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Memory Activation Strategies Applied By Learning Disabilities Teachers To Enhance Their Ability To Retain And Recall Information

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Abstract

The current study aimed to identify memory enhancement strategies applied by teachers of students with learning difficulties to enhance their ability to retain and recall information in Jeddah city, using a sample of (80) male and female teachers of students with learning difficulties, employing a descriptive approach. The results indicated that the degree of application of memory enhancement strategies was at a high and a very high level, with organizational strategy ranking first, followed by memory trigger strategy, then visual imagination strategy, and finally, storytelling synthesis strategy, ranked last with no gender differences attributed. The researcher recommended the importance of empowering teachers of students with learning difficulties to apply memory enhancement strategies and other mental processes, providing them with sufficient knowledge and methods of utilization through training and developmental courses.

Keywords: *Strategies - Memory Activation - Learning Difficulties.*

Introduction

General education schools in both developed and developing countries face challenges with students with learning difficulties, which puts greater responsibilities on teachers to implement effective teaching strateg[1]ies aimed at activating mental processes, including both short-term and long-term memory (Al-Zayat, 2015). Memory is considered one of the most important higher mental processes, upon which other processes rely on it such as perception, consciousness, learning, thinking, problem-solving, and speaking. It represents the active and effective cognitive ability to retrieve experiences and information learned previously for a period of time that may vary, and to retrieve them either through free recall method, restricted recall method, recognition method, or recollection method according to predetermined objectives (Al-Atoum, 2012). Holmes & Gathercole (2014) defined it as the cognitive system responsible for maintaining and processing information during complex cognitive activities such as reading, comprehension, and calculation. (Al-Zayat, 2005) defines it as a high cognitive mental process that includes a set of interconnected processes such as encoding, storage or retention, and retrieval or recall. (Abu Al-Diyar, 2012) refers to memory as part of the human brain where information acquired through our senses accumulates, serving as a detailed record of information, a place for processing and organizing information, transforming it into discernible patterns, perception, understanding, and a locus of control, regulation, and proper guidance of this information.

Memory plays a crucial role in the system of information acquisition and processing. We receive stimuli from the environment through our senses, and these stimuli are then transformed into neural information that passes through structures called sensory registers,

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where the information continues for a very short period. However, a portion of this information, which receives selective attention, is encoded and transferred to short-term memory (Al-Zayat, 2005). Psychologists have identified three components of memory representing three systems in the processing and flow of information: sensory memory, working memory, and long-term memory. Information enters through the senses into sensory memory for less than a second and then moves to working memory where cognitive processing of the information occurs for a short period until it reaches long-term memory for storage until needed (Abdul Rahman, 2016).

1 -Sensory Memory:

Sensory memory represents the first reception system for external stimuli, through which a large amount of information is received via various sensory receptors. This memory plays an important role in accurately conveying the image of the external world, as what is stored consists of impressions or real images of external stimuli; it is a true representation of the external reality without any distortion.

And it includes subtypes such as (auditory, visual, tactile, olfactory, gustatory) memory, and studies conducted on sensory memory have confirmed that it possesses a set of characteristics, including an unlimited capacity to receive sensory information and stimuli, with the potential for rapid loss of information if clear meaning is not available for the information presented in the form of raw sensations.

For information to transition from sensory memory to memory, it must undergo a selection process and be attended to, forming a clear meaning for it. Previous experience, provided instructions, and motivation contribute to the attention process and the formation of meaning for this information, which then transfers to short-term memory (Hajji, Zozo, 2018).

2 -Working Memory:

Recent studies in the field of cognitive psychology indicate that the concept of working memory is used as an alternative concept to short-term memory. Short-term memory is now viewed as just one function of working memory, as it operates to store information and stimuli from sensory memory for brief moments, whereas working memory, in addition to its storage function, also processes this information and stimuli (Al-Atoum, 2012).

Working memory occupies an intermediary position among memory types as it receives its information from sensory memory and works on encoding and processing it in a preliminary manner, making appropriate decisions regarding whether to discard it or send it to long-term memory for permanent retention (Abu Al-Diyar, 2012). Working memory performs a set of functions, the most important of which is encoding, considered the cornerstone of this memory as it represents the process of transforming information into meaningful images or abbreviating it into simpler forms to facilitate later recall. Information can be encoded auditorily, visually, or verbally depending on its nature. Additionally, working memory stores and retains the information processed in long-term memory. Retrieval is the third function of working memory, where this process is influenced by how information retrieval is planned and how the information is organized (Al-Atoum, 2012).

On the other hand, Abu Alam (2012) points out a set of characteristics that distinguish working memory, including the very short duration of information retention unless processed, leading to its loss, as storage capacity is limited. Conversely, any distractions during information processing weaken the likelihood of storage in long-term memory. Thus, the speed of new information entering working memory leads to the loss of old information, termed the concept of substitution.

3 -Long-Term Memory:

Long-term memory is considered one of the most important components of the information processing system. It serves as a reservoir containing a vast amount of information and experiences acquired by an individual throughout various stages of life. It encompasses everything related to knowledge, facts, emotions, images, sounds, attitudes, stories, events, dates, names, and more. Long-term memory is characterized by an unlimited capacity for information. Scientists have divided the contents of long-term memory into two types (Ashour, 2015).

A- Procedural Memory: Information in this memory revolves around the procedural skills that an individual learns through experience and practice. The individual performs these skills in a manner described by some as unconscious or without his awareness while performing them.

B- Declarative Memory: Information in this memory revolves around the experiences, knowledge, and facts that an individual learns throughout various stages of life. It is divided into two types: episodic memory, which contains information related to the individual and their past experiences in a specific chronological and spatial sequence, followed by semantic memory, representing the meanings of facts and information about the surrounding environment.

In the same context, long-term memory is characterized by important features manifested in the absence of limits to the amount of information that can be absorbed in this memory. With no fixed time limits for the duration of retaining information in this memory, all information reaching this memory is stored even if we fail to recall it later. However, the retrieval process of information is influenced by several factors from this memory, including mood state, the effectiveness of the encoding process, and the importance of the information. Thus, effective encoding of information in short-term memory leads to ease of remembering and retrieving it from long-term memory.

As evident from the above, the process of storing information in memory involves several distinct stages. In the initial stage, the brain stores sensory information (that is, information received through the senses) in sensory memory, then transfers it to the short-term storage system (working memory), and thereafter important information is transferred to long-term memory. Any disruption or problem in any of these stages affects the recall process entirely (Arifin, 2019).

Therefore, attention plays a crucial role in the process of memory recall. If we want to transfer information to memory, we must pay attention to it to retain it. Essentially, the information that an individual pays attention to is the one that gets transferred to memory, while the information they don't pay attention to is forgotten and lost from memory (Abdul Hameed, Ramadan, 2012). Thus, attention is considered one of the most important psychological processes. When an individual focuses their attention on a stimulus, they perceive it, and when they perceive, they learn, and when they learn, they remember automatically. This underscores the importance of attention as a fundamental requirement for both perception and memory processes (Abdul Razak and Aldafai, 2011).

The importance of attention lies in determining the identity of the information being encoded and processed in short-term memory. If attention is not paid to this information, it fades away and is forgotten. This confirms the relationship between attention and memory, as differences in the level of attention intensity lead to differences in the level of memory intensity. The more recent and different the learning, the more focused and attentive the brain becomes because it does not fall within the familiar and expected. Biologically, the brain secretes stress hormones, leading to better attention (Tashma and Jubur, 2020). Individual memory strategies encourage learning encoding techniques and transitioning from less effective strategies. They also work to systematically store the information

obtained by the individual for better retention (Gibson, Gondoli, Johnson, Steeger, Dobrzenski & Morrissey, 2011).

Memory Activation Strategies

Rehearsal Strategy: It relies on repeating information verbally or visually to memorize it in memory. There is verbal rehearsal suitable for verbal information and self-rehearsal, along with direct feedback on performance. It is characterized by ease of application (Baddeley, 2007).

Organization Strategy: It relies on deriving an organization or arrangement for the learned word; such as finding common denominators for smaller units within the material under the umbrella of larger units, attempting to organize the less general material units within more general or higher-order units (Malham, 2006). The more organized the information according to specific patterns of units linked together accurately, the more memory activation increases. From it, two strategies emerge, namely:

-Chunking Strategy: It is a set of procedures for organizing acquired information and vocabulary by assembling small units of information into larger interconnected units with meaning that aid in memory recall, such as chunking a phone number to remember it in bits of two numbers (Heward & Wood, 2006).

- Clustering Strategy: It relies on merging associated words together when recalling them without considering the order of their categories to activate memory by classifying words into groups, where the individual's repetition of those elements in each specific category increases their recall effectiveness.

Story Synthesis Strategy: It is associated with the process of visualization, where imaginary images of experiences and information intended to be learned are invoked through imagining a fictional story, aiming to create connections and a conceptualization of the relationship between stored information and what one wants to learn from new information (Herrmann, Raybeck, & Gutman, 1993).

Visual Imagery Strategy: It is one of the memory activation strategies, helping to memorize information more quickly and for a longer period (Munsakorn, 2012). Imagery is considered one of the methods of encoding, storing, and expressing information (Al Aoun, 2012). Visualization is a mental process where information is creatively processed, especially in the absence of sensory input, by exposure to various life experiences and situations (Baddeley, Allen, & Hitch, 2011).

Expansion/Elaboration Strategy: Refers to expanding on information by adding something that makes learning more meaningful, including imagination, memory aids, questioning, and note-taking.

Summarization Strategy: Requires placing the main ideas found in the text into phrases and words. Summarization loses its effectiveness if it includes more information than necessary, and its success requires the student to distinguish between main and ancillary ideas (Abu Rayash, 2007).

Based on the above, (Edwards, 2017) pointed out that working memory relies on cognitive mental skills such as learning skills for its activity and effectiveness. Learning cannot continue without remembering and forgetting, so it must be practiced continuously. Many students judge themselves harshly based on their failure to recall verbal, visual, spatial, factual, and ongoing event information due to their inefficiency in retrieving, using, and applying it in real situations, as well as their inability to retain this information, in addition to their lack of familiarity with strategies that may help them develop their memory capacity.

The Study Problem

Students with learning difficulties face many challenges, manifested in their inability to utilize their existing information and previous experiences in current situations. This is due to their weak ability to retrieve verbal, visual, and spatial information in an organized manner that aligns with the situations they encounter. This means they suffer from inefficiencies in their working memory capacity, which reflects on their learning, education, and interaction with others, both academically and in their daily lives.

Study Questions:

-What is the level of usage of memory activation strategies applied by teachers of students with learning difficulties to enhance their ability to retain and recall information?

- Are there statistically significant differences ($\alpha \leq 0.05$) in the level of usage of memory activation strategies applied by teachers of students with learning difficulties to enhance their ability to retain and recall information attributed to gender differences?

The study conducted by Bell and Mather (2005) aimed to assess traditional memory evaluation and the ability to retain and recall information. The sample consisted of 422 individuals and revealed that the most important memory activation strategies include summarization and note-taking, extracting ideas and concepts, highlighting main ideas with lines, using signs and abbreviations, and connecting parts together. No differences were attributed to gender, age, specialization, or type of profession.

The study conducted by Ketler & Sapir (2006) focused on the effect of memory and its activation in recalling some passages in the English language, the study was conducted on 1200 children. It showed that oral interventions by teachers affect memory activation and help in remembering, and that prompting a word helps in recalling the required letter. It also illustrated that children employ a variety of strategies for the retrieval process, including the location method, forming similar and contrasting links, connecting passages with familiar information, imagining parts of the passage, and using abbreviations. There were differences between genders in favor of females, with no differences attributed to achievement or grade variables.

The study by Swanson, Kehler & Jerman (2014) aimed to investigate two experiments on the effects of strategic knowledge and strategic training on working memory performance in children (aged 10-11) with and without reading disabilities. The first experiment examined the relationship between strategic knowledge and performance on working memory as an internal and acquired tool. The result showed a significant improvement in working memory performance in both groups under learning conditions, but the performance of children with reading difficulties was lower than that of typical children in all memory tasks. Measuring working memory capacity was better in predicting performance in reading and comprehension than the stability of strategies.

The study by Kim (2010) focused on exploring the effect of colors on attracting attention and storing information in memory, assuming that there is a trade-off relationship between memory and tasks that lead to attentional distraction, by performing two tasks simultaneously. It demonstrated that colors have an impact on storing information in memory but do not have an effect on attracting attention.

The study by Dunning, Holmes, & Gathercole (2013) aimed to verify whether working memory training leads to improved performance in children experiencing deficits in this aspect. On a sample consisting of 22 children, tests from the working memory task battery were administered, including tasks such as (recalling numbers and words, counting, backward number recall, and spatial span. After being exposed to training programs, the results showed improvement in their performance.

The study conducted by Al-Battal (2014) focused on the effect of the keyword strategy in teaching English words to students with learning difficulties. The study sample consisted of (20) students who were divided into an experimental group that used the keyword strategy to memorize 12 English words and a control group that used the repeated practice strategy to memorize 12 English words. The results showed that the scores of the experimental group were higher than those of the control group in the post-test.

Davis, Sheldon, and Colmar (2014) investigated the effectiveness of using working memory strategies in improving attention and academic performance. The study was conducted on a sample of (4) students aged (8) years in Australia. They were exposed to a training program consisting of four lessons in mathematics using eight strategies to improve working memory, including mental visualization and self-questioning. The results showed a significant improvement in attention level and in performance, and their academic performance in mathematics also improved.

The study by Anshasi (2018) aimed to analyze the role of memory strategies in improving the efficiency of working memory for students with learning difficulties in school. By employing memory strategies to enhance memory function, childhood represents a period of rapid growth in knowledge and skills, during which children are exposed to large amounts of information, both inside and outside of school. They are expected to retain substantial amounts of material to progress in skills. The ability to process a series of sequential operations, store information, retain it, and recall it does not inherently support the learning process. Therefore, the provision of memory strategies is necessary to equip them with tools that assist in retrieving cognitive information, increasing their capacity to handle vast amounts of information, improving their academic performance, and enhancing their academic achievements.

Study Methodology and Procedures:

A descriptive methodology was employed to suit the objectives of the study, designed to create a questionnaire to measure the memory activation strategies implemented by teachers of students with learning difficulties to enhance their ability to retain and recall information.

Study Population and Sample:

The study population consists of all teachers of students with learning difficulties in Jeddah city, numbering (.....) in the public schools affiliated with the Ministry of Education for the academic year 2024, second semester. The study was applied to a simple random sample of (80) male and female teachers.

First: Distribution of the Study Sample by Gender

Table No. (1): Distribution of the study sample by gender

Gender	Number	% percentage
Females	58	72.5
Males	22	27.5
Total marks	80	%100

The results presented in Table (1) indicate that the number of individuals in the study sample who were teachers reached (58), while in contrast, it was found that ((22) were male teachers. Figure (1) below shows the distribution of the study sample by gender.

Study Tool:

After reviewing a number of educational literature and previous studies related to the current topic, including studies by (Al-Bardini, 2020; Al-Bloui, 2020; Al-Harthy, 2019; Al-Ghamdi, 2019), a scale was designed to measure the memory activation strategies applied

by teachers of students with learning difficulties to enhance their ability to retain and recall information. The scale consists of (27) items, distributed across six dimensions of main strategies, namely:

- **First Dimension:** Rehearsal Strategy (5) paragraphs.
- **Second Dimension:** Organization Strategy (6) paragraphs.
- **Third Dimension:** Storytelling Synthesis Strategy (4) paragraphs.
- **Fourth Dimension:** Visual Imagination Strategy (4) paragraphs.
- **Fifth Dimension:** Summarization Strategy (4) paragraphs.
- **Sixth Dimension:** Memory Cues Strategy (4) paragraphs.

The examinee responds to the scale paragraphs by choosing one of the options according to the Likert four-alternative system to measure the memory activation strategies applied by teachers of students with learning difficulties to enhance their ability to retain and recall information (Always, Often, Sometimes, Never).

Validity of the Study Tool:

-The Apparent Validity of the Study Tool (the judges' honesty):

The apparent validity was verified by presenting it to a number of specialized arbitrators, totaling (6) arbitrators, to assess the scale's quality in terms of its ability to measure what it was designed to measure, its suitability for the study's objectives, the clarity of each statement, its relevance to its axis, its importance, and to express their opinion on any modification, deletion, or addition to the statements. The items were adopted when (80%) or more of the arbitrators agreed on their suitability, necessary modifications were made, and the scale was finalized.

Internal construct validity:

Pearson correlation coefficients were computed between the performance of the sample individuals on each item of the questionnaire and the total score, as well as with the dimension to which they belong, through applying the tool to the sample survey participants. Table (3) illustrates the correlation coefficients of each item with the total score and the corresponding dimension.

Table (3): Correlation agreement between the questionnaire items, the total score, and the corresponding dimension

Paragraph number	Correlation coefficient with dimension	Correlation coefficient with the total score	Paragraph number	Correlation coefficient with dimension	Correlation coefficient with the total score
1	**0.62	**0.48	15	**0.87	**0.64
2	**0.67	**0.60	16	**0.77	**0.71
3	**0.68	**0.65	17	**0.79	**0.71
4	**0.52	**0.59	18	**0.77	**0.61
5	**0.75	**0.42	19	**0.67	**0.52
6	**0.69	**0.55	20	**0.74	**0.50
7	**0.82	**0.70	21	**0.95	**0.69
8	**0.78	**0.70	22	**0.71	**0.67
9	**0.77	**0.66	23	**0.78	**0.62
10	**0.79	**0.68	24	**0.87	**0.66
11	**0.68	**0.53	25	**0.80	**0.65
12	**0.75	**0.61	26	**0.79	**0.50
13	**0.75	**0.66	27	**0.75	**0.56

Paragraph number	Correlation coefficient with dimension	Correlation coefficient with the total score	Paragraph number	Correlation coefficient with dimension	Correlation coefficient with the total score
14	**0.84	**0.63			

**Significant at the ($\alpha \leq 0.01$) level.

It appears from Table (3) that there is a statistically significant correlation at the significance level ($\alpha \leq 0.01$) level between the items with their respective dimension and also with the total score of the questionnaire. The correlation coefficients for the items with their respective dimension ranged from (0.52 - 0.95), while the correlation coefficients for the items with the total score ranged from (0.42 - 0.71). These values are suitable for the purposes of the current study. It is worth noting that all correlation coefficients were acceptable and statistically significant; therefore, none of these items were deleted.

Pearson correlation coefficients were also calculated between each axis and the total score, as well as between the axes themselves. Table (4) shows the results.

Table (4): Correlation coefficients of the questionnaire dimensions with the total score and the dimensions with each other

Dimension/strategies	Recitation	Organization	Narrative Synthesis	Visual Imagination	Summarization	Memory Enhancers
Recitation Strategy	1					
Organization Strategy	**0.61	1				
Narrative Synthesis Strategy	**0.48	**0.59	1			
Visual Imagination Strategy	**0.54	**0.68	**0.75	1		
Summarization Strategy	**0.57	**0.59	**0.41	**0.56	1	
Memory stimulation Strategy	**0.47	**0.63	**0.47	**0.49	**0.48	1
Total marks	**0.75	**0.85	**0.79	**0.84	**0.77	**0.75

** significant at the ($\alpha \leq$**0.01**) level.

Table (4) shows that most correlation coefficients were high and statistically significant, indicating an appropriate level of construct validity. The table indicates that the correlation coefficients between each dimension of the questionnaire and the total score were statistically significant at the significance level ($\alpha \geq 0.01$), ranging between (0.75-0.85). The correlation coefficients among the dimensions ranged between (0.41-0.63), all of which were positive values, indicating an acceptable level of internal consistency.

Questionnaire stability

Cronbach's Alpha equation was used to calculate the reliability and stability through internal consistency in the survey sample, and Table (5) shows the results.

Table (5): Cronbach's Alpha Coefficients Values

THE DIMENSION	STABILITY BY INTERNAL CONSISTENCY METHOD
Recitation Strategy	0.79
Organization Strategy	0.90
Narrative Synthesis Strategy	0.83
Visual Imagination Strategy	0.78
Summarization Strategy	0.86
Memory stimulation Strategy	0.81
The general stability of the questionnaire	0.95

It is evident from the results presented in Table (5) that the overall stability coefficient of the questionnaire reached (.950) through internal consistency method. The stability coefficients for the dimensions of the questionnaire ranged between (.780 - 0.90) through internal consistency method, indicating an acceptable degree of stability for the questionnaire. Thus, it can be relied upon in the field application of the study**.**

Correction and Interpretation Method of the Study Tool:
Responses to the questionnaire were rated using a four-point Likert scale, where each item of the questionnaire corresponds to the following phrases: (Always, Often, Sometimes, Never). Each item of the questionnaire was given a specific value as follows: Grade (1) for the response indicating (Never), Grade (2) for the response indicating (Sometimes), Grade (3) for the response indicating (Often), and Grade (4) for the response indicating (Always). Thus, the highest score that a respondent can obtain on the questionnaire is (108) points, and the lowest score is (27) points. The judgment standard for the questionnaire was calculated according to the attached table below.

Table No. (5): Criterion for judging the questionnaire.

WEIGHTED AVERAGE	THE LEVEL
1.74-1	low
2.49- 1.75	middle
3.24 - 2.50	high
4 -3.25	very high

Statistical Methods Used:
To achieve the objectives of the study and analyze the collected data, several appropriate statistical methods were utilized through the Statistical Package for Social Sciences (SPSS). The following statistical methods were employed**:**

1 Pearson Correlation Coefficient: Used to measure the correlation between the score of each item and the dimension to which it belongs, as well as between the score of each item and the total score of the questionnaire, to assess the internal consistency of the study tool (construct validity).

2 Cronbach's Alpha: Used to measure the reliability of the study tool.

3 Descriptive Statistics (Frequencies): Utilized to identify the characteristics of the study sample individuals.

4 Mean: Used to determine the degree of increase or decrease in the responses of the study individuals regarding the main dimensions (average of item means), which helps in ranking the dimensions according to the highest mean.

5 Standard Deviation: Used to determine the extent of deviation in the responses of the study individuals for each item of the study variables, and for each dimension of the main dimensions from their mean.

6 Independent Sample T-Test: Conducted to examine the significance of differences between the means of the study sample according to the gender variable.

Discussion of Results:

Question 1: What is the level of utilization of memory activation strategies among teachers of students with learning difficulties to enhance their ability to retain and recall information?

The arithmetic means and standard deviations of the responses of the study sample individuals on the dimensions of the questionnaire were calculated, as shown in Table (6).

Table No. (6): Arithmetic means and standard deviations of the study sample's responses, arranged in descending order according to the dimensions of the questionnaire.

Dimension number	Dimension name	SMA Average Arithmetic	Standard deviation	Rank	Level
2	Organization strategy	3.53	0.475	1	very high
6	Memory stimulation strategy	3.43	0.582	2	very high
4	Visual Imagination Strategy	3.40	0.502	3	very high
1	Recitation strategy	3.34	0.452	4	very high
5	Summarization Strategy	3.28	0.686	5	very high
3	Narrative Synthesis Strategy	3.13	0.674	6	high
	Total marks	3.35	0.444		very high

Through reviewing the results presented in Table (6), it is evident that the means of the dimensions' items on the questionnaire ranged between (3.13 - 3.53) degrees, with a level of estimation ranging between high and very high. The overall score for the dimension reached (3.35) degrees, with a very high estimation level. The second dimension in the questionnaire **(Organization strategy)** came first with an arithmetic mean of (3.53) degrees and a very high estimation level. Meanwhile, in the second position came the sixth dimension **(Memory stimulation strategy)** with an arithmetic mean of (3.43) degrees and

a very high estimation level. In the third position came the fourth dimension **(Visual Imagination Strategy)** with an arithmetic mean of (3.40) degrees and a very high estimation level. Finally, in the last position came the third dimension **(Narrative Synthesis Strategy)** with an arithmetic mean of (3.13) degrees and a high estimation level. The results indicate that the overall score for the use of memory activation strategies applied by teachers of students with learning difficulties to enhance their ability to retain and recall information reached (3.35) degrees and came with a very high estimation level. The results of this study are consistent with the findings of studies conducted by Mather (2005), Bell & Ketler & Sapir (2006), Kim (2010), Dunning, Holmes, & Gathercole (2013), Batal (2014), and Inshaasi (2018).

The Organizational Strategy ranked first among the memory activation strategies used by teachers of students with learning difficulties, which can be attributed to the educational process relying on a constructive approach, linking material parts together, dividing information into smaller parts, and connecting them to previous knowledge until reaching the generalization stage. This is in line with the characteristics of students with learning difficulties, as the majority of them study subjects presented as scattered ideas without attempting to link them together. Some of them repeat phrases or sentences multiple times without giving them significance or meaning.

The **(Memory stimulation strategy)** ranked second, with the highest response being for (Clarifying ambiguous questions to facilitate information recall) and (Addressing any inquiries about test questions before starting to answer). The result can be attributed to teachers using diverse methods to activate memory while considering individual differences among students with learning difficulties. Mnemonics, as memory aids, are considered a sophisticated cognitive process characterized by accuracy and quality, which can be employed to help retain acquired experiences in long-term memory.

The **(Narrative Synthesis Strategy)** ranked last, and the researcher attributes this result to the sequence followed by teachers in memory activation, which starts from easy levels and progresses to more challenging ones based on cognitive development and chronological age.

Question 2: Are there statistically significant differences at ($\alpha \leq 0.05$) in the level of use of memory activation strategies applied by teachers of students with learning difficulties to enhance their ability to retain and recall information attributed to gender?

To answer this question, an Independent Sample T-Test was used to examine the significance of differences between the means, and the results are presented in Table 7.

Table (7) Arithmetic means, standard deviations, and T-Test values for the questionnaire axes according to the gender variable.

The axis	Female teachers n=58		Male teachers n=22		T value	Freedom Degrees	Significance level
	Average Arithmetic	Standard deviation	Average Arithmetic	Standard deviation			
Recitation strategy	3.36	0.441	3.29	0.500	-0.461	78	0.64	Not significant
Organization strategy	3.55	0.506	3.46	0.400	-0.482	78	0.63	Not significant
Narrative Synthesis Strategy	3.16	0.669	3.04	0.714	-0.491	78	0.62	Not significant
Visual Imagination Strategy	3.37	0.524	3.45	0.458	0.418	78	0.67	Not significant
Summarization Strategy	3.25	0.711	3.34	0.644	0.334	78	0.74	Not significant
Memory stimulation strategy	3.49	0.528	3.29	0.714	-0.949	78	0.34	Not significant
Total marks	3.36	0.440	3.31	0.476	-0.328	78	0.74	Not significant

The results in the table above indicate the absence of statistically significant differences at ($\alpha \leq 0.05$) significance level in the overall score regarding the use of memory activation strategies applied by teachers of students with learning difficulties attributed to the gender variable. The calculated t-value was (0.328) with a significance level of (.740), which is statistically non-significant at ($\alpha \leq 0.05$). The results also demonstrated no statistically significant differences at ($\alpha \leq 0.05$) significance level according to the gender variable across all dimensions of the questionnaire. The calculated t-values for these dimensions were (-0.461, 0.482, -0.491, 0.418, 0.340, -0.949) respectively, with significance levels of (.640, .630, .620, .670, .740, .340), all of which are statistically non-significant at ($\alpha \leq 0.05$).

The results indicated no differences attributed to the gender variable, which may be attributed to the fact that teachers of both genders (males and females) agree on using memory activation strategies with students with learning difficulties to improve their ability to retain and recall information later on. The current results align with studies such as Mather (2005) and Bell while it differs from the results of the Ketler & Sapir (2006) study, in which the results were in favor of females.

Recommendations:

1 .Empower teachers of students with learning difficulties to apply memory activation strategies and other cognitive processes by providing them with sufficient knowledge and employing them through training and development courses.

2. Enhance the educational process with diverse teaching strategies for active learning based on activating cognitive processes for students with learning difficulties.

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