

Implementation of Peer Tutoring Strategies in Teaching Students with ADHD: Teachers' Attitudes in Saudi Education

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Abstract:

This study aimed to measure teachers' attitudes toward implementation of peer tutoring strategies in teaching students with ADHD in Saudi Arabia. The study moreover examined the relationship between teachers' attitudes of implementation of peer tutoring strategies and variables of demographic characteristics. Five hundred thirty eight teachers employed at public schools in Riyadh City responded to a survey questionnaire. The results of the study showed teachers realized the benefits of implementing a peer tutoring strategy, they considered there to be a lack in implementing this strategy, they were unsure of the barriers faced by teachers, and they supposed there to be teachers' needs. The study found significant differences in teachers' attitudes regarding teachers' gender, teaching position in schools, and previous teaching experience. No significant differences were found in the school level of teaching. Implications are discussed.

Keywords: Teachers' Attitudes, Peer Tutoring, Students, ADHD

1. Introduction

Attention-deficit hyperactivity disorder (ADHD) is "a syndrome that interferes with an individual's ability to focus (inattention), regulate activity level (hyperactivity), and inhibit behavior (impulsivity)" (Sousa, 2007, p. 49). A more worrying estimation suggests that in general education classrooms with at least 20 students one child with ADHD. Hence, it is likely that teachers will, at some point in their careers, have a student with ADHD in their classrooms (DuPaul & Stoner, 2003).

Peer tutoring is one of the approaches used in classwide interventions targeting both behavioral and academic deficiency components of students with ADHD. It is defined as "an instructional strategy in which two students work together on an academic activity, with one student providing assistance, instruction, and feedback to the other" (DuPaul, Ervin, Hook, & McGoey, 1998, p. 581). Gordon (2005) defined peer tutoring as "an instructional method in which one child tutors another in material on which the tutor is an expert and the tutee is a novice" (p. 1). Other alternative names for peer tutoring include "peer teaching," "partner-learning," "peer education," "child-teach-child," and "mutual instruction" (p. 1). It often implies cross-age tutoring in which the tutor (teacher) is older than the tutee (student). The term as used in this study relates to "peer tutoring in which one classroom student tutors another student in his or her same classroom or cross-age tutoring where an older student or an adult tutors a younger student" (p. 1).

Many teachers may prefer individualized instructional strategies for students with ADHD. However, peer tutoring has a clear advantage since all of the students benefit, not just those with ADHD. Tutoring strategies may have success in accommodating the specific needs of the ADHD-diagnosed student, but at the same time, this method is essential to help the class as a whole since the other students benefit from it as well (Harlacher, Roberts, & Merrell, 2006). Several models of peer tutoring, which differ in educational focus (acquisition vs. practice), structure (mutual exchange of non-reciprocity), and components of procedure (for example, weekly sessions), strategies of student pairing, and the use of a reward system were studied (Fuchs, Fuchs, Phillips, Hamlett, & Karns, 1995).

1.1 Purpose of the Study

The purpose of the present study is a quantitative research to examine differences in Saudi's teachers' attitudes toward implementation of peer tutoring strategies in teaching students with ADHD. Answers to the following questions were obtained in this study:

1. What are teachers' attitudes concerning implementation of peer-tutoring strategies in teaching students with ADHD?
2. Are there differences in teachers' attitudes regarding implementation of peer-tutoring strategies in teaching students with ADHD depending on variables of demographic characteristics, teachers' gender, school level of teaching, teaching position in schools (i.e., special or general education), and previous teaching experience with students with ADHD?

2. Literature Review

Given the chronology of ADHD as a negative disorder that influences school performance, determining the effectiveness of strategy at the school level is critical. Several studies in the literature supported strategy, from peer tutoring in a large class to improving the academic results for students with special needs at an academic

level. Specifically, the specialists in academia are urged to use evidence-based research in peer tutoring since this strategy is feasible and efficient (Harlacher et al., 2006). For example, a study by Greenwood, Delquadri, & Carta (1997) on the impact of peer tutoring indicated that students' time on task had increased and their academic performance had improved. Another study, by DuPaul et al. (1998), demonstrated that peer tutoring had a significant impact on first- through fifth- year students' activity level and on their focus regarding academic performance in math, reading, and spelling. Thus, it found the significance of peer tutoring included the reduction of disruptive off-task behavior by students with ADHD. Furthermore, a study by DuPaul and Henningson (1993) showed a positive impact on the classroom intervention of implementing peer tutoring with students with ADHD in academic improvement and behavioral skills.

In a study by Hughes and Fredrick (2006) about teaching students with learning disabilities the researchers evidenced a positive strategy on academic achievement for students with learning disabilities by combining peer tutoring and constant time delay. Another study, by Burks (2004), looked into the effect of peer tutoring on some reading skills for students with learning disabilities. The result found peer tutoring has a functional impact on improving reading skills in the number of words spelled correctly by students with learning disabilities. Additionally, Taylor and Alber (2003) investigated effects of peer tutoring on spelling achievement of students with learning disabilities in the first grade. The findings indicated all participants improved in spelling and spelled correctly better than before they got the interference.

Locke and Fuchs (1995) studied the effects of peer-mediated reading instruction for students with behavior disorders, to enhance the on-task behavior and social interaction in sixth graders by using a single subject research. The result of study found enhanced the on-task behavior and social interaction of students with behavior disorders. Another study, by Franca, Kerr, Reitz, & Lambert (1990), about the effect peer tutoring on students with behavioral disorders proved that peer tutoring had a positive significant influence for students with behavioral disorders in academic achievements and social skills for both tutor and tutee in middle schools. A further study by McDonnell, Mathot-Buckner, Thorson, & Fister (2001) revealed a significant influence of peer tutoring for success with the inclusion of students with moderate and severe disabilities in high school and improved their academic and behavioral skills.

Noori and Karoomi (2011) investigated the effect of peer tutoring strategy on reading skills for students with special education needs. The result found positive results from using the peer-tutoring strategy in development of some skills in reading aloud in class. In their synthesis study Okilwa and Shelby (2010) reported a significant impact of tutoring strategy on educational achievement for students with disabilities in middle and high schools. Another synthesis study found a positive consequence of peer tutoring implementation to increase academic and social achievements for students with disabilities (Hammam, 2010). Another study, by McDuffie, Mastropieri, and Scruggs (2009), examined effects of peer-tutoring strategy through implementing the two methods of co-teaching and non-co-teaching for students with and without disabilities. The finding confirmed a positive influence for co-teaching for educational success in the classroom. Arreaga-Mayer (1998) found peer tutoring has a significant impact on academic levels and activities for students with disabilities and their peers. Mortweet et al. (1999) examined the effects of peer tutoring on students with mild mental retardation in integrated elementary school settings. The result found positive effects of applied peer tutoring in enhancing their spelling and levels of engagement with their peers.

Fuchs, Fuchs, and Kazdan (1999) examined the effect of peer-assisted learning strategies on reading progress for students in high school. It found a significant impact of peer-assisted learning strategies on serious reading problems. Moreover, Kamps et al. (2008) compared the effect of peer tutoring versus traditional teaching instruction in middle schools. The study showed peer tutoring was preferred over traditional teacher-led instruction. Attiah (2004) studied the effectiveness of peer tutoring strategy in the development of oral reading skills for elementary school students. The study results evidenced an appropriate influence in enhancing the oral reading skills. In another study, Seif (2004) found an essential effect of peer-tutoring strategy in improving math skills for students in elementary school.

The findings of these studies suggest that the effects of tutoring strategy on individuals with ADHD include decreasing disruptive behavior and increasing engagement in educational activities and academic achievements. At the same time, it affects classroom collective behavior positively. Accordingly, the wise choice and implementation of such strategy in schools are likely to increase the possibility of real success and close the academic gap for children with ADHD (Harlacher et al., 2006).

3. Method

3.1 Participants

The study contained 538 general and special education teachers (Female= 273, Male= 265) employed in public schools in Riyadh City, the capital of Saudi Arabia, during the 2015–2016 academic year. Following the rules of Saudi education, the schools were culturally divided between genders, with boys and girls in separate schools. The participants were from 23 boys' schools and 24 girls' schools randomly selected in three-education levels –

elementary, intermediate, and high schools. To be a reasonable representation of the population under study, the survey was distributed fairly in all districts of the city. With permission of the Ministry of Education, the researcher distributed the survey and collected the results. Participation in the study was voluntary and no one was obliged to participate or return the survey. Each participant received a letter detailing the purpose of the study and describing the strategy of peer tutoring. Of 700 surveys distributed, 546 were returned. Eight were removed as unusable because of missing data. Table 1 shows the distribution of the study sample according to the study variables.

Table 1: Demographic characteristics of teachers.

Variable	Response	Frequency	Percentage
Gender	Male	265	49.3
	Female	273	50.7
Educational Level	Elementary Education	210	39.0
	Intermediate Education	189	35.1
	Secondary Education	139	25.9
Teaching Position in School	General Education Teachers	434	80.7
	Special Education Teachers	104	19.3
Previous Teaching Experience	Yes	212	39.4
	No	326	60.6

3.2 Instrument

The instrument of study was developed from the literature review. The researcher designed the survey to address issues relating to teachers' attitudes concerning the implementation of peer tutoring in teaching students with ADHD. The survey contained two parts; the first covered teacher demographic characteristics about gender, school level of teaching, teaching position in schools (i.e., special or general education), and previous teaching experience with students with ADHD. The second part contained 24 statements rating the scale of teachers' attitudes toward implementation of peer tutoring in teaching students with ADHD. These statements were divided into four specific subscales of benefits of implementation (6 items), teachers' implementation (5 items), barriers to implementation (5 items), and teachers' needs (8 items). The teachers were asked to rate their degree of agreement using a Likert scale of one to five (5 =strongly agree, 1 =strongly disagree). Choices on the scale ranged through strongly disagree 1.00 to 1.80; disagree 1.81 to 2.60; unsure 2.61 to 3.40; agree 3.41 to 4.20; to strongly agree 4.21 to 5.00.

The survey was written in English, then translated into Arabic. The validity of the translated survey was confirmed by two bilingual professional translators who translated the survey by the back-translation technique. To determine the clarity, accuracy and appropriateness of survey items, the survey was reviewed by five professors in the Special Education Department at King Saud University in Riyadh City. Nine items were revised as a result of their feedback. To check the reliability of the study, each survey subscale was conducted through a Cronbach's Alpha reliability test. The results displayed a high degree of reliability in each subscale: benefits of implementation (0.95), teachers' implementation (0.90), barriers to implementation (0.88), and teachers' needs (0.95). The general reliability coefficient of the scale was (0.89).

3.3 Data Analysis

To find the rank, mean, and standard deviation of each subscale of survey responses in the 24 survey items, the data were analyzed through the statistical program for social sciences (SPSS). In addition, a one-way ANOVA and the independent *t*-test were able to access the significant differences among the results of the study sample variables narrated to the gender, school level of teaching, position in schools (i.e., special or general education), and previous teaching experience with students with ADHD.

4. Results

4.1 Research Question 1:

What are teachers' attitudes concerning implementation of peer-tutoring strategies in teaching students with ADHD? The researcher divided the first question into four specific subscales. The first included six items concerning the benefits of implementing a peer-tutoring strategy in teaching students with ADHD. Table 2 shows the results of rank, mean, and standard deviation (SD) of participants' responses to each of the six items. Through the results described below it was clear that the teachers agreed on the benefits of implementing a peer-tutoring strategy in teaching students with ADHD with an overall average of mean (M=3.83 of 5.00, SD= 0.93). The average of means in all six items was between (3.92 to 3.75 of 5.00). Table 2 shows the first item, (1) assist students to increase their academic skills, had the most agreement on the average mean (M=3.92, SD= 1.03). The second item was (3), providing students direct feedback with their peers, with mean (M=3.84, SD=1.04). The third item was (2), help students to increase their social skills, with mean (M=3.83, SD=1.04). The fourth

item was (6), supportive of students in their academic achievements, with mean ($M=3.82$, $SD=1.00$). The fifth item was (5), having fun learning with their peers, with mean ($M=3.81$, $SD=1.04$). The last agreement was item (4), aim students to be on task behavior during the task, with mean ($M=3.75$, $SD=1.06$).

Table 2: Rank, means, and SD for participants' responses to each item of the first subscale.

No.	Statement	Rank	Mean	SD
1	Assist students to increase their academic skills	1	3.92	1.03
2	Help students to increase their social skills	3	3.83	1.04
3	Providing students direct feedback with their peers	2	3.84	1.04
4	Aim students to be on task behavior during the task	6	3.75	1.06
5	Having fun learning with their peers	5	3.81	1.04
6	Supportive of students in their academic achievements	4	3.82	1.00
The overall average			3.83	0.93

The second subscale included five items concerning the teachers' implementation of peer-tutoring strategy in teaching students with ADHD. Table 3 shows the results of rank, mean, and standard deviation (SD) of participants' responses to each of five items. Following the results described below it was clear that the teachers were not in agreement on the teachers' implementing of peer tutoring strategy in teaching students with ADHD, and the overall average of mean was ($M=2.45$ of 5.00 , $SD= 1.00$). The average of means in all five items was between (2.78 to 2.11 of 5.00). Table 2 shows the only item for which the participants' responses were unsure was item (5) teachers' strategy of peer-tutoring implementation in integrated classrooms on the average mean ($M=2.78$, $SD=1.27$). Conversely, there was no agreement on the other four items. Item (4), teachers implement strategy of peer tutoring only in an appropriate school environment, had mean ($M=2.54$, $SD=1.19$). The second item was (3), teachers implement strategy of peer tutoring in a smaller classroom size of students with mean ($M=2.46$, $SD=1.19$); third was item (2), teachers implement strategy of peer tutoring in core courses such as math, reading, and writing with mean ($M=2.38$, $SD=1.18$). The last item not agreed upon was (1), teachers implement strategy of peer tutoring in all courses with mean ($M=2.11$, $SD=1.11$).

Table 3: Rank, means, and SD for participants' responses in each item of the second subscale.

No.	Statement	Rank	Mean	SD
1	Teachers implement strategy of peer tutoring in all courses	5	2.11	1.11
2	Teachers implement strategy of peer tutoring in core courses such as math, reading, and writing	4	2.38	1.18
3	Teachers implement strategy of peer tutoring in a smaller classroom size of students	3	2.46	1.19
4	Teachers implement strategy of peer tutoring only in an appropriate school environment	2	2.54	1.19
5	Teachers implement strategy of peer-tutoring implementation in integrated classrooms	1	2.78	1.27
The overall average			2.45	1.00

The third subscale included five items concerning the barriers faced by teachers in implementing peer-tutoring strategy in teaching students with ADHD. Table 4 shows the results of rank, mean, and standard deviation (SD) of participants' responses to each of five items. Through the results described below it was clear that the teachers were unsure of the barriers faced by teachers in implementing peer-tutoring strategy in teaching students with ADHD with overall average of mean ($M=2.96$ of 5.00 , $SD= 1.06$). The average of means in all five items was between (3.28 to 2.69 of 5.00). Table 4 displays item (2), the classroom environment is not ready to implement this strategy, was the item about which the participants were most unsure on the average mean ($M=3.28$, $SD= 1.25$). The second item was (1), teachers lack comprehension of how to implement this strategy with mean ($M=3.23$, $SD=1.25$). The third item was (5), no time to organize this strategy in the classroom, with mean ($M=2.86$, $SD=1.34$). The fourth item was (3), students are not willing to work with each other with mean ($M=2.74$, $SD=1.24$). The final item was unsure (4) students faced difficulty establishing relationships with each other with mean ($M=2.69$, $SD=1.34$).

Table 4: Rank, means, and SD for participants' responses in each item of the third subscale.

No.	Statement	Rank	Mean	SD
1	Teachers lack comprehension of how to implement this strategy	2	3.23	1.25
2	The classroom environment is not ready to implement this strategy	1	3.28	1.25
3	Students are not willing to work with each other	4	2.74	1.24
4	Students faced difficulty establishing relationships with each other	5	2.69	1.34
5	No time to organize this strategy in the classroom	3	2.86	1.34
The overall average			2.96	1.06

The last subscale included eight items concerning the teachers' needs to implement peer-tutoring strategy in teaching students with ADHD. Table 5 shows the results of rank, mean, and standard deviation (SD) of participants' responses to each of eight items. Through the results described below it was clear that the participants were agreed upon the teachers' need to implement a peer-tutoring strategy in teaching students with ADHD with an overall average of mean (M=3.69 of 5.00, SD= 1.03). The average of mean in all eight items was between 3.79 and 3.57 of 5.00. Table 5 displays that item (8), teachers need training and workshops about this strategy, gained the most agreement on the average mean (M=3.79, SD= 1.24). The second item was (7), the teachers need to raise their awareness about the effectiveness of this strategy, with mean (M=3.74, SD=1.09). The third item was (6), teachers need teacher assistants in their classrooms, with mean (M=3.72, SD=1.15). The fourth item was (4), teachers need to prepare activities that can be applied to their students, with mean (M=3.71, SD=1.17). The fifth item was (3), teachers need to organize their classrooms, with mean (M=3.68, SD=1.20). The sixth item was (2), teachers need to collaborate with special education teachers in their classrooms, with mean (M=3.66, SD=1.14). The seventh item was (5), teachers need a small number of students in their classrooms, with mean (M=3.63, SD=1.13). The final agreement was item (1), teachers need a guide as to how to implement this strategy, with mean (M=3.57, SD=1.19).

Table 5: Rank, means, and SD for participants' responses in each item of the fourth subscale.

No.	Statement	Rank	Mean	SD
1	Teachers need a guide as to how to implement this strategy	8	3.57	1.19
2	Teachers need to collaborate with special education teachers in their classrooms	6	3.66	1.14
3	Teachers need to organize their classrooms	5	3.68	1.20
4	Teachers need to prepare activities that can be applied to their students	4	3.71	1.17
5	Teachers need a small number of students in their classroom	7	3.63	1.13
6	Teachers need teacher assistants in their classrooms	3	3.72	1.15
7	Teachers need to raise their awareness about the effectiveness of this strategy	2	3.74	1.09
8	Teachers need training and workshops about this strategy	1	3.79	1.24
The overall average			3.69	1.03

4.2 Research Question 2:

Is there a difference in teachers' attitudes regarding implementation of peer-tutoring strategies in teaching students with ADHD, depending on variables of demographic characteristics, teachers' gender, school level of teaching, teaching position in schools (i.e., special or general education), and previous teaching experience with students with ADHD? To answer the second question the researcher used a one-way ANOVA and independent *t*-test to access the significant differences between the results of variables. Table 6 summarizes the differences in results of a *t*-test between groups for variables of teachers' gender, which showed there were significant differences ($p = 0.010$) between male and female teachers concerning their attitudes in implementation of peer-tutoring strategies in teaching students with ADHD. Female teachers have done more implementation of peer-tutoring strategies than have male teachers.

Table 6: The results of a *t*-test for teachers' gender

Gender	N	M	SD	T	P-value
Male	265	3.24	0.66	-2.569	*0.010
Female	273	3.38	0.60		

* 0.05 level of statistical significance

Table 7 summarizes the differences in results of a one-way ANOVA between groups, which shows no significant differences were found ($p = 0.100$) in the school level of teaching concerning teachers' attitudes toward implementation of peer- tutoring strategies in teaching students with ADHD.

Table 7: The results of an ANOVA for the school level of teaching

Source	Sum of Squares	Df	MS	F	P-value
Between	1.862	2	0.931	2.309	0.100
Within	215.726	535	0.403		
Total	217.589	537			

Table 8 summarizes the differences in results of a *t*-test between groups for the variable of the teaching position in schools. It shows significant differences ($p = 0.000$) between general and special education teachers concerning their attitudes about implementation of peer-tutoring strategies in teaching students with ADHD.

This indicates that special education teachers have more interest in the implementation of peer-tutoring strategies than do general education teachers.

Table 8: The results of a *t*-test for the teaching position in schools

Teaching position	N	M	SD	T	P-value
General education teachers	434	3.22	0.65	-9.565	*0.000
Special education teachers	104	3.68	0.37		

* 0.05 level of statistical significance

Table 9 summarizes the differences in results of a *t*-test between groups for the variable of previous teaching experience with students with ADHD. It shows there were significant differences ($p = 0.000$) between teachers who had had previous teaching experience and those who had not, regarding their attitudes toward implementation of peer-tutoring strategies in teaching students with ADHD. The implication is that those who had had previous teaching experience have more willingness to apply implementation of peer-tutoring strategies than who had not.

Table 9: The results of a *t*-test for previous teaching experience

Previous teaching experience	N	M	SD	T	P-value
Yes	212	3.56	0.49	8.293	*0.000
No	326	3.15	0.66		

* 0.05 level of statistical significance

5. Discussion

In the overall study results, it was clearly found that teachers comprehend the benefits of implementing peer-tutoring strategies in teaching students with ADHD. Also, the teachers believed that there is a shortage in implementing the strategy of peer tutoring in teaching students with ADHD. Moreover, the teachers were unsure of the barriers faced by teachers in implementing peer-tutoring strategies for teaching students with ADHD. Hence, they believed there are teachers' needs to implement peer-tutoring strategy in teaching students with ADHD.

A gender difference was found in teachers' attitudes toward peer-teaching strategies for ADHD students. Female teachers have more willingness to implement peer-tutoring strategies in teaching students with ADHD than male teachers do. This finding agreed with a study by Nur and Kavakci, (2010) who found that there was a significant difference in teachers' attitudes toward students with ADHD based on gender. In contrast, no significant differences were found in teachers' attitudes of implementation of peer-tutoring strategies in teaching students with ADHD with regards to school level the teachers taught. Mahar and Chalmers (2007) disagreed with this finding, which indicated a significant difference in grade level of teaching for teachers' attitudes toward students with ADHD. Likewise, a difference was found regarding teachers' attitudes and their teaching position in schools in which special education teachers have more implementation of peer tutoring strategies in teaching students with ADHD than do general education teachers. Kos, Richdale, and Hay (2006) argued with a finding that teachers' positions have an effect on their attitudes toward students with ADHD. Finally, a difference was also found about teachers' attitudes and their previous teaching experience with students with ADHD. Those who had had previous teaching experience have more interest in implementation of peer-tutoring strategies in teaching students with ADHD than who had not. This result agreed with what was found in a study by Zentall and Javorsky (2007), that teachers' previous experience with students with ADHD has an effect on their attitudes.

One limitation of the current study was the terms of distribution of the survey which was across the 2015-16 academic year. It is further limited by the study sample which addressed the general and special education teachers who work in general education schools. Moreover, the survey was distributed only in the capital city of Saudi Arabia. There may have been different responses if it were distributed in other Saudi areas.

Several practical educational implications are based on what was found from this study. It should reduce the barriers faced by teachers wanting to implement peer-tutoring strategies in teaching students with ADHD. This could be done through adopting a classroom environment that supports implementation of peer-tutoring strategy, working to strengthen the desire of students to work with each other, and focusing to enable students to build social relationships with each other. Work is needed to improve teachers' knowledge of how to implement peer-tutoring strategies in teaching students with ADHD. Providing assistant teachers in classrooms is another way for teachers to implement peer-tutoring strategies in teaching students with ADHD. Encouraging and supporting teachers in the preparation and processing of descriptive activities can be of practical benefit to students in the classroom. The provision of training courses and workshops for teachers about the strategy of peer tutoring is another acute need.

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