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A Creative way to Stimulate Children Motoric Skill: Improving the Writing Ability of Students with Mild Intellectual Disorders in Saudi Arabia

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This research aims at examining the effectiveness of the Finger Sand Painting Alphabet Media in helping children with dysgraphia to improve their writing skill. The study uses quasi experimental design with control and experimental group. This study's results might be used as a jumping-off point for defending the position that children's right to free expression is not crucial. This study's findings indicating the amount of improvement in learning outcomes is practically the same provide confidence to this concept and lend support to its believability. In contrast, this conclusion is hasty since much more in-depth study is needed to determine how the freedom of expression effects the development of motor abilities. This collection of studies concludes that a more organized method of teaching may have the same positive effects.

Keywords: Mild Intellectual Disorder, Writing, Finger Sand Painting

INTRODUCTION

Children with mild intellectual orders need special attention and care. They have several areas where teachers and educators can focus on to improve their academic level. When one studies the situation of the intellectually handicapped children who reside in the region, one discovers that a considerable percentage of them are unable to communicate effectively in writing (Mittal et al., 2022). This is the case because many of the intellectually challenged children in the area are illiterate. The great majority of them have not even moved beyond the stage of making patterns out of the letters of the alphabet. Making a design by arranging the components of letters in a number of distinct configurations to create a pattern. In the first approach, students create the shape of the letters by increasing the thickness of their lines and following the direction of the thin line created by the teacher. This is the first stage of the letter formation process. Second, the students proceed in the direction indicated by the lines that link the dots to construct the letters.

Despite the fact that incidents of this kind are more frequent among children with intellectual disabilities when they are in higher grade levels (Chung et al., 2020; Hamdioui & Vaivre-Douret, 2020; Obatta et al., 2020). Writing is one of the things that is quite necessary for students to do in order to achieve academic success in school; however, there are other things that are also quite crucial and should not be overlooked. This is due to the fact that people who have intellectual disabilities often have skills that are below average for their IQ (Bertelli et al., 2018). Both of these situations have an effect on a person's ability to analyse, remember, imitate, and carry out motor activities. Despite the fact that intelligence plays a big role in determining a person's chances of survival, both of these conditions have this effect. Writing involves not just a strong memory but also the ability to make tiny, precise movements with one's hands. This ability is known as "fine motor skills."

It is necessary that some training be provided to stimulate and train fine motor skills as well as detect shapes (Gargot et al., 2020). This is because there are a range of approaches that may be used to analyse the relationship between sensory motor and brain development. To learn how to hold a pencil properly, it is not enough to just recall the shape of the letters; one must also practice moving their hands and fingers. As a consequence of this, there is a need for activities that have the potential to assist children with a moderate intellectual handicap in improving their fine motor skills.

It is general knowledge that a kid's motor abilities have a substantial influence on how a child develops throughout the course of their childhood (Bakhtiar et al., 2019; Hudson et al., 2021; Utesch et al., 2019). This motor-based teaching method is predicated on the fact that this is a well-known truth. Because of this, as Gao & Wang (2019) suggest that it is required to participate in activities that begin with fundamental motor motions, such as drawing on sand, in order to fulfil the prerequisites for this kind of education. An activity that is chosen to build motor skills is painting on sand because it has the potential to educate very small

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muscles, most notably in the fingertips, to make the fingers more flexible. Because of this exercise, the fingers now have more mobility and flexibility.

Students that participate in this activity and make use of its benefits see significant improvements in their writing. Painting different letter shapes and lines is the medium that will be used to transmit the material that will be presented in this activity. As a consequence of doing this, the students could have an easier time recalling the shape of the letters as similarly suggested by Florence and Nathalie (2021). In addition, the researchers modified the sandbox by hanging letter flags to the side of the sandbox as a tool for the children to use in the event that they forgot the form of the letters. This was done in the case that the children lost the form of the letters.

Researchers have proposed an activity to teachers that involves students with mild intellectual impairment using their fingers to paint letters in the sand (Darweesh et al., 2020). The activity is called "alphabet finger painting in sand," and it was based on the findings of the researchers' description of the proposed medium. The kids' initial writing abilities could be improved as a result of participating in this exercise. At long last, scholars and researchers have reached a consensus on the importance of using media (finger sand painting alphabet). Students who have an intellectual handicap that is somewhat severe may benefit from employing a method known as "painting letters with fingers in the sand" to improve their initial writing competence. The children will be using their fingers to write the letters as part of this exercise.

Studies on the advantages of finger painting for strengthening kids with Down syndrome's fine motor skills have been undertaken by another researcher (See for example: McBride & Cheah, 2021; Darweesh et al., 2020; Rahim & Jamaludin, 2019; Suja, 2018). These studies have been given titles like strengthening fine motor abilities in children with Down syndrome via the activity of finger painting. According to the results of a research that was carried out by a different group of academics, finger painting is one kind of media that has been demonstrated to boost fine motor skills. Therefore, researchers and teachers are hopeful that research using a medium (finger sand painting alphabet) to paint letters with fingers in sand will be successful in improving the initial writing ability of students with mild intellectual impairment. This improvement would help students with mild intellectual impairment become more independent in their writing. Researchers are the ones responsible for carrying out this study.

RESEARCH DESIGN and METHOD

In this study, an approach that may be described as quasi-experimental was used, and both control and experimental groups were included. All of the students who participated in this study were in the same grade level and had been diagnosed with dysgraphia. In order to supply the test group with a specific treatment, an unusual technique was carried out on them utilizing Finger Sand Painting Alphabet Media. This was done in order to provide them the therapy. While data from the control group was gathered during the patients' regular class using the traditional method of teaching, these patients were in the patients' usual class. The purpose of this is to evaluate the degree to which the Finger Sand Painting Alphabet Media strategy is able to improve the writing skills of children who have been diagnosed with dysgraphia. When it came time to do the statistical analyses that were required for the study of the data that was gathered, SPSS was the program that was used. This article does not contain a presentation of the raw data because the author wishes to maintain their anonymity. Instead, only the processed data, along with an explanation of how they were collected, are presented.

RESULTS

Before administering intervention to both of the groups, it is necessary to determine whether or not the samples are homogeneous, in other words whether or not they have the same competence. As a result, it is plain discernible whether or not the therapy should be administered to the pupils in groups depending on their level. The results of the test to determine the homogeneity are shown down below.

Table 1. Homogeneity Test

		Levene Statistic	df1	df2	Sig.
Pre test	Based on Mean	1.325	1	38	.257
	Based on Median	.400	1	38	.531
	Based on Median and with adjusted df	.400	1	37.93 3	.531
	Based on trimmed mean	1.325	1	38	.257

The fact that the sig value in the above data is more than 0.005 demonstrates that all of the groups that were evaluated are at the same level of learning competence. Therefore, it is not necessary to divide the pupils into different groups according to the amount of knowledge they possess.

Determining whether or not the data follow a normal distribution is another essential step that must be taken before moving on. As a necessary consequence of this, it is very clear if the data that were gathered are appropriate for parametric testing or not. The table that follows displays the results of the test to determine whether or not the data is normal.

Table 2 Normality Test

		Kolmogorov-Smirnova			Shapiro-Wilk		
	Respondents	Stati stic	df	Sig.	Stati stic	df	Sig.
Test_Re sult	Control Pretest	.361	20	.000	.637	20	.000
	Experiment Pretets	.413	20	.000	.608	20	.000
	Control Postest	.279	20	.000	.807	20	.001
	Experiment Postest	.263	20	.001	.800	20	.001

a. Lilliefors Significance Correction

There is not a single sig value that is higher than 0.005 according to the figures that were shown before. As a result of this, it is abundantly evident that the data do not adhere to a normal distribution; hence, a non-parametric test has to be used.

Table 3. Statistics Test

	Control_Poste st - Control_Pretest	Experiment_P ostest - Experiment_Pretest
Z	-3.695b	-3.992b
Asymp. Sig. (2-tailed)	.000	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

A Sig value of 0.000 indicates that both seem to be at the same asymptote, which was determined by the results of the statistical test (0.005). This suggests that both the control group and the experimental group experience a significant improvement as a result of the experiment. In addition, a descriptive statistics test was conducted, the results of which are presented below, in order to have a better understanding of which approach seems to have the greatest potential for improvement.

Table 4. Wilcoxon Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Control_Pretest	20	3.5500	.51042	3.00	4.00
Experiment_Pretest	20	3.3500	.48936	3.00	4.00
Control_Postest	20	4.9500	.68633	4.00	6.00
Experiment_Postest	20	5.8000	.69585	5.00	7.00

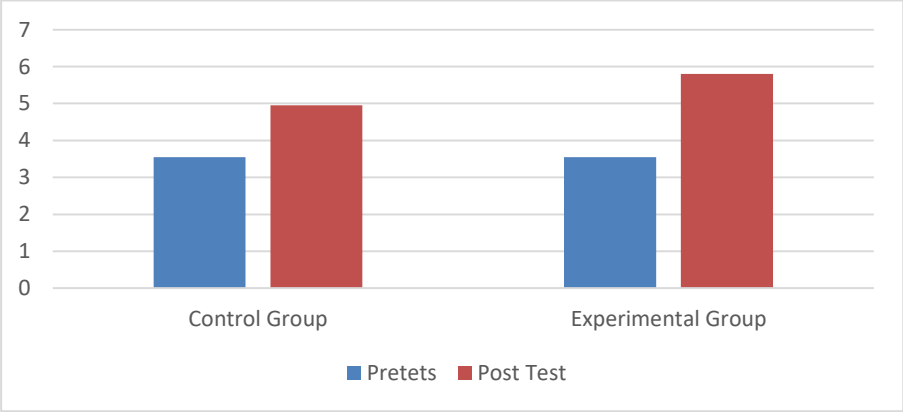

Figure 1. Comparison of Pre-Post test Control and Experimental Group

The data and the graph together make it abundantly evident that the effectiveness of the experimental group was about 0.85 times higher than that of the control group. It is reasonable to infer that the results may be relied upon as a result of the small standard deviations that each group exhibited. Therefore, it is reasonable to draw the conclusion that the use of Finger Sand Painting Alphabet Media carries, although to a lesser degree, a higher level of relevance. This may be supported by the evidence.

People who have dysgraphia often have some amount of writing ability, although they may struggle with their fine motor skills (Hanley & Sotiropoulos, 2018). For instance, people may have trouble doing tasks such as tying their shoes and other household duties. On the other hand, dysgraphia could not affect every area of a person's fine motor abilities. People who have dysgraphia often struggle greatly with both their handwriting and their spelling, which may eventually cause them to get exhausted while writing.

Hanley & Sotiropoulos (2018) suggest that people who have dysgraphia, in general, have difficulties with basic grammar and spelling (for example, they have trouble with the letters 'p', 'q', and 'b'), and they often pick the erroneous word when they are seeking to explain their views on paper. When a child is introduced to writing for the first time, or when their thoughts are first recorded on paper, this problem often makes its appearance. Dysgraphia may occur in persons of all ages, including toddlers, teenagers, and adults.

The inability to write is affected in those who have the condition known as dysgraphia, which is caused by neurological difficulties (Vlachos & Avramidis, 2020), specifically impairments in the left forebrain that are connected to the ability to write. This neurological condition makes it challenging to write, which may show itself in a number of ways, including physical difficulties such as wobbly handwriting or an inability to firmly grasp a pencil. Overall, this condition makes writing challenging. Youngsters who have dysgraphia have a difficult time combining their memory with their ability to properly regulate the spontaneous motor movements that occur while writing letters and numbers. This makes it difficult for these children to write.

The underlying difficulties in orthographic coding, orthographic looping, and graph motor output by the hands, fingers, and executive processes that are involved in writing letters are another factor that contributes to the development of dysgraphia. These difficulties can be seen when an individual has difficulty writing letters. When written words are connected by sequential finger movements to motor output through the hand and with input from the eye, it is said that the words are recalled in the mind's eye. An orthographic loop is the name given to this particular procedure.

If children engage in the action of painting with their fingers, they will be able to channel potentially harmful energy into a form that does not pose a risk to themselves or others. The information presented above explains how activities such as finger painting can be used as an alternative to positive activities for children as a method to limit the amount of time spent engaging in negative activities as a method to limit the amount of time spent engaging in negative activities. Finger painting is an enjoyable hobby that may give a person a boost in their self-confidence and provide them the opportunity to express themselves in the most genuine manner that is open to them.

The conclusion that can be drawn from this point of view is that participation in activities such as finger painting may aid a youngster who struggles with low levels of self-confidence. Activities such as finger painting are very susceptible to being influenced by the plethora of skills possessed by the participant. The hands and fingers, along with other parts of the body like the feet, play a vital role in the interaction that young children have with the material for painting. This function significantly contributes to the formation of an emotional connection between the child and themselves. In order to accomplish the objectives of this instructional activity, sand is being used in the painting process.

In line with one of the instructional techniques for increasing motor skills, which started with sensory motor activities, the choice was taken to utilize sand as a medium for finger painting. This decision was made in accordance with the following: Due to the grainy texture of sand, the consistency of sand might potentially activate the sensory motor in the muscles of the fingers. The activities that are utilized in the learning process (Finger Sand Pinting Alphabet) to paint letters in the sand comprise both a lecture-based approach and a demonstration-based approach. These activities are used to paint the alphabet. Because of this, there is little question that children's learning is improved, and this is especially the case when they are given the chance to express themselves in an unrestrained manner.

Future research can focus on other areas to improve with students with mild metal disabilities. Other skills, such as listening and reading can be investigated with the suggested method.

Conclusion

The findings of this study might serve as a beginning justification for arguing that allowing children the liberty to express themselves is not an extremely important component. The results of this study, which reveal that the amount of change in learning outcomes is essentially the same, provide credence to this thesis and support its plausibility. This conclusion, on the other hand, is premature since there has to be a great deal more in-depth research done to figure out how the freedom of expression influences the development of motor talents. According to the conclusions of this body of research, an approach to education that is more structured is likewise capable of producing comparable beneficial outcomes.

Limitations

This study was only limited to children with Mild Intellectual Disorders, especially, dyslexia. The students included in the study are from Saudi Arabian schools and were diagnosed by specialists as having mild disorders. The results of the study were limited to the sample and method used to obtain the results.

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