

Improving fine motor skills of special education students in Sandakan by using hot box

Muhamad Fazri Bin Hassan

SK Gas Sandakan WDT 231 90009 Sandakan, Malaysia
iamfez93@gmail.com

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Abstract

Fine motor skills are an imperative element in child's development aspect. Lacking in the ability to master fine motor skills often affect the children's quality of learning process. Children with difficulties in fine motor skills usually experience trouble in using their hands and fingers to hold, write, shape and et cetera. In addition, these students will also face challenges in their school activities. Hence, the purpose of this action research is to improve (i) fine motor skills (ii) eye-hand coordination (iii) attention span in learning of special needs students in Sandakan by using HOT Box. Laidlaw action research model (1992) is used to map the process of this action research and qualitative approach is utilized to gather data. There are 20 participants involved in this research. Occupational therapy approach known as HOT Box is used to achieve the targeted objectives in this research. The research has been conducted in 3 months period.

Keywords: *Fine Motor Skills, Hand-eye Coordination, Special Needs Students, Occupational Therapy.*

INTRODUCTION

Physical development is an important aspect in early childhood education (Nur Fauzian Kasim, 2015). Zaleha Damanhuri (2016) stated that there are two main components in the physical development aspect which are fine and gross motor skills. The development of both skills depends on growth of the child, environment, genetics, muscle tone, and gender. According to Muhammad Mustaqim (2014), special needs students have different abilities in terms of motor-sensory, nervous system, cognitive, muscle control, behaviour, communication skills, motor skills and et cetera. Fine motor skills are an essential element in the development of a child, especially from the point of academic, social, emotional and also behaviour.

Special needs students with problems in mastering fine motor skills will not be able to perform activities involving the use of hands such as cutting, writing, holding the pencil correctly and forming letters (Nor Asyikin & Mohd Hanafi, 2013). The disadvantage of operating this skill will interrupt their ability in daily life routines such as wearing clothes. (Muhammad Syafiq, 2011).

PROBLEM STATEMENT

Special needs students with problems with fine motor skills will face challenges in handling activities in the classroom. As a result, this will affect their learning process (Westendorp, 2011). In addition to having problems with classroom activities, children with fine motor skills also have problems with self-management activities. (Mohd Yusri, 2014). Nor Asyikin & Mohd Hanafi (2013) stated that occupational therapy is a service related to restoring physical function to individuals. Mahfuzah & Rosadah (2013) stated that occupational therapy enables one to live a more meaningful life through meaningful activities.

However, early data collection shows that majority special needs students in Sandakan have less access to therapy services unless their parents take the initiative to make an appointment with the hospital or private institution for therapy services. Furthermore, there are more than 20 special education students in Sandakan were diagnosed with low fine motor skills by using Instrumen

Saringan Domain Linus Pendidikan Khas. Therefore, this study is aimed to improve fine motor skills of special needs students by using occupational therapy as an intervention

The focus of this study is divided into three things which are fine motor skills as the main focus, 20 special needs students aged between 7 to 12 with low fine motor skills and HOT Box as a means of achieving targeted objectives.

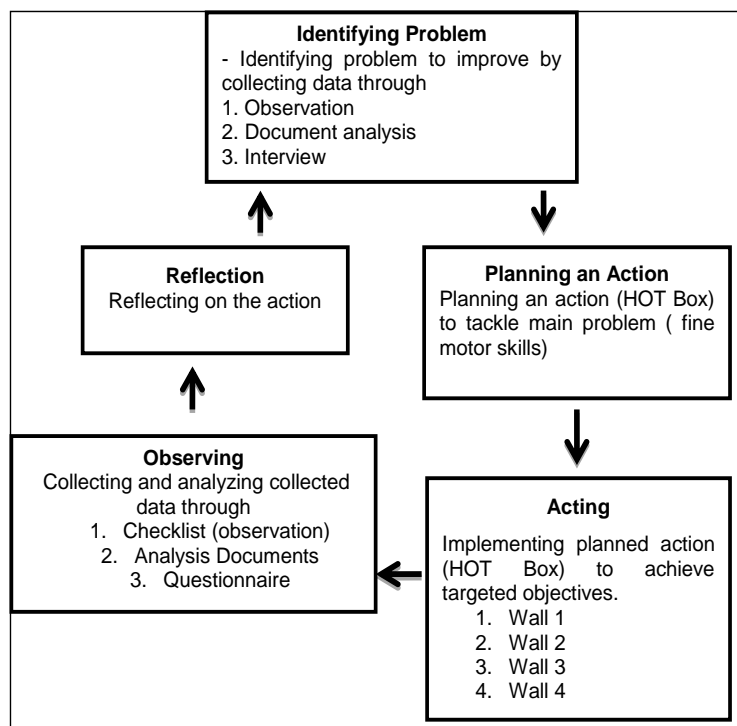
OBJECTIVES

1. To improve fine motor skills of Special Needs Students in Sandakan by using Hot Box.
2. To improve eye-hand coordination of Special Needs Students in Sandakan by using Hot Box.
3. To improve the attention span of learning among special needs students in Sandakan by using HOT Box.

METHODOLOGY

This action research study applied a model of action research introduced by Laidlaw (1992). A qualitative approach is utilized to collect and analyse data. Shown below is the adaptive model used in this study from Laidlaw (1992).

Figure 1. Laidlaw (1992) Model of Action Research Study.



Source: Adapted from Rosinah Edinin (2015).

RESULT

Following are findings of the study.

Objective 1: To improve fine motor skills of Special Needs Students in Sandakan by using Hot Box.

Table 1 Number of successful activities completed by the participants.

Participants	Number of succesful activities	
	Early Test	Final Test
1	10	22
2	5	22
3	10	22
4	5	20
5	8	22
6	9	22
7	10	22
8	10	22
9	7	22
10	9	22
11	8	22
12	7	22
13	10	22
14	9	22
15	9	22
16	8	22
17	9	22
18	10	22
19	10	22
20	11	22

Based on the table above, it can be seen that at the beginning of the study, majority of the participants are only able to complete less than 11 activities. However, towards the end, it was recorded that 19 out of 20 participants were successfully completed all 22 activities while one participant was able to complete 20 activities which shows an additional of 15 activities from the beginning.

Objective 2: To improve eye-hand coordination of Special Needs Students in Sandakan by using Hot Box.

Table 2 Number of successful activities completed in wall 4 on HOT Box











Partc	ACTIVITIES ON WALL 4									
	BEFORE					AFTER				
	velcro	zip	snap button	Normal button	Shoe lace	Velcro	zip	snap button	Normal button	shoe lace
1	√	√	x	x	x	√	√	√	√	√
2	√	√	x	√	x	√	√	√	√	√
3	√	x	√	x	x	√	√	√	√	√
4	√	x	x	x	x	√	√	√	x	x
5	√	√	√	√	x	√	√	√	√	√
6	√	√	x	√	x	√	√	√	√	√
7	√	√	√	√	√	√	√	√	√	√
8	√	√	√	x	x	√	√	√	√	√
9	√	√	x	√	√	√	√	√	√	√
10	√	√	√	x	x	√	√	√	√	√
11	√	√	√	√	√	√	√	√	√	√
12	√	√	x	√	√	√	√	√	√	√
13	√	√	√	x	x	√	√	√	√	√
14	√	x	X	√	x	√	√	√	√	√
15	√	√	√	x	x	√	√	√	√	√
16	√	√	X	x	x	√	√	√	√	√
17	√	√	X	√	x	√	√	√	√	√
18	√	√	X	x	x	√	√	√	√	√
19	√	√	√	x	x	√	√	√	√	√
20	√	√	X	√	x	√	√	√	√	√

Based on table 2 above, it can be seen that in the beginning of the study, majority of the participants experience difficulties in completing activities in wall 4. However, towards the end of the study, 19 participants managed to complete all activities in wall 4 successfully while one participant managed to complete 3 out of 5 activities which show an additional of 2 activities at the end of the study.

3. To improve the attention span of learning among special needs students in Sandakan by using HOT Box.

Based on tables 1 and 2, it can be concluded that all participants showed an improvement in the successful number of activities at the end of the study. This demonstrates that the attention span of learning among special needs students after the study has improved. The following is the finding of the study obtained by using the document analysis. The table below is an analysis of randomly selected student's worksheet at the beginning and end of the study.

Table 3 Document analysis of 5 randomly selected participants.

PARTC.	BEFORE	AFTER	REMARKS
4			<p>Before: Fine motor skills: Weak Eye-hand coordination: Weak Attention Span: Short (stop doing activities after 5 minutes).</p> <p>After Fine motor skills: Improved. This can be seen by observing the luminance of the colour. Eye-hand coordination: Improved. This can be proven by the efforts of the participant to ensure that all areas are successfully coloured. Attention span: Improved. This can be proven by the time spent doing this activity (10 minutes)</p>
9			<p>Before Fine motor skills: Good Eye-hand coordination: Moderate Attention span: Good</p> <p>After Fine motor skills: Good Eye-hand coordination: Improved. This can be seen in the tidiness of the colour. Attention span: Good</p>
15			<p>Before Fine motor skills: Weak Eye-hand coordination: Weak Attention span: Short.</p> <p>After Fine motor skills: Improved. This can be seen through the luminance of the colour. Eye-hand coordination: Improved. Attention span: Improved.</p>
22			<p>Before Fine motor skills: weak Eye-hand coordination: weak Attention span: weak</p> <p>After Fine motor skills: Improved. This can be seen from the luminance of the colour. Eye-hand coordination: Improved. Attention span: Improved.</p>
27			<p>Before Fine motor skills: Good Eye-hand coordination: Good Attention span: Good</p> <p>After Fine motor skills: Better. Eye-hand coordination: Better. Attention span: Better</p>

Following is the finding of this study by using questionnaire. A total of 10 teachers who respectively taught the participants had involved in the questionnaire.

1. Adakah anda dapat melihat peningkatan kemahiran motor halus pada peserta kajian yang terlibat di sekolah anda selepas kajian dilaksanakan?

10 responses

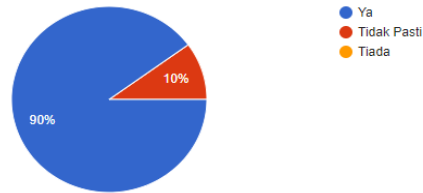


Figure 2. Respondent's feedback on fine motor skills

2. Adakah anda dapat melihat peningkatan koordinasi mata tangan pada peserta kajian yang terlibat di sekolah anda selepas kajian dilaksanakan?

10 responses

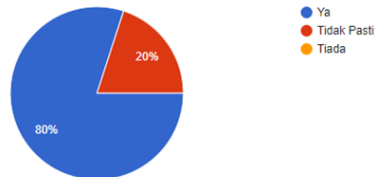


Figure 3. Respondent's feedback on eye-hand coordination

3. Adakah anda dapat melihat peningkatan dalam tumpuan pembelajaran pada peserta kajian yang terlibat di sekolah anda selepas kajian dilaksanakan?

10 responses

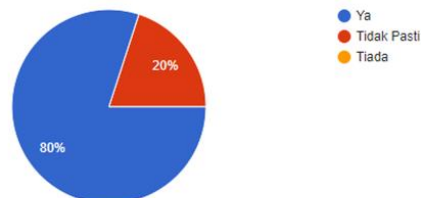


Figure 4. Respondent's feedback on the attention span of learning.

4. Apakah perubahan yang paling ketara pada peserta kajian di sekolah anda selepas kajian ini dilaksanakan?

6 responses

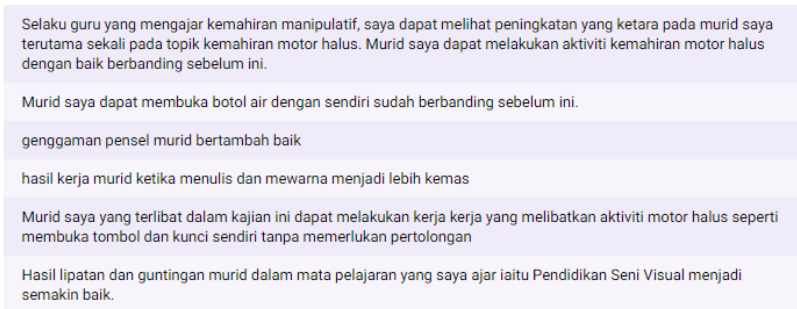


Figure 5. Respondent;s feedback on participants overall improvements.

Based on the figure 2, it is clearly shows that 9 respondents agree that there are improvements among the participants upon their fine motor skills. Meanwhile, one respondent is unsure.

Next, based on figure 3 and 4, it is understood that 8 respondents agree that there are improvement among the participants upon their eye-hand coordination and attention span. Meanwhile 2 respondents are unsure of it. Meanwhile in figure 5, respondents are asked to what extent they can see improvements among the participants after the study. 6 respondents have answered the questionnaire with varies answer in different subjects and activities. For example, one respondent mentioned that a participant's improvement in fine motor skills can be seen during art visual class. Another respondent mentioned that a participant able to open water bottle on his own. Based on the questionnaire, it can be concluded that, improvements upon fine motor skills, eye-hand coordination and attention span of learning among the participants can be seen after the study.

DISCUSSION

Based on this study, it is found that fine motor skills, eye-hand coordination and attention span of learning among the participants have improved after using the HOT Box. In the first week of the study, it is observed that most of the participants experience difficulty in all activities. This is due to the poor fine motor skills and short attention span of the participants. However, after guidance was given to the participants, their fine motor skills, eye-hand coordination and attention span have shown improvements from week to week.

During the whole study, there are several strengths and weaknesses identified. Among the strengths is good collaboration between special education teachers from each school in Sandakan to make sure every participant get involved in the study. In addition, most of the teachers also commented that HOT Box is an innovative tool in helping special needs students improving fine motor skills. However, one of the major weaknesses is that since the study involve big number of participants, the absence of some participants during their scheduled intervention cause a delay in time frame of the study

It is also believed that this study able to help special education teachers to implement the same intervention in helping special needs students to improve their fine motor skills. Also, this study can be used as a reference for further study in future regarding fine motor skills, eye-hand coordination and attention span of learning among special needs students.

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