

Effectiveness of Individual Versus Small-Group Instruction for Students with Reading Disabilities

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ABSTRACT:

This study compared the effectiveness of individual and small-group instruction for improving reading achievement among elementary students with learning disabilities and examined whether outcomes differed by grade level. A causal-comparative design was used with 327 male students in Grades 2, 3, and 4 enrolled in learning disabilities programs in Riyadh, Saudi Arabia, during the second semester of the 2018–2019 academic year. Data were drawn from Ministry of Education diagnostic reading assessments, instructional records, and student portfolios. The individual- and small-group conditions were comparable in age, pretest reading performance, and instructional duration. Independent-samples *t* tests and one-way analyses of variance were used to compare posttest and follow-up reading outcomes, with eta squared used to evaluate effect sizes. No statistically significant differences between individual and small-group instruction were found in most comparisons. The only significant between-condition difference occurred at the Grade 3 follow-up assessment and favored individual instruction; however, the effect was small ($\eta^2 = .05$). Some grade-level differences were also observed, generally favoring Grade 4 students. Overall, the findings suggest that well-structured small-group instruction may provide an effective alternative to individual instruction for many students with reading disabilities when groups are formed according to comparable instructional needs and individual progress is monitored.

Keywords: learning disabilities, reading disabilities, individual instruction, small-group instruction, reading achievement, special education.

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Introduction

Learning disability is one of the most prevailing groups of special education in schools, and it indicates the set of developing disorder that affect the acquisition of basic academic skills for students, notably

reading, writing and arithmetic, despite having normal mental or above average disabilities and not suffering from any sensory mental or any educational condition that interprets decline in his academic achievement (Botrus, 2011; El-Sartawi et al., 2009). Reading disability represents one of the most common learning disabilities due to its direct effect on student's academic progress and on his ability to learn the rest of school subjects (Botrus, 2011).

The programs of learning disabilities relied on the principle of individualized learning, based on the fact that students with learning disabilities differ in their cognitive characteristics, academic levels and educational needs; and that requires preparation of individualized learning programs which are compatible with strength points and needs of each student (Ministry of Education, 2012; El-Shadadi & El-Samiri, 2013). Therefore, the individual instruction had become one of the essential pillars in the programs of reresource rooms, as it assists the teacher to provide teaching that is appropriate to speed of student's learning and the level of his performance; with provision of direct feedback and continuous modification of learning activities (Mara & Haila, 1998).

Despite of the well-known features of individual instruction, recent years have witnessed expansion in the use of small groups in learning disabilities programs, due to pressures related to an increase in the number of students and the need to an optimal use of human resources and the interest in developing social and communicative skills of students through interactive learning. This approach collects a limited number of students who are comparable in the level of academic performance, with continuous consideration of individual differences among them during teaching (Guidance in learning disabilities, 698-709; El-Said, 2007).

The educational literature indicate that individual instruction contributes in the improvement of academic performance among students with learning disabilities, especially in basic reading skills; through providing intensive learning education that focuses on the needs of each learner (Salim, 2006; Abdulhadi, 2009; Abdulgani, El-farag and Showkat, 2014; Shihab, 2011; Adani et al., 2012). On the contrary, other studies have shown that learning in small groups may achieve similar academic results, in addition to advantages related to the development of cooperative skills, social interaction and increase of motivation towards learning (Filippatou & Kalda, 2010; Aldemir & Gursel, 2014; Boardman et al., 2016; Alsahli, 2017).

Despite of an increase in the use of small-group instruction in learning disabilities programs, the scientific evidence that directly compares between this approach and individual instruction still limited, especially in Arabic environment. The literature review has revealed that most studies have focused on evaluating the effectiveness of each approach separately. Whereas, few number of studies have directly compared between them (Boardman et al., 2011), just as most of these studies have been conducted in educational environments that differ from Saudi environment which delimits the possibility of generalizing its results.

In the Kingdom of Saudi Arabia, the Ministry of Education has followed organization that allows the use of both individual instruction and teaching of small groups in the programs of learning disabilities, ensuring necessity of consideration individual differences when forming educational groups (Ministry of Education, 2012; guide in learning disabilities, 698-709). However, this practical application has not accompanied with sufficient studies which compare between the effectiveness of these approaches in improving reading achievement among students with learning disabilities, and this makes it necessary to provide research evidence to support decisions related to organization of educational services inside reresource rooms.

The significance of this study lies in the fact that it highlighted the issue connected to practical and educational dimensions, representing in the identification of extent of effectiveness of both individual instruction and small groups approach in teaching reading to students with learning disabilities. Also, its results contribute in assisting teachers, supervisors of learning disabilities programs and educational

decision-makers to choose the most relevant teaching method in light of scientific evidences, which can achieve the optimal use of educational resources and to maintain the quality of services provided to students at the same time.

Based on that, this study aimed to compare the effect of individual instruction and small-group instruction on reading achievement among students with reading disabilities, and to identify differences related to the grade. To answer the main question that states: Does individual instruction achieve results better than small-group instruction in developing reading skills among students with learning disabilities or both approaches achieve comparable level of effectiveness?

Arabic language skills for students with learning disabilities at primary level.

The skills of Arabic language for students with learning disabilities have been distributed among academic grades from first to sixth primary grade, and the skills in each level represent the minimum allowable to master or acquire the necessary skills to graduate and enroll the student in grade levels, the degree of difficulty is taken into consideration to align with age group from seven to twelve years and with their academic grades.

Table 1 Arabic language skills for students with learning disabilities at primary level 2018.

grade	number	Skill
	1	Reads remodeled (mashkool) text with (40) words length.
Second grade	2	Identifies the meaning of new words through synonyms and antonyms.
	3	Copies short text; about two lines to three lines remodeled.
	4	Writes short texts about ten to twenty words.
	5	Arranges words to form useful sentences.
	6	Deduces general meaning when he/she reads.
grade	number	Skill
	1	Draws words that have hamaza at the beginning, middle and end.
Third grade	2	Reads remodelled texts with one hundred words, considering the correct pause and flawlessness of correction.
	3	Writes short texts about twenty words from long-term memory.
	4	Arranges short sentences to form coherent texts.
	5	Presents ideas from the texts that she/he listened to.
grade	number	Skill
	1	Reads texts loudly characterize by quality of performance, flawlessness of pronunciation and variegating of voice according to readable styles.
Fourth grade	2	. Employs the punctuation marks (point, two dots, coma, exclamation mark and question mark).
	3	
	4	
	5	
	6	
	7	

Literature Review

Literatures of learning disabilities assert that reading at primary level represents a vital field for early intervention, because failing to acquire skills of phonological awareness, reading fluency, decoding, vocabulary and reading comprehension often connects with continuity of academic disabilities in later levels. Therefore, modern studies have tended to study the effectiveness of two main patterns of intervention; individual reading instruction and small-group instruction. Individual reading instruction indicates presenting direct and organized intervention for one student based on accurate diagnosis of the level of his reading performance. This pattern is considered appropriate for students with severe or continuous disabilities who do not respond sufficiently for class education or collective interventions. The studies of intensive intervention underlined that students with learning disability need explicit education, repeated practice, direct feedback and continuous monitoring for progress by modifying the intervention according to student's response (Vaugh et al., 2014; Wenzek et al., 2018). Also, data-based individualization is considered one of modern perspectives in this field; as it lies on using reading performance data to intensify the intervention or modify it when student does not achieve sufficient progress (Espinass et al., 2022; Lindstrom et al., 2019).

The significance of individual instruction is especially showed in remedying the disabilities of decoding, oral reading, reading fluency, spelling and reading comprehension. Individual Intervention allows the teacher to accurately identify the mistakes of students, such as ellipsis, substitution, repetition and discontinuous reading. Then, design direct remedial activities for these mistakes. It also provides use of multi-sensory styles, such as the connection between sight, auditory, movement and pronunciation, and these approaches are useful for students who suffer from weakness in connecting between written symbols and their sounds. Literatures indicate that individual

instruction can be more effective when it is short but intensive, organized in frequent sessions and based on measurable objectives.

Whereas, small-group instruction indicates to presenting reading learning for a limited number of students who share comparable reading needs. This pattern is often used inside the programs of response to intervention (RTI) and multi-tiered systems of support (MTSS), whereby a teacher presents additional intervention directed to students with similar disabilities in phonological awareness, reading fluency or reading comprehension. The meta-analyses have revealed that reading interventions in small groups achieves average effect in improving reading skills, especially when it is directed to a limited skill instead of being comprehensive general programs (Hall & Burns, 2018).

The strength of small groups lies in that it is an assemble between directed learning and social interaction. It provides an opportunity for students with learning disabilities to learn from peers, participate in collaborative reading, exchange roles and train on strategies of understanding such as prediction, summary, generating questions and clarifying meaning. The study of Boardman et al. (2016) has revealed that collaborative reading strategy has improved the reading comprehension among higher primary level. Also, it reinforced their participation inside normal classes. The study of (Filippatou & Kaldi, 2010) has asserted that reading based on projects contributes in rising achievement and increase motivation among students with learning disabilities.

Accordingly, individual and small-group instruction do not represent two opposing approaches, however, two complementary levels of support. small groups suit students who have average disabilities or common needs, but individual instruction suits the most severe cases or which requires intensive accurate remedy. Recent literature recommend starting with a class interventions and small groups, and then move to an intensive individual instruction when follow up data indicates weakness in

responding to Intervention. Also, the best results are achieved when an intervention combines between accurate diagnosis and explicit learning, repeated practice, feedback, monitor progress and modify teaching based on data of student performance.

Method

A causal-comparative design was used to examine differences in reading achievement between students receiving individual instruction and those receiving small-group instruction. Because students were already receiving these instructional arrangements in their schools, the researchers did not manipulate group assignment. This design allowed naturally occurring instructional groups to be compared while acknowledging the more limited control available relative to a randomized experiment.

Participants

The sample of study consisted of 327 male students in second, third and fourth primary

grades who enrolled in learning disabilities programs in Riyadh district, Kingdom of Saudi Arabia through second semester of the year 698-709. The sample was selected using stratified random sampling to ensure the representation of different academic grades, and the study was delimited in grades which have an adequate number of students to allow conduct of statistical comparisons between two approaches of instruction.

Before data analysis, the parity of two study groups (individual instruction & small-group instruction) has been ensured in basic variables which may affect in the results; chronological age, pre-assessment for reading skill and the number of teaching lessons. independent-samples t tests for two independent samples revealed no statistically significant differences between two groups in all these variables, which indicates their identification before applying the two approaches of teaching.

Table 2 Paired-test for two groups (the group that taught individually, and those who were taught in small groups(in the subject of reading.

grades	Variable	group	No of students	means	Standard deviation	t-value	Level of significance	
Second grade	Age	Individual	59	8.00	0.00	0.85	0.40	Not significant
		small groups	81	8.01	0.11			
	Duration of instruction	Individual	59	5.71	1.87	0.23	0.82	Not significant
		small groups	81	5.79	2.05			
	Skill pre-assessment	Individual	59	0.37	0.67	0.38	0.70	Not significant
		small groups	81	0.33	0.55			
Third grade	Age	Individual	46	8.93	0.25	1.44	0.15	Not significant
		small groups	68	8.99	0.12			

	Duration of instruction	Individual	46	5.59	1.59	0.71	0.48	Not significant
		small groups	68	5.79	1.47			
	Skill pre-assessment	Individual	46	0.25	0.48	0.71	0.48	Not significant
		small groups	68	0.19	0.40			
Fourth grade	Age	Individual	31	10.03	0.48	0.13	0.26	Not significant
		small groups	42	10.14	0.35			
	Duration of instruction	Individual	31	5.16	1.21	0.64	0.52	Not significant
		small groups	42	5.36	1.34			
	Skill pre-assessment	Individual	31	0.32	0.48	0.33	0.74	Not significant

Measures

The study used three primary sources of data:

1. Data collection form prepared by the researchers, which includes educational and demographic information, teaching approach and the results of pre-, post and follow-up assessments.
2. Diagnostic tests of reading accredited from general directorate of special education at the Ministry of Education, and these tests are based on curriculum and aimed to determine the level of student's performance in reading skills, and to determine educational needs on which the remedial program is based. The researchers have based on these tests to measure pre, post and follow-up performance.
3. Pupils folios and teaching records available in reresource rooms, and which includes individual educational plan, performance reports and records of following progress in reading skills.

Psychometric Properties of the Reading Assessments

The study used diagnostic reading assessments officially implemented in Ministry of Education learning disabilities programs. The researchers evaluated score stability using a test-retest procedure with an independent pilot sample; coefficients ranged from .92 to .94, indicating high temporal stability. The data-collection form was also reviewed by specialists in special education, curriculum and instruction, and psychology to establish content relevance and clarity before use.

Procedure

After selecting the participants, data were collected from students' folios and records of reresource rooms. The results of pre-assessment were used to determine the level of initial performance in reading skills, then the results of post and follow-up assessment were compared after applying the approaches of instruction. The teaching has been implemented according to normal practices in learning disabilities programs; where members of first

group received education individually, whereas members of second group received education as part of small groups that are homogeneous in the level of academic performance, by abiding with educational plan adopted in both approaches.

Data Analysis

Statistical analyses were conducted by the use of (IBM SPSS Statistics 30) and the use of independent-samples t test for two independent samples to compare average marks of two groups in both post and follow-up measurements. In addition, one-way ANOVA was used to study the effect of grade, by applying Scheffe test for post comparisons when there are statistically significant differences. Moreover, the effect size was calculated by the use Eta squared (η^2) to evaluate the practical significance of differences, besides using of arithmetic means and standard deviation to describe data.

Results

This study aimed to compare the effectiveness of Individual and small-group instruction in developing reading skills among students with learning disabilities, in addition to examine the effect of grade level on the level of reading achievement.

Differences between individual and small-group instruction

The results of independent-samples t test for two independent samples revealed no statistically significant differences between students who were taught individually and those who were taught within small groups in most comparisons conducted on reading achievement marks. At the level of second primary grade (see table 3), no statistically significant differences were found between approaches of instruction in both post and follow-up measurement, although the average marks of students who were taught individually were higher than the averages of those who were taught in small-groups, however, these differences did not reach the level of statistical significance.

Table 3 independent-samples t test for significance of differences between average marks of second grade students with learning disabilities, who have been taught individually and those who been taught in small-groups in the test of reading skill.

grade	skill	Teaching instruction	N	mean s	Standard deviation	T-value	Degree of freedom	Level of significance	Statistical decision
Second grade									
	Skill post-assessment	individual	59	9.19	0.80	1.33	138	0.18	Not significant
		small groups	81	9.01	0.78				

	Skill follow-up assessment								
		individual	59	9.38	0.80	1.86	138	0.07	Not significant

And in third primary grade (look at table 4), no statistically significant differences have been recorded in post-assessment between two groups, whereas the results of follow-up assessment have revealed one statistically

significant difference in favor of individual instruction ($p=.02$), nevertheless, effect size reached ($\eta^2=.05$), and this indicates that the practical significance for this difference was small despite of its statistical significance.

Table 4 independent-samples t test for significance of differences between average marks of third grade students with learning disabilities, who were taught individually and those who were taught in small-groups in the test of reading skill.

Grade	scale	TA	n	means	Standard deviation	t-value	df	Significance level	Statistical decision	Eta squared
	Skill post-assessment	Individual	46	9.13	0.83	1.39	112	0.17	Not statistically significant	
Third		small groups	68	8.91	0.82					
										0.05
	Skill follow-up assessment	Individual	46	9.33	0.87	2.37	112	0.01	Significant at level 0.05	
		small groups	68	8.94	0.84					

As for fourth primary grade (see table 5), have no statistically significant differences between both approaches of teaching whether in post or

follow-up assessment, which shows the convergence of performance level between two groups in this grade level.

Table 5 independent-samples t test for significance of differences between average marks of fourth grade students with learning disabilities who were taught individually and those who were taught in small-groups in reading skill test.

grade	Scale	Teaching A	N	means	Standard D	T-value	Degree of F	Significance Level	Statistical decision
Fourt	Skill post assessme	individua	3	9.66	0.54	1.80	71	0.08	Not significant

h	nt	l	1						t
		small groups	42	9.38	0.73				
	Skill follow-up assessment	individual	31	9.68	0.54	1.59	71	0.12	Not significant

Generally, these results indicate that individual instruction did not regularly outweigh small-groups instruction in developing reading skills, because the statistically significant differences were delimited to only one case, whereas rest of comparisons revealed comparable results between approaches.

Effects of Grade Level

To investigate the effect of grade level, one-way ANOVA was used (see table 6) independently for both groups of individual and small-groups instruction.

Table (6) One-Way ANOVA for differences that attributed to the difference of grade level.

scale	Source of variation	Set of squares	Degrees of freedom	Mean of squares	F-value	Statistical significance	Eta squared effect size
Post assessment of reading skill	Between groups	6.05	2	3.02		0.01	0.07
	Inside groups	77.36	133	0.58	5.20		
	total	83.41	135				
Follow-up assessment of reading skill	Between groups	2.53	2	1.27			0.03
	Inside groups	79.55	133	0.60	2.12	0.12	
	total	82.09	135				

Individual instruction

The results revealed statistically significant differences between grade levels in post assessment of reading skill ($p < .01$), but no statistically significant differences were found in the follow-up assessment. By using Scheffé test, post comparisons have clarified that students of

fourth grade have achieved high means that were statistically significant compared to second and third grade students, whereas no statistically significant differences were found between second and third grades. The effect size has reached ($\eta^2 = .07$) which represents tiny to average effect size.

small-group instruction

Also, the results revealed statistically significant differences between the grade levels in both post and follow-up assessment ($p < .01$). However, the values of eta squared were low ($\eta^2 = .05$), which indicates that the effect of grade level even if it was statistically significant, still limited from practical terms.

Summary of Findings

The main results of the study can be summarized as follows.

1. No statistically significant differences were found between individual and small-group instruction in most comparisons related to reading achievement.
2. One statistically significant difference was revealed in favor of individual instruction in follow-up assessment of only third primary grade, but the effect size was small.
3. Fourth grade students performed better than second and third grade students in some comparisons, whether in individual instruction or small-group instruction.
4. Values of effect sizes indicate that most identified differences were limited from practical terms, and this is what supports the convergence of both approaches of instruction in educating students with reading disabilities.

Discussion

The study aimed to compare effectiveness of Individual and small-group instruction in developing reading skills among students with learning disabilities. The results generally show no statistically significant differences between these approaches in most comparisons. This indicates that both approaches are able to achieve comparable academic progress when implemented according to remedial teaching principles and considered students individual needs.

This result agrees with recent perspective in literature of special education, which sees that effectiveness of educational intervention does not depend on number of students in the

group, but it depends on quality of teaching, competence of a teacher, relevance of educational activities and continuous monitoring of teachers' performance. Individual instruction allows the teacher to present education that directly align with all needs of student. Whereas, small groups provide additional opportunity for social interaction, cooperative learning and blending between peers, and these are factors that may contribute in improving learning when groups are homogeneous in the level of performance.

Despite that there are no significant differences in most comparisons, the results of follow-up assessment in third primary grade have revealed outdoing of individual instruction. This can show that some reading skills in this stage require more intensive training and direct feedback, and this is what individual instruction provides more greatly than collective instruction. Having said that, the littleness of effect size indicates that this advantage is limited from practical terms, and does not represent adequate evidence for totally favouring individual instruction.

From practical terms, the results of the study support directing learning disabilities programs towards flexible use of these two teaching approaches, because it is possible to use individual instruction with cases that need intensive intervention, whereby small groups can employed with students who are comparable in the level of performance, that can contribute in improving competence of using educational resources without affecting negatively in the level of academic achievement.

Limitations

The results of this study are interpreted in light of a number of delimitations. The sample was limited to students of primary level of Riyadh district, the issue which may delimit the generalization of results in other academic levels or educational environments. It was also limited to only male students, which may delimit generalizing its results in female students. In addition, the study focused on achievement in reading without highlighting other academic

skills, and it adopted data of programs already existing, and this is what may make some grade variables out of complete control of researchers.

Conclusions

The study showed that individual instruction and small-group instruction both achieve comparable levels of effectiveness in developing reading skills among students with learning disabilities, and the differences between them were limited, specially in follow-up assessment of third primary grade with slight effect size. These results indicate the possibility of using small-group instruction as suitable educational alternative for individual instruction in many educational situations, conditionally, to consider academic homogeneity between members of the group and to continuously consider the progress of each student individually.

Recommendations

In light of the results, the study recommends the followings.

References

1. Expansion in using small-group instruction inside learning disabilities programs, by maintaining academic homogeneity between members of the group.
 2. Training teachers of learning disabilities on effective teaching strategies in small groups, by continuously considering the individual differences.
 3. Conduct experimental studies using random distribution of participants to compare between two approaches.
 4. Studying the effect of individual and small-group instruction on other variables, such as motivation, self-competence and social skills.
 5. Implementing similar studies in different academic levels and in other academic fields such as writing and mathematics.
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