this sensory garden.

**METHODOLOGY**

Researchers used structured observations and interview protocols as instruments. Observation checklist instrument and set of interview protocols were referenced, reviewed and verified by three specialists in the field of special education from public higher education institutions.

The form of observation is based on the description of Fetterman (1989). In conducting the observations, the researcher referred to science subject five times a week according to the time schedule of the 9 students involved from class 5 Aman. The science subject topic was Plants. It is subject to the Annual Teaching Plan syllabus for activities conducted in the sensory garden to suit the abilities of all students. Next, the researcher collects observational data (checklists), interviews and recorded recordings using video recorders to validate observation data (Miles et al. 2014). Observation forms were drafted in the form of a table to enable the researcher to review the predefined items.

Visual stimulation, audio, touch, smell and taste are multisensory activities carried out in the sensory garden. There are 5 pre-administered items that are student profiles, sessions, activities, issues and obstacles. Visual stimulation, audio stimulation, touch stimulation, smell stimulation and taste stimulation were applied in teaching and learning in this sensory garden according to the daily lesson plan (DLP).

The main objective of this activity was to stimulate the multisensory sensation of all respondents. In terms of sessions such as start-ups, discussions, explorations and individuals / groups were recorded to gather data and further validate the findings. The table below is an example of an observation that uses a checklist as a record of a 14-day review of the survey.

**OBSERVATION: CHECKLIST**

| NO. | | ITEMS | NOTES |
|---|---|---|---|
| 1 | **Student's Profile** | i. Race<br>ii. Name<br>iii. Class<br>iv. Learning Problems Category | |
| 2 | **Session:** | i. Beginner<br>ii. Discussion<br>iii. Hands on / Exploration / Discovery Inquiry<br>iv. Individual / Pair / Team | |
| 3 | **Activity:** | **Visual Stimulation**<br>i. Students observe / see herbs plants<br>ii. Students observe textures of colours, leaves, flowers and trees<br>**Audio Stimulation**<br>i. Students observe variety of sounds<br>ii. Students repeat the sound they heard<br>**Touch stimulation**<br>i. Students feel / touch the texture and leaves elements, branches with thorns, soft, hard, wet, dry and many more<br>ii. Students state the texture they touched<br>**Smell Stimulation**<br>i. Students smell plants or herbs leaves<br>ii. Students express smell<br>**Taste Stimulation**<br>i. Students use their tongue senses to taste such as berries and herbs<br>ii. Students identify the taste and express it | |
| 4 | **Issue (problems)**: | i. Individual<br>ii. Friend<br>iii. Miscellaneous | |
| 5 | **Obstacles:** | i. Location / weather<br>ii. Interaction / Communication<br>iii. Discipline<br>iv. Focus | |

Accordingly, the researchers self-administered the interview guide instruments in this study. this interview was broken into two sections where Section A (Science teacher) were asked 8 questions, while Section B (student) was also 8 questions. All of the interview questions that the researcher drafted were to review whether the activities performed showed positive or negative effects on the learning process in the sensory garden. The interviews were conducted randomly which took between 10-15 minutes to obtain data and feedback from all respondents and Science teachers. The data obtained is then recorded in the interview form space.

From the interview analysis, all respondents expressed their excitement and joy through multisensory stimulation activities in the garden. Respondents spoke in more detail about their feelings and opinions during a study in the sensory garden which helped them to be more focus and with their behavior problems.

**Table 2.** Background of Study Samples

| | PPKI Students | Gender |
|---|---|---|
| S_1 | Autism | M |
| S_2 | Autism | M |
| S_3 | Dyslexia | F |
| S_4 | Autism | M |
| S_5 | Autism | F |
| S_6 | Autism | M |
| S_7 | ADHD (Attention Deficit Hyperactive Disorder) | M |
| S_8 | Slow learner | F |
| S_9 | Autism | M |
| GS | Science Teacher | F |

* Code S - Study Sample
* GS - Science Teacher

A total of 9 respondents in this study were from Class 5 Aman with 6 autism students, 1 dyslexic, followed by 1 ADHD and 1 slow learner student. There were 6 male and 3 female students. For sample (S_1, S_2 and S_4), all of these students had moderate-to-severe autism and could still learn and respond well.

However, some of them were less involved in the group, less intrusive and lack of confident in the classroom. Whereas the sample (S_5 and S_6), comprised of intelligent autism students, can be independent and enjoy learning outside the classroom. For the autism student sample (S_9), they were less focused in the classroom and a bit aggressive. For the sample students (S_3, S_7 and S_8), it consisted of students who were relatively passive and less focused in the classroom but could follow instructions and the learning. Science teachers were also involved in obtaining information and data for validation.

## RESULTS AND DISCUSSION

### WHAT IS THE EFFECT OF LEARNING IN THE SENSORY GARDEN ON AUTISM STUDENTS?

Based on the data collected by the researcher, the results of the data support each other. All respondents showed an increase in learning focus after 2 weeks of intervention. The findings have a huge impact on all respondents and all students are more prepared and excited about the activities.

In this regard, it was found that students especially students with autism, showed positive effects on behavior change, language and communication skills and increased learning focus. In fact, positive attitudes such as interest in learning, good relationships with classmates and engagement in group work have improved.

**Theme 1: Students are more focus and understand better**

Based on the respondents' interviews, the data revealed that the learning focus of autism students increased after a 2-week intervention through real-world sensory garden according to GS, S_5 and S_6.

> *"As a result, students are excited and focused when the teacher is giving activities". (GS)*
>
> *"In my opinion… teaching approach in sensory garden is more suitable as all students can listen to the teacher's instructions. From my evaluation, students were more focus and understand faster. They used to play a lot, got bored easily and doesn't understand the lessons I am trying to convey." (GS)*
>
> *"Yes ... studying in the garden is more fun than in the classroom because I can pick up leaves, touch trees, pick leaves and fruit, taste the mulberry fruit and more". (S_5)*
>
> *"Yes, I love to study at the garden and I understand better compared to learning in the classroom. ( S_6)*

**Theme 2: Cognitive Development**

Findings from the transcript data of the interview indicated that GS gave an explanation of the positive change in the respondents' cognitive development through a sensory garden learning approach. This cognitive development involves a longer focus on learning activities and learning content is better understood through exploration of the environment in the sensory garden. (S_4 and S_7).

> *"In the group, my partner and I were given the task to record plants with roots and plants that does not have roots, have stem and no stem, the texture of the coarse and soft tree and so on". (S_4)*
>
> *"Fun and happy ... there are leaf picking and leaf counts activities, tasting fruits and many more". (S_7)*
>
> *"There seems to be a positive improvement in the assignments I gave them. They completed the tasks quickly. They also focus easily and are more prepared". (GS)*
>
> *"It is difficult to get these students to focus. Especially (S_3, S_5 and S_6). With the multisensory implementation at this sensory garden, at least they can pay attention during the activity, which is good enough for me" (GS)*

**Theme 3: Emotional Development**

The transcript of the respondents' interviews shows that GS explained that all respondents expressed their feelings of joy and enjoyment in activities at the sensory garden. According to (S_1 and S_4), these positive emotions have a profound effect and their learning goals are achieved.

*"It was fun to hold the tree and the leaves". (S_1)*

*"If in this garden I can run freely and have activities .. I can play with my friends ..". (S_4)*

*"When I bring them to this garden, I can see teamwork among them ... they are more excited and interested in the assignments." (GS)*

**Theme 4: Social Development**

Science teacher respondents stated that activities in the sensory garden could enhance the social development of the subject where the activities carried out had a positive effect on the level of socialization of students. According to this Science teacher, in pairs and group activities were conducted and there was a two way communication when exploring and seeking answers to assigned tasks.

*"I was intrigued by the activity just now. I got to pick leaves with friends for teacher's assignments…". (S_5)*

*"Prickly and not prickly plants, plants with stems and no stems, coarse and soft tree texture and so on can be learnt". (S_9)*

*"Exploration activities, discovery inquiry and hands-on activities are also carried out through multisensory stimulation of touch, smell, taste and vision ... Besides that, I can see their positive social development with friends". (GS)*

**HOW FAR DOES THE SENSORY GARDEN STIMULATE AUTISM STUDENTS' MULTISENSORY?**

**Theme 1: More Sensitive**

The results of the study conducted in the sensory garden showed a positive effect on all respondents as they were more aware of the learning process especially students with autism. Compared to before the intervention, many problems arose such as boredom, discomfort and lack of attention in the classroom but after the intervention was conducted, many positive effects were seen from all respondents.

*"In my opinion, multisensory stimulation method is suitable for PPKI students as multisensory senses are used during the activity. This is because they are exposed to the real environment and are more sensitive during the learning process". (GS)*

*"I divided my students into pairs and group activities. I applied tasks by exploring and hands-on work in this assignment…" (GS)*

**DISCUSSION**

Researchers recommend that further studies should be extended to subjects such as other special education students. For example, visual disabilities and hearing impairment, pre-school and mainstream students. Research on other subjects will be able to prove the impact of learning in the sensory garden more meaningfully.

In addition, teachers should further diversify multisensory activities through play activities, discovery inquiry, exploration and hands-on at the garden. Through outside of classroom learning, autism students not only explore the environment but these various activities enhance their development and make learning more

enjoyable. Activities like hands-ons can help students gain new knowledge and their minds will develop through their experiences and the environments.

In this study, researchers recommend that each school should establish a sensory garden as the multisensory approach within the teaching and learning can help teachers capture the interest and focus of their students. Landscape planning in a beautiful, well-organized garden and in accordance with safety standards should be taken into account by the school (Monika Trojanowska, 2014). Besides that, Malaysia's Ministry of Education should allocate and assess the design requirements of the sensory garden. Elements such as textures, pathways, reflexology sites, colours, herbs and more are needed to bring the atmosphere of the garden environment to the attention and interest of all students.

Therefore, this study needs to be practiced in schools to improve the education system in line with the outlined education policy. This study is used by teachers as teaching and learning spaces that have a positive impact on student's achievement. In this regard, the education system can be improved in a more optimistic way. In addition, the Malaysia's Ministry of Education can produce sensory garden implementation modules for all students in schools across the country on the importance of learning in sensory garden to enhance the learning focus of autism students.

## CONCLUSION

Autism students tend to have behavioral, emotional and communication problems that make it difficult for them to learn. Teachers can diversify strategies such as playing methods, individual or group projects, discovery inquiry, exploration and hands-on for students to new knowledge. This makes the learning environment of autism students more enjoyable to achieve their learning goals.

Therefore, sensory garden approach is one of the ways to increase the concentration, interest and communication of autism students. In conclusion, to enhance the learning focus of autism students, teachers must take into account that the emotions of autism students are inconsistent and sometimes good or bad.With this in mind, teachers should have a variety of learning methods and techniques suited to the different abilities of autism students.

## REFERENCES

Abdullah, M. 2012. Keberkesanan Kaedah Multisenori Dalam Pengajaran Dan Pembelajaran Bahasa Melayu Kanak-Kanak Disleksia (Doctoral dissertation, Universiti Kebangsaan Malaysia).

Aini, K. 2014. Penerapan model pembelajaran inkuiri dengan hands on minds on activity untuk meningkatkan hasil belajar siswa pada materi pokok termokimia (implementation inquiry learning model with hands on minds on activity to improve student's achievments at thermochemistry). UNESA Journal of Chemical Education, 3(1).

ALI, M. M., & SAHAL, N. 2016. Intervensi Meningkatkan Tumpuan dalam Pembelajaran Murid Bermasalah Pembelajaran (The Intervention Increased Attention in Students With Learning Disabilities). Jurnal Pendidikan Malaysia| Malaysian Journal of Education, 41(1), 1-6.

Blakesley, D., Rickinson, M., & Dillon, J. (2013). Engaging children on the autistic spectrum with the natural environment: Teacher insight study and evidence review.

Chee Meng Er , Tahar, M. 2013. Keberkesanan Kaedah Multisensori dalam Pengajaran Kemahiran Menulis Murid Bermasalah Pembelajaran. Seminar Internasional Pasca Siswazah Pendidikan Khas UNJ-UKM-UPI Siri 3/2013. Bangi: Penerbit Universiti Kebangsaan Malaysia

Ghazali, R., Sakip, S. R. M., & Samsuddin, I. (2018). A Review of Sensory Design Physical Learning Environment for Autism Centre in Malaysia. Environment-Behaviour Proceedings Journal, 3(7), 145-151.

Gormley, E. 2016. The Prevalence of Visual, Auditory, and Kinesthetic Senses Students with Low-Incidence Disabilities Utilize When Receiving Instruction.

Haliimah, M., Asikin, D., & Razziati, H. (2015). Taman Sensori pada Ruang Luar Autism Center di Kota Batu. Jurnal Mahasiswa Jurusan Arsitektur, 3(1).

Hastutiningtyas, W. R., & Setyabudi, I. (2017). STUDI KASUS SARANA TERAPI OKUPASI DENGAN TAMAN EDUKASI PADA PENDERITA AUTIS DI SLB SUMBER DHARMA KOTA MALANG. Care: Jurnal Ilmiah Ilmu Kesehatan, 5(2), 277-290.

Hussein, H. 2014. Experiencing and engaging attributes in a sensory garden as part of a multi-sensory environment. Journal of Special Needs Education.

Hussein, H. 2012. The influence of sensory gardens on the behaviour of children with special educational needs. Procedia-Social and Behavioral Sciences, 38, 343-354.

Hussein, H. 2010. Using the sensory garden as a tool to enhance the educational development and social interaction of children with special needs. Support for Learning, 25(1), 25-31.

KHOO, S. A., & ALIAS, A. (2015). TAHAP KEMAHIRAN SOSIAL MURID-MURID AUTISME DI PROGRAM PENDIDIKAN KHAS INTEGRASI BERMASALAH PEMBELAJARAN. In Seminar Kebangsaan Majlis Dekan-Dekan Pendidikan Universiti Awam Malaysia 2015.

Mahyiden, Norharyani, Yasin, M. H. M., 2015. Kemahiran Literasi Menggunakan Modul Cepat Baca Dan Bahan Bantu Mengajar Multisensori. International Seminar On Special Education For Southeast Asia Region 5th Series 2015 UKM – UPI – UNESA- SEAMEO SEN. Bangi: Penerbit Universiti Kebangsaan Malaysia

Muhamed, H. (2017). Pendekatan belajar melalui bermain untuk membantu kemahiran komunikasi kanak-kanak autistik di Pra Sekolah Pendidikan Khas (Doctoral dissertation, Universiti Pendidikan Sultan Idris).

Nikravesh, R., & Tabaeian, S. M. (2016). Sensory Garden Design Solutions in Child Friendly Environments (Case Study: The Children of the City Of Isfahan, North West-District# 12, in Pre-Elementary and Elementary Schools. Journal of Design and Built Environment.

Nur Syuhada Wahab, Faridah Yunus. 2017. Teknik Multisensori Dalam Pengajaran Dan Pembelajaran Literasi Huruf Kanak-Kanak Prasekolah. Persidangan Antarabangsa Sains Sosial & Kemanusiaan Kali ke-2 (PASAK 2017). Bangi: Penerbit Universiti Kebangsaan Malaysia

Pagliano, P. 2013. Using a multisensory environment: A practical guide for teachers. David Fulton Publishers.

Ruhaena, L. 2015. Model Multisensori: Solusi Stimulasi Literasi Anak Prasekolah. Jurnal Psikologi, 42(1), 47-60.

Rusinko, J. E. 2011. A proposed theoretical model of literacy learning using multisensory structured language instruction (MSLI) (Doctoral dissertation, Antioch University).

Sekarmaji, D. S. 2018. Pengaruh metode multisensori terhadap kemampuan berhitung anak usia 5-6 tahun (Doctoral dissertation, Universitas Sebelas Maret).

Setyabudi, I., & Hastutiningtyas, W. R. (2017). KONSEP TAMAN PEKARANGAN SEBAGAI ZONA TERAPI DAN EDUKASI BAGI ANAK AUTIS (STUDI KASUS: SEKOLAH LUAR BIASA (SLB) SUMBER DHARMA MALANG). Jurnal Lanskap Indonesia, 9(1), 52-62.

Trojanowska, M. (2014). SENSORY GARDENS INCLUSIVELY DESIGNED FOR VISUALLY IMPAIRED USERS.

Strom, B. S., Ytrehus, S., & Grov, E. K. 2016. Sensory stimulation for persons with dementia: a review of the literature. Journal of clinical nursing, 25(13-14), 1805-1834.

Widiyastuti, M. 2017. Pengaruh penggunaan metode multisensori terhadap kemampuan membaca permulaan pada anak tunagrahita ringan kelas v di slb-c ypslb gemolong tahun ajaran 2016/2017 (Doctoral dissertation, Universitas Sebelas Maret).

Yasin, M. H. M., Tahar, M. M., Razalli, A. R., Chee, T. P., & Bari, S. 2014. Bimbingan dan kaunseling murid-murid bermasalah pendengaran. Jurnal Penelitian dan Pengembangan Pendidikan Luar Biasa, 1(1), 74-82.

Yohana Widjaja, Susinety Prakoso. 2018. Pengalaman Sensori pada Taman Lingkungan (Objek Penelitian: RPTRA Kembangan Utara)

Zamri Mahamod & Yahaya Othman. 2017. Penulisan Akademik Dalam Bidang Sains Sosial. Bangi: Penerbit Universiti Kebangsaan Malaysia