

Effectiveness Implimentation of Occupational Therapeutic Module on Language and Cognitive Achievement among Children with Autism Spectrum Disorder

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Abstract:The purpose of this study is to determine the effects of an Occupational Therapeutic Module towards language and cognitive skills achievement among four years old children with Autism spectrum disorder. The aim of this study is also to evaluate and assess the existing strengths and weaknesses and to profile the subject's achievement of language and cognitive skills. A case study approach with multi case and multi-site method which involves single subject A-B-A-B design was used to administer the module in four phases: Baseline (A), Intervention 1 (T), Maintenance (M) and Intervention 2 (K) in 24 sessions within a period of 6 months. The adapted language and cognitive development checklist was used to measure the level of achievement based on a 6-point scale. A set of questionnaires was used to gather information on subjects from teachers, therapists and parents. Response of subjects tabulated in graphs and their progress was evaluated. The findings show that the use of therapeutic processes contributes towards improvement of language and cognitive skills from non-responding to responding consistently in all subjects. The implementation of Occupational Therapeutic activities stimulates the Oral Motor Movements (OMM) of the subjects which enhance their word pronunciation and comprehension. Improvement of memory and attention span were also observed in all subjects. Further work on this module should be carried out to include other categories of special children with language and cognitive impairments.

Keywords: Occupational Therapeutic, Modules, Language and Cognitive achievement, Autism Spectrum Disorder

I. INTRODUCTION

Practice of Teaching and Learning approaches (T&L) and the qualities of intervention of teachers and therapists in early intervention programs to coincide with the corresponding and objective manner of measure lessons will prove the achievement of language and cognitive Autism spectrum disorder child. According to Vaughn and Fuch (2013), teachers and therapists have to use more effective program in early intervention and need to reflect the validity and reliability of assessment approach in designing T&L. There is some restraint in the implementation of early intervention program when it should be given more serious attention, especially in the approach of T&L. According to Nilonske and Mills (1999) teaching and learning activity in small groups, the role of the therapist, explicit and structured teaching also play a role in increasing the achievement of Autism spectrum disorder children. In this study, researcher chose Autism spectrum disorder child with heterogeneous which requires the design of early intervention programs that give focus to a model that relies on the integration of Occupational Therapeutic which enhance stimulation of organ sensory motor-OSM (Dunbar, 1999).

II. BACKGROUND OF STUDY

Task to solve the problem of language and cognitive development is heavy, as a child with Autism spectrum disorder consisting of various levels of ability but by selecting the programs, modules and appropriate approach can improve their language and cognitive ACHIEVEMENT (Deno, 2013). American and Canadian Association of Occupational Therapeutic (2017) view that the Occupational Therapeutic Module equipment have integrated mechanism which will stimulates, responsive and drive organ sensory motor(OSM) internally and externally to enhance language and cognitive skills achievement. Thus teachers and therapists should have the creativity and enhance personal talents towards develop the ability of language and cognitive skills of children with Autism spectrum disorder (Babyak, Koorland, &Mathes, 2000).

III. PROBLEM STATEMENTS

Education for children with learning disabilities become more challenging as the current development in the aspect of scientific and technology in education. Language difficulties and cognitive disability in children with Autism spectrum disorder need to be addressed effectively. Autism spectrum disorder children often have difficulties in the motor and sensory organ function has implications on their performance in activities of daily living skills (Dunbar, 1999). Delays in language and cognitive development can be enhanced to the optimum through the program, modules, curriculum, therapeutic approach, structured clinical intervention style is designed to exploit the capabilities of language and cognitive abilities (Robert & Lynn, 1998). Hallahan and Mock (2013) has identified the problems faced by children with Autism spectrum disorder have not found a solution.

Interviews, observations, reference documents, curriculum, approach and T&L as well as discussions with members of the multidisciplinary team in an early intervention centre, therapists still practice the conventional way and do not refer to the current model. This is despite the Occupational Therapeutic program involves various activities to enhance language and cognitive skills of children with Autism spectrum disorder (Kuhn & Stahl, 2003). Evaluation and assessment of strengths and weaknesses of children with Autism spectrum disorder should be monitored at all times to establish T&L process effective (Vaughn & Fuchs, 2003). Evaluation and assessment instruments should be appropriate to reflect the validity and reliability of the assessed skills (Fuchs & Compton, 2014).

IV. THE OBJECTIVES OF THE STUDY

This study aimed to develop a profile of the background development of children with Autism spectrum disorder, to measure the effectiveness of the Occupational Therapeutic module to increase language skills and subjects to measure the effectiveness of the Occupational Therapeutic module to increase cognitive skills of the subjects. In particular, the objectives of the study are as follows:

1. Profiling the development of children with Autism spectrum disorder as a whole and their response to the use of Occupational Therapeutic module.
2. Identify the components of language skills ACHIEVEMENT of children with Autism spectrum disorder.
3. Identify the components of cognitive skills ACHIEVEMENT of children with Autism spectrum disorder.
4. Identify the extent of Occupational Therapeutic module components influencing the increase language and cognitive skills of children with Autism spectrum disorder.

V. THE CONCEPTUAL FRAMEWORK OF STUDY

Forming the framework of this study is based on a combination of Learning Theory (Gagne, 1977), Cognitive Theory (Chomsky, 1965; Piaget, 1959), Assimilation Theory (Ausubel, 1965) and Behavioural Theory (Skinner, 1938). The combination of the above theories with Canada Occupational Therapeutic Model: How It Works that has been adapted from Hagedorn (1997) as a guide for the study. Based on the above model, the researcher used the Occupational Therapeutic module emphasizes the *Stimulation Process* in an *Integrated Organ Sensory Motor* (OSM) to create a *positive behavioral response* to increase language skills and cognitive components of children with Autism spectrum disorder.

VI. METHODS

The Research Design and Respondents

This study is a case study, multi-case and multi-location based on A-B-A-B single subject design. Single subject design is very useful in conducting research on individuals in terms of intensive rehabilitation. The method of multiple cases and multiple locations to assess and evaluate individuals with Autism spectrum disorder in detail in terms of language and cognitive development as well as profiling the background. Subjects selected from the categories children with Autism spectrum disorder, aged 4 years from the male and female. Subjects were randomly selected systematically from three early intervention centres in Malaysia which provides early intervention program available. Subjects were chosen to meet the features and functions for children with Autism spectrum disorder just as poor motor coordination and sensory language ability is quite weak.

The Research Procedure

The study was conducted in four phases: Phase Baseline (A), Intervention Phase 1 (T), Maintenance Phase (M) and Intervention Phase 2 (K). All subjects went through 24 sessions over a period of 6 months. Language and

cognitive development adapted checklist instrument used to determine the level of increase language skills and cognitive components. Six point Likert scale used in determining the scores for subjects in each of the skills to be included in a line graph. Questionnaires are also used for interviews with teachers, therapists and parents to obtain information on the subject of detailed research. The findings were analysed using descriptive data (frequencies, means and percentages).

Table 1 Single Subject Design A-B-A-B

Y	BASELINE	INTERVENTION 1	MAINTENANCE	INTERVENTION 2
	A	T	M	K
	Observation only.	Implementation of First Occupational Therapeutic sessions	Observation of Language and Cognitive skills maintenance results of Intervention 1 (T)	Implementation of Second Occupational Therapeutic sessions.
	WEEK 1-6	WEEK 7-12	WEEK 13-18	WEEK 19-24

(Resource: Wiersma, 2013, pgs. 147)

- A: The Baseline before therapeutic sessions, assessment tests and observation sessions only held.
- T: The intervention session 1(T) – First Occupational Therapeutic session carried out.
- M: The Maintenance and observation/assessment test to evaluate retention levels after the first intervention session (T).
- K: The intervention session 2 (K) is held to enhance language and cognitive skills achievement of children with Autism spectrum disorder continued.
- Y: Components of language and cognitive ACHIEVEMENT scores
- X: The variables of time and number of days of Occupational Therapeutic intervention sessions conducted

VII. RESULTS

a) The profile of the background and information on the development of children with Down syndrome

Interviews with teachers, therapists and parents of children with Autism spectrum disorder, the background can be profiled in this study as the basis of data in the use of Occupational Therapeutic as a domain module on increasing language skills and cognitive components. Table 2 briefly describes the profile and background of children with Autism spectrum disorder.

X

b) Increase the ACHIEVEMENT of language skills and cognitive components of children with Autism spectrum disorder

The findings of the data obtained from Phase Baseline (A), Intervention Phase 1 (T), Phase Maintenance (M) and Intervention Phase 2 (K) can be described on a line graph, patterns of performance and increase language skills and cognitive components of children with Autism spectrum disorder separately.

c) Comparison of the performance and achievement of language skills and cognitive components of the subjects

The Occupational Therapeutic module equipments adopted in this study contributes an effect of performance and increase language skills and cognitive components of Autism spectrum disorder children. The results show that there are differences and similarities in ACHIEVEMENT and enhancement of skills tested. Although language and cognitive skills of the subjects very low at the Baseline Phase (A) but it has been increased in the Intervention Phase 2 (K) where by they able to react and interact consistently.

VIII. DISCUSSION

The findings of this study indicate that the Occupational Therapeutic module and the devices has been considered as the main predictor components improve the performance of language and cognitive skills of children with Autism spectrum disorder. In the module of Occupational Therapeutic, clinical methods, therapeutic approach emphasizes teaching and learning process that is integrated with the stimulus and response (S-R) to organ sensory motor (OSM) has been strengthened and conditioned towards positive behaviour for language and cognitive skills of children with Autism spectrum disorder. Therapeutic activities in the module of Occupational Therapeutic were found to influence the process of achivement of language and cognitive components skills for children with Autism spectrum disorder:

- a) Based on the Figure 2, the process of Occupational Therapeutic intervention in phase 1(T) has given the an impact of visual, auditory and touch stimulation to act consistently in the pre-receptive language skills (*see the direction of sound, visual perception of the object and impressive sound source direction*). The findings of this study also support by Westling and Fox (2000) which states that although Autism spectrum disorder children face language and cognitive problems are extreme, if given intensive intervention function can be improved.
- b) In the meantime, the results showed weaknesses in receptive language skills early in the baseline phase (A). Figure 3 highlights, the intervention phase of the study found that subjects show interest, positive behaviour and ability to understand instructions to complete the initial language receptive activities (*playing with manipulative objects, identify objects, see picture called and respond to the therapist*). Occupational Therapeutic equipments (*Bolts, Nuts, and Supro Board Scanning Board*) is a multi-dimensional function to stimulate and encourage organ sensory motor (OSM) of hearing and vision to act consistently in the early receptive language skills.
- c) The results of the study based on Figure 4 also show that there are differences and similarities in the scores of receptive language skills (*verbal instructions to follow, identify three types of location, pointing and set of numbers called*). Subjects were found to be able to encode, understand the concept of speech with the aid of the Occupational Therapeutic devices enhanced the subjects to respond and interact with themselves and consistently.

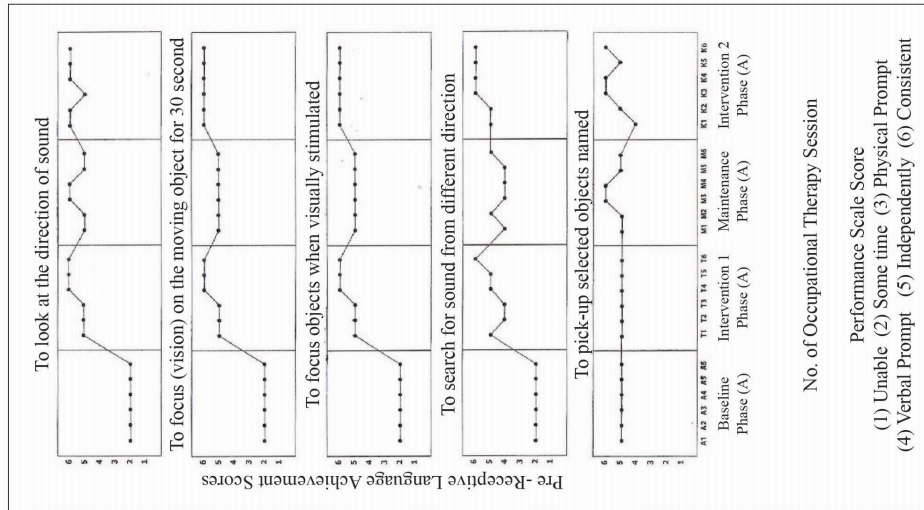


Figure 1 : Pre-receptive Language Components

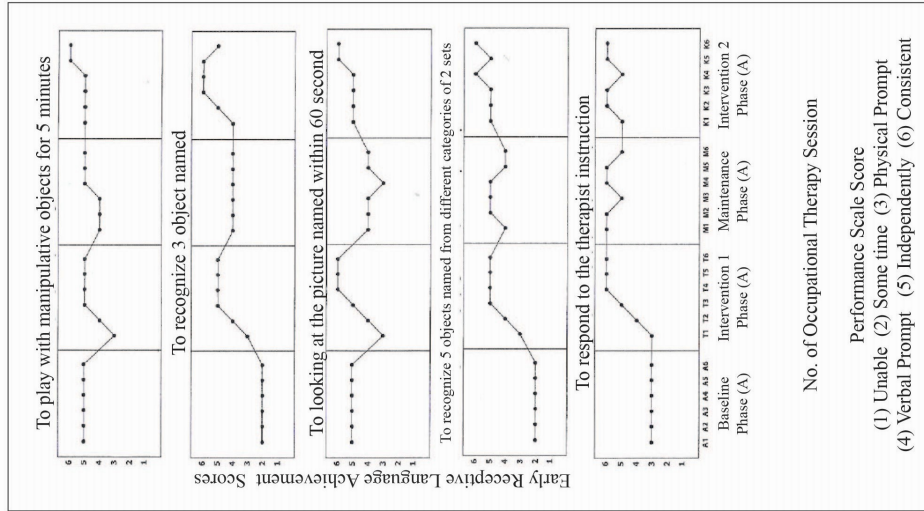


Figure 2 : Early Receptive Language Component

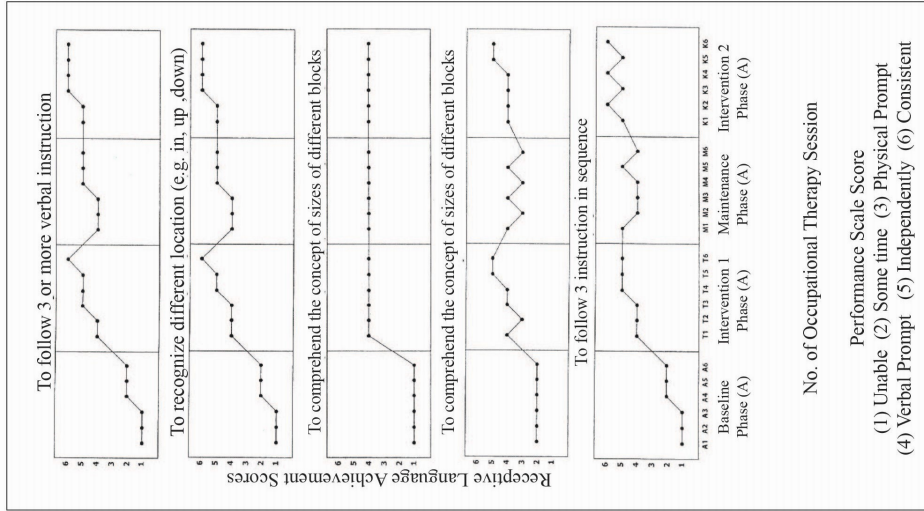


Figure 3 : Receptive Language Component

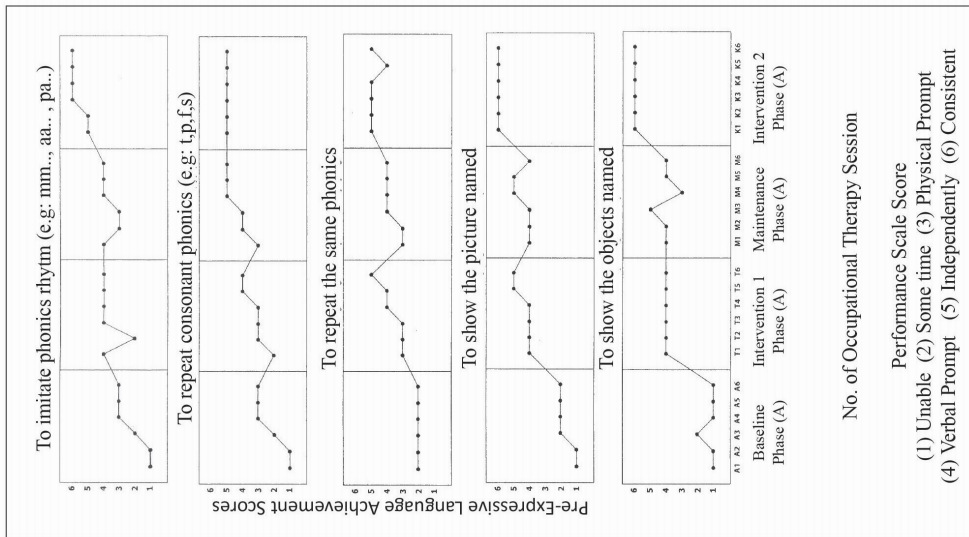


Figure 4 : Pre-expressive Language Component

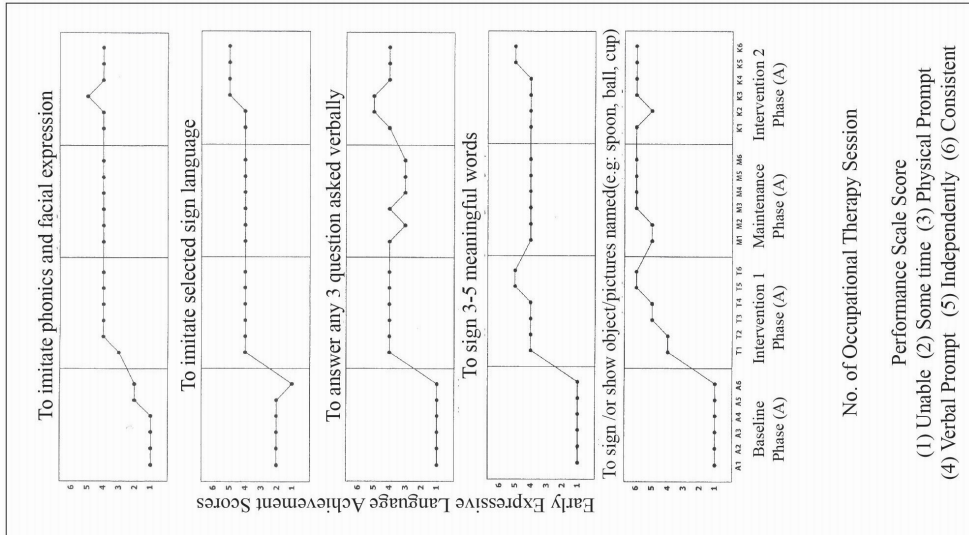


Figure 5 : Early Expressive Language Component

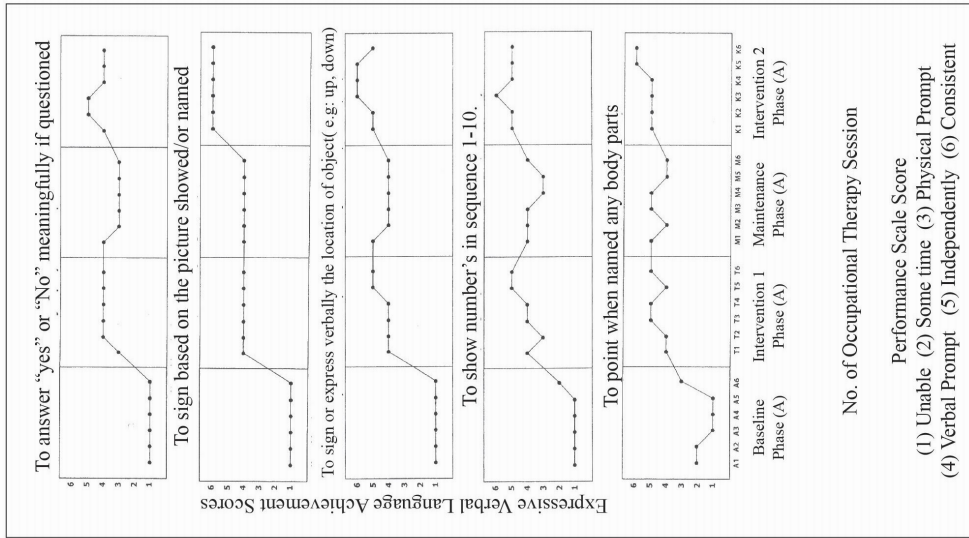


Figure 6 : Expressive Verbal Language Component

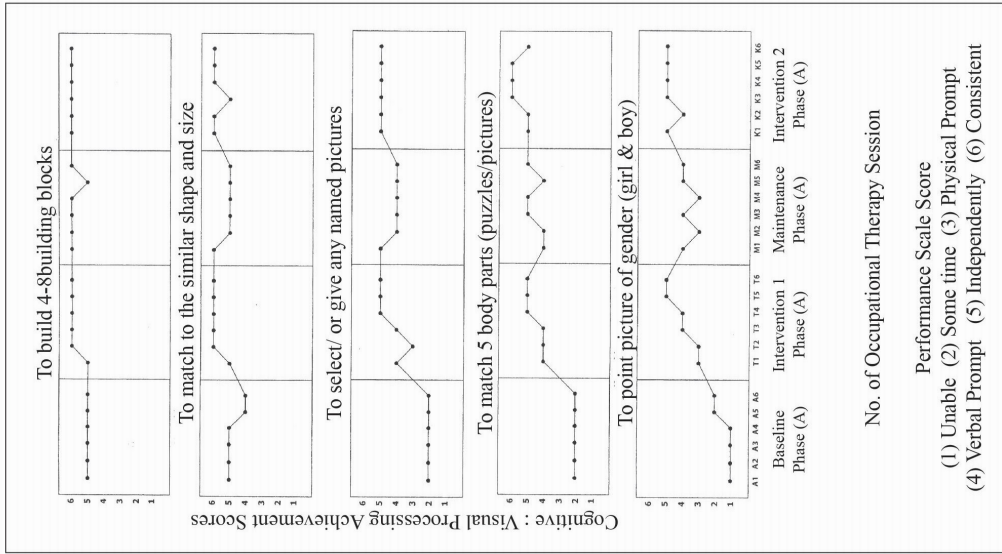


Figure 9 : Cognitive Component – Visual Processing

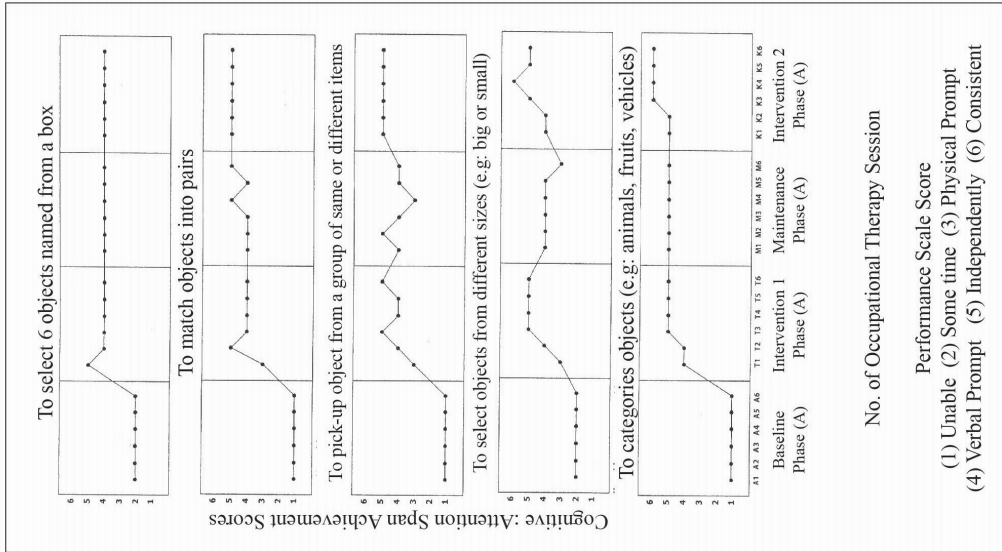


Figure 8 : Cognitive Component – Attention Span

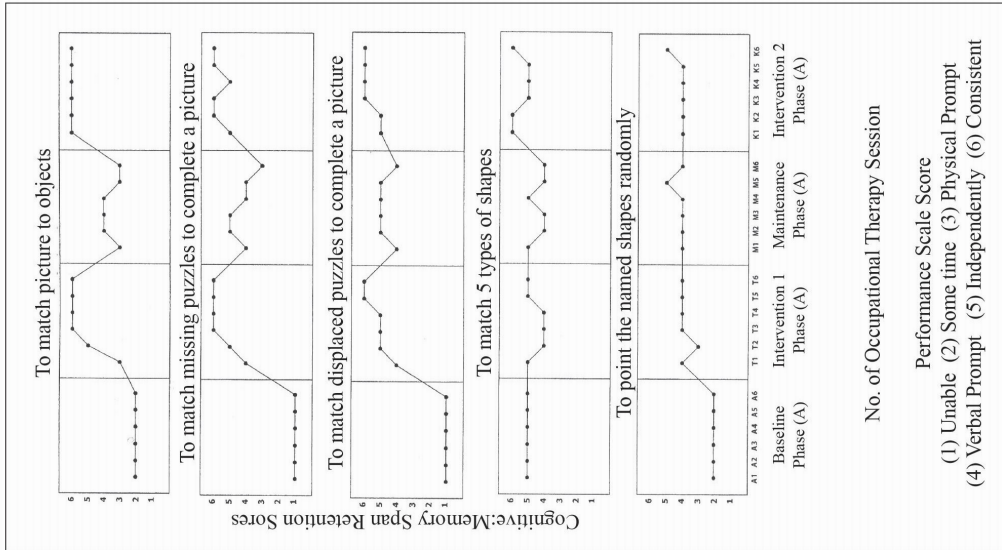


Figure 7 : Cognitive Component- Memory

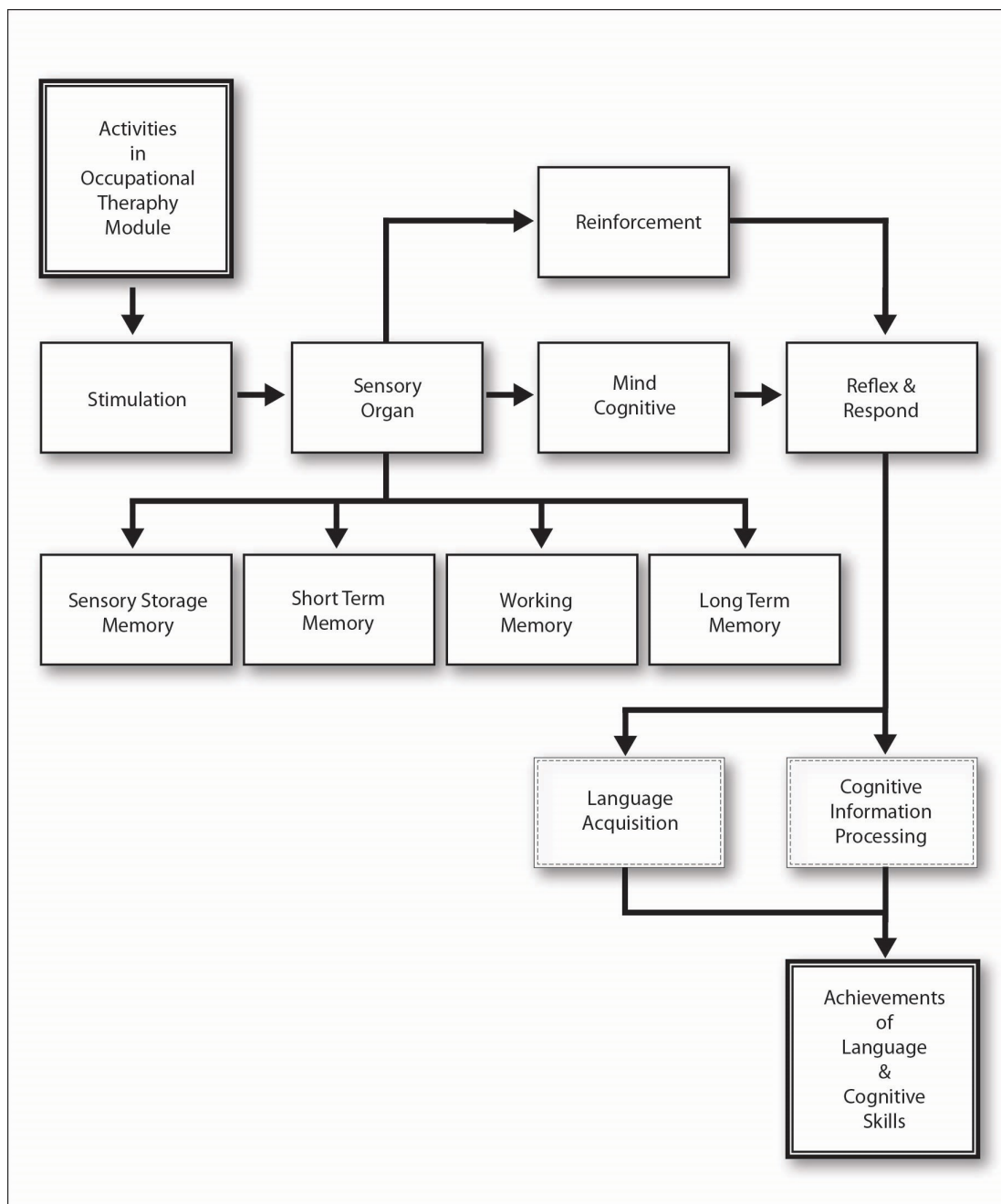


Figure 14 Domain of Occupational Therapeutic Approach

Activities of Occupational Therapeutic module stimulates the organ sensory motor (OSM) to realize the conditioning, behaviour encouragement and understanding the behaviour of the subjects. The input of minds-cognitive process encourage the respond of children with Autism spectrum disorder to act to increase the skills of language proficiency and cognitive ability continuously.

IX. IMPLICATIONS OF THE STUDY

The Occupational Therapeutic module activities encourage interaction process, stimulate the understanding, motivate learning, to support active learning and create a positive environment. The use of Occupational Therapeutic module as pilot projects in the early intervention program has succeeded in creating excellent results. Theories presented in this study related to teaching and learning of language behaviour and cognitive skills should be back in interventions session to improve language skills and cognitive components of children with Autism spectrum disorder.

Teachers and therapists should have expertise and qualified in identifying the problem and the biological, physiological and psychological of children with Autism spectrum disorder. Parental involvement with multidisciplinary team members in an intervention program should exist at all times. Parents also should know the factors that affect language and cognitive development of their children. Early intervention program administrators should be aware of the fact that category and the level of children with Autism spectrum disorder are heterogeneous should be assessed and evaluated as a whole.

X. CONTRIBUTION OF STUDY

Occupational Therapeutic module managed to overcoming weaknesses in the approach to the conventional of teaching and learning at the centre of early intervention. Occupational Therapeutic module contributed clinical therapeutic styles that are useful to teachers, therapists and parents. The study contributes to the set of instruments that can measure and assess the strengths and weaknesses of cognitive skills and language components of Down's syndrome children. Occupational Therapeutic modules also serve as a guide to the formulation and forming curricula, modules, and Individual Education Plans (IEP's) in Ministry of Education, Department of Social Welfare and Centre for Early Infant Stimulation and Early Intervention.

XI. ADVANCED RESEARCH PROPOSALS

This research proposes that similar studies can be conducted with a large number of samples so that generalizations can be made in the internationally. It is proposed that Occupational Therapeutic module is used for other categories of children with learning disabilities. Follow up studies can be conducted in the form of ANOVA, SPANOVA and MANOVA in order to determine the study variables that will determine the effectiveness of the Occupational Therapeutic module. Teachers and therapists in early intervention programs need to emphasize the diversity of methods of teaching, the characteristics of children, follow-up training and background to understand the subjects. Parents need to focus on their child's development as a whole. Early detection of symptoms, diagnosis, and placement in appropriate programs must be executed immediately. The ministry and the department relating to education, health and welfare of children with Autism spectrum disorder should collaborate.

XII. CONCLUSION

Results of the Occupational Therapeutic module intervention displays performance and increase language skills and cognitive components of children with Autism spectrum disorder. Similarities and differences in scores between and within the Baseline phases (A), Maintenance (M) Intervention 1 (T) and Intervention 2 (K) can be observed. The findings provide implications for the practice of early intervention programs scientifically, technologically, holistic, humanistic and parenting. Approach to intervention, therapeutic, teaching and learning, and curriculum modules to be in accordance with individuals with special needs at all times.

REFERENCES

- American and Canadian Occupational Therapeutic Association (2008). Occupational therapeutic practice framework: Domain and process. *American Journal of Occupational Therapeutic*, 2nd,62: 625-683.
- Ausubel, D. P. (1965). *Educational psychology: A cognitive view*. New York, NY: Holt, Rinehart & Winston.
- Ayers, A. J. (2015). *Sensory integration and learning disorders*. Los Angeles, CA: Western Psychological Services.
- Babiyak, A. E., Koorland, M., & Mathes, P. G. (2018). The effect of story mapping instruction on the reading comprehension of students with behavior disorders. *Behaviors disorders*, 25, 239 – 258.
- Chomsky, N. (1957). *Syntactic structure*. The Hague: Mouton.
- Dunbar, S. B. (1999). A child's occupational performance: Considerations of sensory processing and family context. *American Journal of Occupational Therapeutic*, 53, 231 - 235.
- Deno, S. L. (2003). Developments in curriculum-based measurement. *Remedial and Special Education*, 37, 184-192.
- Fuchs, D., Fuchs, L. S., & Compton, D. L. (2004). Identifying reading disabilities by responsiveness to instruction: Specifying measures and criteria. *Learning Disabilities Quarterly*, 27, 216 - 227.
- Gagne, R. M. (1977). *The condition of learning* (2nd ed.). New York, NY: Holt, Rinehart & Winston.
- Hagedorn, R. (1997). *Foundations for practice in Occupational Therapeutic*. Edinburgh, UK: Churchill Livingstone.
- Hallahan, D. P., & Mock, D. R. (2013). *A brief history of the field of learning disabilities*. New York, NY:

Guilford Press.

- Kuhn, M. R., & Stahl, S. A. (2013). Fluency: A review of development and remedial practice. *Journal of Educational Psychology, 95*, 3 - 22.
- Nolinske, T., & Mills, B. (1999). Cooperative learning as an approach to pedagogy. *American Journal of Occupational Therapeutic, 53*, 31 - 40.
- Piaget, J. (1959). *Language and thought of the child*. London, UK: Routledge.
- Robert, L. K., & Lynn Kern, K. (2018). *Teaching children with autism*. Baltimore, MD: Paul Brookes.
- Skinner, B. F. (1938). *Behavior of organism*. New York, NY: Appleton Century Crofts.
- Vaughn, S., & Fuchs, L. (2003). Redefining learning disabilities as inadequate response to instruction: The promise and potential problems. *Learning Disabilities Research & Practice, 18*, 137 - 146.
- Westling, D. L., & Fox, L. (2010). *Teaching students with screen disabilities* (2nd ed.). Englewood Cliffs, NJ: Merrill.
- Wiersma, W. (2013). *Research methods in educational: An introduction*. Boston, MA: Allyn & Bacon.