

Using Strategies of Multiple Intelligences Among Students with and Without Learning Disabilities in Mathematics and Their Impact on Academic Self-Efficacy

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Abstract

The objective of the current research is to identify the impact on academic self-efficacy of using multiple intelligences strategies among students with and without learning difficulties in mathematics, and to highlight the areas of multiple intelligence MI most prevalent among the student, (Male, female) In addition to revealing the differences in academic self-efficacy between students with and without LD in Mathematics in the third and fourth grade of primary school in three primary schools in the province of Beni Suif, Egypt, during the second semester of the 2020/2021 academic year, The final research sample consisted of (66) students (36) students with LD in mathematics, (30) without LD, The research tools included the Stanford Binet Intelligence Scale, the fifth edition, McKenzie's list of MI (McKenzie, 1999) "Translated and codified by the two researcher", the academic self-efficacy scale, achievement tests in mathematics and the training program ((Preparation by two researcher). Research results showed that there are differences between average grades of students without and with mathematics LD on the scale of MI for the students without LD. Pre-test averages generally showed lower than post- test averages for each of the two groups, noting that there was no interaction between measurement periods (pre-test ,post-test and follow-up) except in verbal intelligence and existential intelligence. It also shows that the group of student without LD is more intelligent than the group of students with mathematics LD in post test, as well as differences between them on the scale of academic self-efficacy for the students without LD as well. It also indicated that, despite the improvement in academic self-efficacy, students with LD have lower average scores than students without LD in all measurements (pre- ,post and follow-up Tests).

INTRODUCTION

Intelligence is a combination of several highly valuable abilities in life (XU, 2020), and MI consider a part of a person that difficult to determine, as there is no accurate assessment that can provide a comprehensive survey of MI students (Armstrong, 2009). In the 1980s, American psychologist Howard Gardner proposed the theory of MI (Gardner, 1983), aimed at challenging basic human linguistic intelligence, mathematical, musical, spatial, physical, and motor interpersonal relationships.

This theory provided a multiple view for the mind, recognizing different aspects of human knowledge or ability. He identified only seven intelligences or different abilities: (Linguistic, mathematical logic, social, motor, musical, spatial, personal) intelligences, and then added natural and spiritual intelligence, and then added more intelligences called "natural intelligence" and "emotional intelligence." (Armstrong, 2009). He grouped these intelligences into three areas; analytics, introspection, interactive, which act as a

regulator to understand the type of relationship between intelligences and how they work together (Razmjoo, 2008).

The educational view of the concept of intelligence has changed from unified intelligence to individual intelligence. According to Gardner, all possess this intelligence, but we differ in the degree, the differences between human beings are in the type of their intelligence rather than in the degree as previously argued, and that intelligence can be developed through training and education (Ambusadi, 2009). Teaching for LD depends on strategies such as mission analysis-based training, psychological, developmental and other process-based training, which relies on treating disabilities and weaknesses and neglects the strengths of those with learning difficulties. Experts in this area believe that it is the appropriate strategy that takes into account the strengths of MI. (Amer and Muhammad, 2008), people with LD have some high intelligence - according to the theory of MI that is evident in some areas of these intelligence, such as painting, music, physical education and representation, which may outperform their without LD peers, yet teachers have not benefited from it in improving the level of academic education of those with LD (Weinstein, 1994, Stoloostein).

Several studies have revealed that there is correlation between MI and self-efficacy, which considers as a good indicator of success (Koor, & Al-Hebaishi, 2014), self-efficacy considers an important concept in the field of education. An individual who feels that he or she has high self-efficacy employs his or her abilities effectively, as it can be shown through cognitive perception of one's abilities and experience. Some studies of cognitive, social, motor and professional skills have shown that self-efficacy is an important building that helps to learn students and perform achievement behaviors (Schunk, 1989). Also, it can be the judgments or expectations of an individual's performance of conduct in ambiguous situations that are reflected in the choice of

activities involved in performance, effort, difficulty and conduct (Khaled, 2007). In Bandora's view (Bandora, 2007), the self-efficacy affects human thinking, emotions and behaviors. The persons' beliefs about his mental and emotional abilities drive him towards the choice of different life activities and tasks, and affects the persistence his effort and perseverance to achieve the goals he seeks through the level of emotional stimulation that may be detrimental or encouraging to his behavior. (Chan, 2003) noted that there is a statistical positive correlation between MI and teachers' cognitive self-efficacy, and that personal, linguistic, musical and spatial intelligence is good for public self-efficacy while social and physical intelligence are good for helping others. As (Abolfazli, & Gholami, 2015) indicated that self-efficacy is one of the critical factors for the success of individuals at any context, assuming that MI along with teachers' self-efficacy may work continuously to shape the efficiency and effectiveness of their teaching functions, and of academic self-efficacy. The four bases are knowledge, vicarious experience, enactive mastery, and physical and emotional state. Several studies have shown the importance of enhancing the self-efficacy of students with LD (Tabassam, & Grainger, 2002). LD have an indirect impact on self-efficacy (Hampton, & Mason, 2003), Students with special LD in mathematics also experience certain disorders that hinder their ability to perform arithmetic and mathematical understanding, with poor ability to abstract, which affects basic abilities to understand arithmetic, make discoveries, draw conclusions and generalize independently (Miyake, et al., 2000). The tasks of mathematics require more knowledge and multi-step solutions, and inhibition to eventually produce a sense of self-efficacy (Bishara, & Kaplan, 2021), and work to improve academic self-efficacy is essential for students to possess the motivation, will and skills required (Nasa, 2014). (Levy, 2008) emphasized that "students enter the classroom with different learning abilities, styles and personalities, so teachers need to find

appropriate strategies that provide students with the necessary support to achieve the standards presented through problem solving and integrating the student's MI and learning style as one of these strategies.

Research Problem

Attention to students with LD in mathematics is essential in improving their learning potential, as many studies have shown that these students are more exposed to cognitive concerns about mathematics, especially if they have low levels of self-efficacy (Ardi, et al., 2019). Self-efficacy is an important dimension of personality where it plays a key role in guiding behavior. The low self-efficacy of people with LD makes them more negative in the mood and less demanding in their academic tasks (War, 2011), so it affects academic motivation and learning (Pajares, & Schunk, 2001). Self-efficacy also refers to beliefs about one's abilities to learn or perform behaviors, which play an important role in guidance, perseverance and achievement (Schunk, & Pajares, 2002). Educators see the importance of teaching pupils in ways that suit them in their preferred way for the educational process to be done well. But most schools don't care or take into account the abilities of individuals with difficulties that appear in different fields such as painting, acting, music, etc. Therefore, the problem of studying is whether the MI Strategy can be applied to teach children without and those with LD, especially in the teaching of mathematics, by noticing to researchers while working in the Special Education Department and during the course of field training for female students that the most difficult subjects for students are mathematics. On the basis of the foregoing, thus the problem of the current study can be shown in the following questions:

- Are there differences between the average scores of students without LD and the average scores of students with LD in math on the multiple intelligences scale?
- Are there differences between the average scores of students without LD and the

average scores of students with math LD on the Academic self-efficacy Scale?

- Do the intelligences of students with LD in math differ according to the gender variables (males and females)?
- What has been the impact of a multi-intelligences educational strategy on the development of academic self-efficacy among students and students with (LD)?

Research Objectives

1. Recognize the impact of MI strategies in students without (LD) and with LD in mathematics on academic self-efficacy.
2. Highlighting the areas of intelligence most prevalent among students with gender learning difficulties in mathematics (male, female).
3. Reveal differences in self-efficacy between students with and without (LD) in mathematics.

Importance of the study

- Directing teachers to adapt diverse and attractive methods of teaching mathematics to suit each student's types of intelligence, thereby creating a suitable environment for them.
- Helping curriculum designers to build and develop curricula and shape content according to multiple intelligences strategies, thus contributing to their motivation and effectiveness in the educational process.
- Suggesting a series of training and extension programmers for students with LD in mathematics, thus providing methods and strategies whose importance lies in being an integral part of the plans presented to them.
- Drawing the attention of researchers and educators to the importance of self-development of students with LD in mathematics, and to searching about the important variables associated with them, which help to develop their abilities and prepare them for working life.

Terminology of the Research

The idea of MI is that a man does not have one intelligence but is born and ready for several, intelligences a theory developed by Howard Gardner in 1983 that there are many intelligences that is useful for learning and teaching methods, ranging from seven to ten intelligences until eight intelligences has ended up enabling educators to find teaching methods that help students master subjects. linguistic, logical/mathematical, visual/spatial, music, physical/motor, personal, social/personal, natural/environmental (percussion, 2008 Smith, 2002), Plus existential intelligence.

Strategies of multiple intelligences

The define procedurally: it is a set of planned procedures and activities in the form of an educational program based on MI to address some LD in mathematics for third and fourth grade students through activities and areas in which the student excels, investing in strengths and addressing weaknesses.

Self-efficacy

Describes a person's confidence in his or her ability to organize, execute, and regulate performance in order to solve a problem or accomplish a task at a given level of skill and ability. It operates on a multilevel and multifaceted set of beliefs that influence how people feel, think, motivate themselves, and act during various academic tasks (Schunk, & Pajares, 2002).

Academic self-efficacy

Points to the perceived ability of students to manage their own learning behavior, master academic subjects, and achieve academic expectations, namely, the extent to which an individual believes that he or she can succeed at a certain level in a specific academic mission or objective, identified as a positive indicator of academic performance in various disciplines (Al-Jawhouria, et al., 2018; Bandura; et al., 1999). Procedural definition: It is the degree obtained by the sample members

as a result of their response on the academic self-efficacy scale used in the study.

Learning difficulties

The concept of LD refers to a disorder in one or more of the basic psychological processes involved in the understanding and use of spoken or written language, which may appear in the child in the disorder of the ability to listen, speak, read, write, or perform arithmetic operations (Hallahan et al., 1996).

Learning disabilities in mathematics

It is referred to as Dyscalculia or Developmental dyscalculia, which is the inability to understand and remember the concepts of mathematics, rules, formulas, basic computational skills, and sequence of operations. Students have a poor understanding of the concept of numbers, the number system, and the skills that form the basis of mathematical skills.

Review of Related Literature:

Multiple intelligences:

The theory of MI is an alternative to the concept of general intelligence, but it lacks to a practical and reliable method of evaluation (Shearer, & Jones, 1994), which suggests that an individual possesses a set of intelligences rather than a single type (Chapman, 2009), According to the theory of MI, intelligence can be defined as the ability to solve problems (Kallenbach, 1999), and (Gardner, 2011) defines it as not only a mental capacity that everyone possesses to a greater or lesser extent, but there are eight different intelligences that represent a unique knowledge file for everyone. Since the publication of "Frames of Mind," many educators have interacted with the idea of distinct forms of intelligence, and the theory of intelligence is one of the leading theories in detecting and measuring one's mental abilities and how they appear (Tariq, 2008). Based on the perspective that intelligence is a fundamental element of learning and academic achievement or the challenge that it is not dominated by a single public capacity but

distinguishes human intelligence into specific methods (Si'ayah, & Setiawan, 2019).

The theory of MI suggests that not one set of teaching strategies will work better with all pupils and at all times, and that all pupils have a tendency to be eight-intelligences, so any teaching strategy may be successful with one group and less successful with another, thus because of these individual differences, teachers are advised to use a wide range of teaching strategies (Moses, 2013). Since one class members are different in personality, they are also different in the quality of their intelligence, so the teacher has to pay enough attention to all students by using teaching methods appropriate to different intelligence (Ambo Said, 2009). The theory of MI has broad implications for special education by looking at children with special needs as people with strengths and weaknesses in many areas. (Ghauri, 2014) Since the concept of LD is based on the different abilities and the capabilities of an individual, some of them may be weak in one, while others are strong (Kirk & Gallagher, 1986).

As part of the studies on MI (Bas, & Beyhab, 2017) study aimed at ascertain the effects of MI that support learning for English, applied to 50 students in the fifth grade, and the results showed that (MI) were more effective in the positive development of student trends. In (Alqarni, 2018) which showed that with excessive referrals of students with LD there were a need for teachers to change the traditional teaching practices, which required checking their awareness of the theory of MI and their practices with students, and if teachers could identify intelligence such as mathematical/logical, personal, visual/spatial, musical and personal. The study sample (271) included those with LD, and the results showed that teachers' awareness of MI theory had the highest relation to physical/motor intelligence, and the lowest relation to linguistic intelligence.

The aim of the (Abolfazli & Gholami, 2015) study was to ascertain the relationship between MI and self-efficacy, as they have selected 35 students in teaching English as a

foreign language from special language schools in Urmia, the MI Scale (McKenzie, 1999) and the Teachers' Senses of Efficacy Scale, the results indicated that there was a significant positive correlation between the sum of MI and the total self-efficacy of teacher students. The study of (Badeaa, 2010) aimed at discovering and developing MI in children with LD to develop their own self-concept. The sample size was (80) students in the primary school child ranged from (6-9 years) of age. The results showed that there are no differences between male and female average grades with LD in the total degree of intelligence, while males excelled in both mathematical and spatial intelligence and females excelled in linguistic, musical and personal intelligence. A study of (Umm Jilali and Abdul Hamid, 2018) showed the impact of using MI education program to address the difficulties of mathematics in third-grade primary students. The study sample consisted of two groups; a control and experiment; each consisted of 30 pupils, aged between (8) and (10), and the results found that the program was effective in addressing the difficulties of learning mathematics.

From the above, it is clear that the theory of MI enables educators to find teaching methods that help learners to master subjects and create an exciting classroom environment that includes evaluation activities and tools that respond to eight types of intelligence.

Academic self-efficacy

One of the most important and researched topics in the theory of social learning presented by Bandura, self-efficacy is one of the main factors contributing to the cognitive development of its influence on an individual's motivation and is also one of the most powerful processes of self-organization. The beliefs and judgment of an individual about his or her ability to perform successfully in various activities, and the extent to which they affect his or her life in several ways (Bandura, 1988), Bandura states that self-efficacy is part of the cognitive flexibility, and individuals with higher beliefs about self- efficacy have a higher

cognitive flexibility, they trust in their ability to behave efficiently. The theory also states that even if an individual is aware of the fact that he has alternatives in a situation, he must also believe in his own competence in order to exercise the required action (Bandura, 2000). It is related to the concept of self (Bong, & Skaalvik, 2003), the self-efficacy is the personality and beliefs of the individual about what he/she can do, how motivated in a specific area, and how successfully completes tasks in this area. They also represent an individual's beliefs and ideas about his ability to achieve certain achievements, his flexibility in dealing with difficult and complex situations and his perseverance in fulfilling his mandated tasks. (Bandura, 1997), as expressed in his beliefs about curbing or regulating their daily actions (Abdurrahman, 1998), self-efficacy is also an active and learned system concerned with tightening an individual's ability to produce a particular pattern of behavior (Schunk, 1981). Students' beliefs about their ability to excel (Al Jahouria and Al-Zafari, 2018) also mean that individuals' beliefs about their ability to achieve desired outcomes through their behaviors, their ability to adapt and control challenging situations, and self-efficacy enhance or hinder motivation.

We may find that people with low self-efficacy will not risk failure and will aspire only to things that are easily accessible, and that self-efficacy in performance affects many important behavior aspects of learning, including choice of activities, effort, perseverance, learning and achievement (Bandura, 1977; Schunk, 1989), shows academic self-efficacy through the process of absorbing and the recovery of knowledge. (Zytoon, 1999), refers to the convictions of individuals that they can successfully perform certain academic functions at certain levels (Schunk, 1991), plus the level of self-confidence to do so (Bong, & Skaalvik, 2003). Self-efficacy has been measured by many scales. (Kiray, 2016) aimed at developing the Self-Efficacy scale for science teachers where the scale is (55) items.

In the context of studies on self-efficacy, the "Celikkaleli study, 2014" examined the relationship between cognitive flexibility and academic, social and emotional self-efficacy among adolescents, with a sample of "270" students and concluded that there is a positive relationship between academic, social, emotional and cognitive resilience, as predicted. The "Beichner study, 2011" showed the relationship between students' academic self-efficacy and teachers' use of multi-learning intelligent learning strategies and methods, as well as evidence of how student self-efficacy learning practices affect their ability to deliver. Some studies have indicated that there is a significant relationship between MI and self-efficacy, and have revealed that each dimension of MI has a meaningful relationship to general self-efficacy, and self-efficacy is based on a larger theoretical framework known as social cognitive theory where there are bidirectional interactions between perception, behavior and environmental contexts (Bandura, 1989 Wood &), a study of (Yuen, et al., 2008) revealed perceptions of self-efficacy in academic and non-academic fields for children with LD, and the study sample consisted of (34) students with specific difficulties, and the results indicated that those with LD had weaker beliefs than those without LD. Their own competencies in the field of academic education, a study (Lackaye, & Margalit, 2008) also revealed differences in self-efficacy, mood, effort, and hope among students with LD and their without LD peers. The study found that those with LD experience a decrease in academic self-efficacy compared to without LD peers, with no differences between the two groups in emotional self-efficacy. The (Saracoglu, et al., 1989) study aimed at detecting the differences in self-efficacy and self-esteem between without LD students and students with LD, they found that those with LD experienced low self-esteem and self-efficacy compared to without LD students.

Learning difficulties in mathematics

Several factors contribute to a child's failure to learn, and some of the possible causes of school failure are LD (Benmarrakchi, Kafi, & Hore, 2015). Defining the term LD is not easy because it is a new term in special education which is unclear. The concept of LD refers to the presence of children with delay or disorder in one or more psychological processes that in one or more of; speech-related psychological processes, oral or spoken language. This academic delay is not due to mental retardation, sensory deprivation or cultural or educational factors (Abdul Hamid and Saber, 2013). Dyslexia is a difficulty in learning mathematics that weakens an individual's ability to learn concepts of numbers, make precise mathematical calculations, solve problems, perform other basic mathematics skills, and dyslexia is sometimes called Dyslexia. (Digital dyslexia, mathematical dyslexia, mathematical dyslexia (Whatever the term is, they all indicate difficulty in acquiring math skills such as conducting arithmetic operations, mathematical conclusions or using symbols (Governor, 2017).

About 6% of school-age children have a significant deficit in mathematics among students classified as having LD. Computational difficulties are as widespread as reading problems. This does not mean that all reading difficulties are accompanied by computational learning problems, but it does mean that the deficiencies in mathematics are widespread and require similar attention. (Garnett, 1998), in a study (Szucs, et al., 2013) to detect malfunction in more than (10000) aged 9 years old, researchers found that children with dyslexia showed poor performance in spatial visual memory, and mathematics anxiety is a negative reaction to mathematics associated with negative emotions, a sense of stress, impotence, and mental chaos and awe that results when a student is asked to manipulate numbers or solve mathematical issues.

The educational literature classifies LD to several types based on different criteria: the

most famous of these classifications; LD are classified as developmental LD and academic LD. The term developmental difficulties are used to describe weaknesses in pre-learning skills or requirements required by the student for academic achievement in subjects such as cognition, attention, memory, thinking and oral language (AL Khatib, 2013). Academic LD include reading, writing and arithmetic difficulties and are the result and outcome of developmental LD, and the child's inability to learn such materials affects learning acquisition at the subsequent educational stages (Bird and Yusuf, 2015). The Salihu, & Rasanen study, (2018) indicates that children's mathematics skills are examined during the fifth and sixth grades, as well as their reading understanding. The results of the study show that reading skills are a strong determinant of their performance in mathematics later, which concludes that mathematics and reading problems, may result from a similar cognitive background. (Eissa, & Mostafa, 2013) on the extent to which the use of differentiated education by integrating multiple smart and learning methods in solving problems and attitudes towards mathematics in six classes with learning difficulties in mathematics, the sample consisted of (60) students, and the results indicated the effective use of differentiated teaching with these students, as many students with learning difficulties have failed to use systematic problem-solving strategies. (Parrill-Burnstein, 1981) and (Munro, 1994) pointed to the relationship between teaching methods and preferred methods of learning mathematics, and methods that enable teachers to explore ways in which mathematics teaching methods can be expanded to help students solve problems more systematically.

Study hypotheses

In the light of the literature and previous studies reviewed, the research assignments could be formulated as follows:

- There are differences between average scores of the without LD students and the average scores of students with LD in

mathematics on the scale of Multiple Intelligences.

- There are differences between average scores of without LD students and average scores of students with LD in mathematics on the scale of academic self-efficacy.
- The Multiple Intelligences differs in students with mathematical learning difficulties, according to gender variables (male, female).
- The impact of a Multiple Intelligences educational strategy on the development of academic self-effectiveness among without LD students and with LD in mathematics.

RESEARCH METHODOLOGY

Tools of the study

Stanford Binet IQ fifth edition (rationing by: by Mahmoud Abu Niles, 2011). The scale is designed to measure five basic factors: inference, knowledge, quantification, optical-spatial processing, and short-term memory. Each of these factors is divided into two main areas; Verbal and non-verbal domain which is a test to measure an individual's cognitive abilities and intelligence from the age of (2 to 85), and the known use of Stanford Binet - metrics include the diagnosis of various cognitive delays in children, mental retardation, learning difficulties, autism and mental talent.

Description of scale: The scale consists of (10) sub-tests, spread over two main areas (verbal, non-verbal), with each domain containing five sub-tests. Each sub-test consists of a set of micro-tests of varying difficulty (starting from easier to harder). Each test consists of (3:6) paragraphs or tasks. The stability of the various sub-tests was calculated in the reduplication and half-segmentation method and in the alpha-Cronbach equation, the coefficients using the stability reduplication ranged from 0.84 to 0.97, the mid-segmentation coefficients ranged from (0.93) to (0.97), and the alpha-Cronbach equation ranged from 0.86 to (0.99), indicating that the measure had high stability values. The validity of the scale was also calculated in two ways; the age distinction is true, where the

ability of different sub-tests to distinguish between different age groups has been measured. All differences are marked at (0.01), and the second is the calculation of the correlation factor of the intelligence ratios of the scale by the total degree of the fourth image, ranging from (0.73) to (0.76), which are generally acceptable validity coefficients and indicate a high level of validity of the scale.

The Quick Neurological Screening Test (Arabization: Abdul Wahab Kamel, 1989).

(Q.N.S.T) The scale aims to monitor objective observations to identify those with LD. The test shows whether there is a defect or a neurological defect that leads to a student's educational output disorders. By recognizing the extent of neurological integration in its relation to learning, the test consists of (15) a LD task, where it takes (20) a minute to apply, and the total degree classifies the (15) tasks to three levels; The high grade if (above 50) indicates that the pupil suffers from learning problems, the group of pupils has been selected from this category, and the suspicion is from (26-50) They are obtained from several symptoms that may be neurological or developmental depending on the pupil's age and the severity of the presentation, normal from (0-25) Indicating both cases, and the test trader calculated the correlation factor between degrees (161) A student in the fourth grade on this test and their grades on the scale of the pupil's behavior (Mustafa Kamel, 1990) was (0.674) to (0.874) in statistical terms. (0.01) the correlation factors also calculated between the grades (40) of pupils in the third and fourth grade of the test and the scores of the measurement test of the pupil's behavior, ranging from (0.204) to (0.627) in statistical terms (0.01). The expressionist also calculated the correlation factor between the total test score and the sub-test scores and arrived at correlation coefficients that were between (0.67) and (0.92), which were high, indicating the stability of the scale.

McKenzie List of Multiple Intelligences (McKenzie, 1999) (translation and codification of researchers). The list consists of (90) singles that illustrate behavior that describes a person or his or her traits, spread over nine types of intelligence, at (9) vocabulary per species, all vocabulary is positive, and each singular has five responses: (Applies perfectly, applies very, sometimes, applies little, does not apply at all, and is valued by giving bikes. (5, 4, 3, 2, 1) The degrees of each intelligence are treated as an independent dimension, because the list does not have a total degree, and the constant coefficient is

calculated at the values of the persistence coefficients ranged from 0.92-0.71 using the mid-term segmentation method to between (0.92) and (0.71). (0.68-0.93) using the alpha-Cronbach method. These values are high and positive, indicating the stability of the scale. in life, $F(1, 143) = 15.97, p < .001$, explaining 10% of the variance. Age was a significant predictor of purpose in life, $\beta = -.32, p < .001$. The second model, adding family income, was also significant, $F(2, 142) = 9.92, p < .001$, but did not bring a significant F change. The coefficient

Table 1. Internal Validity Consistency

Intelligence No.	Interpersonal /social intelligence	Intrapersonal intelligence	Verbal / linguistic intelligence	Visual /spatial intelligence	Logical /mathematical intelligence	Bodily /kinesthetic intelligence	Naturalistic intelligence	Musical intelligence	Existential intelligence
1	0.49**	0.44**	0.73**	0.69**	0.64**	0.59**	0.69**	0.89**	0.76**
2	0.51**	0.55**	0.77**	0.62**	0.53**	0.56**	0.67**	0.79**	0.83**
3	0.71**	0.52**	0.74**	0.63**	0.51**	0.68**	0.56**	0.69**	0.80**
4	0.56**	0.60**	0.70**	0.71**	0.75**	0.52**	0.59**	0.72**	0.72**
5	0.76**	0.44**	0.48**	0.65**	0.62**	0.61**	0.64**	0.70**	0.73**
6	0.71**	0.63**	0.74**	0.86**	0.70**	0.73**	0.55**	0.84**	0.54**
7	0.80**	0.72**	0.80**	0.76**	0.72**	0.65**	0.50**	0.77**	0.64**
8	0.74**	0.62**	0.79**	0.65**	0.56**	0.46**	0.82**	0.86**	0.69**
9	0.50**	0.32*	0.60**	0.78**	0.48**	0.67**	0.60**	0.71**	0.67**
10	0.78**	0.28*	0.49**	0.62**	0.67**	0.71**	0.40**	0.82**	0.71**

Table 2. Describes Stability values of the McKenzie list of MI using the Split-Half and alpha-Cronbach methods

Number	The dimension	Number of items	alpha-Cronbach	Spearman-Brown
1	Interpersonal /social intelligence	10	0,85	0,77
2	Intrapersonal intelligence	10	0,68	0,71
3	Verbal / linguistic intelligence	10	0,88	0,86
4	Visual /spatial intelligence	10	0,88	0,91
5	Logical /mathematical intelligence	10	0,82	0,79

6	Bodily /kinesthetic intelligence	10	0,81	0,70
7	Naturalistic intelligence	10	0,88	0,71
8	Musical intelligence	10	0,93	0,92
9	Existential intelligence	9	0,87	0,85

Academic Self- Efficacy scale :(prepared by researchers). It was prepared after briefed number of previous scales and studies, such as the Muris study, 2001; Ferla, et al., 2009; Shokri, 2012; Gwamanda, 2016) consists of (44) statements, aimed at determining and measuring the academic self-efficacy of pupils. All paragraphs of the scale are responded to by the grade teacher through the five-rating Likert scale by selecting one response out of five options, which are (strongly agreed-agree - agree to some extent-disapprove-strongly disapproved) and grades (5-4-3-2-1) are given for each response respectively, with the overall

score on the scale ranging from (44 - 202) degrees. The validity has been verified using the external test validity, and the validity of the scale has been calculated on (50) student "male, female" using the vocabulary validity method by calculating the correlation factor between the degree of each phrase and the total degree of dimension to which it belongs after deleting the singular degree. The values of the correlation coefficients reached ranged from (0.72), (0.89) are high and positive values and indicate the validity of the scale as shown in table 3.

Table 3. Internal Validity consistency

number	Validation	number	Validation	number	Validation	number	Validation
1	0.67**	11	0.46**	21	0.77**	31	0.62**
2	0.59**	12	0.60**	22	0.79**	32	0.77**
3	0.64**	13	0.76**	23	0.71**	33	0.64**
4	0.65**	14	0.64**	24	0.71**	34	0.67**
5	0.59**	15	0.67**	25	0.79**	35	0.75**
6	0.77**	16	0.59**	26	0.82**	36	0.83**
7	0.70**	17	0.80**	27	0.63**	37	0.67**
8	0.68**	18	0.69**	28	0.67**	38	0.84**
9	0.47**	19	0.78**	29	0.77**	39	0.63**
10	0.70**	20	0.78**	30	0.67**	40	0.86**

Table 3 shows that all items of the scale are related to the overall degree, indicating that they measure a single feature, namely academic self-efficacy. The reliability of the test has also been calculated on (50) pupils using the split-half method. The values of the stability coefficients ranged between (0.66) and (0.96), and the alpha-Cronbach method. The values of the alpha-constant coefficients have ranged from (0.46) to (0.86) appropriate constant coefficients indicating the stability of the scale

Achievement tests in mathematics

To identify those with LD in mathematics and to monitor indicators of LD in mathematics, it consists of (30) questions 'for each question (grade-zero)". The two researchers calculated the validity of the tests by presenting them to a group of psychologists and mental health arbitrators to judge the validity of the tests, and the reliability of the tests was calculated by applying them to (40) pupils in the third and fourth grade in three primary schools in the province of Beni Suf - Egypt (Muhammad Mutali Al - Sha'rawa School, Al - Zahra Elementary School, Al -

Safwa School), where they were chosen in an intentional manner. The stability factor through the reduplication method was valued at a two-week interval to (75.0).

The training program

The program was based on Gardner's theory of MI which was based on the existence of nine types of intelligence: Verbal/Linguistic, Logic/Mathematical, Visual/Spatial, Music, Physical/Motor, Personal, Social/Personal, Natural, and Existential Intelligence. The program was based on a variety of activities and exercises according to the specific content of the math curriculum. The period of applying the program of is four and a half months, where the program is (36) sessions in addition to a preliminary session, with two meetings per week during 2020/2021, and the duration of the

session has ranged from (45) Minutes with breaks.

Program Applied Strategies

The many different strategies, have been used namely; puzzle presentation strategy, storytelling, individual reading, role playing, self-assessment, brainstorming, peer participation, self-evaluation of answers, free thinking, asking questions, cooperative learning, guided discovery, observation, dialogue and discussion, questioning and exploration Problem solving, visual imagination, simulation, group discussion, self-questioning, mind mapping, learning by playing, and modeling. The following is table 4 a distribution of the teaching plan for the program.

Table 4. Distribution of the teaching plan for the program

Lesson	Topic	Multiple intelligences strategy type	No. of Sessions
From (First to fourth)	-Measure the height. -area measurement.	Interpersonal /social intelligence	4
From (Fifth to Eighth)	-Measuring the lengths of a geometric figure. -holograms.	Intrapersonal intelligence	4
From (Ninth to Twelfth)	- division concept. - Rounding to the nearest ten or hundred.	Verbal / linguistic intelligence	4
From (Thirteenth to Sixteenth)	-representation of fractions. -equal geometric shapes.	Visual /spatial intelligence	4
From (Seventeenth to Twentieth)	-millimeter and centimeter. -numerical patterns.	Logical /mathematical intelligence	4
From (Twenty-first to Twenty-fourth)	-The place value of a number in thousands and tens of thousands. - Rounding numbers to the nearest thousand.	Bodily /kinesthetic intelligence	4
From (Twenty-fifth to Twenty-eighth)	-Adding two numbers of at most three digits by regrouping and without. -Subtracting two numbers of up to three digits by regrouping and without.	Naturalistic intelligence	4
From (Twenty-ninth to Thirty-second)	-Comparing and ordering fractions. forming division with a remainder and without a remainder.	Musical intelligence	4
From (Thirty-third to Thirty-sixth)	-Compare numbers within tens of thousands. - Arrange the numbers within (1000).	Existential intelligence	4

Total			36
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The study designs

The researchers used the quasi-experimental method represented in the method of sample selection, which was selected intentionally and in dealing with the variables of the study according to the assumptions that seek to verify them. There are two variables, the independent variable and the dependent variable. Pre/post/ follow-up tests have been followed by two experimental groups (one group is students without (LD) other one with (LD) in mathematics), The research is limited to teaching mathematics for third and fourth graders according to (MI), The necessary quantitative data were collected and analyzed using appropriate statistical methods to test the research hypotheses.

-Study variables: the study consisted of the following variables:

-Independent variable: (MI) Strategies Program.

-Dependent variable: academic self-efficacy.

-Results were collected to determine the effect of the independent variable on the dependent variable.

-The study used some statistical methods to analyze the results: Correlation, medians, means standard deviation, T-test and Variance analysis to find out the significance differences between the means.

Data collection and sampling

The final research sample consisted of (66) students in the third and fourth primary grades in three primary schools in the province of Beni-Suef, (36) students with LD in mathematics, including (19) females, (17) males, (30) without LD students, (17) females and (13) males. The study sample was deliberately selected by counting students with LD in math, and checking by applying the

scales mentioned above during the second semester of the 2020/2021 school year.

Study Application Procedures

The procedures in the study were as follows:

- The two researchers prepared and designed the measures and tools of the current study and verified their validity, reliability and usability.
- Selection of the study sample at the diagnostic stage and identification of students after verification of the sample selection procedure.
- Following the completion of the diagnostic procedures for the sample study, the study tools were applied pre-application.
- Applying the study scales, which are (Stanford Binet Scale - Multiple Intelligences Scale - Academic Self-Effectiveness Scale - Achievement Tests in Mathematics).
- Collecting the results of the study's measures and tools, and the two researchers used appropriate statistical methods to process the data of the study, verify the hypotheses and interpret the results in the light of the theoretical framework and previous studies.

RESULTS

Hypothesis 1:

"There are differences between the average grades of students without LD and the average grades of students with LD in mathematics on the scale of (MI)" To verify the validity of the hypothesis, the researchers used binary variation analysis to repeatedly measure both groups (without and with LD) in mathematics and measurements (pre-test, post-test, and follow-up) The following table shows this.

Table 5. Variation analysis of the binary recursive measurement of the scores of normal students and students with LD in mathematics in multiple intelligences (pre-test, post-test, and follow-up) measurements.

No.	Intelligence	Source	Total Squares	Degrees of Freedom	Average squares	"F" ratio	Total Value	Conclusion
1	Interpersonal /social intelligence	Time	1731.309	2	865.655	116.867	.000	There are differences.
		Group * Time	39.451	2	19.725	2.663	.074	No interaction
		Error	948.115	128	7.407			
2	Intrapersonal intelligence	Time	871.219	2	435.610	86.771	.000	There are differences.
		Group * Time	28.492	2	14.246	2.838	.062	No interaction
		Error	642.589	128	5.020			
3	Verbal / linguistic intelligence	Time	2815.437	2	1407.718	183.961	.000	There are differences.
		Group * Time	237.861	2	118.930	15.542	.000	There's an interaction.
		Error	979.493	128	7.652			
4	Visual /spatial intelligence	Time	2665.664	2	1332.832	156.495	.000	There are differences.
		Group * Time	11.785	2	5.892	.692	.503	No interaction
		Error	1090.144	128	8.517			
5	Logical /mathematical intelligence	Time	2265.843	2	1132.921	159.002	.000	There are differences.
		Group * Time	8.792	2	4.396	.617	.541	There's an interaction.
		Error	912.026	128	7.125			
6	Bodily /kinesthetic intelligence	Time	2595.118	2	1297.559	221.056	.000	There are differences.
		Group * Time	15.501	2	7.751	1.320	.271	No interaction
		Error	751.337	128	5.870			
7	Naturalistic intelligence	Time	3415.176	2	1707.588	236.542	.000	There are differences.

		Group * Time	8.812	2	4.406	.610	.545	No interaction
		Error	924.026	128	7.219			
8	Musical intelligence	Time	4406.377	2	2203.188	225.232	.000	There are differences.
		Group * Time	20.498	2	10.249	1.048	.354	No interaction
		Error	1252.078	128	9.782			
9	Existential intelligence	Time	4648.147	2	2324.073	250.379	.000	There are differences.
		Group * Time	106.409	2	53.205	5.732	.004	There's an interaction.
		Error	1188.126	128	9.282			

Table 5 shows that the values of "F" ratio range from (86.7) to (250.38), all of which are statistically significant. In order to determine the direction of differences, the two researchers extracted the average of multiple

intelligences in measurements (pre-test, post-test, and follow-up) of both groups of normal students and those with LD in mathematics. The following table shows this.

Table 6. multiple intelligence averages in measurements (pre-test, post-test, and follow-up)

Measure	Group	Interpersonal /social intelligence	Intrapersonal intelligence	Verbal / linguistic intelligence	Visual /spatial intelligence	Logical /mathematical intelligence	Bodily /kinesthetic intelligence	Naturalistic intelligence	Musical intelligence	Existential intelligence
pre-test	the group of students without (LD)	30.60	31.93	28.33	29.60	28.97	30.40	29.17	27.80	30.47
post-test		36.70	36.27	.5734	37.30	35.77	37.50	37.87	38.03	40.43
follow-up		37.53	37.23	36.10	38.27	37.23	38.07	38.47	38.37	41.93
pre-test	the group of students with (LD) in mathematics	29.03	30.56	23.28	27.22	27.19	27.06	26.53	25.92	28.19
post-test		33.31	33.08	86.32	33.72	33.06	34.06	34.36	34.72	35.08
follow-up		36.11	35.36	33.14	35.31	34.61	35.86	35.89	36.36	39.75

Table 6 shows that the overall pre-test averages are lower than those of each group, noting that there is no interaction between the measurement periods (pre-test, post-test, and follow-up) in the two study groups normal and with mathematical (LD) except in verbal and existential intelligence, and in terms of the verbal intelligence, despite the difference between the group of normal students and

students with mathematical learning difficulties in pre-test, measurement. (28.33), (23.28) respectively, show the convergence of their degrees in post-test and follow-up measurement (34.57), (32.86) respectively, indicating a marked improvement in verbal, and in existential intelligence, despite the convergence of the average scores of normal group with students with (LD) in mathematics. (30.47),

(28.19) and (41.93), (39.75) respectively show that the normal group is more intelligent than the group of learning difficulties in mathematics in post-test.

Hypothesis 2:

"There are differences between average grades of normal students and average grades of

Table 7. Values "T" for the difference between average grades of students without LD and with LD in mathematics in the effectiveness of academic self-efficacy in pre, post and sequential measurement

Measure	Variable	Group	Number	Average	Deviation	Value "T"	Degree of Freedom	Probability Value	Conclusion
Pre-test	Academic Self-Effectiveness	the group of students with (LD) in mathematics	36	104.86	9.38	4.439	64	.000	There are differences.
		the group of students without (LD)	30	114.53	8.07				
Post-test	Academic Self-Effectiveness	the group of students with (LD) in mathematics	36	137.75	8.09	3.073	64	.003	There are differences.
		the group of students without (LD)	30	143.53	6.99				
Follow-up	Academic Self-Effectiveness	students with (LD) in mathematics	36	143.25	6.71	2.566	64	.013	There are differences.
		students without (LD)	30	146.97	4.63				

Table 7 shows that the "T" values of the difference between the average academic self-efficacy score between the group of students with LD and normal students extend from (2.566) to (4.439), all of which are statistically function for the normal students with averages indicating a higher average of students without LD in both pre- test, post- test and follow-up test.

students with (LD) in mathematics on the scale of academic self-efficacy," and to check the validity of the hypothesis, the researchers used the "T" test for the difference between the average scores of the two groups: normal students in mathematics and with LD students. The following table shows this.

Hypothesis 3:

"The MI of students with mathematical LD vary according to gender variables (male, female)." To validate the imposition, the researchers used the "T" test for the difference between the average scores of the male and female groups with math LD, and the following table shows this.

Table 8. Values "T" for the difference between average scores of MI for students with math LD depending on type

Number	The dimension	Number of items	alpha-Cronbach	Spearman-Brown
1	Interpersonal /social intelligence	10	0,85	0,77
2	Intrapersonal intelligence	10	0,68	0,71
3	Verbal / linguistic intelligence	10	0,88	0,86
4	Visual /spatial intelligence	10	0,88	0,91
5	Logical /mathematical intelligence	10	0,82	0,79
6	Bodily /kinesthetic intelligence	10	0,81	0,70
7	Naturalistic intelligence	10	0,88	0,71
8	Musical intelligence	10	0,93	0,92
9	Existential intelligence	9	0,87	0,85

Measure	intelligences	Gender	N	Mean	Std. Deviation	t	Sig. (2-tailed)	Conclusion	
Pre-test	Intrapersonal intelligence	Male	17	30.0000	3.69121	-1.191	.242	There are no differences.	
		Female	19	31.3684	3.20088				
	Interpersonal /social intelligence	Male	17	29.1765	4.00367	-.515	.610	There are no differences.	
		Female	19	29.8947	4.31914				
	Verbal / linguistic intelligence	Male	17	24.1765	5.34129	-.535	.596	There are no differences.	
		Female	19	25.0000	3.84419				
	Visual /spatial intelligence	Male	17	26.5294	4.12489	-1.770	.086	There are no differences.	
		Female	19	28.5789	2.75511				
	Logical /mathematical intelligence	Male	17	26.0588	4.06925	-1.276	.211	There are no differences.	
		Female	19	27.6842	3.57542				
			Male	17	26.8235	4.77278	-1.229	.227	There are no differences.

	Bodily /kinesthetic intelligence	Female	19	28.4211	2.89282				
	Naturalistic intelligence	Male	17	25.7647	4.10075	-1.685	.101	There are no differences.	
		Female	19	28.1053	4.21498				
	Musical intelligence	Male	17	24.4118	5.78855	-1.128	.267	There are no differences.	
		Female	19	26.5789	5.72825				
	Existential intelligence	Male	17	24.8235	5.30607	-1.366	.181	There are no differences.	
		Female	19	26.7895	3.17243				
	Post-test	Intrapersonal intelligence	Male	17	35.4706	2.09516	-1.107	.276	There are no differences.
			Female	19	36.3684	2.69177			
		Interpersonal /social intelligence	Male	17	36.5882	2.03282	.265	.793	There are no differences.
			Female	19	36.3684	2.83256			
		Verbal / linguistic intelligence	Male	17	33.0588	2.70348	.466	.644	There are no differences.
Female			19	32.6842	2.10957				
Visual /spatial intelligence		Male	17	35.4706	2.71840	.980	.334	There are no differences.	
		Female	19	34.6842	2.08307				
Logical /mathematical intelligence		Male	17	34.8824	2.86972	-.192	.849	There are no differences.	
		Female	19	35.0526	2.46021				
Bodily /kinesthetic intelligence		Male	17	36.1176	2.59524	-.237	.814	There are no differences.	
		Female	19	36.3158	2.42791				
Naturalistic intelligence		Male	17	36.0588	2.07577	-.901	.374	There are no differences.	
		Female	19	36.6842	2.08307				
Musical intelligence		Male	17	36.7059	1.72354	.093	.927	There are no differences.	

		Female	19	36.6316	2.87152			
	Existential intelligence	Male	17	35.4706	2.23935	-3.055	.004	There are differences.
	Verbal / linguistic intelligence	Female	19	38.8947	2.49209			
Follow-up	Intrapersonal intelligence	Male	17	35.6471	1.80074	.958	.345	There are no differences.
		Female	19	35.1053	1.59495	.951		
	Interpersonal /social intelligence	Male	17	36.1765	2.12824	.192	.849	There are no differences.
		Female	19	36.0526	1.74718			
	Verbal / linguistic intelligence	Male	17	33.1176	2.26060	-.052	.959	There are no differences.
		Female	19	33.1579	2.38661			
	Visual /spatial intelligence	Male	17	35.4118	2.59949	.273	.786	There are no differences.
		Female	19	35.2105	1.78198			
	Logical /mathematical intelligence	Male	17	34.6471	2.52342	.092	.928	There are no differences.
		Female	19	34.5789	1.92399			
	Bodily /kinesthetic intelligence	Male	17	35.8235	1.91165	-.112	.912	There are no differences.
		Female	19	35.8947	1.91180			
	Naturalistic intelligence	Male	17	35.6471	1.83511	-.751	.458	There are no differences.
		Female	19	36.1053	1.82254			
	Musical intelligence	Male	17	36.1765	2.18619	-.511	.613	There are no differences.
		Female	19	36.5263	1.92551			
	Existential intelligence	Male	17	36.3529	1.83511	.775	.443	There are no differences.
	Verbal / linguistic intelligence	Female	19	35.8421	2.08868			

Table 8 shows that the "T" values of the difference between the average degrees of MI between the group of students with LD according to the type variable extend between (0.052) and (1.3055) are not statistically significant in all intelligence before and after application and in the sequential stage except in existential intelligence in the post-measurement for the female. That suggests that there are no differences in the degrees of intelligence according to the gender.

Table 9. shows the contrast analysis of the repeated measurement of the academic self-efficacy - scores of the two groups with mathematics LD and without LD.

Variable	No .	Sourc e	Total Squares	Degrees of Freedom	Average squares	Cursor ratio	Probabilit y Value	Conclusion
Academi c Self-Efficacy	1	Period	48686.325	2	24343.162	391.385	.000	There are differences .
	2	Group * Period	299.254	2	149.627	2.406	.094	No interaction
	3	Error	7961.281	128	62.198			

Table 9 shows that the "F" ratio values of the difference between the average academic self-efficacy scores in the three measurements are (391,385) statistically significant This indicates that there have been changes in self-efficacy, while the interaction between the study and measurement groups is (2.406) not indicating that the effect of the change in academic self-efficacy as a result of time

Hypothesis 4:

An educational strategy based on MI has had the effect of developing the academic self-efficacy of normal students and students with LD. In order to identify the validity of this hypothesis, analysis of variance was used to repeated measurement on the academic self-efficacy scores of the two groups,

The following table shows this.

constraints didn't interact with the study group. To illustrate this effect, the researchers relied on drawing data and averages for subgroups and figure 1 explaining this.

Form 1. Shows the average academic self-efficacy scores of both those with LD in mathematics and normal students in all "pre-post-follow-up Tests"

	Measure	Students with LD in math	Students without LD
Normal ——— difficulties ———	Pre-test	104.86	114.53

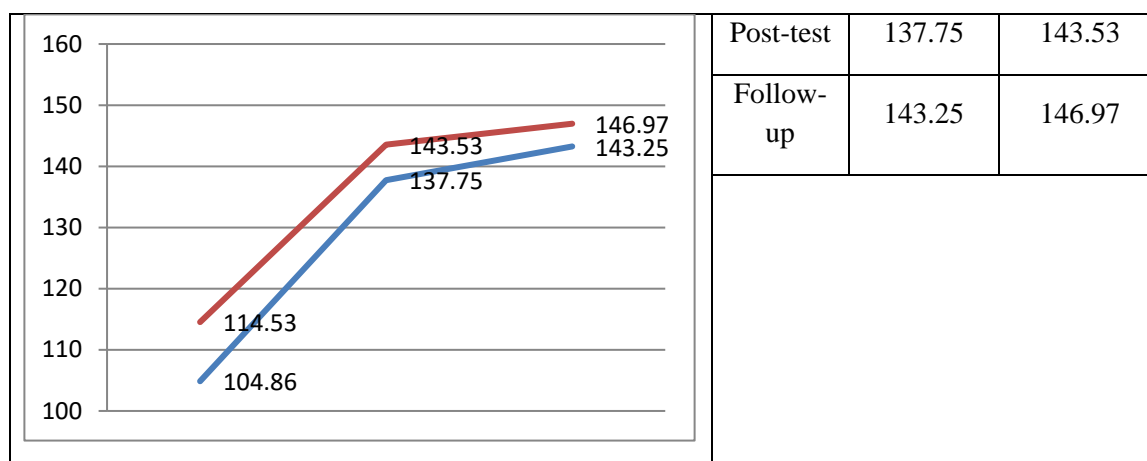


Figure 1 shows that the average academic self-efficacy scores of both those with LD in mathematics and without LD in all measurements (pre, post and follow-up) are (104.86), (137.75), (143.25), (143.25), (143.25), (114.53), (143.53) and (146.97) respectively, indicating that those with LD despite improvements in academic self-efficacy have lower average grades than average students without LD in all measurements (pre-post and follow-up).

DISCUSSION

The results of the first hypothesis showed differences between average grades of students with mathematics LD and normal students on the MI -scale, To validate this hypothesis, the researchers used the analysis of the bilateral variability of the recurrent measurement of each of the two groups and Pre- and post-follow-up tests. As shown in table (6) that the values of, 'F, ratios' extend from (86.7) to (250.38), and they're all statistically significant, To determine the direction of differences, the average multiple intelligences in (Pre- and post-follow-up tests) were extracted for both groups, as shown in table (7) it shows that pre-tests averages are generally lower than the post-measurement averages for each of the two groups. Noting that there is no interaction between tests periods(Pre- and post-follow-up tests), for the two study groups, except in verbal intelligence and existential intelligence, and in terms of verbal intelligence despite the difference between the two study

groups in pre-intervention tests; (28.33) (23,28), (respectively, Shows their convergence of grades in post-and-follow tests (34.57), (32.86) respectively which indicates a marked improvement in verbal intelligence and in terms of existential intelligence, despite the convergence of the average scores of the two groups(30.47) (28,19) Follow-up tests (41.93), (39.75) respectively, it appears that the normal group is greater in intelligence than the group of mathematics LD in (post -test). This finding was agreed with the results of the study of both the study of (Aldris, 2009; Al-Mahsina, 2013; Tafti, et al., 2014), According to the researchers, based on the theoretical framework, multiple intelligences have increased more in normal students. Based on the theoretical framework, multiple intelligences has increased more among normal students. In this context, a study (Yekta, et al., 2021) which showed that mathematical logical intelligence indicates the ability of logical thinking in mathematics, which helped normal students to solve mathematical issues quickly and this was evident in their post-intervention measurement scores. As for intelligence in people with mathematics LD they may occur in any of the nine intelligences, as we find that there are individuals with mathematical logical difficulty, individuals with spatial deficiencies, others with motor physical deficiencies or musical disability, Which means that although there is a weakness and deficiency in mathematics, they excel in one of the MI,

'Weinstein, 1994', believes that people with LD have some high intelligence that is clearly visible in areas such as painting, music, sports and motor education and may outperform normal people. In (koura's study, & Al-Hebaishi, 2014) showed that personal intelligence was the most preferred type of intelligence, and music intelligence is the lowest Music intelligence is the least, and people with LD show a quantitative and qualitative reduction in the interpretation of feelings expressed non-verbally (emotional signals). A (García-Redondo, 2019) study noted the importance of applying and promoting different intelligences as an important bridge to improving disability areas for pupils with LD in general and mathematics in particular.

With regard to the results of the third hypothesis, the "t" values showed differences between the average score of MI between the group of students with LD according to the gender variable (female male) ranging from (0.052) to (1.3055) which is not statistically significant in all intelligences before and after the application of the program as shown by table (9), as well as in follow-up test except in the existential intelligence in post-intervention test for females, This indicates that there are no differences in the degrees of intelligence according to the gender variable, and the absence of differences between males and females can be explained by the balance of equal experience obtained by both males and females, in terms of learning opportunities, its type, one curriculum and traditional teaching methods, The researchers attributed that the values of existential intelligence are higher in females for their ability to find and achieve a more appropriate meaning of life than males, as confirmed by the Halama study, & Strizenec, 2004; Al-Fatlawi, & Abdel-Moneim, 2021.

The results of the fourth hypothesis to identify the impact of multi-intelligences learning strategies on the academic self-efficacy of normal students and students with LD indicate that there have been changes in

academic self-efficacy, Variance analysis was used to measure repeatedly on the academic self-efficacy scores of the two groups, and table 10 shows that the "F" values of the difference between the average academic self-efficacy scores in the three measurements are (391,385), which are statistically significant While the interaction between the study and measurement groups is (2,406) is not significant, This suggests that the impact of the change in academic self- efficacy a result of time constraints did not interact with the two study groups, To illustrate this effect, the graph and averages of subgroups were relied upon as form 1, which showed that the average academic self-efficacy scores of each group with mathematics LD and normal students in all pre- and post-follow-up tests were (104.86), (137.75), (143.25), (114.53), (143.53) and (146.97), respectively, This indicates that students with LD despite improvements in academic self- efficacy, their average score is lower than normal students in all tests: pre- and post- and follow-up, We conclude from the result of this hypothesis that the development of intelligence has an impact on the development of academic self- efficacy among normal students and with mathematics LD , and many studies have indicated that there is a relationship between MI and the academic self-efficacy, Chan, 2003, noted that there is a positive and statistically significant correlation between MI and the self- efficacy of teachers and that personal, linguistic, musical and spatial intelligence is good stimulants for the effectiveness of the general self, while social and physical intelligence has been good alarms towards helping others, Abolfazli 'Khonbi.2015' also noted that self- efficacy is one of the determining factors for individual success in almost any context, assuming that MI combined with the self- efficacy teachers may continuously work by shaping the efficiency and effectiveness of their teaching functions. The researchers explain that the average score of students with LD is lower than the average score of the normal students in all tests: (pre and post and follow-up) despite improvement

after the application of the program, because the low self-efficacy of students with LD as a result of the nature of their educational problems in mathematics, in addition to the decrease in motivation, which is a basic feature of people with LD, This has been shown by many studies such as the study (Hamidi, Boubacar, 2021), From the above it is clear that teaching methods based on MI have an effective and significant impact in raising the level of academic self-efficacy because teaching according to this theory makes the teacher diversify the presentation of information through several activities, This can also be explained by the fact that normal students, such as students with LD, are going through many academic burdens, forcing them to master some of the skills necessary to meet the demands of successive studies, Therefore, the use of intelligence strategies during the program helped to clearly raise the level of academic self-efficacy in both groups, as confirmed by the results of "Shore study, 2001" where it showed that integrating intelligence into lessons and tasks will have a positive and effective impact on the academic self-efficacy, Therefore, we should highlight ways in which the academic self-efficacy of learners in various fields can be enhanced, and provide more ways and methods that help students persevere and stimulate their learning abilities. This is what" Ferla, et al., 2009" focused on, that the of the academic self-efficacy is strongly influenced by the level of academic student and affects it, and has a role in predicting the level of academic, especially in mathematics.

CONCLUSION

In conclusion, this research reviewed the importance of creating an innovative approach to teaching educational skills in mathematics using MI strategies. It has helped to stimulate the growth of different types of intelligences by understanding the type of intelligence that students with mathematical learning difficulties have, and by training them in methods, skills and attitudes inside and outside the classroom. This has affected their

academic self-efficacy and gives them better knowledge about themselves and their characteristics, acting through various educational tasks that have increased their ability to maximize their opportunities and stimulate themselves. Emphasizing the importance of students being aware of their weaknesses and strengths, and creating appropriate opportunities to compensate for their weaknesses and develop and utilize their strengths through learning practices that can also allow them to develop self-confidence, self-esteem and self-organization, thus contributing to a positive attitude towards mathematics learning. Research has also emphasized the critical aspect of academic self-efficacy in influencing academic performance and excellence among students in general and with LD in mathematics, in particular, and the importance of incorporating MI strategies within mathematical skills, and of using them simultaneously because of their effectiveness in raising student academic performance.

General Recommendations

Based on the findings of the current research, the researchers recommend that:

- 1- Using the List of Multiple Intelligence to detect the various types of intelligences that students enjoy, and then build teaching models that correspond to their abilities and thinking methods, and to take this into account when writing books and curricula in mathematics courses to develop students' different intelligences.
- 2- Analyzing the curricula at the various academic levels to determine the extent to which they include the activities of multiple intelligences.
- 3- Holding guidance (awareness) courses, workshops and seminars for teachers and parents of students with learning difficulties in mathematics to introduce them to the strategies of multiple intelligences, and their role in enhancing

the academic self-efficacy of their children.

- 4- Support and strengthen the strengths of those with learning difficulties in mathematics, and enhance their abilities so that they can feel and develop a sense of academic self.

Suggestions for further research

For further research on the current topic, the researcher suggests the following study:

- Levels of cognitive processing in the light of BASS theory and its relationship to multiple intelligences among children with attention deficit hyperactivity disorder.
- Multiple intelligences strategies for high school students with learning difficulties and their relationship to executive functions and academic performance.
- Emotional intelligence and strategies of multiple intelligences among students with learning difficulties in mathematics with high and low academic procrastination.

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