CHAPTER - II

REVIEW OF LITERATURE

2.0. Introduction

Best (1997) has highlighted the importance of related studies and literature as "practically all human knowledge can found in books and in libraries". These studies help us to avoid the risk of duplication. Every investigator is expected to know what sources are available in his field of enquiry which of them he is likely to use and find them.

Related literature is that which is obviously relevant to the problem, such as previous research investigating the same variables or a similar question: references to the theory and study the similar practices. It enables a reader to gain further insights from the purpose of a study. Also the researcher draws maximum benefit from the previous findings, takes hints from the designs and procedures of previous researches, matches his conclusion with conclusions drawn earlier,

This chapter reviews are the important literature related to the study. It provides a background for the development of the present study and brings the reader up to date.

2.1 Peer-Tutoring

Peer tutoring is a measure that allows for collaboration and socialization between students. It allows for teachers to have more classroom time and students can learn from teaching other students (Bender, 2002).

Peer tutoring programs are designed for students to tutor one another through a tutor /teacher relationship. Often the roles are reversed in a strategy called reverse-role tutoring. Although little research had been found with reverse-role tutoring, students have illustrated benefits: the student's abilities rather than disabilities are highlighted (Tournaki & Criscitiello, 2003).

Peer tutoring allows for immediate corrective feedback allowing for an increase in understanding from the text (Juel, 1996). Peer tutoring strategies also focus on self-esteem. Tournaki and Criscitiello (2003) suggest that peer tutoring strategies allow students with disabilities to take on a more positive role, in which they are seen as mentors to other struggling students. In a study by Juel (1996), the tutors stated that they felt an increase in motivation and self- esteem compared to their non-tutoring classmates.

2.1.1 Models of Peer tutoring

Several models of peer tutoring exist within educational settings such as Cooperative Integrated Reading and Composition (CIRC), Reciprocal Teaching, Class Wide Peer Tutoring (CWPT), and Peer-Assisted Learning Strategies (PALS).

Cooperative Integrated Reading and Composition (CIRC) is a reading program developed for 2nd through 6th grade students ("Educational Programs that Work," 1995). It has similar components to other peer tutoring models such as reading strategies involving group reading by ability level, direct instruction, and the integration of reading materials from curriculum used in the classroom (1995). To implement CIRC, training and purchasing of materials are required annually (1995). Several studies have indicated that this program is successful in the elementary grades (1995).

Reciprocal teaching is another peer tutoring strategy that uses rehearsal strategies. Students and teachers use rehearsal to increase comprehension using the following components: questioning, clarifying, predicting, and summarizing (Slater & Horstman, 2002). Reciprocal teaching begins by having the teachers model the strategies to their students in which the students then use these strategies and are coached by their teachers for subsequent material (Fuchs & Fuchs, 2001). However, CIRC and Reciprocal teaching have several drawbacks that make it very impractical for the classroom teacher (Fuchs & Fuchs, 2001). First, CIRC requires teachers to invest a lot of extra time into the program, and it requires schools to make and use their own materials (2001). With all of the demands placed on teachers, the strategies should be easy for teachers to use. Secondly, reciprocal teaching is also difficult for teachers to master (2001).

Because of the drawbacks discussed previously as well as the need for efficient interventions, Class Wide Peer Tutoring (CWPT) and Peer Assisted Learning Strategies (PALS) have been viewed as more teacher friendly. CWPT and PALS have been developed as peer tutoring strategies that require less work from the teachers, more facilitation among students, and are easier to understand and teach than CIRC and reciprocal teaching. CWPT was developed at the Juniper Gardens Children's project as a "result of efforts to improve instruction for minority, disadvantaged, and/or learning disabled children" (Delquadri et al., 1986, p. 535). This program was designed to improve the following procedures and principles in the classroom: opportunity to respond, academic skills, and behavioral procedures (Delquadri et al., 1986).

The procedure takes approximately 40 minutes and occurs three times per week (Fuchs & Fuchs, 2001). Because CWPT allows for the tutee and tutor to switch roles, each student is allotted 10 minutes for reading. Each student asks comprehension questions about the text (2001). The rest of the time is used for posting points and feedback. Teams are chosen based on random assignment and teams are reassigned weekly so each student gets an opportunity to be on the "winning" team at some point (Delquadri et al, 1986). However, it is important to make sure that the pairs are socially compatible (Fulk & King, 2001). Points are awarded by the following criteria: two points for the tutee for reading the sentence without errors and one point for the tutor when correcting the error. Because the tutoring system evolves around a team atmosphere, CWPT allows for students to learn from each other; it also strengthens social interaction among peers (2001). Academic skills to determine a student's progress is another contributing component to CWPT. Some skills that CWPT have been used with are the following: textual oral reading, responding to comprehension questions, using workbooks for reading practice, practicing spelling with spelling lists, and practicing vocabulary (Delquadri et al., 1986).

CWPT is most effective when using materials from the school district and skills involved with the school's curriculum, which is cost effective for school districts (Delquadri et al, 1986). In a study by Dequadri et al., (1986) a 4" grade student was given very little opportunity to respond within the allocated class time. Because he was only

reading at first grade level, he was subsequently placed in a classroom for students with Learning Disabilities (LD). Within a short period of time in the LD classroom (2 weeks), he went from reading 15.2 words per minute to reading 47.5 words per minute. He was soon reading at the 5th grade level (1986). CWPT allows adequate time for each student because he or she is reading with peers and an allocated amount of time is set aside for reading. CWPT has been shown to increase a student's academic success from 20% to 70% (Delquadri et al., 1986). CWPT also results in increased on-task behaviours, and students work with problems consistently and rapidly (Bender, 2002).

Research has indicated positive results for CWPT. Students using CWPT in middle school and high school have had continued success on achievement tests such as the California Test of Basic Skills in reading, math, and language (Greenwood & Delquadri, 1995). The strategy keeps students "actively on task" (Fulk & King, 200 1, p. 51). CWPT also has been shown to be beneficial to low achieving students because it improves self-esteem and social skills (2001).

A second model of peer tutoring is Peer-Assisted Learning Strategies (PALS). PALS was developed by faculty at Peabody College at Vanderbilt University in cooperation with personnel from the Nashville-Davidson Metropolitan School District in 1991 ("Peer-Assisted Learning," n.d.). It was initially designed for Title I students, students with Specific Learning Disabilities (SLD), and students performing at various grade levels for grades 2-6 ("Peer-Assisted Learning," n.d.). PALS has since extended its use for kindergarten and high school students. PALS are modifications of CWPT, and include phonological awareness, decoding, and comprehension strategies (Fuchs, Fuchs, & Burish, 2000). PALS use activities similar to CWPT such as tutor tutee roles and reversal, corrective feedback, and interaction with peers (Fuchs et al., 2000). There are also some differences between the two strategies in relation to materials used. Teachers are often trained through workshops to teach their students how to use activities in PALS as well as maintain the activity during the sessions (Fuchs, Fuchs, Mathes, & Simmons, 1997). Teachers also use a manual for the specified grade that contains scripted materials to implement the PALS program into their reading curriculum. The sessions are approximately 35 minutes in length (Fuchs et al, 2000). Because PALS are designed to

act as a curriculum substitute rather than as an extension for other reading activities, teachers do not need to set aside extra time to implement PALS into the classroom (Fuchs et al., 2000). The procedures for PALS are similar to CWPT in which students are divided into pairs; however, the activities of reading and comprehension are expanded into the following areas: partner reading, paragraph shrinking, and prediction relay. Each student is paired by selecting a higher achieving student with a lower achieving student in reading (Fuchs et al., 2000).

The higher performing student always begins as a tutor in order to serve as a mentor for the lower performing student (2000). As with CWPT, the pairs are divided into two teams. Students gain points for their team by performing the activities correctly and demonstrating adequate behaviour during tutoring (2000). At the end of the week, team performances are summed and the team with the most points is given the title of "winner" for that week. For grades 2-6, teams and pairs are reselected every 4 weeks; however, due to motivation differences, high school PALS'S teams are reselected more frequently and will be discussed further (Fuchs et al., 2000). The activities of PALS are partner reading, paragraph shrinking, and prediction relay. Partner reading is the first activity for PALS. The tutor, the higher performing student, begins oral reading for the first 5 minutes; the roles are then reversed with the tutor providing corrective feedback (Fulk & King, 2001). Paragraph shrinking focuses on improving reading comprehension. Students state who, what, and where for the reading and describe the main idea in 10 words or less (2001). The final activity for PALS is prediction relay. Prediction relay allows for the students to look at what is happening next in the reading and then predict (Fulk & King, 200 1).

The PALS extensions for high school have similar activities and procedures as the 2-6 grade PALS; however, they differ in three ways. As mentioned earlier, teams and pairs are reselected more frequently (i.e., every day, rather than every 4 weeks for grade 2-6 PALS) (Fuchs & Fuchs, 2001). Also, high school scheduling may influence student selection. According to Fuchs and Fuchs (2001), high school students tend to enjoy interaction with various peers rather than interaction with the same peers. The second difference is that motivational systems appear to be different for older students. Therefore, the motivations became more tangible. The student's rewards often lead to gaining such

things as compact discs and fast food coupons (2001). Finally, high school PALS differ from 2-6 grade PALS in the reading materials used. The reading materials are more directed towards such things as life skills, social relationships, and employment opportunities (Fuchs & Fuchs, 2001).

2.2 Peer Assisted Learning Strategies

Gerry Rayner, Theo Papakonstantinou (2018) studied on The Use of Peer-Assisted Learning to Enhance Foundation Biology Students' Understanding of Evolution. Peer-assisted learning (PAL) promotes improved skills across a variety of disciplines, and may enhance students' understanding of conceptually difficult ideas. The effect of group size in promoting learning of such concepts, either in quantitative or qualitative terms, is also an area of interest. This study aimed to investigate the comparative value that foundation biology students placed on paired versus quad PAL activities, and both their perceived and actual understanding of plant and animal evolution, following such activities. The activities were structured and scaffold over a four week period, with paired groups (dyads) merging into quads, and with students being surveyed over that period. Students reported that discussions with their lab partners helped improve their understanding of plant and animal evolution, and the majority valued quad over dyad PAL. Additionally, the PAL intervention had a positive impact on students' examination results, compared to the previous year's baseline cohort. The findings indicate that in the design of group learning activities, particularly those related to threshold concepts, educators should give due consideration to several factors. These are group size, activity scaffolding and sequencing, and the structure and types of post-activity questions that seek to catalyse reflection, discussion and the development of deep knowledge.

According to Topping, (2009) Peer-Assisted Learning Strategy can be defined as the acquisition of knowledge and skill through active helping and supporting among status equals or matched companions. PALS involve people from similar grouping. It means that PALS giving a chance to students to learn and help each other in gaining knowledge during learning activities. Students who have higher understanding can help their 23 friends who get difficulties understand English, especially in reading comprehension.

In another study**,** Tariq (2005) points out that primary aim of PALS is to raise students' self-confidence. Students are provided with opportunity to practice and discuss with their peers when they encounter problems or difficulties during reading also feel free to convey their opinion to the peer without being afraid to make mistake. There are some advantages of PALS, it provides a less formal, and more comfortable and relax environment, while group leaders can ask appropriate question and provide feedback to their peers directly and they can feel free also to ask questions correctly.

(Fuchs et al., 1997) conducted a study on Special educators has long emphasized the diagnosis and remediation of disabilities and their role in students' learning. Thorius and Graff (2018) envisioned that PALS (Fuchs et al., 1997) could become an "empowering literacy intervention for students of color and/or English learners with mild disabilities" (p. 165) by validating and sustaining the dynamic, diverse, and unique identities of students of color and English learners (ELs), viewing students of color and ELs with disabilities as expert learners with their higher-achieving PALS (Fuchs et al., 1997) peer and "empowering students to challenge school and societal inequities that may contribute to challenges in reading performance in the first place" (p. 165). But, for peer tutoring at the secondary level to move beyond the 42 classification as only a potentially evidence-based strategy, more research needs to be conducted (Alzahrani & Leko, 2018).

These research studies (Thorius & Graff, 2018; Alzahrani & Leko, 2018) influenced the design of this study as they show how the PALS (Fuchs et al., 1997) intervention can empower students with LD and add to the body of research that Alzhrani and Leko (2018) state that the field still lacks. With this in mind, the present study was designed to add to the corpus of research on PALS (Fuchs et al., 1997) as an evidence-based intervention for students with LD. PALS (Fuchs et al., 1997) was chosen as an intervention as it had "the potential to achieve the pedagogical goal" (Reinking & Bradley, 2008, p. 74), which is a guiding question of the formative experiment framework. In implementing PALS (Fuchs et al., 1997) in an inclusion classroom, this study confirmed the view of students with LD as expert learners just as their typically-developing peers are viewed. Fuchs, Fuchs, Mathes, and Martinez (2002) cited PALS (Fuchs et al., 1997) as an intervention that supported Thorius and Graff's (2018) assertion that in classrooms where

PALS (Fuchs et al., 1997) is used, students with LD are viewed as having the same social standing as their typically-developing peers, whereas in non-PALS (Fuchs et al., 1997) classrooms students with LD are not viewed as having the same social standing as their typically developing peers. Thorius and Graff's (2018) research heavily influenced the choice to use the PALS (Fuchs et al., 1997) for this study.

2.3 Techniques involved in PALS

There are some steps that should be prepared by teacher in order to have success teaching and learning activities through PALS explained by Tariq (2005) such as; 1) introduce to the students about the concept and benefits of PALS, 2) organize the sessions in PALS well, for instance; emphasizing that the students' willingness to participate in the sessions of PALS are needed because it will influence the success of PALS, 3) explain the students' roles in the group.

McNamara, D. S. (2006), stated that during the treatment, the students will be work in pair. The group will be determined by ranked the students' score the top to the bottom. Each pair consists by the higher and lower performance. The higher performance will be tutor and lower performance as tutee. During the tutoring activity, the higher 24 performance reader will read first in order give a model to the low performance. In the process of PALS, the activities are divided into four parts. First activity is partner reading. Each student have partner reading. The partner readers take turns coaching, monitoring, fixing mistake, and awarding points. This activity timed 10 minutes. The second is retell. When each student finished the reading, the second reader retells text and the first reader uses a question card prompt. The partners chose how many points they earn for this activity. Retell occurs in 5 minutes. The third is paragraph shrinking. The first reader only reads 1 paragraph at a time and the second reader prompts to find main idea statements for each paragraph. Then they switch places as prompter and reader. Paragraph shrinking timed 10 minutes. The last is prediction relay. The first reader makes prediction and then reads half a page to check for correct answer. The second reader provides prompts. The second reader then has a chance to perform. Points are awarded for correct answer to prompts. Prediction relay timed 10 minutes.

Ridianto (2018), investigated Teaching Reading by using Paragraph Shrinking Strategy. This research was an experimental research which is posttest only control group design. The population of the research was Eight Graders of SMP N 2 Kec. Luak Payakumbuh. The sample was chosen by using cluster random sampling technique. The experimental class was treated by using Paragraph Shrinking Strategy while the control class was treated by using conventional strategy. The instrument of this research was reading test in multiple choice form. This instrument was valid because it had content validity which had been taught before and it is based on the syllabus. Then, this instrument was reliable because the writer had done try out and split half reliability. Next, to analyze the data, the writer used the t-test formula that suggested by Gay to answer the hypothesis. It found that t-test (6.13) and t-table (2.021). It means that t-test was bigger than t-table. On the other word, Alternative Hypothesis (H1) was accepted and Null hypothesis (H0) was rejected. So, it can be concluded that Paragraph Shrinking Strategy gave significant effect to teaching and learning process and can increase students' reading ability.

2.4 Strategies of Interventions involving Peer Mediated Learning

Reviewing various studies revealed that eight different strategies involving peer mediated learning were used. Two of the studies described related strategies: one used Class Wide Peer Tutoring (CWPT) (Plumer & Stoner, 2005) and the other Peer Assisted Learning Strategies (PALS), (Fuchs et al., 2002). One of the articles used Cross Age Tutoring- a strategy involving older children serving as tutors for younger children (Mills et al., 2014), and the rest used methods first introduced in those specific studies (Stanton-Chapman, & Snell, 2011; Garfinkle & Schwartz, 2002; Jones, 2007; Klavina et al., 2014; Davenport et al., 2004). The explored strategies will hereby be presented as a three-step process, before, during, and after intervention.

2.4.1 Before Starting the Interventions

Two out of the eight studies mention that they had some form of preparation for the children that would serve as peer tutors. In one of the studies, during which typically developing children would tutor children with moderate physical disabilities

and mild cognitive disabilities in physical education, the tutors underwent a training about collaborative educational values, teaching instructions and communication skills. They discussed with their teacher and one-another about empathy, compassion and being a good friend. They also had a chance to practice peer mediation on each other under teacher supervision (Klavinaet al., 2014). In the second study fifth grade students with learning disabilities served as tutorsfor typically developing preschool children in literacy-related activities, the tutors practiced 6reading preselected books for the preschool children and discussed skills they could model and positive ways to provide feedback (Davenport et al., 2004).

2.4.2 During the Interventions

In the studies that involved elementary school children, one of them was implemented during literacy time and free play in elementary school (Plumer & Stoner, 2005), one during the instruction of mathematics (Fuchs et al., 2002), one was implemented on play activities (Jones,2007), and one during physical education class (Klavina et al., 2014). One of the studies involved both elementary and preschool children. It was implemented during literacy related play activities (Davenport et al., 2004).

The three studies that involved only preschool children, were implemented during play related activities (Garfinkle & Schwartz, 2002; Stanton-Chapman, & Snell, 2011; Mills et al., 2014). During the implementation of the intervention strategies, certain commonalities and differences were also observed.

In three of the studies, children with special needs practiced both being the tutor and the tutee to typically developing children (Plumer & Stoner, 2005; Fuchs et al.; Stanton-Chapman, & Snell, 2011). One study involved only children with special needs, who served as tutors and tutees to one another (Garfinkle & Schwartz, 2002). The rest of the studies assigned the role of the tutor to typically developing children and the role of the tutee to the children with special needs (Jones, 2007; Klavina et al., 2014; Mills et al., 2014).

In all five of the studies that involved elementary school children as tutors, the interventionists' role was to introduce the activity and observe during the implementation (Fuchs et al., 2002; Davenport, Arnold & Lassmann, 2004; Plumer &Stoner, 2005; Jones,2007; Klavina et al., 2014). Interventionists involved within the activities, requiring him/her to give prompts and praises were demonstrated in two of the studies that involved preschool children as tutors (Garfinkle & Schwartz, 2002; Stanton-Chapman, & Snell, 2011). The third study that involved preschool children as tutors, gave two instructional approaches for the interventionists. One was the Elementary intervention (EL), which limited the role of the interventionists to instructing the activity at first, and then observing and asking questions when needed. The other was the Direct Language (DL) intervention, according to which the interventionists were the ones to coordinate the whole activity from the beginning to the end (Mills et al., 2014).

2.4.3 After Implementing the Interventions

After implementing the strategies involving peer mediated learning, one of the studies involved follow up sessions as generalization-maintenance setting, in order to determine what changes the strategies had brought to the children (Garfinkle & Schwartz, 2002). Another study involved generalization observations on children's behaviors (Stanton-Chapman, & Snell, 2011).

2.5 Effects of strategies of interventions involving peer mediated learning on the children

Six studies conducted observations in order to find out about the effects of the peer mediated learning strategies, either direct (Plumer & Stoner, 2005; Garfinkle & Schwartz, 2002; Fuchs et al., 2002) or videotaped (Stanton-Chapman & Snell, 2011; Klavina et al., 2014; Mills et al., 2014). Three studies considered the students' opinion (Plumer & Stoner, 2005; Jones, 2007; Klavina et al., 2014), five the teachers opinion (Stanton-Chapman & Snell, 2011; Garfinkle & Schwartz, 2002; Fuchs et al., 2002; Jones, 2007; Klavina et al., 2014) and one the parents' opinion (Jones, 2007) on the effects of the strategies. One study conducted tests before and after the implementation of the interventions (Davenport et al., 2004).

2.6 Peer Assisted Learning Strategy for English

2.6.1 PALS for Enhancing Reading Fluency

Fuchs et al. (1997) examined the effects of PALS on reading fluency and reading comprehension of second- to sixth-grade students whose average age was ten. An initial sample of 22 schools from a southern state was stratified on reading scores and the percentage of students who qualified for free or reduced-price meals, and then randomly assigned (within strata) to either PALS or comparison conditions. After randomization of schools, teachers who had one or more students with learning disabilities in their reading class were recruited to participate in the study. The recruitment efforts yielded a sample of 40 teachers (20 PALS and 20 comparisons) from 12 of the 22 schools. Each of the 40 teachers then was asked to identify three students to participate in the study: one low performing student with a learning disability (identified in accordance with state regulations), one low-performing student who did not have a learning disability, and one average-performing student. This resulted in a total study sample of 120 students. While schools were randomly assigned to PALS and comparison groups, this study was Table 2. Scope of reviewed research Grades 2, 3, 4, 5, 6 Delivery method Small group Program type Supplement Studies reviewed 46 Meets WWC standards without reservations 2 studies Meets WWC standards with reservations 1 study Peer-Assisted Learning Strategies June 2012 Page 4 WWC Intervention Report reviewed as a quasi-experimental design because teachers knew their treatment condition when they selected student participants. In addition, teachers were only recruited after random assignment (although teachers were not told their condition during recruitment), and 10 of the schools that were randomized had no eligible teachers. The remaining 12 schools participated throughout the study and included 40 teachers and 40 students with learning disabilities.

Lynn (1999), examined the effects of Peer-Assisted Learning Strategies (PALS) on Students' Literacy Development and Beliefs About Reading, when PALS is implemented with secondary-level students in remedial and special education classes. Teachers were assigned to PALS (n=9 classes) and contrast (n=9 classes) treatments. Teachers implemented PALS with their entire classes five times every 2 weeks, for 16 weeks. To designate research participants for outcome measurement, teachers identified all students

whose reading instructional levels were Grades 2 through 6. Reading comprehension and fluency were measured before and after treatment; beliefs were indexed after treatment. Analyses of variance indicated that, compared to contrast counterparts, PALS students grew more on reading comprehension and reported more positive beliefs about working hard to improve reading. However, PALS and contrast students grew comparably on reading fluency and reported similar beliefs about being and wanting to become better readers. Implications are discussed for developing effective forms of peer-mediated instruction for use in high school remedial and special education classes.

2.7 PALS for Enhancing Reading Comprehension

Nurkhairiyah (2017), conducted a study on the classroom action research was done to explain to what extent the application of Peer-Assisted Learning Strategy (PALS) to improve the students' reading comprehension and what factors influence the improvement. The research consisted of two cycles with four meetings for each cycle. All of the students had roles as tutor and tutee. Then, the researcher was helped by a collaborator to observe and give advice about the teaching and learning activities in the class. The research findings showed that the application of PALS improved the students' reading comprehension. The improvement was also influenced by some factors, such as: (1) The students' willingness to do all of the procedures in PALS. (2) The tutoring activities in the class. (3) The teacher's roles. In conclusion, the application of PALS better improved the students' reading comprehension in English at grade XI. C of MA Pondok Pesantren Daarun Nahdhah Thawalib Bangkinang.

Zarei. A. A. et al. (2019) research on The Effect of Models of Reading Instruction on Reading Comprehension, Reading Self-efficacy, and Reading Anxiety. This study compared the effect of four reading models on reading comprehension, foreign language reading anxiety (FLRA), and reading self-efficacy. In order to do so, 184 female Iranian senior high school EFL students at intermediate English reading level were selected through convenience sampling in three high schools and one language institute in Zanjan. The participants were in four intact groups. Each group was randomly assigned to one of the treatment conditions-'Direct Activities Related to Texts' (DARTs), Peer-Assisted Learning Strategies (PALS), 'Read, Ask, and Put into your own words' (RAP), and 'Title,

Headings, Introduction, Each first sentence, Visuals, End of each part, Summary' (THIEVES) models. These models were taught for eight sessions. Data were collected using the reading comprehension part of the Michigan Test of English Language Proficiency (MTELP), Foreign Language Reading Anxiety Scale (FLRAS), and Reading Self Efficacy Questionnaire (RSEQ). The collected data were analyzed using three one-way ANCOVA procedures. The results showed that the four models did not significantly differ in terms of their effect on foreign language reading anxiety and reading self-efficacy. However, there was a significant difference between the effect of THIEVES and RAP on reading comprehension in favor of RAP. Besides, only RAP and PALS improved reading self-efficacy. Moreover, DARTs, THIEVES, and RAP improved reading comprehension and decreased reading anxiety, whereas PALS increased reading anxiety and negatively affected reading comprehension. The theoretical and pedagogical implications of the findings are also discussed.

Improving Students' Reading Comprehension by Using Peer Assisted Learning Strategies(PALS) in EFL Contexts, was conducted by Sulistami, P., Pahamzah, J. Baratayaomi, W., Syafriza, S (2018), the study aimed to describing the process of teaching reading comprehension and identifying whether Peer Assisted Learning Strategies (PALS) can improve students' reading comprehension at the tenth grade of SMA Negeri 6 Kota Serang. The subject of this research was 30 students in Class X IPS 2. While doing Classroom Action Research (CAR), the researcher was helped by the English teacher as collaborator to observing the research and to know the process of teaching reading comprehension through PALS. The significant improvement of reading comprehension showed from result of pre-test and post-test. The Minimal Mastery Criteria (MMC) score in SMAN 6 Kota Serang in English subject was 75. In the pre-test the average score of students' was 45.6 and there were only 2 students (6.7%) who passed MMC. In the post-test of cycle I, the average score of students' was 69.57 with 12 students (40%) who passed the KKM. The average score of students' post-test II was 83.3 and there were 26 Students (86.6%) who passed MMC. It is concluded that the student's reading comprehension was improved and the students were able to comprehend the text through PALS.

2.8 PALS for English Language Learners

Laura (2013), assessed the effects of Peer-Assisted Learning Strategies (PALS), a reciprocal class wide peer-tutoring strategy, on the reading performance of native Spanish-speaking students with learning disabilities (LD) and their low-, average-, and high-achieving classroom peers. Participants were 132 native 34 Spanish-speaking English language learners (ELL) in Grades 3 through 6, along with their 12 reading teachers. Teachers were assigned randomly to PALS and contrast groups. PALS sessions were conducted 3 times a week for 15 weeks. Students were tested before and after treatment. PALS students outgrew contrast students on reading comprehension, and those effects were not mediated by student type.

Saenz et al. (2005) examined the effects of *PALS* on the reading fluency and reading comprehension of third- to sixth-grade students in 12 English language learner (ELL) classrooms in one south Texas school district. To participate in the study, a classroom had to have an all-ELL student population with at least two students with a learning disability. The study design was a randomized controlled trial in which 12 classrooms were stratified on grade level and school. Each of the 12 teachers was then asked to identify 11 students to participate in the study: two low-achieving students with a learning disability (identified in accordance with state regulations), three low-achieving students who did not have a learning disability, three average-achieving students, and three high-achieving students. After students were identified, the classrooms were randomly assigned to either *PALS* or comparison conditions (six per group). This WWC review was based on an analysis of a subset of 20 students with learning disabilities (10 *PALS* students and 10 comparison students). Comparison group teachers conducted reading instruction using their normal approach (business-as-usual). Outcome measures were administered before and after the intervention.

Michelle Watson (2015) investigated on The Effectiveness of Peer-Assisted Learning Strategies for Teaching English Reading Skills to Hispanic English Language Learners. The PALS program was designed as an alternative approach to teacher-led instruction to help ameliorate reading difficulties, and although its effectiveness has been demonstrated with a variety of students, little research has been conducted on its effectiveness for teaching reading to Hispanic ELL students, especially in the early grades.

The sample of study were 95 participating students; 50 in the PALS condition and 45 in the control condition. This study assessed PALS' effectiveness for teaching English reading skills as well as increasing social status for third grade ELL students. Results showed that PALS was significantly effective for increasing reading fluency amongst ELL students, although no significant results were found for reading comprehension or social status. These findings are inconsistent with existing research and the implications and limitations are discussed.

2. 9 Peer Assisted Learning Strategy for Mathematics

Fuchs, et. al. (2016), examined the effects of Class Wide Peer-Assisted Learning Strategies (PALS) in Mathematics Incorporating the Use of Curriculum Based Measurement on the Acquisition and Transfer Learning of Low- and Average Achieving 2nd–4th Graders, and those with an identified learning disability. Students were randomly assigned to treatments with and without PALS on a mathematics operations curriculum and pretested and post tested for mathematics operations and concepts/applications. ANOVA indicated superior mathematics growth for Students in the 37 PALS condition. Patterns in the data, however, suggested the need for additional research on low-achieving and learning disabled transfer from the operations tutoring content to the broader mathematics curriculum and on the effects of PALS on conceptual and applications portions of the mathematics curriculum.

Catherine (2015), conducted a meta-analysis to summarize the effectiveness of peer-mediated interventions on the mathematics performance of both students with disabilities and those at risk for mathematics disabilities. Meta-analytic techniques were used to calculate mean effect sizes for 17 studies that met inclusion criteria. Results indicate that peer-mediated interventions in mathematics are moderately effective for improving students' mathematics performance. Also, findings are strongest for students at risk for mathematics disabilities, elementary-aged participants, and mathematics computation content. Recommendations for future research and practical implications are discussed.

Borders, E. (2019) conducted study on Peer-Assisted Learning Strategies (PALS) in Mathematics: Application To A Small Group Setting. This study aimed to contribute to the existing research on Peer Assisted Learning Strategies (PALS) as a mathematics intervention by applying the program as a small group intervention with sixth-grade students in a general education mathematics classroom. PALS mathematics was hypothesized to result in individual student improvement on targeted math skills. The case study included pre- and post-test data of individual student progress for six male students on targeted mathematics skills. Error analyses were conducted to represent the percentage of problems answered correctly, incorrectly, or skipped for each targeted mathematics skill. Results of the study had mixed implications. Two out of six students had steady improvement in targeted mathematics skills and all six students had relative increases in the percentage of problems answered correctly for multiplication with two-digit by two- or three digit numbers (e.g., 150 x 25, 45 x 25). The study concluded limited results for the effectiveness of PALS math as a small group intervention. Implications of the results are insufficient due to the several study limitations.

Kelly Ann Hugger, M.S. (2014) reported that Evaluating The Effects Of Peer-Assisted Learning Strategies (PALS) In Mathematics Plus An Anxiety Treatment On Achievement And Anxiety Of Third Grade Students. The purpose of this study was to examine the effects of an adaptation of Peer-Assisted Learning Strategies (PALS) in mathematics on achievement and anxiety of third grade students. Four intact classrooms were randomly assigned to experimental or control condition groups. Experimental teachers implemented one of three interventions: PALS, a relaxation technique (RT), or PALS+RT twice weekly for 12 weeks. Tools administered Outcome measures included AIMSweb's curriculum based measure for math computation (MCOMP) and the Revised Children's Manifest Anxiety Scale, Second Edition (RCMAS-2). Within the classrooms, baseline, pre-test, and post-test data were collected on 79 students. The study revealed not statistically significant results. Results indicated that students in the PALS+RT group made the greatest gains in math achievement and students in the RT group had the greatest reduction in anxiety. The results suggest that PALS can be adapted to include a brief

relaxation technique and that relaxation techniques may be beneficial in reducing student anxiety symptoms.

Fantuzzo, Davis, & Ginsburg (1995) examined the effects of reciprocal-peer tutoring and parental involvement on self-concept in mathematics achievement of fourth- and fifth-grade students. The results showed that students who were in the peer tutoring plus parental involvement conditions perceived themselves more socially confident, were more accurate on math CBMs, and had significantly higher scores on standardized math computation measures as compared to students in the parental involvement only condition.

2.10 Peer Assisted Learning Strategy for Science

Pat Romano Joan Walker (2010), conducted study on Peer tutoring (PALS) is an instructional strategy where peers act as "Instructional Agents" for fellow students. In this study, 10 high school biology students participated in a ten day peer tutoring intervention to determine whether peer tutoring would 1) facilitate student academic success, 2) enhance student focus as well as engagement in biology class, and 3) favorably affect students' behavior in class leading to fewer off- task behavioral problems. Baseline data included scores on academic tasks, student surveys, student reflection journal entries, teacher observation field notes, and behavior checklists. Similar data types were collected for ten days after peer-tutoring was initiated. Student scores on most academic tasks were higher after peer tutoring, with the exception of scores on the unit assessment. More students completed homework after peer-tutoring. After peer-tutoring, off-task behavior in class was reduced. Most students "agreed strongly" that working with peers led to greater understanding, better focus on - task, and more enjoyment in studying biology.

Wangmo U, et al., (2019) researched on A study of effectiveness of peer assisted learning strategy (PALS) as remedial program in 7th grade Science. The purpose of the paper is to determine the effectiveness of PALS as a remedial program in 7th grade Science. Quasi Experimental method the data was collected by pre test/post-test exam (the post-test questions was different with the pre test questions, but same in the content) and for both the experiment and control group. Further to validate their learning satisfaction, students were asked to answer survey questionnaires. The sample size was 78 and selected sample has 7A (n-30) is randomly selected as experiment group (where PALS will be

administered) and 7B (n-28) as control group (No-PALS). This study indicated they learnt not only about subject matters but also grew more confident in their ability to retain the knowledge gained from PALS.

K. Lea Priestley,(2020) conducted a study on Exploring the Influence of peer-Assisted Learning Strategies (PALS) in increasing Reading Comprehension of Grade-Level Biology Text and Biology Self-Efficacy in Students with Learning Disabilities : A Formative Experiment. The study used a formative design experiment framework which does not answer a research question but addresses a pedagogical goal. The goal of this study was to determine the influence of Peer-Assisted Learning Strategies (PALS) on the reading comprehension of grade-level biology text and biology self-efficacy with students diagnosed with learning disabilities. As a result of this intervention, it was expected that students would better understand biology text and feel better about themselves as a biology student. Students were separated into pairs, or dyads, with each pair having a stronger reader and a weaker reader. These dyads participated in a series of three structured learning activities: Partner Reading, Paragraph Shrinking and Prediction Relay. Biology self-efficacy assessments and researcher-developed reading comprehensive assessments were administered both pre-and post-intervention and after each biology unit. Student notebooks, the researcher notebook, teacher interviews, and focus student interviews were used to gather qualitative data throughout the study. The results suggested that the PALS intervention can have positive effects on the reading comprehension of grade-level biology text and biology self-efficacy for students with learning disabilities.

2.11 Effect of Peer Mediated Learning Strategies on Engagement of the Children

Effects on the engagement of the children were found in three studies. One of the three studies mentions that the social communication intervention that was implemented in preschool resulted to increased engagement on peer play. The researchers supported that a student in order to be engaged he/she has to take part in an activity and actively interact with the materials and people around him/her, in a way appropriate for the situation (Stanton-Chapman, & Snell, 2011).

In the second study, during the interventions and throughout the follow ups, refers to increased non-social engagement of preschool children with special needs above baseline levels. With the term non-social engagement, attending to and interacting in an

appropriate for their age way with materials of their environment is implied (Garfinkle & Schwartz, 2002).

The last study, mentions increased levels of engagement for children with special needs in elementary school. This study, though, does not specify what engagement is considered to be (Fuchs et al., 2002).

2.12 Effect of Peer Mediated Learning Strategies on Learning and Cognitive Outcomes of the Children.

As far as the positive learning outcomes are concerned, three out of the eight studies refer to them. One of them was about mathematical achievement among elementary school students, during which also frequent and correct feedback from the typically developing children was also promoted (Fuchs et al., 2002).

The second study involved both elementary and preschool students; positive learning outcomes were measured for the reading achievement of the elementary school students. Also positive effects were measured on the attitudes of the preschool students towards reading (Davenport et al., 2004). The third study supported that when teacher involvement was more increased and teachers were more active in decision making, then the word complexity the children used during the teacher directed activity was higher, but had non-significant difference for free play time (Mills et al., 2014).

2.13 Effect of Peer Mediated Learning Strategies on Social Outcomes of the Children.

Six out of the eight studies referred to the social outcomes that the peer mediated learning strategies had on the children. Even though, one study referred to non-generalizable results on social setting behaviors, when the researchers used class wide peer tutoring, positive effects occurred on social setting behaviors, when the class wide peer tutoring was combined with one on one peer coaching during literacy activities (Plumer & Stoner, 2005).Four out of these studies refer to a generally more positive class climate, as the interactions between peers were more positive (Stanton-Chapman & Snell, 2011) and the proximity of children with special needs to their typically developing children and they were more aware of each other within the whole school environment (Garfinkle &

Schwartz, 2002). Moreover, the friendship feelings were strengthened and the peer perception was more positive (Klavina et al., 2014). The typically developing children became not only more accepting and understanding, but also more proud, confident, responsible, helpful and patient towards their peers with special needs (Jones, 2007). The articles referred to more positive outcomes on language development, after the use of peer mediated learning strategies.

Two studies mentioned the positive effect on turn taking skills and patience, in conversations or during play time (Garfinkle & Schwartz, 2002; Stanton-Chapman & Snell, 2011) and increased successful reciprocal conversations (Stanton-Chapman & Snell, 2011) and peer play (Garfinkle & Schwartz, 2002). One of the studies mentioned that teacher structured activities with not extended teacher involvement (the teacher gets involved only for safety reasons), increased the utterances between the children (Mills et al., 2014).

2.14 Peer Assisted Learning Strategies for Students with Different Learning Styles

Laura M. Sáenz, et al. (2007) studied on Peer-Assisted Learning Strategies in Reading for Students with Different Learning Needs. This study provides an overview of the class wide peer-tutoring strategy known as Peer-Assisted Learning Strategies (PALS) for reading. Specific activities and research supporting PALS for Kindergarten, First Grade, Grades 2 to 6, and High School are described. Then, research addressing the characteristics of students who have not responded to PALS, as well as approaches to identification and further intervention for PALS non responders, is summarized. Current efforts to examine PALS when taken "to scale" are briefly described followed by ways to obtain PALS materials and training.

Doughlas, et al. (2017), conducted the study to determine the effectiveness of a class wide peer tutoring program in reading for three learner types: low achievers with and without disabilities and average achievers. Twelve schools, stratified on student achievement and family income, were assigned randomly to experimental and control groups. Twenty teachers implemented the peer tutoring program for 15 weeks; 20 did not implement it. In each of the 40 classrooms, data were collected systematically on three students representing the three learner types. Pre- and post-treatment reading achievement

data were collected on three measures 33 of the Comprehensive Reading Assessment Battery. Findings indicated that, irrespective of type of measure and type of learner, students in peer tutoring classrooms demonstrated greater reading progress. Implications for policymaking are discussed.

2.15 PALS for Social Interaction & Self Concept

Ginsburg-Block, Rohrbeck, and Fantuzzo (2006) conducted a meta-analysis of 36 studies and found small to moderate size effects across social, self-concept, and behavior effects with peer-assisted learning-type interventions. The study suggested that peer-learning models that focus on academics can also improve social and self-concept concurrently. The benefits of peer-tutoring were examined through a meta-analysis of single-case research (Bowman-Perrott, Davis, Vannest, Williams, Greenwood, & Parker, 2013). The study examined 26 single-case studies with students in grades 1 through 12. A moderate to large size effect was found for academic improvement. The study demonstrated that peer tutoring is beneficial regardless of dosage, grade level, or disability. The study highlighted that among students with disabilities (LD and EBD), those with emotional or behavioral disorders benefited the most. While there is much research about self-concept and self-esteem, there have been no studies that looked into whether peer-tutoring models can concurrently reduce levels of anxiety in students.

Dion, Fuchs, and Fuchs (2005) examined the influence of PALS in reading on the quality of students' social relationships. Results showed modest positive effects and the largest effects were observed with students who were originally identified as unpopular before the intervention.

2.16 Peer Assisted Learning Strategies at Elementary School

PALS (Fuchs et al., 1997) in elementary schools studied on PALS were first implemented with students in second through sixth grade (Fuchs et al., 1997). In the PALS 2-6 program, training sessions with scripted lessons are used for teachers and students to learn the program (Fuchs Research Group, 2019). The program is implemented for three 35- minute sessions each week during the normal language arts period. Students are paired using a curriculum-based or standardized reading measure, pairing a more advanced

reader with a struggling reader. All reading materials chosen for the PALS (Fuchs et al., 1997) reading activities are at the level of the lower reader (Fuchs et al., 2001). The students are assigned to one of two teams and earn points for their performance, which are kept on score cards. The student who serves in the role of coach gives the points. Teachers reinforce positive behavior and performance by circulating through the classroom during the sessions. At the end of the week, the class applauds the winning team and second place team and every four weeks, the dyad pairs are changed as are the team assignments.

PALS 2-6 (Fuchs Research Group, 2019) include three activities: Partner Reading, Paragraph Shrinking, and Prediction Relay, with each activity having a set point value. The first activity, Partner Reading, allows the more proficient reader to read aloud for the first 2 minutes, and then the less proficient reader reads aloud from the same text for the next 2 minutes. If the student serving in the role of tutee makes a mistake while reading, the student serving in the tutor role has the partner re-read the sentence. At the end of this activity, the less proficient reader retells what happened in the text (Lee, 2014). The goal of this activity is to practice fluency and accuracy in the reading of text 38 (Lee, 2014; Simmons, et al., 1994). With the second PALS 2-6 (Fuchs et al., 1997) activity, Paragraph Shrinking, the more proficient reader starts reading the text and the less proficient reader requires the partner to answer questions like, "What or who is the paragraph mainly about?" or "What is the important thing about the what or who?" and asks the reader to tell the main idea of the passage in 10 words or less. This activity takes about 4 minutes, and the less proficient reader then reads another paragraph and tells the more proficient reader the main idea of the paragraph just read (Fuchs et al., 2017; Lee, 2014).

According to Fuchs et al. (2017) and Lee (2014), the purpose of this activity is to provide opportunities for students to monitor their comprehension while attempting to reduce textual information. The final PALS 2-6 (Fuchs et al., 1997) activity, Prediction Relay, allows students to make predictions about the next information presented in expository text or what happens next in narrative text. The more proficient reader makes a prediction first and then reads the next section or part of the story and tells the less proficient reader if the prediction was accurate or not. Then, the students switch roles for this activity. Results from studies conducted by Fuchs et al. (1997) and Kearns, Fuchs,

Fuchs, McMaster, & Sáenz (2015) showed students of teachers who implemented PALS (Fuchs et al., 1997) had larger gains in fluency and reading comprehension than students in non-PALS (Fuchs et al., 1997; Kearns et al., 2015) classrooms, as well as larger gains than the expected growth of typical students between third and sixth grade. The effectiveness of PALS (Fuchs et al., 1997) earned a "best practice" status by the U.S. Department of Education Program Effectiveness Panel (Fuchs et al., 2001). Due to the success of PALS 2-6 (Fuchs Research Group, 2019), the program was extended to include Kindergarten 39 PALS (Fuchs Research Group, 2019) and First-Grade PALS (Fuchs Research Group, 2019) programs.

2. 17 Peer Assisted Learning Strategies at Secondary School

PALS (Fuchs et al., 1997) in secondary schools studied in their meta-analysis of intervention studies, Wexler, Reed, Pyle, Mitchell and Barton (2015) cited multiple studies using peer-mediated interventions such as PALS (Fuchs et al., 1997) at the elementary level, a few at the middle school level, and even fewer studies published on the secondary level (Calhoon & Fuchs, 2003; Fuchs et al., 2001; Josephs & Jolivette, 2016). Given that reading problems continue past the elementary school years, evidence based interventions are also necessary for secondary students. In addition, Fuchs et al. (1999) found that the reading problems of secondary students may be exceptionally difficult to remediate when they looked at the effects of PALS (Fuchs et al., 1999) on high school students with serious reading problems.

Fuchs et al. (1999) focused on implementing PALS (Fuchs et al., 1997) in nine high school resource and remedial reading classes. A limitation of the Fuchs et al.'s (1999) study was that the students did not have a typically developing peer as a model, but a student that had LD like themselves, which might have been one reason for the moderate effect size ($p = .34$). The PALS (Fuchs et al., 1997) intervention was also not used every day, but only 2.5 times per week for 16 weeks. The Fuchs et al.'s (1999) study also incorporated a questionnaire about student's beliefs about their reading attitudes and working with other students. The authors also used their own measure of reading comprehension, which may or may not have yielded valid results since the instrument was validated on students in second through sixth grade, even though the reading level of the

chosen participants was in the same grades, their actual grade level was 9th through 12th grade. 40 As a result of Fuchs et al.'s (1999) study, the high school PALS curriculum (Fuchs et al., 2017) was published, and updated two years later (Fuchs Research Group, 2019).

PALS for High School Students (Fuchs Research Group, 2019) differ from the PALS 2-6 (Fuchs Research Group, 2019) version in four distinct ways. Instead of switching partners every four weeks, high school students participating in PALS (Fuchs Research Group, 2019) can change partners every day. This can help alleviate problems of increased absenteeism at the secondary level and can build tolerance in working with others. However, this was not feasible for the present study as the daily change resulted in too much confusion in the classroom and detracted from the validity of the study. Second, the motivation system for PALS for High School Students (Fuchs Research Group, 2019) is based on a work theme. The pairs can earn PALS dollars (Fuchs Research Group, 2019) that are deposited into checking accounts. With their earnings, the students can write checks to order items donated by local businesses from a PALS (Fuchs Research Group, 2019) catalog. Third, students who participate in PALS (Fuchs Research Group, 2019) at the high school level read more informational and expository text and not narrative text exclusively like PALS (Fuchs et al., 2017) for the younger grades. Finally, PALS for High School Students (Fuchs Research Group, 2019) can be implemented five times each week instead of the three 35-minute sessions weekly for PALS 2-6 (Fuchs Research Group, 2019).

2.18 PALS in Higher Education

A New Teaching Approach in Basic Sciences: Peer Assisted Learning was conducted by Abedini M. (2013), in Birjand University of Medical Sciences to examine and compare the effects of two educational methods: Peer Assisted Learning and lecture on medical students learning and retention scores. This semi-experimental study was conducted on medical basic pharmacology teaching for students who divided in PAL and lecture groups based on demographic features through a block randomized sampling method. Data compiled using a questionnaire consisting of: a) 15 demographic questions and b) 30 multiple choice questions [knowledge level (15 questions), comprehension level

(11 questions) and application level (4 questions)]. The teaching were carried out in eight sessions (1.5 hours each) for both groups who were attended the pre-test, immediate and also three mouths post-test without any prior notice. The student's learning and retention determined by subtracting of pre-test and immediate post-test scores, as well as immediate post-test and three months post-test scores after teaching, respectively. Paired t-test and t-test were used for assessing effectiveness of educational methods. The study demonstrates: a) both methods increase learning scores ($p<0.001$); b) PAL learning scores significantly are higher than lecture in overall and knowledge level ($p<0.02$) as well as comprehension and application levels ($p<0.001$); c) PAL retention marks are dramatically higher compared with lecture in overall ($P<0.00l$), comprehension and application levels ($P<0.02$); but not in knowledge level ($P>0.05$). These findings support the notion that PAL is more effective than lecture on student's learning and retention, specifically in comprehension and application levels. PAL could be an effective mean to encourage students and improve their knowledge and performance in basic sciences.

2.19 Peer Mediated Learning as an Inclusive Strategy

Some studies, mentioned measures of increased engagement as part of the effects of the peer mediated learning strategies. Falkmer et al. (2012) support the dimensions of "being there" and "being engaged" in participation. Peer mediated learning strategies may constitute steps towards the improvement of the participation of every child- with or without special need. Additionally, the promotion of positive social outcomes and school and class climate also associate with the idea of inclusion. Since this is another very important dimension of participation, this study suggests that peer mediated learning strategies may be introduced, as they promoted a positive context for children with special needs.

The environmental dimensions of participation- 5 A's can be used, in order to better understand how peer mediated learning strategies affect participation. Availability (Maxwell et al., 2012) is presented in terms of providing to children with special needs a peer to help them personally, and Accessibility (Maxwell et al., 2012) through providing resources in order to make him/her engaged.

Affordability (Maxwell et al., 2012) and Adaptability (Maxwell et al., 2012) are realized through the fact that the situation becomes easier to understand according to their own needs and to act in with the help of a peer, within their time and energy capacities. Acceptability (Maxwell et al., 2012) is presented in the form of promoting a more positive perception within the micro systems of peers towards special needs.

Peer mediated learning strategies support the environmental dimensions. This constitutes a step towards the participation of all children, regardless of any diversity, and thus a step towards the inclusion of more children within a quality education (UNESCO, 1994). Applying the findings of this research on Bronfenbrenner's (1997) model of the child ecology, peer mediated learning strategies affect directly the micro level.

Perceptions of peers towards special needs are more positively inclined, there are more successful reciprocal conversations and peer play, and friendship feelings are strengthened. Possibly all the levels can be indirectly affected some more and some less. The positive effects on the micro level can possibly affect the meso-systems, as the relations between the children and the school becomes better, which in turn affect the relations between the school micro system and the family micro system. The macro level is also affected as a general shift towards more understanding and inclusive ideologies is being built resulting in more inclusive laws and regulations, and consequently the exo-level also becomes more positively inclined towards inclusion. Effects on inclusion at all ecological levels are a goal of accepting and granting the rights of all children to education (United Nations, 1989; UNESCO, 1994; United Nations, 2006).

Ladd et al. (2009) explain peers and Motivation, in general, and assert that mostly cognitive and learning outcomes have been investigated. Based on results of the studies included in this study, it is obvious that in studies that include children with special needs the majority refer to social outcomes (six out of the eight studies), than those referring to cognitive and learning outcomes (three out of eight studies).

Peer-mediated teaching strategy that has benefited many beginning readers (Fuchs, Fuchs, Thompson, Al-Otaiba, Yen, Yang, & O'Connor, 2001) and has improved reading

comprehension skills is PALS. PALS is designed to help classroom teachers in Grades 2-6 accommodate the diverse instructional needs of children

Research has shown that PALS can have a positive impact on the beginning reading skills of many children (Rafdal et al., 2011).PALS is a scientifically based practice studied over the past 15 years. In these experimental studies 21 classrooms were assigned to PALS or No-PALS in classrooms that used the same curriculum. It was implemented 2 to 4 times per week during normal instructional time. Students were pre- and post-tested on well-known measures of reading to determine the amount of learning. Results showed that across four types of learners (students with learning disabilities, low-performing students without disabilities, average achievers, and high-achievers) reading achievement was significantly higher in PALS classrooms than No-PALS classrooms. As a result of this evidence, PALS was approved by the U.S. Department of Education's Effectiveness Panel for inclusion in the National Dissemination Network of effective educational practices for the use at the school, district, and state levels.

Research has shown that PALS can have a positive impact in the beginning reading skills of many children (Rafdal et al., 2011). Increases in reading fluency and comprehension in students with and without disabilities in grades K-5 was found. PALS significantly increased the reading comprehension skills of high school students with reading disabilities (Fuchs, Fuchs, & Kazdan, 1999). PALS demonstrate a positive effect on increasing reading comprehension for students in kindergarten to 12th grade for students with reading disabilities.

Fuchs, Fuchs, Thompson, Al-Otaiba, Yen, Yang, O'Connor (2002) investigated whether phonological awareness (PA) training combined with beginning decoding instruction and practice is a more effective approach for special-needs populations than PA training alone. They studied two beginning reading programs; phonological awareness and phonological awareness with K-PALS. Pre- and post-test data were collected on 25 children with disabilities. Results 23 showed that students with disabilities who participated in PA plus kindergarten PALS (K-PALS) performed higher than the other students in the PA group on letter-sound recognition, and scored higher than both the PA group and control group on word attack. When examining the individual students' data

other students with disabilities showed little or no gain on beginning reading skills. K-PALS may be effective for some, but not all students with disabilities.

Sáenz, Fuchs, and Fuchs (2005) evaluated the effects of PALS on the reading performance of native Spanish-speaking students with learning disabilities and their low-, average-, and high-achieving classroom peers. One hundred thirty-two native Spanish-speaking students participated in the study. In order to be included, each classroom had to have an ELL student population and at least two students identified as having a learning disability. All students in each class participated. PALS were conducted during regularly scheduled reading instruction three times per week for 35 minutes sessions for 15 weeks. A one between-subject and one within-subject ANOVA was conducted for each Comprehensive Reading Assessment 24 Battery (CRAB)-score to evaluate the comparability of students in the two treatment conditions prior to the implementation of PALS. Strong results on reading comprehension were obtained for pre- to post-treatment. The effect sizes favored the PALS condition exceeded one standard deviation on CRAB questions answered correctly. PALS activities promoted high achievers' development. This occurred even though they were paired with lower achieving students to practice those strategic reading behaviors. According to the Institute of Education Sciences (IES) of the U.S. Department of Education, "Scale-up evaluations determine whether or not an intervention is effective when it is implemented—across a variety of conditions—and provide an estimate of how robust the intervention is" (IES, 2010).

McMaster, Fuchs, Sáenz, Lemons, Kearns, Yen, Compton, and Fuchs (2010) examined the Effects of PALS in Student reading achievement across different student populations and types of schools. Three locations were selected: the original research site (Nashville, TN); a location with some history of using PALS (Minnesota); and a location that had very little or no history of using PALS (South Texas). After 18 weeks, K-PALS students outperformed controls on measures of phonemic awareness, regardless of site of level of support. The control students in this study were achieving at higher levels than control groups in earlier research (Stronger control). This may suggest that kindergarten reading instruction is generally stronger now than it was a decade ago which may be attributed to changes in kindergarten reading instruction that have occurred since the

release of the National Reading Panel report (NICHD, 2000). As a result, researchers need to find ways to strengthen PALS so that it can withstand these types of changes. In the second half of the study, teachers in grades 3-5 were randomly assigned to PALS or Control. All PALS teachers were told to implement "Top Down" PALS—use it exactly as 25 described. Teachers participated for two years. In the first year, teachers were randomly assigned to PALS or control. During the second year, teachers chose to implement either "Top Down" or "Bottom Up" PALS. Control teachers continued to serve as controls. The Bottom Up PALS teachers were asked to implement core elements of PALS that have strong research support. Results showed that Top Down and Bottom UP PALS students made reliably greater gains than controls. In addition, Bottom Up PALS students made reliably greater reading gains than Top Down PALS students. These results show that teachers should have some degree of flexibility and customizations of PALS to "fit" into their specific classroom needs.

Chan-Iannetta, George, Ferreira, and Volpe (2011) evaluated the effectiveness of PALS as an intervention for kindergarten students. The program, referred to as K-PALS, was adapted for kindergarten level instruction and was implemented in a total of six classrooms at two separate schools. Researchers found that students in the K-PALS program outperformed the control group in their ability to identify numbers correctly. Furthermore, while English Language Learning (ELL) students scored lower initial and final scores than their non-ELL peers, they made similar gains in the K-PALS condition compared to their non-ELL peers. The similar gains made by ELL and 14 non-ELL students suggests that the PALS intervention can be effective for ELL students. The study provides support for the implementation of PALS in mathematics; however, the support is limited to the kindergarten level. Also, the demographic breakdown of the students involved were largely Asian (61.4%) and Caucasian (29%) and included a moderate percentage of low-income families (58.6%).

2.20 Peer Assisted Learning Strategy for Students with Disabilities

Brooke H. Rafdal Kristen et.al (2011) conducted on study determined The Effectiveness of Kindergarten Peer-Assisted Learning Strategies (K-PALS) for Students with Disabilities. The researchers randomly assigned 89 kindergartners with individualized education programs (IEPs) from 47 classrooms to control (n = 9); K-PALS Level 1 (teachers received 1-day workshop; n = 19); or K-PALS Level 2 (teachers received workshop plus booster sessions; n = 19). Multivariate analysis of covariance on posttest measures of beginning reading skills indicated that K-PALS students outperformed controls on alphabetic and oral reading measures, but that no reliable between-group differences were attributable to level of support. The researchers also discuss directions for further research and implications for implementing classroom-based reading interventions for students with disabilities. Rafdal, McMaster, McConnell, Fuchs, and Fuchs (2011) conducted a large-scale multisite study to determine the effectiveness of K-PALS for students with disabilities. The researchers investigated 89 kindergartners with individualized education programs (IEPs) from 47 classrooms using a covariance on post-test measures. K-PALS was implemented four times per week for 18 weeks. Each session lasted 20-30 minutes. Results indicated that K-PALS was effective for increasing initial alphabetic principal and decoding skills for students with disabilities who were included in general education classrooms for classroom-based reading instruction. These results are consistent with previous findings, which have demonstrated K-PALS effectiveness for students in the general education population (Fuchs et al., 2001; Fuchs et al., 2008).

Calhoon and Fuchs (2003) examined the effectiveness of PALS mathematics with high school students that have disabilities. Ten self-contained special education classrooms were involved, varying in grade level from 9th to 12th, containing a total of 92 participating students. The participants were largely male and had an equal distribution of Black and White students. The majority of students were identified as having a Specific Learning Disability (78%) and the remaining disabilities identified were Intellectual Disabilities (14%) and Behavioral Disorder (4%). Half of the classrooms were randomly assigned to participate in PALS and the other half participated in the typical special education mathematics program. The study lasted for 15 weeks and the PALS sessions took place twice a week (30-minute sessions). Students in the PALS condition showed

significantly more improvement in computation math skills, however, there was not a significant difference in concepts or the application math skills (Calhoon & Fuchs, 2003). Researchers also administered satisfaction questionnaires at the end of the intervention to both the students and teachers involved. A majority of both teachers and students gave positive reviews for the PALS program and the use of progress monitoring with CBMs to increase motivation. Although the study was not in general education classes, results suggest that the program may be useful with older populations of children. Overall, PALS mathematics has received little attention at the secondary levels of education.

In 2003 Mary Beth Calhoon and Lynn S. Fuchs joined together and examined the effects of PALS and curriculum-based measurements (CBM) on mathematics performance of secondary students with disabilities (Calhoon & Fuchs, 2003). The study included 92 students split between ten classes. These students were in 9th through 12th grade. All of these students were receiving math instruction in a self-contained resource room and were below grade level. The classes were randomly assigned either PALS/CBM or the classroom math program. PALS was practiced twice a week and CMS was completed weekly for 15 weeks. The Math Operations Test-Revised, Math Concepts and Applications Test, and Tennessee Comprehensive Achievement Test were all used to determine the students' understanding of math skills at all levels.

Teachers and students were trained on how to properly use PALS and were provided with the tools to complete the tasks. In order to determine comparability of condition a one-way ANOVA was run on the three pretreatment mathematics test scores, but not significant difference was found. To determine the difference post treatment one-way ANOVAs were run PALS/CMB vs. control and a significant different was seen between the groups. Concepts/applications and TCAP skills showed that both groups increased while the PALS/CBM group did significantly better than the control group on computation scores. Overall growth was shown with both groups but in many cases the PALS/CBM groups showed a greater improvement on computation skills. Based on the results from the questionnaires the students and staff enjoyed PALS/CBM. The students felt it helped them improve their math skills and made them work harder in math. The teachers believed it was beneficial to the students and provided a lot more information when writing students IEPS and individualizing math instruction. While this study proved

that PALS/CBM can be beneficial for increasing 17 students computational skills it fell short on improving students development of concepts/application skills. When teaching math, many believe it is important to ensure that the basic computational skills are mastered prior to moving on to the concepts/application skills. Research has shown PALS can be beneficial to helping move this process along, especially for students with disabilities.

2.20.1 PALS for Children with Emotional or Behavioural Disorder

The Effects of Peer-Assisted Learning Strategies on the Beginning Reading Skills of Young Children with Emotional or Behavioral Disorders studied by Katherine B. Falk, Joseph H. Wehby(2001), results indicated that the peer tutoring phase of K-PALS led to increases in student scores on letter-sound correspondence and blending probes. Consistent with the literature on the efficacy of PALS with the LD population, these findings suggest that K-PALS is a promising approach in increasing the reading performance of students with E/BD who are at risk for reading failure.

2.20.2 PALS for Children with Reading Disabilities

Calhoon (2005) looked at the combined effects of the Linguistics Skills Training (LST) and PALS (Peer Assisted Learning Strategies) programs on the reading skill acquisition of middle school students with reading disabilities. Specifically, the researchers were interested in seeing if the combination of the peer mediated LST phonological skill and PALS comprehension programs result in significantly greater gains in reading comprehension, word recognition, and reading fluency scores rather than a whole-class remedial reading program. Thirty-eight special education students from two middle school participated in this study. Each student received language arts in a self-contained classroom and was reading at least three grade levels below their current grade placement based on pretest scores on the Woodcock-Johnson Test of Achievement (WJ-III; Schrank, McGrew, & Woodcock, 2001). Lessons for the LTS portion of the program occurred three times per week while PALS was implemented twice per week. In contrast, the treatment group received reading instruction using a widely implemented remedial reading program, Saxon Phonics Intervention three times per week. Results showed the LST/PALS program was found to be an effective method for increasing letter-word

identification, work attack, and passage comprehension in comparison to students in the contrast 26 group. These finding support other studies using PALS to teach reading comprehension skills to students with disabilities.

2.20.3 Peer Assisted Learning Strategy for Students with ASD

R. E. Regelski, et, al.(2016) investigated on the Effects of PALS on Reading Fluency and Reading Comprehension for Students with ASD. A single-subject multiple baseline design across participants was used for three students with ASD. Results from the current study demonstrated that students with ASD can improve reading comprehension and reading fluency when using PALS. More specifically, all three students increased their reading comprehension and two students increased their reading fluency.

Melissa L. Woodward (2014), studied on peer-assisted learning strategies and their impact on the math fluency and social skills of students with autism. The purpose of this study was to determine if peer-assisted learning strategies (PALS) could increase students with autism's math fluency skills as well as enhance their social skills. All students involved in the study began their math fluency at a basic addition subtraction level 1 on the Morningside Math Fluency program. Also at the beginning of the study the students completed a How I Feel toward others survey and it was determined that they were either indifferent toward others or disengaged. The eight students involved in the study were engaged in PALS a minimum of three times per week over a ten week time period. The independent variables were the use of PALS. The dependent variable was the measure of the student's math fluency skills and feelings toward others. The study showed that peer-assisted learning strategies could be an effective intervention to increase students with autisms' math fluency skills. It did however show no significant impact on enhancing these students' social skills. PALS provides explicit instruction to enhance student learning and allows them to work in small groups with students who share similar skills.

2.20.4 PALS for Children with Dyscalculia

A study to Compare the Effectiveness of Peer Assisted Learning Strategies Vs Numeracy Intervention Programme On Dyscalculia Among schooler in selected school, Madurai district, conducted by Priya, N (2018) The study was Conducted in selected

school at Madurai district. Factorial research design has been adapted the total sample Size selected for this was 60 students out of which 30 students from experimental Group I and 30 students from experimental Group II. Pretest was conducted on schooler in the schools by using questionnaires for dyscalculia to assess the Level of dyscalculia. The class teachers gave the list of students who were studying in 2nd and 3rd standard. Implemented the peer assisted learning strategies and Numeracy Intervention Programme for randomly selected 2nd and 3rd students with the duration of 30 minutes for 4 weeks. Post test was conducted for the subjects to assess the evaluation of numeracy intervention programme by using the Questionnaires for dyscalculia which was assessed by the researcher. Chi Square was calculated to analyze the association between post test scores of Dyscalculia among experimental group i and experimental group ii of schooler with their demographic variables. The results shows that, there were no significant Association between the post test scores of dyscalculia in experimental I and II and their selected demographic variables. From the findings of the study it can be concluded that, highest percentages with schooler were in the age group of 6- 7yrs, most of them were males, second child with good extracurricular activities and Regular attendance in the class for the groups. Peer assisted learning strategies and Numeracy intervention programme were highly effective on dyscalculia. There were No significant difference in effectiveness of peer assisted learning a strategies and Numeracy intervention programme on dyscalculia. There is no significant Association found between the post test scores of experimental group I and II when Compared to age, sex, birth order, extracurricular activities and attendance, ($p>0.05$)

2.21 Sustainability of PALS

In 2004 a study was published in which PALS was being used in math in an elementary school. The study was done with general education teachers on students with 15 and without disabilities. PALS were to be used twice a week and done as a class-wide intervention. This specific study not only looked at PALS impact on the students but the teachers perceptions of its utility and sustained use as well (Baker, Gersten, Dimino, & Griffiths, 2004). Often teachers will participate in research studies for interventions and once the study is completed the teachers will no longer use that intervention. This study specifically looks at whether or not teachers sustain the use of PALS even after the

original study is completed. It also looks at whether the teachers who were sustaining PALS use were doing so according to how they were originally trained or did they adapt it to fit their style. Through questionnaires and observations information was gathered to determine the sustained use and effectiveness. When the teachers were asked to report on their use of PALS all eight teachers reported that they use it regularly at least twice a week and have not made any modifications to their original training. Through observations and the gathering of data all eight teachers were found to have actually sustained use and for it to continue to have positive impact on their students. This study shows that when PALS is implemented on a consistent basis and is done correctly it can be successful in elementary math as well as elementary reading.