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# The effectiveness of response to intervention (RTI) diagnostic program in diagnosing and improving the difficulties of reading and writing in a Jordanian sample

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**The study aims to investigate the impact of an educational program that was developed based on the response to intervention model for diagnosing and improving the difficulties of learning to read and write among a sample of students in Jordan. The number of the study participants was 60 male and female students, with learning difficulties in fourth, fifth, and sixth grades in government schools affiliated with the Jordanian Ministry of Education. For the purpose of the study, a program was prepared based on the strategies and methods of the response to intervention model in three stages, measured the effectiveness of the program in diagnosing reading and writing difficulties was prepared and measured the extent of their improvement. The researcher prepared achievement reading and writing tests to be applied in the pre and post measurement for each stage of the response to intervention model. The program was implemented for two consecutive months at three meetings per week, each of which lasted for 45 minutes. The study data collected were analyzed and the study reached (1) the effectiveness of the response to intervention model in detecting students' reading and writing difficulties were demonstrated by the decrease in the number of students who need intensive interventions according to each stage of the model and (2) there are statistically significant differences in the achievement tests performance for reading and writing and for post-measurement in all stages of the response to intervention model and grades.**

**Key words:** Response to intervention (RTI), reading and writing difficulties.

## INTRODUCTION

The difficulties of reading and writing are the most prevalent patterns of learning disabilities, as they constitute more than 80% of the categories of learning difficulties. Also, they are a major obstacle to school success in all subjects because the inability to read and write results in multiple mental incapabilities and multiple learning problems (Lerner, 2000).

Previously, it was prevalent to identify students with reading and writing difficulties by testing the divergence between intelligence and academic achievement in

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reading and writing. Here, students are required to obtain average or above in official intelligence tests and achievement test in reading and writing (Al-Zayat, 2007). However, the test of divergence was criticized because it contains several contradictory and illogical factors in estimating the intelligence and achievement of students with learning difficulties. This led to lack of agreement on the diagnosis and evaluation of people with learning disabilities (Gresham, 2002).

As a result, the response to intervention model came as one of the most prominent models that address the weaknesses in the process of diagnosing and treating learning disabilities. This model constitutes a general framework for diagnosing students with learning difficulties, assessing their achievement and determining the extent of their deviation from the average achievement of their peers. It presents the serial therapeutic intervention according to specific stages based on the capabilities and needs of the students and also determines the educational services they need (Al-Ansari, 2009).

## The study problem

Recent research and studies in the field of special education have revealed the weakness and limitations experienced by the divergence test in diagnosing learning disabilities. This led to a decrease in its credibility in identifying students with learning difficulties (Rashid, 2016). Therefore, the Education for People with Disabilities Law (IDEA, 2004) introduced the response to intervention model (RTI) to determine the services of the youngest children while providing their own individual education, where RTI strategy is a methodology based on accurate data and a way to give academic solutions that suit the children's situation (Wallace, 2014).

Hence, the problem of the study reveals the effectiveness of a therapeutic diagnostic program based on the response to intervention model (RTI) in diagnosing and improving reading and writing skills among a sample of students with learning difficulties. The following sub-questions emerge from the main question:

(1) How effective is the RTI in diagnosing students with literacy difficulties in a Jordanian sample in grades four, five, and six primary schools?
(2) Are there statistically significant differences between the averages of the students' scores in the post-test reading skills due to the educational program?
(3) Are there statistically significant differences between the averages of students 'scores in the post test of writing skills due to the educational program?

## Objectives of the study

(1) Building a diagnostic and assessment tool for reading and writing difficulties based on the response to intervention model with psychometric properties.
(2) Building a therapeutic diagnostic program to improve reading and writing difficulties for a sample of students.

## Importance of the study

(1) Presenting the response to intervention model as an alternative to the standard divergence between mental ability, and academic achievement, as a tool for diagnosing and assessing learning disabilities
(2) Providing special education field with a structured program for diagnosing and treating reading and writing difficulties based on frequent measurement and accurate data and providing therapeutic methods and services that are appropriate to the capabilities and needs of students according to their progress as a strategy for early intervention to save their time and effort.

## Terms of the study

### *Response to intervention model*

It is a model that provides intense and direct intervention to students before performing the diagnostic process to identify students who need special educational services (Sheldon, 2005).

It is procedurally defined as: a teaching strategy based on direct and intensive teaching interventions that are carried out individually or within small groups with the aim of identifying and revealing students with reading and writing difficulties, and then providing therapeutic services to students who have proven to have reading and writing difficulties.

### *The therapeutic diagnostic program based on the response to intervention model*

It is a set of strategies, methods, means and activities that have been prepared for use by the teacher in order to treat students' reading and writing difficulties.

### *Difficulties in reading and writing*

It is the inability to read and write, difficulty in reading and writing letters and syllables, linking between their forms and sounds, the inability to form words and sentences, and write clearly.

It is procedurally defined as the score that students obtain in the reading and writing achievement test.

Students with reading and writing difficulties in this study are fourth, fifth and sixth grade students who were referred to the Learning Difficulty Resources rooms;
those who are proficient in reading and writing alphabet but have difficulties in reading and writing syllables,

words, sentences and paragraphs in schools in Amman region based.

### Study limitations

(1) The sample of the study was limited to public schools in Amman Governorate.
(2) The study sample was restricted to students with learning difficulties in the fourth, fifth and sixth grades at the basic stages.
(3) The study application was limited to the first semester of the year 2018/2019.
(4) The degree of accuracy of resource room teachers' diagnosis for students with learning disabilities.
(5) The level of cooperation and seriousness of the study sample members in answering the study tool.

## THEORETİCAL FRAMEWORK

### Dyslexia

Reading is a complex process that includes a set of mental processes represented in perception, remembering, deduction, and connection. It is an intellectual activity that includes the following processes: letters and words correctly known and spoken, understanding, analyzing, criticizing, and interacting with the reader, solving problems and psychological pleasure (Mercer and Mercer, 2006).

Dyslexia is represented in the inability to acquire the basic skills of learning to read or read very slowly, or mixing letters and words with repetition of the reciter and not adhering to numbering and deleting a number of letters. It is also the students' inability to understand everything they read in the detail, so these students face a problem in understanding the questions that are posed to them directly after reading (Al-Waqfi, 2016).

### Dysgraphia

Writing is positively associated with the skill of reading, so teaching and learning writing is an essential element in the educational process as it is an educated skill that can be given to students as a mental activity based on thinking. Difficulties appear in the writing process in the form of: reversing writing letters, mixing directions, arranging letters, incorrect word or syllables when writing, mixing similar letters, enlarging or shrinking letters too much, difficulty in holding writing tools, poor calligraphy, and lack of line (Hilalhan et al., 2006).

### Learning disabilities diagnosis

The American Department of Education has developed a set of procedural systems that can be taken as criteria for diagnosing learning disabilities.

#### *Discrepancy criterion*

This means there is a difference or discrepancy between the students' actual achievement, abilities, and mental ability in one or more of the following areas: oral expression, auditory comprehension, basic reading skills, reading comprehension, written expression, mathematical operations, or mathematical reasoning; it is the difference within the individuals, that is the students' achievement is not low in all subjects; their achievement may be low in reading but high in mathematics or written expression, or their performance might be high in completing optical distinction but low in distinguishing auditory distinction, which is called intra-individual difference.

#### *Exclusion criterion*

It means excluding the cause of the educational difficulty experienced by the students; it is the result of a specific disability (visual or auditory, motor or mental or emotional disability) caused by environmental, cultural or economic factors.

#### *Special education criterion*

It means that the educational difficulties and problems faced by the student are so large and complex that they cannot be treated in the regular class using traditional methods and require special education programs and methods (Hilahan et al., 2006).

Many criticisms have been made regarding the variation in the diagnosis of learning disabilities for the following reasons:

(1) There is no agreement among specialists on a cut-off point at which the difference in distance between mental ability and academic achievement is determined.
(2) Criticism of the measures used to assess the level of contrast between mental abilities and achievement is that it lacks the required psychometric properties.
(3) The exclusion test does not help predict students' academic performance and academic achievement.
(4) The test of spacing does not help to determine appropriate methods and strategies for a student with learning disabilities.
(5) The criterion of variation perpetuates the phenomenon of "waiting for failure", which means postponing the assessment and diagnosis of the student to the third grade to start the evaluation process, and this contradicts the philosophy of early intervention.

As a result of these and other criticisms, response to intervention model or treatment response model has

been suggested, which is defined as: “a system that integrates assessment and intervention within a multi-level prevention system to maximize students’ achievement and reduce behavioral problems; it also identifies students at risk of poor learning outcomes, monitors students’ progress, provides evidence-based interventions, controls the intensity and nature of these interventions, depending on the students' response, and identifies students with learning disabilities or other disabilities’’ (Skelding-dills, 2013).

It is defined by the United States National Joint Committee for Learning Disabilities as a set of forms of therapeutic interventions that can help to provide accurate information about students with learning disabilities and determine their need for special education services and associated therapeutic services and interventions at various stages (NJCLD, 2005).

**Levels of response to intervention model**

It consists of three levels as mentioned in Miller (2016).

(1) The first level: General or comprehensive intervention, which is the stage of general education, in which therapeutic interventions and educational activities are offered to all students in the class. Emphasis is placed on academic skills, and in the intermediate and secondary levels, focus is placed on a broader range of skills and behaviors; progress is observed in individual student’s performance and adjusting the procedures and interventions according to their progress. 80% or more students must pass this stage.
(2) The second level: targeted intervention: It is the stage of intensive and special therapeutic interventions for students who have not passed the first stage; strategies and curricula are designed to assist the general curriculum and not replace it. They are provided individually or in the form of small groups, and the progress of students in achieving their goals is monitored. This stage must be passed by 15-20% or more students.
(3) The third level: The intensive specialized intervention phase: In this stage, specialized and individual therapeutic interventions are offered to students who have failed in the first and second stages, and intensive interventions are provided to improve their academic performance and follow up their performance. Students who have not passed this level are evaluated as needing special education services and are named as students with learning difficulties. This stage must be passed by 5% or less students.

**Rationale for applying the teaching response model (Thebes, 2007)**

(1) The response to intervention model attributes the students' academic weakness in their inability to benefit from and use well the educational methods and strategies. This leads to a decline in their academic level, and not necessarily because of their learning difficulties.
(2) The response to intervention model helps to distinguish between actual learning difficulties and the weakness and lack of educational services provided to the students.
(3) The response to intervention model provides a wide range of specialized educational services to the largest number of students who have academic weakness and who only need a change in teaching methods.
(4) Implementation of the response to intervention model requires a specialized team in the general education and special education field, which supports the joint responsibility of the team members.
(5) The response to intervention model helps to identify students who are exposed to learning difficulties in early stages and provide them with early intervention services. This reduces the "waiting for failure" phenomenon, and also the number of students transferred to special education services.
(6) The response to intervention model helps to reduce teachers’ diagnostic errors, and helps to collect data related to their tutorial.

**LITERATURE REVIEW**

Bryant et al. 2008) conducted a study aimed at knowing the effect of therapeutic interventions in the second level of the response to intervention model on the performance of first grade students who have learning difficulties; they numbered 161 students who received therapeutic interventions for a period of 23 weeks. The study found that 119 students have improved their performance as a result of therapeutic interventions and did not need to move to the third level, while 42 students did not benefit from intervention treatments at the second level. This means that they need other intensive interventions.

Callender (2007) conducted a study aimed at providing students with reading difficulties with intervention strategies to solve specific problems within the response to intervention model and assessing special education before and after its application. Data were collected from 1999-2004 and the study sample consisted of 1400 students in grade 3 chosen from 150 schools. They were divided into two groups; the first group applied a reading program plan based on the response to intervention model, and the second group applied a reading program based on the school curriculum. The study found that the result of the first group in the reading achievement test is better than the results of the second group. The researcher also noted that the number of students increased in the period (2002-2005) by 3% in general education schools and by 1% in special education programs.

Peterson et al. (2007) conducted a study aimed at measuring the effectiveness of the response to intervention model based on a collaborative consulting system to solve problems. The program was applied to 556 students in eighth grade from 1999 to 2003. The study results show that the level of students improved in reading skills. This indicates the effectiveness of the program and the level of improvement was constant at a rate of 1% during the years of application. Also, 98% of the teachers that participated in the study indicated that the response to intervention model provided a suitable learning environment for students. All team members showed their cooperation and satisfaction with the program and its effectiveness in improving students' performance; also parents play an effective role in 90% success of the program.

Al-Zayat (2006) conducted a study aimed at knowing the predictive value of identifying and diagnosing learning difficulties by the quantitative and qualitative analysis model. The sample of the study consisted of 504 students from the third and fourth basic grades in four schools in the Republic of Egypt. The following measures were applied to them: Raven's measure of mental abilities, a behavioral traits scale for people with learning difficulties, a behavioral traits measure for people with low achievement. It was found that: the criterion of divergence based on quantitative analysis does not distinguish between people with learning difficulties and those with low achievement; it contributes to diagnosing 40-50% of students with low achievement as having learning difficulties due to errors in identification and diagnosis, which affects the nature of the programs they receive. The study also found that 60% of students who were diagnosed with learning disabilities respond to intensive early intervention services in the first stage of the response to intervention model and therefore remain in the regular classes. The results also showed that the predictive value of the qualitative analysis models is more accurate and more reliable compared to the quantity analysis models based on test spacing.

Fuchs and Fuchs (2005) conducted a study aimed at revealing the effectiveness of the response to intervention model in identifying and diagnosing learning difficulties; the study was applied to 100 first grade students at Tennessee Elementary School. To identify students with learning difficulties, a CBM-WIF measure was applied which measures the ability to read correctly. The students are considered successful on the scale if they can read 50 words out of 100 words chosen randomly, and they are to fail on the scale if they only read 15 words. The study results show a group of students obtained an average of 22.5, exceeding the failure point criterion (15); therefore, they are not grouped in the category of people with learning difficulties; another group of students got an average of 10.5 on the scale and therefore failed to pass the cut-off point of the scale. Thus, they were transferred to benefit from the services of the response to intervention model in the first level for a period of 8 weeks. Then, their reading abilities were re-evaluated on the same scale, and the group got a level of improvement of 1.8. Thus, their performance improved and they were excluded from the category of learning difficulties. A third group obtained an average of 5.5, failing to pass the cut- off point of the scale. They were included to benefit from the response to intervention model procedures. At the first level for a period of 8 weeks, their reading abilities were reassessed on the same scale, and they obtained an improvement level of 0.4. Consequently, they were transferred to benefit from the services of the response to intervention model in the second level for a period of 8 weeks, after which they were re-evaluated. The group obtained an improvement level of 1.7; thus the group succeeded and their performance improved. Then they were excluded from the category of learning difficulties. A fourth group obtained an average of 5.5, and therefore failed to pass the cut- off point of the scale. They were transferred to benefit from the procedures of the response to intervention model in the first level for a period of 8 weeks, after which their reading abilities were reassessed on the same scale. The group got an improvement level of 0.2 and thus they were transferred to benefit from the services of the response to intervention model in the second level for a period of 8 weeks. Then they were re-evaluated and the group got an improvement level of 0.5, which is less than the required value. Therefore, this group was taken out of the category of learning difficulties and was transferred to benefit from special education services.

Al-Ansari (2009) conducted a study to know the effectiveness of the response to intervention model in developing the skill of word recognition in terms of diagnosis and treatment and finding an alternative model for the test of spacing to detect learning difficulties. The fourth and fifth primary schools were randomly selected, and the study obtained the following results.

The response to intervention model reduces the percentage of students with learning difficulties by 66.66%, and the performance of 20 students improved. This shows their response to therapeutic interventions in the intervention response model, which indicates a high predictive value of the response to intervention model based on qualitative analysis. After applying the dimensional scale in the follow-up phase shows, the percentage of persistence in the performance of students in the response to intervention model reached 95.95%. This indicates the effectiveness of the strategies of the response to intervention model.

Vaughn et al. (2003) conducted a study to evaluate the effectiveness of the response to intervention model in detecting and identifying students with learning difficulties. The study sample consisted of 45 students from the second grade of primary school with a high probability of emerging learning difficulties based on the

appreciation of their teachers. The response to intervention model was applied to them in three stages and for a period of three months. The study found that 66% of the students responded to the teaching interventions and improved their performance. 34% of the students did not respond to the teaching interventions and were transferred to special education services to obtain intensive interventions.

Vaughn et al. (2003) conducted a study to identify the effectiveness of the response to intervention model as a method for detecting students with learning difficulties who were not disclosed through the criterion of divergence. The study sample consisted of 45 students from the second grade who face difficulties in reading in three schools; a program based on the response to the intervention model was applied to them for a period of 10 weeks. The study obtained the following results: 10 students responded to the program based on the response to intervention model at the second level, 14 students responded to the program based on response to intervention at the third level, 10 students responded to the program based on the response to intervention model at the fourth level, and 11 students did not respond to the program based on the response to intervention model. That is, 75% of the students responded to the program based on the response to intervention model by applying the four levels.

It is clear from a review of previous studies that the response to intervention model supports early detection of the strengths and weaknesses of the students through intensive and appropriate teaching interventions that meet the needs of different students. This does not aggravate the students' learning problem and its complexity, and thus reducing the number of students who are described as having learning difficulties.

## METHODOLOGY

The researcher used the semi-experimental curriculum.

### Study population and its sample

The study population included all students with learning disabilities between the ages of 9 and 12 years in the fourth, fifth, and sixth grades; they were enrolled in government schools affiliated to the Jordanian Ministry of Education in the first semester of the academic year 2018/2019. The primary study sample was chosen using the simple random method from the second Amman District Directorate, in which resource rooms and students with learning difficulties are available. The sample consisted of 100 students with learning difficulties representing the fourth (35), fifth (33) and sixth (32) classes. The criteria for selecting the study sample include the sample of students with reading and writing difficulties chosen according to the criterion of divergence based on the following:

(1) The students must obtain an average IQ of 90 or above on the Raven scale of successive matrices rationing (Alian and Al-Smadi, 1988).
(2) The performance of students should be less than the mark of success in the achievement test in reading and writing prepared by the researcher (26 or less).
(3) The students must not have any mental or sensory handicap or environmental or emotional deprivation. This was ensured by reviewing and studying their personal and school files.
(4) They must be diagnosed by the teachers of the Learning Disabilities Chambers, to confirm they have difficulties in reading and writing according to the tests approved in the Ministry of Education (Princess Tharwat College Tests for Learning Disabilities and informal tests designed by the teachers of the Learning Disabilities Resources Rooms).
(5) The academic record of the students must be reviewed and their grades in Arabic language subject must be monitored during the previous school years.
(6) After applying the previous criteria to the primary sample of the study, the study sample reached 60 students representing the fourth (25), fifth (23) and sixth (12) grades students.

### Study tools

The researcher collected the study data using the following tools.

#### *First: Raven's test of the successive matrices rated on Jordanian environment*

It is a test that aims to measure intelligence based on the students' ability to do abstract thinking in realizing the relationships between symbols and geometric shapes such as similarity or difference or the relationship existing between the part and the whole or the relationships of succession. Alian and Al-Smadi (1988) legalized it on the Jordanian environment and found its psychometric properties by applying it to a sample of (2543) people whose ages ranged between 11 and 40 years. On the scale, the result showed the emergence of five factors, including one factor that explains approximately three quarters (1.74%) of variation of performance, which is the general factor. The stability factor was extracted using a retest method and reached 90%. Likewise, the criteria represented in the transferred degrees and the percentages corresponding to each grade of raw grades in each age group were extracted.

#### *Second: Achievement test in reading and writing prepared by the researcher*

The researcher built the test paragraphs based on the study objectives to measure students' achievement in both reading and writing before and after applying the educational program. This test may be of three equal forms to suit the three stages of the program. Each model consists of eighteen questions: nine questions in reading and nine questions in writing. It was divided into four levels: the syllable level, the word level, the sentence level, and the paragraph level, in a graded manner in terms of difficulty level. Each student was asked to answer all the questions given in the test, and the grades were distributed according to the number of correct responses for the student.

**Validity of the test:** The validity of the content was verified by presenting the list of educational objectives of the program and the test paragraphs to a committee of arbitrators from professors of special education and psychology. Paragraphs that were agreed upon by the arbitrators were 90% or more; and the paragraphs that did not reach this percentage were deleted.

**Reliability of the test:** To ensure the consistency of the achievement test that was used in the current study, the ten-day repeating method was used on 30 male and female students with

**Table 1.** Correlation coefficients between the marks of the study sample by repetition method

| Type of test | Correlation coefficient |
|---|---|
| Achievement reading test | 0.91 |
| Writing achievement test | 0.93 |

*Statistically significant at the significance level of 01.0.

learning difficulties who were not from the fourth, fifth and sixth grades; both reading and writing tests were given to them. Then the correlation coefficients and their significance level were extracted for the two tests. Table 1 shows the correlation coefficients for both the reading test and the writing test.

**Correction of the test:** After the test was divided into four levels (syllable, word, sentence, paragraph) and the grades were distributed by 15, 15, 10, and 10 grades for each level, an overall mark was extracted from the general total of 50 for each student, both in pre and posttest.

***Third: The educational program based on the treatment response model prepared by the researcher***

The program included a set of different strategies and activities for each student according to his needs and weaknesses in reading and writing obtained from the achievement test results and from reviewing his work and performance records at school and from the teachers' notes.

The overall objective of the program is to use the response to intervention model to identify students who have actual reading and writing difficulties and those who have been misdiagnosed to have reading and writing difficulties; this limits students who actually deserve special education services.

The program was built on the following foundations:

(1) Selecting intervention activities based on the specific difficulties that the study sample has been identified with through the achievement test prepared by the researcher and from the analysis of students ' work and records.
(2) The theoretical basis for the intervention response model, which is based on the presentation of the intervention in three phases or levels; the duration of each stage is two weeks at three sessions per week and the duration of each session is one (45) minute class:

(a) The first level: providing intensive and varied educational activities for all students in the study sample and in the regular class, and then assessing their progress and measuring the extent of improvement of their weaknesses.
(b) The second level: to provide intensive and varied educational activities in the form of small groups and individually to students whose performance at the first level has not improved in parallel with the regular curriculum and in the regular class.
(c) The third level: inventory of students whose performance did not improve in the second level and referred them to the resource rooms to provide focused and in-depth educational programs to treat their difficulties.

(3) Activities were presented at each level according to the needs of each student; teaching methods and teaching strategies that proved effective in many studies were applied to suit the needs of students and their preferred learning styles. These teaching methods include: VAKT method, Fernald method, Orton Gillingham method, Macro, Micro, Gameplay, and computer learning. In addition to using home enrichment activities, there was continuous feedback and immediate reinforcement.
(4) Pre-measurement is carried out by applying the achievement test in reading and writing to students before applying teaching strategies at each level. Then post-measurement was done to determine the extent of improvement and progress in the students' performance. Based on the results of the evaluation, an appropriate decision is taken with regard to the students, so the student who improves his performance in Post-measurement is excluded from the program and focus is placed on it in the regular class. For the student who fails, to attain the next level he is to be followed up, focused on, and given specific teaching.
(5) The training includes a set of worksheets that are regular, sequential, and interrelated in a gradient that suits the capabilities of the students.
(6) Combining reading and writing exercises within a single task, and mutually allowing the students - in the educational situation - to deal with reading and writing skills together.
(7) The various program activities are included from easy to difficult until the student reaches the level of proficiency and if the student fails to reach the degree of proficiency, he moves to the next level.
(8) Enhancing students' correct responses, through material and symbolic rewards, in order to increase their motivation and thus ensure their continuation and interaction with the activities of the program sessions.
(9) The application of the activities of the program by two teachers (one teacher and one female teacher) after their pre-training and preparation by introducing them to the model, its methods and strategies, how to implement the program and writing individual educational and educational plans.

**Curative interventions in the program**

In the first stage, general teaching strategies were presented in reading and writing using the method: VAKT method, Fernald method, Orton Gillingham method, and the use of appropriate exercises and activities for it. The students' progress and the extent to which he achieved the goals are monitored by making a file for each student. Interference here was through general education and in the regular class.

In the second stage, teaching strategies were presented based on the specific needs of each student, intensifying educational activities and modifying or changing teaching methods according to the needs of the student. The intervention here was an aid to general education and not compensation for it; students remained in their classes and intensive strategies were presented to them; there was diversification in teaching methods and giving tasks to household and enrichment activities.

In the third stage, here the intervention was presented to students who failed in the second level; they were referred to the Learning Disabilities Resource Rooms because they can have learning difficulties in reading and writing. An individual educational program was designed for them based on the weaknesses that they

**Table 2.** The numbers of students enrolled in each stage of the response to intervention model, according to their improved performance.

| Class | Overall number | The number of students who pass the first level of the response to intervention model | The number of students who pass the second level of the response to intervention model | The number of students who pass the third level of the response to intervention model |
|---|---|---|---|---|
| 4th grade | 25 | 10 | 11 | 4 |
| 5th grade | 23 | 8 | 10 | 5 |
| 6th grade | 12 | 3 | 6 | 3 |
| Overall N | 60 | 21 | 27 | 12 |

failed to improve on. During the interventions of the previous stages, special education services are provided to them at this stage.

**Program evaluation and testing**

After building the educational program, it was presented to a group of arbitrators specialized and interested in the subject of special education, psychological measurement, counseling, psychology and a number of resource room teachers to evaluate the following aspects:

(1) The extent to which the tutorial is based on the response to intervention model and components.
(2) The suitability, clarity and organization of the sequence in the program.
(3) The extent to which the program matches the desired educational goals.
(4) The suitability of the time period for the application of the program and its distribution in sessions.

**Exploratory pilot application of the proposed educational program**

After presenting the program to the jury committee and making the appropriate amendments, a sample of 13 male and female students was selected from students with learning difficulties from outside the study sample; some sessions of the program were applied to them to verify:

(1) Possible difficulties when applying the educational program to the study sample to correct it.
(2) The extent of students' interaction with educational activities and methods.
(3) Modifying and developing the program in light of the feedback of this experiment.

This exploratory experiment helped to organize the educational sessions, starting with preparing the students and explaining the educational strategies intended to be used.

The program was finalized after arbitration, exploratory experimentation and appropriate amendments, as it became ready for final application.

**Study procedures**

(1) Meeting with Arabic language teachers and teachers of sources of learning difficulties in each school to clarify the objectives of the study, taking approvals on the application of the program and study tools and arranging the application dates and the number of lessons the researcher needs.
(2) Obtaining data related to students such as: grade, difficulty type, degree in Arabic language (reading and writing).
(3) Review students' academic files related to their achievement in general, their family circumstances, and their health and emotional state.
(4) Apply the Raven scale for successive matrices on the individuals of the initial sample consisting of 100 students, and determine the degree of intelligence for each student.
(5) The achievement of the achievement test in reading and writing on the individuals of the primary sample.
(6) Reviewing the students' academic record and monitoring his grades in Arabic language during the previous school year.
(7) Identifying students with learning difficulties by applying the criterion of divergence, and excluding students who do not meet the criterion of divergence between intelligence and academic achievement in reading and writing. Accordingly, the study sample reached 60 students representing the fourth (25), fifth (23) and sixth (12) grades students.
(8) The application of the therapeutic program for a period of six weeks (by two weeks for each stage), by three sessions per week and the duration of each session one (45) minutes of study. The program is divided into three stages and the student who improves his performance after the end of the first stage is excluded from the umbrella of learning difficulties. If he does not respond, he is moved to the second stage.

## RESULTS AND DISCUSSION

Results related to the first question states: What is the effectiveness of the response to intervention model (RTI) in diagnosing students with learning and reading difficulties in grades four, five and six?

To answer this question, the researcher applied the achievement test in reading and writing to the members of the study sample of 60 male and female students: fourth (25), fifth (23) and sixth (12) before and after each stage of the response to intervention model; then the test was corrected. The number of students who achieved the test pass mark of 26 and above is 50; the results are given in Table 2.

It appears from Table 2 that the study sample responds to the response to intervention model at all stages; general and diverse teaching methods and strategies were applied to all the study sample of 60 male and female students in their regular classes and with their colleagues. 21 students succeeded in passing the stage. The first of the intervention are students whose marks were on the post-test for the achievement test (26) or more. This means that the general methods and

**Table 3.** Arithmetic averages and standard deviations for the post achievement reading test for each stage of the response to intervention model.

| Class | The first stage of the response to intervention model | | | | | The second stage of the response to intervention model | | | | | The third stage of the response to intervention model e model | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pretest | | Posttest | | | Pretest | | Posttest | | | Pretest | | Posttest | |
| | Mean | SD | Mean | SD | | Mean | SD | Mean | SD | | Mean | SD | Mean | SD |
| Fourth grade n = 25 | 26.90 | 2.81 | 40.10 | 2.88 | The remaining number n = 15 | 30.89 | 0.24 | 32.95 | 0.44 | The remaining number n = 4 | 22.53 | 2.57 | 36.13 | 2.19 |
| Fifth grade n = 23 | 29.63 | 0.47 | 31.04 | 0.47 | The remaining number n = 15 | 32.80 | 0.92 | 37.11 | 0.98 | The remaining number n = 5 | 24.54 | 2.77 | 27.15 | 2.99 |
| Sixth grade n = 12 | 27.82 | 1.07 | 33.01 | 0.47 | The remaining number n = 9 | 30.79 | 0.87 | 34.98 | 1.45 | The remaining number n = 3 | 21.53 | 2.23 | 25.93 | 2.76 |

strategies presented at the first level of the intervention have improved the performance of the students and consequently withdraw from the program because they are not with learning difficulties. The remaining number of (39) male and female students moved to the second stage of the response to intervention model, which includes providing intensive strategies and individual and group teaching. Then the post-test was applied to them, and it shows the success of (27) male and female students on the post-test; thus they withdraw from the program because they are not with learning difficulties. The remaining number of students and 12 (male and female) students were subjected to the third level of the response to intervention model services and strategies; they were referred to the resource room for the possibility that they have learning difficulties to receive special education services.

It was noted here that the response to intervention model has reduced the number of students who were diagnosed by the test of divergence as having learning difficulties from 60 to 12 students; 48 responded to the strategies and methods of the response to intervention model, and this is an indication of the effectiveness of the response model. The program includes a set of teaching strategies that have been proven effective with studies and scientific research such as the multi-sensory learning method, the Fernald and Gillingham method, computer education and educational games. The model takes into account multiple learning patterns. The students used the methods that commensurate with their abilities, and speed of reinforcement was used continuously to increase the students' motivation for learning and achievement.

This study is consistent with Bryant et al. (2008), Peterson et al. (2007), Al-Zayat (2006), Doug and Lynn (2006), Al-Ansari (2009), Vaughn et al. (2003) and Vaughn et al. (2003).

Results related to the second question: Are there statistically significant differences between the averages of students 'scores on the post test of reading skills attributed to the educational program?

The standard mean and deviations for the post test scores were extracted for each stage of the response model and for all grades. Table 3 shows the results.

It is clear from Table 3 that all members of the study sample and in all classes have improved their performance according to the stages of the response to intervention model as follows:

(1) In the fourth grade, 10 responded to the intervention in the first stage, and the arithmetic mean for them before the intervention was 26.90 and after the intervention it rose to 40.10. In the second stage 11 responded to the intervention. The mean before the intervention was 30.89 and after the intervention it rose to 32.95; in the third stage, 4 responded to the model; the mean of them before the intervention was 22.53 and after the intervention, it rose to 36.13 by 16%.

(2) In the fifth grade, 8 responded to the intervention in the first stage, and the arithmetic mean for them before the intervention was 29.63 and after the intervention it rose to 31.04; in the second stage 10 responded to the intervention. The mean for them before the intervention was 32.80 and after the intervention it rose to 37.11; in the third stage 5 responded to the intervention; the arithmetic mean for them before the intervention was 24.54 and after the intervention it rose to 27.15 by 21.7%.

(3) In the sixth grade, 3 responded to the intervention in the first stage, and the arithmetic mean for them before the intervention was 28.27 and after the intervention it rose to 33.01. In the second stage 6 responded to the intervention, and the mean for them before the intervention was 30.79, and after the intervention it rose to 34.98. In the third stage, 3 responded to the intervention; the arithmetic mean for them before the intervention was 21.53 and after the intervention it rose to 25.93 by 25%.

Results related to the second question: Are there statistically significant differences between the

**Table 4.** Arithmetic averages and standard deviations for the post achievement test in writing for each stage of the response to intervention model.

| Class | The first stage of the response to intervention model | | | | | The second stage of the response to intervention model | | | | | The third stage of the intervention response model | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pretest | | Posttest | | | Pretest | | Posttest | | | Pretest | | Posttest | |
| | Mean | SD | Mean | SD | | Mean | SD | Mean | SD | | Mean | SD | Mean | SD |
| Fourth grade n = 25 | 21.43 | 2.01 | 26.03 | 2.79 | The remaining number n = 15 | 28.53 | 0.47 | 30.94 | 0.50 | The remaining number n = 4 | 22.43 | 0.62 | 27.31 | 0.59 |
| Fifth grade n = 23 | 33.73 | 0.51 | 35.57 | 0.62 | The remaining number n = 15 | 33.60 | 1.82 | 36.59 | 1.84 | The remaining number n = 5 | 25.18 | 3.10 | 30.47 | 2.23 |
| Sixth grade n = 12 | 20.24 | 0.50 | 25.57 | 0.48 | The remaining number n = 9 | 31.67 | 0.51 | 34.23 | 0.48 | The remaining number n = 3 | 27.30 | 1.76 | 30.07 | 2.40 |

averages of students 'scores on the post test of writing skills attributed to the educational program?

The standard mean and deviations for the post test scores were extracted for each stage of the response model and for all grades. Table 4 shows the results.

It is clear from Table 4 that all members of the study sample and in all classes have improved their performance according to the stages of the response to intervention model, as follows:

(1) In the fourth grade, 10 responded to the intervention in the first stage, and the arithmetic mean for them before the intervention was 21.43 and after the intervention it rose to 26.03, in the second stage 11 responded to the intervention. The mean for them before the intervention was 328.5 and after the intervention it rose to 30.94; in the third stage 4 responded to the intervention, and the arithmetic mean for them before the intervention was 22.43 and after the intervention it rose to 27.31.

(2) In the sixth grade, 3 responded to the intervention in the first stage, and the arithmetic mean for them before the intervention was 20.24 and after the intervention it rose to 25.57; in the second stage 6 responded to the intervention. The mean for them before the intervention was 31.67 and after the intervention it rose to 34.23; in the third stage, 3 responded to the intervention, and the arithmetic mean for them before the intervention was 27.30 and after the intervention it rose to 30.07.

(3) We can say that the response to intervention model is effective in detecting and identifying students with learning difficulties as well as effective in improving and treating academic weakness of the students. The researcher attributes this result to the fact that the response to intervention model is based on three therapeutic stages that depend on the continuous measurement of the level of students' progress and the provision of educational strategies and teaching methods. Scientific research and multiple studies have proven its efficiency and effectiveness; it commensurate with the students' abilities and educational needs within a comfortable educational environment, that is free from threat and psychological pressure. The use of reinforcement daily and the provision of enrichment activities and household duties that involve parents in the follow-up program had a significant role in the progress of the students and increased their motivation for the program. The results of the current study are consistent with all previous studies.

The study attempts to reconsider the issue of diagnosing students with learning disabilities in terms of components, procedures and drivers used; it adopts the response to intervention model as a strategic and proven method that is effective in diagnosing and evaluating people with learning disabilities.

## Recommendatıons

In light of the results of the study, the researcher recommends the following:

(1) Changing the routine evaluation pattern currently used in schools to detect students with learning difficulties and rely on the methods and strategies of the response to intervention model.

(2) That special education programs for people with learning disabilities be modified so that their teaching methods are based on the response to intervention model within its different stages, and the strategies should be generalized to all schools.

(3) Doing a re-study on large samples that include other types of learning difficulties, and comparing the effectiveness of the program with each of these types; and also studying the effect of the program on other dependent variables among these students.

## CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

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