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A STUDY ON EFFECTIVENESS OF DIFFERENCE BETWEEN AGE OF THE EXPERIMENTAL GROUP IN MEMORY AMONG DYSLEXIC STUDENTS

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ABSTRACT

From the Stone Age to the Current Technological Era, educational technology is envisioned as evolving in the conceptual framework of the current study. The educational system during the Stone Age cannot be researched using written documents because there were none. People were able to learn more about the world through studying star maps, astronavigation, ocean currents, and meteorological conditions. Technology used in education during the ancient period varied depending on the civilization. The hieroglyphics, which were used by the Egyptians to create their education, are pictures. China is credited with creating paper. Literally, educational technology was created throughout the middle Ages. People first used slate, horn books, blackboards, and chalk, but there weren't many drawings in textbooks. Only a few nations in the contemporary era began using electronic typewriters and computers. Intriguingly, computers are used for education in schools, colleges, and universities all across the world in the twenty first century. The classroom is changing from being teacher-centric to becoming learner-centric with computers and internet access. The usefulness of a computer-assisted exercise has been developed in the current study for key cognitive variables, including attention, memory, reasoning, and language.

KEY WORDS: Cognitive, Technology, Internet Access, Memory

INTRODUCTION

The framework for comprehending the operational interaction between the human and the machine is the Human Environment/Technology Interaction Application (HETI). According to HETI, in order to engage with the environment or a machine, a human must first receive information. To create insightful conclusions and wise decisions, the individual must then process the information. The person must next react quantitatively to the information. The foundation of much occupational therapy theory and practice, sensory input, cognitive throughput, and motor output are compatible with this. These three functional capacities are designated Human Input (HI), Human Processing (HP), and Human Output in this conceptual paradigm (HO).

Human input encompasses all sensory dimensions, including tactile, proprioceptive, visual, vestibular, auditory, olfactory, and gustatory experiences. Memory, attention span, orientation, recognition, thought processing, problem solving, generalization, sequencing, concept development, categorization, and other intellectual operations are all parts of human functioning. Neuromotor aspects such as muscle tone, reflexes, range of motion, strength, endurance, soft tissue integrity, skeletal integrity, postural control, and activity tolerance are all part of the human output.

The machine or technological environment makes up the second half of the HETI Model. The model's human side is reflected in the components. The Environment/Technology Input (EI/TI) refers to a type of dynamic and functional machine's approach for sending or receiving information. These technological developments also serve a specific purpose and are referred to as environment/technology applications (EA/TA). Functional technology and machinery are useless unless they can be used to show off their capabilities through a motor or display, which is known as the environment/technology output (EO/TO).

For instance, when someone uses a computer for the first time, they must see the device, use the keyboard or mouse, and practically see the display on the monitor (human input). When using a computer, we must combine the words and images we read or see on the monitor and translate that information into the proper motor actions. We must determine what the sound means when the computer beeps in error (human processing). Then the computer is the target of the motor output (human output). The computer's component instructs us on what to do next by providing environmental and technological input. However, a program that reads, decodes, and analyses keystrokes and mouse movements must be installed on the computer (environment/technology application). The computer must next transform the newly calculated information into a presentation that humans can understand. It transforms invisible electronic impulses into visible displays and audible signals (output for the environment and technology). The envisioned human-machine cycle is now complete.

In his computer work, Dunn applies the idea of the significance of human-environment interaction. In Dunn's model of human-machine systems, technology is viewed as a highly complex, mechanical component of the environment. An interaction is a process of input, output, and feedback between a person and a computer or any other technology. There are two key ideas in this model of human-machine systems.

1. Machine-Assisted Approach: This method uses technology only temporarily to prevent advancements that cause handicap. For instance, instruction on attentional deficits
2. Machine-dependent Approach: This entails using technology to accommodate handicap on a somewhat permanent basis. Take a speech synthesizer, for instance.

In other words, the machine reliant approach has an adaptive approach, whereas the machine assisted approach has a corrective approach. Although retraining continues to be popular, the use of computers for the rehabilitation of visual, perceptual, and cognitive deficiencies is still debatable. Other research that supports its usage lacks proper control and a conceptual underpinning or framework that directs its use. Almost everyone agrees that the computer is a tool that can be used in the framework of the intervention approach, notwithstanding some debate.

COMPUTER-ASSISTED EXERCISE FOR THE PRESENT STUDY

The goal of the study is to evaluate the efficacy of computer-assisted exercise in improving dyslexic children's learning to enhance their cognitive abilities, such as concentration, memory, cognitive thought, and language. With insights obtained from psychology, literature on computer-assisted cognitive training intervention is abundant. In the literature, several questions have been posed and answered.

The computerized cognitive training based on the Human-Environment/Technology Interaction Application was developed by researchers with the evidence of different software. In addition to the assistance of qualified software development experts, software is designed with windows. The curriculum contains twenty games to enhance cognitive abilities, such as concentration, memory, cognitive thinking and language.

RESEARCH METHODOLOGY

The planning of the research is the topic of the current chapter. The research design, instruments employed, sample selection, dependability, pilot study, and data collecting and statistical analysis is all covered in detail.

RESEARCH DESIGN

SELECTION OF SAMPLE OF DYSLEXIC CHILDREN IN THE SPECIAL SCHOOL

It is determined to only include the schools with more than thirty students in the nine to sixteen-year-old age range in order to have a fair representation. The schools with computer resources are chosen since the current study will use PSGCAS COMPUTER-ASSISTED EXERCISE (maximum of seven computers). The sample consists of eight special schools with a total enrollment of 275 students. Even though S.No.3 in the Appendix, one of the special schools, meets the criteria for inclusion in the sampling, the investigator was not allowed to carry out the intervention. 230 kids are identified as dyslexics in the current study with the use of the dyslexia screening test. When explanations are offered concerning the computer-assisted activity, thirty out of the 230 participants are unable to comprehend its substance. Two hundred dyslexic students from each school are selected for the study. One hundred of them make up the experimental group, and another one hundred form the control group.

PILOT STUDY

A pilot study is conducted before the main investigation is started. The pilot study made sure that non-sampling error was under control and that "Local Control" was improved in the experimental design.

The following are some of the goals of the pilot study:

- Determining the accuracy of the computer-assisted exercise for the variables attention, memory, cognitive reasoning, and language.
- Increasing the trust in the current investigation's ability to build relationships with the samples, effectively convey instructions and directions to the samples, and get the

samples' honest responses; developing a time and cost schedule to finish the final study by estimating the amount of time and money needed to collect data for the pilot study.

PILOT STUDY SAMPLE

A group of fifty dyslexic kids receive social proforma. After receiving the data, the Talland Letter Cancellation Test and the Binet-Kamat Test for Intelligence are performed. They are split into 25 pieces for the experimental group and 25 pieces for the control group. While the experimental group receives the unique training, the control group is just required to continue with their regular training. Children with dyslexia are divided up into batches because they have trouble reading. They receive instructions, receive assistance from a computer during a computer-assisted exercise, and have their scores meticulously recorded. Their questions are answered there and then. The next batch is not called until the previous batch has finished responding. The information is also gathered directly from each dyslexic youngster. The Human Environment/Technology Interaction Application serves as the foundation for the development of the computer-assisted exercise. Twenty exercises make up this intervention item, which is used in the study. Three months' worth of training sessions total one hour and 36 minutes. Following the three-month intervention, the experimental group and the control group get another administration of the Binet-Kamat Test for Intelligence and the Talland Letter Cancellation Test as post-tests.

RESULTS AND DISCUSSION

ELEMENTS OF READING

For its extensive investigation, the National Reading Panel (2000) chose a number of reading-related components, which it found to be crucial building blocks for reading instruction. The following reading skills must be mastered by proficient readers: Phone awareness is number one, followed by phonics, fluency, vocabulary, and comprehension.

1. The capacity to recognize, consider, and interact with the distinct sounds in spoken words is known as phonological awareness. Phonological awareness is a comprehensive concept that includes the capacity to recognize and work with both phonemes and bigger units of

spoken language, such as words, syllables, and rhymes. The process of recognizing and adjusting the individual sounds in words is the focus of phonological awareness, which is a subset of it.

2. Learning the correlation between letters and sounds and using that information to recognize words and read is known as phonics, and it is a crucial word-recognition skill. The link between written letters and linguistic sounds is known as phonics.

3. The capacity to read related content quickly, easily, and automatically is referred to as reading fluency (Hook & Jones, 2004; Meyer, 2002; National Reading Panel, 2000). Fluency is necessary for readers to cross from word recognition to reading comprehension (Jenkins, Fuchs, vandern Broek, Epsin & Den, 2003).

4. The vocabulary plays a key role in the reading ability. Reading achievement is significantly impacted by the student's vocabulary, which is also closely tied to reading comprehension (National Reading Panel, 2000). The reader must possess vocabulary proficiency in order to properly use a word in a given situation.

5. Reading is done for comprehension. The improvement of reading comprehension should be a focus of all reading instruction. Reading comprehension is a significant issue for many students with reading impairments. Word recognition abilities do not automatically translate into comprehension abilities. Reading comprehension is an active process that calls for the reader and the text to connect in a deliberate and considered way. The reader must bridge the gap between the knowledge they already have and the information offered in the written text as they work to understand the stuff they are reading. Thus, reading comprehension requires thought. Understanding of the information depends on the reader's background knowledge, level of interest, and reading environment. Each person will produce unique knowledge as they combine the text's new material with what they already know (National Reading Panel, 2000).

MEMORY

The study's findings show that there was a substantial difference between the experimental group's pre-test and post-test scores. Between the control group's pre-test and post-test, there was no discernible difference. There is no discernible difference between the experimental group and the control group of the pre-test when they are compared, however there is a discernible difference between the experimental group and the control group of the post-test. There is no discernible difference between males and girls in the experimental group. However, the f-ratio reveals a large age gap in the experimental group.

HYPOTHESIS: The experimental group's gender does not significantly differ in their recall.

TABLE-1: DISPLAYS MEAN, STANDARD DEVIATION AND 'T' VALUE OF GENDER OF THE EXPERIMENTAL GROUP IN MEMORY.

Variable	Experimental Group	Gender	N	Mean	Standard Deviation	't' value	Significant value
Memory	pre test	Boys	221	8.443	1.689	1.586	0.116 (NS)
		Girls	79	7.847	2.047		
	Post test	Boys	221	9.984	1.311	1.373	0.173 (NS)
		Girls	79	9.539	1.932		

NS – Not Significant

The 't' value (t = 1.586 and 1.373, respectively) between the experimental group's gender in memory is shown in the above table. The 't' value is discovered to be insignificant. This table has led researchers to the conclusion that there is no discernible gender difference in the experimental group's memory. Therefore, the aforementioned hypothesis, according to which there is no discernible gender difference in the experimental group's memory, is accepted.

Working memory exercises enhanced performance on tasks directly connected to the training, but they had little effect on more general cognitive abilities including verbal cognition, attention, reading, and arithmetic. The majority of the children were no longer categorized as having poor working memory capacity for their age as a result of the adaptive training. Their memory and attention scores improved more than those of the control group thanks to the program. However, self-reported enhancement in regular circumstances was largely comparable. 40% for the controls compared to 48% for the brain fitness group.

The researches that dispute the findings mentioned above are listed below. Online brain training programs with the first group emphasizing planning and problem-solving in reasoning Another concentrated on more general tests of math, memory, and attention. The third group is the control group, which conducts online research to find solutions to challenging questions. Even while improvements were seen in every cognitive task that was trained, even when those tasks were closely related conceptually, there was no evidence of transfer effects to untrained activities.

According to a study analysis published by the American Psychological Association, working memory training is unlikely to be a successful treatment for kids with illnesses like attention-deficit/hyperactivity disorder or dyslexia. Additionally, it seems that healthy individuals and kids who want to do better in school might increase their cognitive abilities using memory training exercises.

HYPOTHESIS: There is no significant difference between age of the experimental group inmemory.

TABLE-2: DISPLAYS THE MEAN AND STANDARD DEVIATION OF AGE OF THE EXPERIMENTAL GROUP INMEMORY

Variable	Age	N	Mean		Standard Deviation	
			Pre-test	Post-test	Pre-test	Post-test
	9-10	25	7.320	8.760	1.405	1.614
	11-12	25	8.520	9.240	1.122	1.128

Memory	13-14	25	8.800	10.640	2.533	1.186
	15-16	25	8.200	10.600	1.779	1.587

TABLE-3: PRESENTS THE SUMMARY OF THE ANALYSIS OF VARIANCE OF THE SUBJECTS IN MEMORY

Experimental Group		Sum of Squares	df	Mean Square	F-ratio	Significant value
	Between Groups	30.910	3	10.303		
	Within Groups	307.680	96	3.205	3.216	0.026*
	Total					
		338.590	99			
Pre-test						
	Between Groups	68.510	3	22.837		
Post-test	Within Groups	180.880	96	1.884	12.121	0.000*
	Total	249.390	99			

*P < 0.05 level

The F-ratio (F = 3.216 and 12.121, respectively) between age of the experimental group in memory is shown in the above table. The 'F' value is discovered to be significant at the 0.05 level. It can be seen from this table that the experimental group's ages significantly differ in their ability to recall information. In light of this, the aforementioned hypothesis—according to which there is no discernible difference between the experimental group's ages—is rejected.

CONCLUSION

The research that backs up the findings mentioned above is listed below. The working memory component that Cogmed-relational memory enhances is not the same working memory component that is lacking in attention deficit hyperactivity disorder. Working memory exercises must be practiced five days a week for five to six weeks in order for the Cogmed program to develop working memory capacity in both children and adults. Children with attention deficit hyperactivity disorder and healthy people appear to benefit from training with this program in terms of working memory assessments.

The success of working memory training programs is frequently founded on the notion that, similar to how lifting weights increases muscular mass, repetition of memory trials can teach the brain to function better. However, our data demonstrates that just overloading the brain with training activities won't improve performance on tasks not included in these tests.

Working memory enables the brain to temporarily store relevant knowledge, enabling humans to finish the activities at hand. Working memory exercises often entail asking participants to remember information while engaging in distracting activities. Along with attention, working memory is essential. Working memory can be directly targeted and improved, and working memory demands on learning programs can be reduced by using computer games and approaches like error-free learning.

STATEMENT OF THE PROBLEM

The issue of the present study is to find out the efficacy of Computer-Assisted Exercise among dyslexic children in improving cognitive variables such as concentration, memory, reasoning and language. With perspectives obtained from various disciplines, the literature on computer-assisted cognitive training in the related variables is abundant. In the literature, several questions have been posed and answered. In literature, the need for research has been well accepted. In recent years researchers have been aware of the role of computer technology in setting the reach and determining the limits for individuals in the community, in schools and at home. In particular, the present study seeks to link computer-assisted exercise as the method of cognitive training for dyslexic children to enhance focus, memory, thinking and language.

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