



## EFFECTS OF CLASSWIDE PEER TUTORING ON WORD ATTACK SKILLS AMONG STUDENTS WITH LEARNING DISABILITIES

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### **Abstract:**

This study investigated the effects of classwide peer tutoring (CWPT) on word attack skills among students with learning disabilities (LD). The participants included 5 students with LD in the control group and 4 students with LD in the CWPT experimental group; all of the students were in the third grade in Najran, Kingdom of Saudi Arabia (KSA). The word attack test (WAT) was developed and administered to the two groups as the pretest and posttest. The students in the experimental group received instruction through CWPT, whereas the students in the control group received individual instruction. In the WAT posttest, the mean rank of the students in the experimental group was significantly higher than that of the control group.

**Keywords:** classwide peer tutoring, reading difficulties, students with LD, word attack

### **1. Introduction**

The U.S. Department of Education estimated the prevalence of LD in the developed societies as 5.36% (Lerner & Johns, 2012; Al-Zoubi & Al-Qahtani, 2015), but in the Kingdom of Saudi Arabia (KSA) it is estimated between 5-10% (Abu Nayyan, 2015). Academic struggles are one of the characteristics of students with LD. They can face difficulties in a variety of subjects, including reading, writing, and math. Thus, the academic problems associated with LD can vary, leading to the emergence of specific LD terms. Reading is the most significant challenge for students with LD (Hallahan,

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Kauffman & Pullen, 2012). A student might have difficulty recognizing letters and their sounds, reading visual words, reading silently or orally, or comprehending what is read (McLoughin & Lewis, 2008). Reading difficulties may be due to the problems related to word attack skills, reading comprehension and fluency (Hallahan, Lloyd, Kauffman, Weiss, & Martinez, 2005) or critical reading skills (Al-Khateeb, 2013).

Reading challenges in the students with LD could also be associated with problems in phonological awareness (Gillon, 2007), word encoding and decoding (Swanson, Zheng & Jerman, 2009), auditory memory (Swanson & Stomel, 2012), working memory (Wang & Gathercole, 2013), or cognitive processes (Kudo, Lussier & Swanson, 2015).

The development of language varies among children in early childhood depending on visual disengagement and word attack skills (Venker, 2016). Therefore, the acquisition of reading skills depends on a child having an alphabet reading system that allows him or her to convert written words to the phonological representation (Müller, Richter, Križan, Hecht & Ennemoser, 2015). Word attack skills are considered key to the learning process (Kucker, McMurray & Samuelson, 2015). Thus, students with reading difficulties need a differentiated instruction to enable them to transform decoding skills into word attack skills (Cho et al., 2017). In this regard, the use of synthetic and analytical phonics is an effective technique for teaching reading skills to students who struggle with reading (Henbest & Apel, 2017).

The educational programs that are implemented for students with LD in general education classes are not always effective (McGrother et al., 2006); students with LD need to be taught strategies that meet their academic needs. Accordingly, the No Child Left Behind (NCLB) Act stresses that all students should obtain a high quality of education through the implementation of varying teaching strategies (Morgan, 2006). The Individuals with Disabilities Education Act (IDEA) also emphasizes the need to provide identification and intervention services for students with LD in placement settings (Lundblom & Woods, 2012). The IDEA encourages the use a general education curriculum for students with disabilities (McMaster, Fuchs & Fuchs, 2006). Thus, special and general education teachers should use modern teaching strategies to improve the reading skills of students with LD.

In the field of special education, various teaching strategies have been used to reduce academic problems among students with LD (deBettencourt & Howard, 2015). For example, peer-mediated tutoring (PMT) seeks to meet the diverse needs of learners (Landrum, Tankersley & Kauffmann, 2003). Through the implementation the PMT, teachers seek to improve the reading skills and follow the individual progress of the

peer tutees as well as, evaluate the performance of the peer tutors (Flores & Duran, 2016).

Classwide peer tutoring (CWPT) is one of PMT strategies that have been used effectively for teaching students with LD in educational settings (Hallahan et al., 2012; Maheady, Mallette & Harper, 2006). CWPT is an effective strategy that allows for the participation of all students in the teaching and learning process (Hughes & Fredrick, 2006). It can accommodate a number of students as they peer teach each other (Burks, 2004) and allows students to receive individual instruction (Taylor & Alber, 2003).

In CWPT, the teacher pairs together two students with different learning abilities in a relationship based on partnership and cooperation (Hallahan et al., 2005). CWPT facilitates academic partnership between the students through the integration of the tutor and tutee. Thus, the peer tutor transfers knowledge and experience to the peer tutee. The peer tutors could contribute to improve fluency and reading skills among the peer tutees (Reutzler, 2012). By the implementing this strategy, the learning environment in the classroom is transformed from a traditional learning environment, which is based on explanation and indoctrination, to a stimulating environment by providing students with opportunities to interact with each other by giving them knowledge, skills and attitudes. CWPT shifts the responsibility of teaching from the teacher to the peer tutors, and the role of the teacher becomes that of a supervisor in the teaching and learning process. CWPT gives the teacher an opportunity to manage the classroom efficiently and provides differentiated instruction for all students (Okilwa & Shelby, 2010).

Previous studies have described the benefits of CWPT. Taylor and Alber (2003) and Burks (2004) showed the effectiveness of CWPT in improving spelling among students with LD. Buzhardt, Greenwood, Abbott and Tapia (2007) demonstrated the positive effects of CWPT on academic and behavioral performance among students with mild developmental disabilities in various special education settings. Maheady and Gard (2010) showed the effectiveness of CWPT in improving math computational fluency among students with LD. Mackiewicz, Wood, Cooke and Mazzotti (2011) concluded that peer tutoring is effective in improving the acquisition and understanding of vocabulary words for students with LD. Calhoon (2005) demonstrated the effectiveness of PMT in improving phonological and reading comprehension skills among students with reading disabilities. Hughes and Fredrick (2006) highlighted the benefits of combining CWPT and constant time delay with respect to the acquisition of vocabulary words and social skills among students with LD. Harper and Maheady (2007) concluded that CWPT contributes to inclusion, social acceptance, and academic achievement of students with LD.

The purpose of this study is to investigate the effects of CWPT on word attack skills among students with LD. CWPT will be used with students with LD who are enrolled in a resource room. The resource room is the prevailing approach for students with LD in public schools in Najran, KSA. This approach is based on individualized instruction. In other words, in this study, the researchers seek to determine the effects of CWPT on students with LD and compare it with the effects of individualized instruction. This study is designed to test the following hypothesis: No statistically significant differences in the word attack test outcomes attributable to CWPT exist between the students in the control group and those in the experimental group.

## **2. Method**

### **2.1 Research Design**

A Non-Equivalent Control Group Pretest-Posttest Design was used. This design is a quasi-experimental approach and is used to measure the effect size between independent and dependent variables (Ismail, Al-Zoubi, Bani Abdel Rahman & Al-Shabatat, 2009).

### **2.2 Participants**

The participants included 5 female, third grade students with LD from the second primary school in Najran, KSA, and 4 female, third grade students with LD from the thirty-seventh primary school in Najran, KSA. The students ranged in age from 9 to 10 years. Using purposive sampling, the two schools were selected because the school principals had history of extended cooperation with researchers and a number of third grade students who experienced difficulties in reading were available. Thus, the 4 students from the thirty-seventh primary school were selected to be the experimental group, and 5 students from the second primary school were selected as the control group by the use of a simple random sample method. The students in the control and the experimental groups have been considered to have reading difficulties since the LD teachers implemented a set of formal and informal assessment scales during the scanning and referral stages.

### **2.3 Instrument**

To measure the reading skill levels among the students in the control and experimental groups, the researchers developed a word attack test (WAT). The WAT was based on the Arabic curriculum for the first grade in KSA. In addition, the WAT was developed in collaboration with LD teachers and Arabic language teachers. The WAT consists of a

group of reading skills such as reading alphabet letters separately; reading alphabets with a formation; distinguishing letters that are similar in pronunciation but differ in shape; distinguishing letters that are similar in shape but differ in pronunciation; and distinguishing letters in the beginning, middle, and end of a word.

To verify the validity of the test's content, the WAT was reviewed by ten faculty members from the Department of Special Education and the Department of Curriculum and Instruction at the Faculty of Education in Najran University, KSA. Based on comments and suggestions of reviewers, the WAT questions that received a score of 85% were included in the test. The final draft of the WAT consisted of 100 true or false questions. Each correct answer was given (1) mark, and each incorrect answer, a (0) mark. Consequently, the highest possible score was (100), and the lowest possible score was (0).

To measure the reliability of the test, the WAT was applied to a pilot study that consisted of 11 students with LD who had reading difficulties. The Kuder-Richardson Formula 20(KR-20) was used to check the internal consistency coefficient. When the KR-20 is used with true or false questions, one mark is given for each correct answer, and zero is given for each incorrect answer (Aslanides & Savage, 2013). The reliability of the WAT was 0.83. In addition, the range of the coefficient of difficulty of WAT questions was 0.44-0.62, and the range of coefficient of discrimination was 0.58-0.83.

## **2.4 CWPT Guide**

This guide was prepared to help LD teachers implement the CWPT and is warranted because direct individual instruction is the common approach to teaching students with LD at the resource rooms in Najran, KSA. The guide was designed based on the CWPT procedures, which are described in Hallahan et al. (2012). The CWPT guide included a set of instruction tasks, including the WAT. The CWPT guide also contained the question papers, answer sheets for each session, and a list of rewards to be given to the winning team. The instructional tasks were divided into 40 sessions with 5 sessions per week, and the duration of each session was 30 minutes per day. In addition, during each session, the students on both teams exchanged roles as the tutor and tutee every 15 minutes. The co-author of this study presented three 2-hour training sessions to the LD teacher of the experimental group. The aim of these sessions was to explain the concept and procedures of the CWPT strategy. The co-author also presented a video that included the procedures for organizing a resource room and the steps for dividing peer pairs into two teams according to the CWPT strategy.

## 2.5 Procedures

1. The researchers obtained an approval letter from the principals of the second and thirty-seventh primary schools for the implementation of this study.
2. The researchers contacted the parents of students with LD to present the aims and procedures of the study; the parents expressed their desire to cooperate with the researchers.
3. Before the implementation of the study, the WAT was applied individually to students with LD in the experimental and control groups as a pretest. The LD teachers in the experimental and control groups read each question and asked the students to answer each question using the answer sheet.
4. The students in the control group were enrolled in a resource room during the first semester of the 2016/2017 school year and received direct individual instruction in reading from the LD teacher.
5. The students in the experimental group were enrolled in a resource room during the first semester of the 2016/2017 school year their reading instruction according to the CWPT strategy.
6. After coordination with the principal and LD teacher in the thirty-seventh primary school, 4 female, third grade students without LD, ages 9-10, were selected. These students expressed their desire voluntarily participate in the implementation of CWPT with their peers with LD. The LD teacher also communicated with the parents of students without LD and the parents gave their approval for their children to participate in this study.
7. The LD teacher of the experimental group divided the 8 students (4 students with LD and 4 students without LD) into 2 equal teams. Each team included 4 students (2 students with LD and 2 students without LD). Then the teacher distributed each team into 2 groups. Each student with LD was paired with a peer without LD. In addition, this study was conducted in a resource room because it was difficult to apply the CWPT in a general education classroom.
8. The LD teacher presented a training workshop for the students in the experimental group about the term and procedures for implementing CWPT and distributing the roles among the students.
9. After implementing of the CWPT, the WAT was applied to the experimental and control as a posttest.

## 3. Results

### 3.1 Students' Performances on the WAT

**Table 1:** Descriptive data of control and experimental groups on the pretest and posttest

Group	Control		Experimental	
	Pretest	Posttest	Pretest	Posttest
Measure				
Number	5	5	4	4
Mean	43.80	49.80	41.75	67.50
SD	6.907	6.760	5.123	1.291

As shown in Table 1, the mean WAT score of the control group rose from 43.80 in the pretest to 49.80 in the posttest. Moreover, the mean score of the experimental group rose from 41.75 in the pretest to 67.50 in the posttest. To identify statistical differences between the WAT scores of the two groups, the Mann-Whitney test was used (see Table 2).

**Table 2:** Results of the Mann Whitney Test of control and experimental groups on the pretest and posttest

Measure	Group	Mean Rank	Sum of Ranks	U	Z	P
Pretest	Control	5.60	28.00	7.000	-0.735	0.462
	Experimental	4.25	17.00			
Posttest	Control	3.00	15.00	0.000	-2.449	0.014
	Experimental	7.50	30.00			

Table 2 shows that on the WAT pretest there was no statistically significant difference between the mean rank of the control group (5.60) and that of the experimental group on the WAT pretest (4.25), confirming the equivalence between the control group and the experimental group with respect to this measure ( $Z = -0.735$ ,  $p = 0.462$ ). However, Table 2 also shows that for the WAT posttest, the mean rank of the experimental group (7.50) was significantly higher than that of the control group (3.00) ( $Z = -2.449$ ,  $p = 0.014$ ).

### 3.2 Discussion

The purpose of this study was to investigate the effects of CWPT on word attack skills among students with LD. The results indicated an improvement in the mean and mean rank of the CWPT experimental group compared with the control group in the WAT posttest. This improvement can be attributed to the effectiveness of using CWPT. The implementation of CWPT provided the students with LD and the students without LD positive opportunities to interact with each other. Moreover, with the implementation of CWPT, the learning environment in the resource room changed from a traditional

environment to a stimulating environment that allowed opportunities for students to interact with each other, gain knowledge, social skills, and participate in the teaching and learning process. The implementation of CWPT promotes the students and trains them in cooperative learning, which has become an educational and social necessity in the classroom. Topping (2005) demonstrated that CWPT contributes to academic and social skills among students. Harper and Maheady (2007) pointed out that CWPT leads to academic and psychological changes among students. Through CWPT, learning activities in the classroom will be focused on students.

The majority of students with LD have low, academic achievement and social skills. Thus, they need the hope and social skills provided through CWPT. In this regard, Mahan (2010) confirmed that PMT can be used as an effective intervention method to help students with reading disabilities. On the other hand, Hughes and Fredrick (2006) stressed that CWPT helps students with LD acquire social skills. This strategy has fostered the ability of students to work with one another and trained them in cooperative learning, which has become a social and educational necessity.

The improvement in word attack skills among students with LD in the experimental group can be attributed to the role of the LD teacher in creating the improved environmental and physical conditions in the resource room, the choice of an appropriate time to implement the CWPT and the resulting increased familiarity between the students with LD and the students without LD. Moreover, the desire of students without LD to work with their peers with LD as well as the encouragement of parents and school administration also contributed to the effectiveness of the successful implementation of CWPT. This strategy could also be used to help improve the academic and social skills of students without LD. In this regard, Iyer (2011) suggested the direct and indirect effects of PMT on the academic and social skills of both the tutors and tutees.

CWPT fostered spirit of cooperation and positive competition among students, and this contributed to the improved word attack skills observed among students with LD. CWPT also required peer tutors, who provided feedback to their peer tutees. Moreover, CWPT created a teaching environment based on trial and error and discovery, which encouraged the successful implementation of this strategy. The exchange of roles between the peer tutor and peer tutee during every instructional session helped instill confidence and self-reliance among the students with LD in the experimental group. The positive role of the LD teacher during the sessions, the spirit of positive competition and cooperation between the two teams, and the provision of privileges and rewards for the winning team led to an improvement in word attack skills among students with LD.



#### 4. Conclusion

CWPT have received considerable interest in foreign research but little attention in the KSA. However, the results of this study are consistent with the results of previous studies that indicated the effectiveness of CWPT in improving academic skills of students with LD. Future research in KSA should implement CWPT in general education classrooms and study its effect on other reading skills, such as reading comprehension, fluency, and critical reading. The researchers recommend the enrollment of special and general education teachers in CWPT training workshops. One limitation of this study is the small sample size of students with LD enrolled in the resource room, which reduces of the generalization the results of this study to other regions in the KSA.

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The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. This research is original work and does not contain any libelous or unlawful statements or infringe on the rights or privacy of others or contain material or instructions that might cause harm or injury.

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