THE EFFECT OF CROSSWORD PUZZLE GAMES IN READING AND WRITING ABILITY TOWARD DYSLEXIA AND DYSGRAPHIA STUDENTS IN ELEMENTARY SCHOOL

THESIS

Submitted as Partial Fulfillment of the Requirements for the Sarjana Degree of English Department Faculty of Arts and Humanities State Islamic University of Sunan Ampel Surabaya



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ABSTRACT

Anggriawan, Ary. 2018. The Effect of Crossword Puzzle Games in Reading and Writing Ability toward Dyslexia and Dysgraphia Students in Elementary School. *Thesis*. English Department, Faculty of Arts and Humanities, State Islamic University of Sunan Ampel Surabaya.

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This study discusses some learning disabilities which always happen in the students. They are dyslexia and dysgraphia. This study aims to know the symptoms of dyslexia and dysgraphia among elementary school students, and the significant of crossword puzzle game applied to the students. The data is from second grade students in elementary school who are unable to read and write. There are three students who are indicated as dyslexic students, and four students who are indicated as dyslexic students, and four students. There are three instruments to this study. The first is test including pretest and posttest. The second is participant observation to explore the indication of dyslexic and dysgraphic students, and the third is interview. The technique of data analysis, the researcher used t-test to know the significant of crossword game applied to this study, and the transcript of interview to know the valuation of the students about crossword game.

By the end of this research, the researcher found eight indications of dyslexia among the students, they are addition, omission, inversion, reversal, substitution, reading slowly, easy to forget the letter, and unconfident. Then, three indications of dysgraphic students, they are bad handwriting, writing out of the line sheet, and writing slowly. The researcher also proves that crossword game is effective to help students with these disabilities. It is described from the improvement of the students score. It is supported by the result of t-test which Sig. tailed > Sig. level (α) displayed the number of Sig. tailed is 0.104, it means greater than 0.05. It can be concluded that Crossword Games gave significant difference to the students score. The students enjoy and feel fun while the crossword game puzzle is implemented to the learning process.

Key Terms : Dyslexia and Dysgraphia, Elementary School, Crossword Puzzle Game.

INTISARI

Anggriawan, Ary. 2018. The Effect of Crossword Puzzle Games in Reading and Writing Ability toward Dyslexia and Dysgraphia Students in Elementary School. *Thesis*. English Department, Faculty of Arts and Humanities, State Islamic University of Sunan Ampel Surabaya.

The Advisor: Prof. Dr. Hj. Zuliati Rohmah, M. PdKey Terms: Disleksia dan disgrafia, Sekolah Dasar, Teka-teki silang.

Penelitian ini membahas tentang beberapa ketidakmampuan dalam belajar yang sering terjadi pada siswa. Beberapa ketidakmampuan tersebut adalah disleksia dan disgrafia. Penelitian ini bertujuan untuk mengetahui gejala disleksia dan disgrafia pada siswa Sekolah Dasar serta pengaruh penerapan permainan teka-teki silang pada siswa. Data pada penelitian ini berasal dari siswa kelas dua di dua sekolah dasar yang tidak bisa membaca dan menulis. Terdapat tiga siswa yang ditengarai sebagai siswa disleksia, dan empat siswa yang ditengarai sebagai siswa disgrafia. Penelitian ini di desain sebagai studi eksperimental. Terdapat 3 instrumen pada penelitian ini. Pertama adalah tes yang meliputi pretes dan postes. Kedua adalah observasi partisipan untuk menemukan gejala dari siswa disleksia maupun disgrafia, dan yang ketiga adalah wawancara. Teknik analisa data, peneliti menggunakan t-test untuk mengetahui signifikansi permainan teka-teki silang yang diterapkan pada penelitian ini, dan transkrip wawancara untuk mengetahui pendapat siswa tentang permainan tersebut.

Pada akhir penelitian ini, peneliti menemukan delapan tanda-tanda siswa disleksia; penambahan huruf, penghilangan huruf, pembalikan huruf (dari kanan ke kiri), pembalikan huruf (dari bawah ke atas), penggantian huruf, membaca secara lambat, mudah melupakan huruf dan tidak percaya diri. Kemudian tiga indikasi siswa disgraphia; tulisan tangan yang buruk, menulis keluar dari garis yang telah di sediakan dan, menulis secara lambat. Peneliti juga membuktikan bahwa permainan teka-teki silang efektif untuk membantu siswa dengan ketidakmampuan ini. Hal ini ditunjukan dari peningkatan skor pada siswa. Hal ini juga didukung oleh hasil t-test yang menunjukan nilai Sig. tailed lebih besar dari nilai Sig. level (α) menampilkan jumlah Sig. tailed 0,104 yang berarti lebih besar dari 0,05. Dapat di simpulkan bahwa teka-teki silang memberikan perbedaan yang signifikan terhadap skor siswa. Para siswa menikmati dan merasa senang saat teka-teki permainan silang di terapkan dalam proses pembelajaran.

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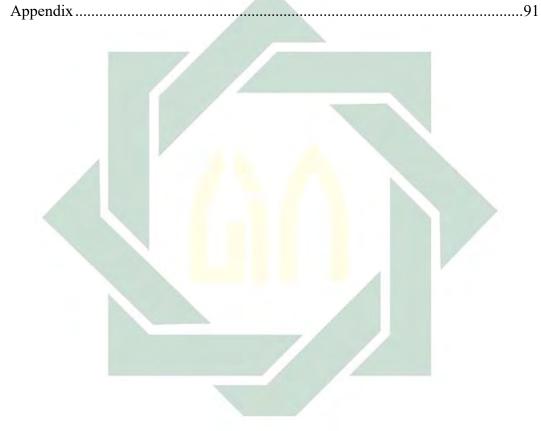
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CHAPTER 1

INTRODUCTION

In this chapter, the researcher explains the background of the study which contains the previous studies, the reason why the researcher chooses this topic and the statement of the problem. And research problems, research objectives, significant of the study, scope and limitations and the key of terms.

1.1 Background of Study

A learning disability is not an illness or a disease. The term of learning disability describes delays in learning development. It is known as developmental delay or special needs. Usually, it occurs in children. This problem may emerge in their school or their daily activity. Children who get this problem will be difficult to concentrate, memorize, and calculate. It will impede the children learning and growth. Thus, children will also get problems in reading (dyslexia), writing (dysgraphia), and calculating (dyscalculia). These problems do not come from audio visual catching but it is more specific about brain processing input (Shaywitz, 2003).

Linda Siegel (2003) argues that children with learning disability do not show their emotional interruption, they get the difficulty in study, for instance reading and counting. National survey found that 8 % from children in US get learning disability (Bloom and Day, 2006). They reported that the number of son is greater than daughter in learning disability. The children with learning disability have bad achievement; they cannot catch what the teacher was said and commanded (Berninger, 2006). It means that the students cannot understand well course at school.

Learning disability is the field of psycholinguistic. Psycholinguistic or psychology of language is the study of the psychological and neurobiological factors that enable humans to acquire, use, and understand language (Charles and Thomas, 2006). Learning disability has correlation with psycholinguistic because it relates to how children acquire the new words then practice in other case. There are psycholinguistic that works have been focused to the learning of language by children and on speech processing and comprehension by both children and adults. Traditional areas of research include language production, language comprehension, language acquisition, language disorders, language and thought, and neuro-cognition (Steinberg and Sciarini, 2006).

Learning disability is the problem among language acquisition, language comprehension, then it influences toward the language production. Language acquisition relates to the language process in the brain while people received the new knowledge. In this case, not all people could receive the new thing they got as well. Language scientists used two chief methods to investigate the relationship between language-processing ability and the brain (Traxler, 2012). They discussed the main way to investigate brain–language relationships and what happens to language processing abilities when the brain is damaged or disabled.

Some people with learning disability may have the trouble in their hemisphere especially in the left hemisphere. The study hemispheric function has taught us that the left hemisphere plays a dominant role in speech and language comprehension (Rasmussen & Milner, 1977). Anesthetizing the left hemisphere causes them to become mute, and they also have trouble understanding language. Whereas in learning process, people need to understand the language first, if they could not understand well the language, how they can understand the course. In conclusion, people with learning disability may get the trouble in their brain especially in left hemisphere.

These facts inspire the researcher to add the psycholinguistic work. It is about the learning disability especially in children. The learning disabilities are reading problem called dyslexia, and writing problem called dysgraphia. Badian (1996) states that the specific learning disabilities, such dysgraphia and dyslexia, it usually happens in 8 years old of children. It is appropriate with Indonesian Education and Culture Department reported in 1997, there are 4 provinces, such West Java, East Java, Lampung, and West Kalimantan showed that approximately 10% children get difficulty in writing, 9% in reading, and more than 8% get learning difficultness. Besides that, 22% children with these disabilities have high intelligence, 25% is middle, and 52% is low.

Dyslexia, the word dyslexia is made up from two different mean, *dys* meaning absence, and *lexia* meaning language. The Greek origin combines 'dys' & 'lexia' which mean an absence of language (Laurence, 2009). Dyslexia is one of language disability that impede in reading, writing and spelling (Hammond and Hughes, 1993). Drake (1989) states the dyslexia students are difficult to read the alphabet either in board or book. They also have problems in hearing and visual

monitoring. It becomes the problem for words using, student with dyslexia will impede studying at school (Bolhasan, 2009).

Dysgraphia is the learning difficulty of expressing idea in writing (Hammil, 2004). Actually, the term of dysgraphia itself is bad hand writing. Children with this disability may write very slowly, the written work is poor, so the readers cannot understand what dysgraphia children has written. Sometimes, they cannot write orthography because they cannot combine sound and letters while writing. Children with dysgraphia will be difficult to spell. Related to dyslexia which is about reading disability, dysgraphia is the common problem of children learning process.

There are some researchers who have discussed about dyslexia: Rohaty and Shafie, (2005); Munawaroh and anggrayni, (2010); Ningsih and Kusumarini (2011); Varia and Nurul (2013). The researcher found one discussion about dysgraphia; they are by Febriana and Yuliati (2015). They did not discuss both dyslexia and dysgraphia in a research. They explained the dyslexia and dysgraphia separately. The researcher of this research has combined dyslexia and dysgraphia discussion in a research. Most of the previous studies had collected data from the students in elementary school. So, in this research, the data were taken from elementary school students.

An analysis of dyslexia symptoms has been done by Rohaty and Shafie (2014). They identified the dyslexic symptoms among forty selected Pre-schooler students in Negeri Sembilan kindergartens. Their study aimed to identify hundreds selected students who got quite risk of dyslexia in Pre-schoolers, it was classified into gender. Rohaty and Shafie used the Dyslexia Early Screening Test (DETS) to analyze the students which consisted of rhyme detection, memory recall, fine motor skills, sense perception and posture stability. The data was analyzed descriptively using percentages. After all test had been taken by them, there were 3 subtests that showed low scores were letter naming, rhyme detection, and phonological discrimination. The previous research is almost similar with the present study, both of them used test to identify the students who got dyslexia symptoms but in the present study, the researcher only used test to determine the students. By this research, the researcher does not only identify but also give treatment like some additional course. It is different with previous research which only pure identify the dyslexia student and report as percentages data.

Munawaroh and Anggrayni (2010) also discussed about the symptom of dyslexia in early age children. They stated that a lot of students get difficulty in reading while taking course. They explained that Indonesia education was lower than other country especially in elementary school. Their research focused on the psychology factor of dyslexia students collected some fact about it. So, they did not observe directly the children. They concluded some symptoms of dyslexia children such premature, physical disorder, low to understand command, and often absence in course.

The previous study done by Ningsih and Kusumarini (2011) discussed about the difficulty of dyslexic children in recording and writing word visually. The data were taken from 5 students attain the age between 6-8 years old. They applied experimental study used (two-store) memory storage by Richard Atinkson as research model. They proved that visual study is able to improve short-term memory system in children. The technique of doing treatment, the children asked to see the words and sentence in a monitor in 60 second, and they had to write in the paper the words seen by them. This previous study does not mention how they collected the data. Ningsih and Kusumarini only gave treatment to the observed students; there was no ongoing treatment afterward.

Another previous study has been done by Varia and Nurul (2013) who examined the significant of scrabble games to increase reading ability in dyslexic students. They applied single-case-experimental with A-B-A designed by Swoboda. They applied visual Conservative Dual Criterion to process the data to know the alteration of the students after Scrabble gave. They took the data from Madrasah Ibtida'iyah students. The result is positive. Scrabble games can increase the reading ability in the children.

The scrabble game from Varia and Nurul (2013) was only for dyslexic student. In this current study, the researcher applied crossword game to help dyslexic and also dysgraphic students. The study from Varia and Nurul (2013) was designed as a single case experimental study; it means that their researcher only focused on one group. This current researcher focused on 2 groups, they were experimental group and control group. The researcher used t-test and supported by SPSS program to analyze the data. It used to analyze the data and examined the significant of crossword game to increase reading and writing ability to the students.

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The dysgraphia discussion has been done by Febriana and Yuliati (2015) who presented the observation of grade six student in elementary school of Wedi in Sidoarjo. They found a student who had difficulty in finding word, developing word, arranging words into a sentence, and arranging word into paragraph. The data collection technique used was observation and documentation. The techniques of data analysis used were visual analysis inside condition and visual analysis among condition. They used scientific approach to the students. They conclude that scientific approach gave effect to the writing description in dysgraphia students.

The previous studies above show that dysgraphia and dyslexia are related each other. Dyslexia refers to the reading, spelling, memorizing problem whereas dysgraphia refers to the writing problem, how children difficult to express their idea into written. These are parts of learning disability. Hence, the researcher has opinion that dyslexia and dysgraphia are close enough. If parents or teacher ignore these problems, it will give bad impact in the development of children learning.

Based on the facts above, it is very interesting for the researcher to focus on these learning disability topics such reading (dyslexia) and writing (dysgraphia). First, dyslexia and dysgraphia are related to language comprehension, language production which process in though (Steinberg and Sciarini. 2006). It related to language disability in learning, it is also the field of Psycholinguistic. Second, the researcher wants the students with learning disability are able to back as normal student who are easy to understand course at school. Third, the researcher initiates to help children increasing their reading and writing skill especially in students who get dyslexia and dysgraphia.

The researcher applied the *Crossword* game as an instrument; it is different from Varia and Nurul (2013) which applied *scrabble* game to increase reading ability. The researcher also applied the experiment studies with 2 groups. The researcher was taken the data from 2 elementary school, they were experimental group (EG), and control group (CG). It is because the critical age when children began to read, spell, and write are in elementary school (Sunaryo and Surtikanti, 2011). Then, the researcher tried to give treatment like additional course because the most of researchers just observed students without any teaching after. The researcher expects that the research can give meaningful and fresh idea especially for teacher to put some game into course to make students easier to understand.

1.2 Research Problems

- What are the indication of dyslexia and dysgraphia in the 2nd grade student in 3rd elementary school Tejo Mojoagung and Islamic elementary school Al-Khalifa Mojowarno?
- 2. Is there any significant difference between crossword game implementation with other way to increase reading and writing ability of dyslexia and dysgraphia student?
- 3. What is the students' opinion about activities using crossword game?

1.3. Research Objectives

- 1. To know the indication of dyslexia and dysgraphia in students so the teacher has already known how they treat the student with dyslexia and dysgraphia.
- 2. To know the significant of *crossword puzzle games* applied as additional course to dyslexia and dysgraphia students.
- To explain how teacher should treat toward children who has dyslexia and dysgraphia.
- To know the significant different between crossword game implementation with other way to increase reading and writing ability of dyslexia and dysgraphia student.

1.4 Significance of Study

The researcher expects that the research could give meaningful contribution to studies in linguistic field, especially about language disability which is a part in psycholinguistic. The result of this study is expected, all teacher and parent know the indication of learning disability such as dyslexia and dysgraphia in children especially in elementary school. The researcher also expects that the research can give the fact that every child is not same, some students may need special treatment in learning process. The researcher suggests to the teacher and parent, they have to teach the children wisely and more patiently, because children with dyslexia and dysgraphia need special treat to solve their learning disability.

1.5 Scope and Limitation

Regarding to the statement in the background of the study, the researcher focuses on learning disability in 2nd grade of elementary school. The researcher chose 2 schools, the first is *SDN TEJO 3 MOJOAGUNG* as experimental group, and the second is *SDIT AL-KHALIFA MOJOWARNO* as control group. These schools are chosen randomly. The researcher committed the diagnostic test and found that some students of these schools got learning disability such dyslexia and dysgraphia.

The researcher chose 2nd grade because Badian (1996) states that the specific learning disabilities, such dysgraphia and dyslexia usually happen in 8 years old of children. The researcher used an experimental study method. Solso & MacLin (2002) state that experimental study is a research; consist of at least one variable designed to be a basic course to find cause and effect. Therefore, experimental research examines a hypothesis to find an effect, relationship, or the difference alteration toward groups which get treatment. The researcher gave the different treatment to these schools. The first treatment for experiment group had held by the researcher with applied the crossword games whereas the second treatment for control group had held by the teacher with conventional teaching like calistung (baca tulis dan berhitung).

1.6 Definition of Key Terms

1. **Dyslexia**, one of language disability that occurs in reading, writing, speaking, and listening. It is usually occurring in student when they learn at school

- 2. **Dysgraphia**, a learning disability that affects an individual's facility with writing, the student with this problem cannot write like teacher's instruction.
- 3. **Dyslexic**, the one who get dyslexia.
- 4. Mojoagung, the sub-district of Jombang, Eash Java, Indonesia
- 5. **Crossword puzzle game** like the word game, the player is asked to guess what the correct answer related to number of Blank Square.



CHAPTER II

LITERATURE REVIEW

The content of this chapter provides an explanation of the theories that became the basis of this study.

2.1 Psycholinguistic

Linguistics was divided into two parts known as macro and micro linguistics (Crystal, 1990). Macro linguistics deals with the relation of the language with all the aspects beyond of the language itself. For example: social factors, psychology, anthropology, and neurology. Meanwhile, micro linguistics deals with the internal structure of language like the structure of phonology, morphology, syntax, and lexicon.

Psycholinguistics itself is included in macro linguistics. The word of Psycholinguistics is formed by two words mainly *psychology* and *linguistic*. Both of them are different but they have similarity that concern with language as the formal object. However, the objects of material between *psychology* and *linguistic* are different. Linguistics deals with the structure of language while Psychology concern with the process or behavior of the people in using language.

Psycholinguistic or psychology of language was the study of the psychological and neurobiological factors that enable humans to acquire, use, and understand language (Charles and Thomas, 2006). According to Napitupulu (1994) that psycholinguistics is the study of language acquisition and language behavior. The acquisition of language is closely concerned with the language learning, otherwise, language behavior relates to the process of competence and performance. The language acquisition is natural, unconscious process of language development in humans that occurs without instruction (Denham and Lobeck, 2013) whereas the language behavior is the output of the language acquisition. The language behavior shows the competence of people in producing language.

Stern (1983) argued that psycholinguistics deals directly with the process of encoding and decoding as they relate states of message to state communicators. This definition stressed on the process of encoding and understanding to the codes delivered between speaker and listener. It means the psycholinguistic relates to the people when understand the language of message from speaker.

All of the definition above, it can be concluded that psycholinguistic is concern with the process of brain when understand the language that used by people. It related to the language acquisition, language comprehension, and language production. The language acquisition, comprehension, and production are related each other. The acquisition of people while understand the language and comprehend the meaning will affect to the producing language. The one who has low skill to understand language will get the disability of producing language. It also affects to the learning language called language disability.

2.2 Language and Brain

Language scientists have already used two chief methods to investigate the relationship between language-processing ability and the brain. They were neurophysiological and brain-imaging methods like ERP, magnetoencephalography (MEG), and FMRI have provided important insights into

how different parts of the brain work together to support language production and comprehension.

The hemisphere is the part that took the important role to language production. The hemispheres maintain connection with one another through a bundle of fibers called the *corpus callosum*. There is a covering on each hemisphere, called the *cortex*, which is a furrowed outer layer of cell matter. It is the cortex that is concerned with higher brain functions in both humans and animals.

There are two hemispheres in our brain, left-hemisphere and righthemisphere. The left hemisphere is thought to control language, math and logic, while the right hemisphere is responsible for spatial abilities, visual imagery, music and your ability to recognize faces. The left hemisphere of our brain also controls the movement on the right side of our body.

The left hemisphere of the brain contains parts of the parietal lobe, temporal lobe and the occipital lobe, which make up our language control center. In these lobes, two regions known as the Wernicke area and the Broca's area allow us to understand and recognize, read and speak language patterns including the ability to learn foreign languages.

The recent evidence indicated that the left hemisphere is not only brain's part which involved in most language tasks but the right hemisphere too, it is involved in language processing (Beeman and Chiarello, 1998). They said that both hemispheres received similar input and both attempt to process input, for every language process the hemispheres compute information differently at each level of processing (e.g. semantic processing), so that each hemisphere is most adept at handling particular inputs and producing particular outputs'.

There is increasing evidence showed that the right hemisphere is critical for understanding discourse (Paradis, 2003). Patients with right-hemisphere damage have impairments concerning narrative script, interpretation, integration of information or conceptualization of the unit as a whole, construction of new conceptual models, and inferences about another person's beliefs and intentions (Stemmer and Joannett, 1998). The right hemisphere has an ability to use 'knowledge of the world', involved in scripting, where a number of sentences are related to a topic. Patients who have damage in their right hemisphere show structuring problems in story recall (Moya, 1986), and their speech is disrupted, particularly at the level of discourse, jumping from one topic to another incoherently (Brownell and Martino, 1998).

So, based on the fact above the left-hemisphere and right-hemisphere are related each other to process the language in brain. The left hemisphere especially in Wernicke area and the Broca's area allow us to understand and recognize, read and speak, while the right hemisphere used to understand the narrative script, interpretation, integration of information or conceptualization of the unit as a whole, construction of new conceptual models, and inferences about another person's beliefs and intentions.

2.3 Language Disorder

Language disorders, known as aphasias, are presumed to have as their cause some form of damage to some specific site in the hemisphere where language is located. Such damage causes characteristic problems in speech, as well as in reading and writing. An extensive study using radio-isotope scanning by Benson and Patten (1967) served to support the traditional distinction that aphasias are generally classifiable into two groups, Broca's aphasias and Wernicke's aphasias. In addition to these two basic groups, other aphasic sites were also found.

The French physician Simon Aubertin provided early evidence that the *left frontal lobe* was involved in speech production. He was treating a patient who had shot off a chunk of his school in a failed suicide attempt, leaving a large part of his left frontal lobe exposed. Aubertin found that when he pressed on his patient's *lefthemisphere frontal lobe* with a spatula, the patient immediately stopped talking (Finger 2001; Woodill and Le Normand, 1996). Aubertin concluded that normal frontal lobe function was a necessary component of speech production. At the time, *phrenologist* had already advanced the claim that language was governed by the frontal lobes (Lanczik and Keil, 1991; Prins and Bastiaanse, 2006), see *Figure 2.1*.

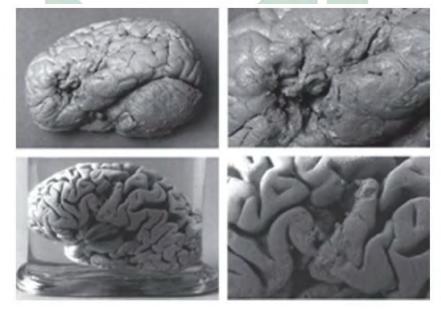


Figure 2.1

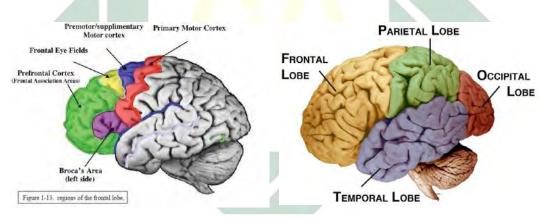
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It was supported by Paul Broca who autopsied the two patients named Leborgne and Lelong. Leborgne could only say one thing, the syllable *tan* whereas Lelong could say five words but they had the same trouble speaking. After two men died, Broca studied their brains to see whether they had anything in common. He found that they both had substantial brain damage in the frontal lobe of the left hemisphere.

Adam and Susanne Rother were another Broca's patients who got aphasia but their symptoms much different than Leborgne and Lelong (Eling, 2006). These recent patients could speak and hear, but they had difficulty understanding both spoken and written language, and their spoken output was also marked by the use of *neologisms* (new, made-up words) and by semantic anomalies. After reviewing Susanne lesion location and both patients' patterns of comprehension and speech output, the other scientist named Wernicke formulated his theory of "sensory" and "motor" aphasia. Wernicke proposed that posterior region of the brain stored "remembered images", while frontal region stored "impression of action" (Lanczik and Keil, 1991).

In conclusion, the most of responsible areas for speech, language processing, and reading are in the left hemisphere, and for this reason we will focus all of our descriptions and figures on the left side of the brain. The *figure 2.2* showed, there are part language processing in the brain that supporting each other to comprehend the language that have been acquired. These parts have their own function:

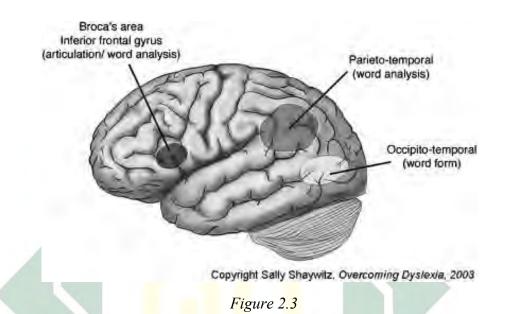
- The **frontal lobe** is the largest and responsible for controlling speech, reasoning, planning, regulating emotions, and consciousness.
- The **parietal lobe** is located farther back in the brain and controls sensory perceptions as well as linking spoken and written language to memory to give it meaning so we can understand what we hear and read.
- The **occipital lobe**, found at the back of the head, is where the primary visual cortex is located. Among other types of visual perception, the visual cortex is important in the identification of letters.
- The **temporal lobe** is located in the lower part of the brain, parallel with the ears, and is involved in verbal memory.





In addition, another evidence suggests that two other systems, which process language within and between lobes.

a. The first is the **left parieto-temporal system** (*see figure 2.3*), appears to be involved in word analysis – the conscious, effortful decoding of words (Shaywitz, 2002). This region is critical in the process of mapping letters and written words onto their sound correspondences – letter sounds and spoken words (Heim and Keil, 2004). This area is also important for comprehending written and spoken language (Joseph, 2001).



b. The second system that is important for reading is the **left occipito-temporal area** (*see figure 2.3*). This system seems to be involved in automatic, rapid access to whole words and is a critical area for skilled, fluent reading (Shaywitz, 2004).

2.4 Learning Disability

The damage or disabled means there are some part of brain are not active as well. They were studying hemispheric function has taught us that the left and right hemisphere of our brain control different functions when it comes to processing language especially in learning (Haegen, 2012).

Based on National Association of Special Education Teachers Dyslexia, Children with learning disabilities are a heterogeneous group. The children are a diverse group of individuals; describe potential difficultness in many different areas. For example, one child with a learning disability may experience significant reading problems, while another may experience no reading problem but has significant difficultness with written expression. Learning disabilities may also be mild, moderate, or severe. Over the years, parents, educators, and other professionals have identified a wide variety of characteristics associated with learning disabilities (Gargiulo, 2004).

Almost 35 years later, Lerner (2000) identified nine learning and behavioral characteristics of individuals with learning disabilities; (a) Disorders of attention, (b) Reading difficulties Poor motor abilities (c) Written language difficulties (d) Oral language difficulties (e) Social skills deficits (f) Psychological process deficits, (g) Quantitative disorders and (h)Information processing problems.

Buer, Keefe, and Shea (2010) mentioned that learning disability used to the name of students who unable to follow learning activity because the weak of intelligence, sensor disorder, disability in culture and language. Grossman (2008) stated about learning disability, is the condition of students who unable to reach the good achievement in class. Sugihartono (2007) also stated that students who get low achievement in class could be identified as the student' with learning disability. The researcher concludes that learning disability is the symptom which can be seen from the low students' achievement. It is because of low intelligence, sensor disorder, has no enough culture and language.

2.4.1 Dyslexia

One type of aphasia that involved disorders in reading and writing is called dyslexia (Steinberg and Sciarini, 2006). The word dyslexia is made up from two different mean: dys meaning absence, and lexia meaning language. The Greek origin combines 'dys' & 'lexia' meaning an absence of language (Laurence, 2009). There were many sorts of dyslexia, one category of which was due to damage to the brain, after reading and writing had been acquired. However, dyslexia may be observed while they are in the process of acquiring reading and writing skills. Problems of hemispheric dominance or defects in visual perception, for example, may play some role in causing difficulties in reading and writing.

Some children may only be able to write backwards (deer as reed) or upside down, or in reading they may confuse letters (b with d, p with q, u with n, m with w) and engage in other anomalies. Approximately 10%-15% dyslexia happened in students at school when they study at class (Vellintino, 2004). Tammase and Jumraini (2015) found the brain dysfunction impede the academic course, such as, difficult to recognize words, difficult to put word into sounds, words inversion, spelling disorder, low confident to say some words, and less understand meaning sentence.

Drake (1989) stated that dyslexia problem has some characteristic, such as difficulty in language study, unbalance of intellectual, unable to read the printed text, unable to write correctly even though just to copy it, feel bored too fast when face the text and listen the teacher. Dyslexia is the people who unable to read even they got enough education (Mercer, 1997 and smith, 1999).

Rosana (1998) stated that children with dyslexia can be detected from 8 characteristics; what the children write is not appropriate with the spoken, reading slowly, need long time to fill the answer, easy to forget names, spelling disability, maybe they understand some course topic in learning but they get low score in examination, reading unarranged. Rosana (1998) concluded the whole of student with dyslexia is low in learning.

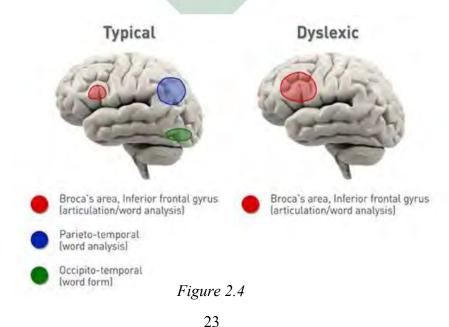
Six areas of the left hemisphere of the brain that be the causes of dyslexia:

- The **frontal lobe**, located behind the forehead, does the role of controlling speech, consciousness, reasoning, emotions, affects the ability to sight read, and contains Broca's area. This section of the brain is where language is essentially stored, organized, and controlled.
- Neurological problems in the parietal lobe are the reason for many of the issues of memory tied to reading, particularly comprehension. This area of the brain also links written and spoken language to each other, which are very necessary for fluent reading. The parietal lobe also controls sensory perception and is located behind the frontal lobe.
- The **left parietotemporal system** is the exact part of the brain found to impact the ability of a person to decode words. What happens in

this system is letters are attached to sounds but when there is a neurological disorder preventing normal processing, then there will be problems deciphering words, recalling letter sounds, and comprehending written text without interventions to do so.

- The specific problem dyslexics have with letter identification can be traced back to physical differences in the **occipital lobe**. It holds the visual cortex and manages several visual perceptions.
- Verbal problems are associated with physical differences in the temporal lobe. When a person has problems recalling spoken details, deficits in this area are the cause.
- Occipito-temporal area helps a person to quickly recall words with a mechanical agility, but when this area is physically different from the average reader, reading will be significantly slowed down because of it.

The comparison between normal brain and dyslexic brain. was displayed in *figure 2.4*.



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2.4.2 Dysgraphia

The researcher from National Joint Committee for Learning Disabilities reported that dysgraphia is from Greek word which means difficulty that make children disable to write or express their idea in arranging letters to be written. Like dyslexia, dysgraphia also influenced by neurology factors, the problems are from front right hemisphere which connects to writing ability.

These are the following symptom of dysgraphia according to The Indonesia Doctor:

- Inconsistent with the letters in written
- While writing, upper letters and lower letters still mixed
- Size of letter is inconsistent
- Children looks tired and difficult to express their idea, knowledge, or understanding in written
- Children do not know how holding the pencil correctly
- Talk more while writing with their own self
- Out of the line paper when writing
- Still get difficultness even though they just copy the written beside them

There are some symptoms of dysgraphia are difficult to create word formation, writing out of the line paper, repeating and deleting words, difficult to put punctuation and capital word and mirror writing (Tammase and Jumraini, 2015). Djaja (2010) argued that dysgraphia is the one of learning disability especially in writing. Basically, it can be known from the high score in intelligence score but low in the writing test. Mulyono (2002) found that dysgraphia is writing problem in course. The writing difficulty can be understood as incorrect diction while arrange the word, grammatical disorder or uncomplete, wrong spelling used in a word and capital word disorder (Wardani, 1995). Often, writing disability also refers to the children while hold the pencil. Writing is the basic skill which is important for students in elementary school. Lerner (1985) found that writing is the visual output from the idea.

Soemarno Markam (1987) explained that writing is express the language through symbol and picture. Writing is complex activity, it consists of arm moving, fingers and eyes in the same time. Writing also refers with language understanding and speaking ability. Tarigan (1986) defined that writing as the drawing of graphic symbol from the daily language of writer or other people. Poteet (1984) stated that writing explains visual delineation about thinking, feeling, and idea through symbols of language for communication or noted.

In conclusion, writing is the important part in learning because it affects to the children while understand the language. Writing refers to visual output from the idea. Often, it is very useful for us to communication because in writing, students can convey their message to other people.

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2.5 Educative Games

Armstrong (2002) states there are some ways to increase intelligence, they

are:

- a. Do word's games like anagram, scrabble, or Crossword games.
- b. Do self-communication and record with *tape recorder* and listen that
- c. Visit the library
- d. Make some stories in diary book
- e. Self-practice with telling story

CHAPTER III

RESEARCH METHOD

This chapter explains about research design, instruments, techniques of data collection and data analysis.

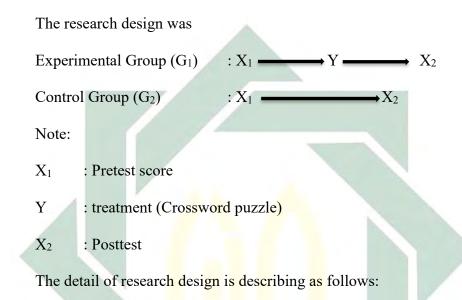
3.1 Research Design

In this study, the researcher applied an experiment study method. Solso & MacLin (2002) defines an experiment study is a research; consist of at least one variable designed to be a basic course to find cause and effect. Therefore, experimental research examines a hypothesis to find an effect, relationship, or the difference alteration toward groups which get treatment. In this paper the researcher found an effect of Edu-game to increase reading and writing ability students. The researcher applied crossword game as a treatment in course outline. The researcher used *t-test* as a tool to explore the significant of crossword game toward reading and writing ability in dyslexia and dysgraphia students.

The researcher took students from 2nd grade of elementary school as group examined. The researcher identified the students who have dyslexia and dysgraphia by visiting school and observing in class. The researcher visited 2 schools, first was SDN Tejo III as experimental group (EG), and then, second was SDIT Al-Khalifa Mojowarno as control group (CG).

The researcher applied true experimental studies with one treatment. The researcher applied crossword games as a method toward experimental group (EG) which consisted of students with dyslexia and dysgraphia. The purpose of used crossword game is to know the effect of that game toward students learning

especially reading and writing ability. The researcher examined dyslexia and dysgraphia students in experimental and control group. The researcher examined control group as comparison without treatment, but they had tought by their own teacher with conventional learning (calistung).



1. Diagnostic Test

The researcher visited 2 schools randomly. The researcher tried to find the 2^{nd} grade students with dyslexia and dysgraphia by asking the teacher. After the researcher knew that these schools had some students with dyslexia and dysgraphia indication, the researcher went to the class and gave the test to find which one student who got dyslexia and dysgraphia. The researcher prepared answer sheet to determine students to be analyzed. The answer sheet consisted of understanding word and letter, understanding number, interpretation picture, and memorizing. The researcher did these steps one by one to all 2^{nd} grade either experimental or control group students. The researcher collected the data from students who got low score and difficulty while answering the order of observation script.

2. Pretest

After test for looking the participant was done. The researcher got the students with learning disabilities. The researcher gave pre-test as early score of the students. The pre-test consisted of reading test, memorizing test, and writing test. The technique of giving pre-test was almost same with previous test; the student had to answer one by one question based on the instruction. The researcher took the students' score in pre-test as early score.

3. Treatment

After received the pre-test, the students got treatment like additional course in school. The treatment was given by the researcher. The researcher only gave the treatment to experimental group (EG) and the control group (CG) was held by their own teacher. So, the researcher did not give treatment for the control group. The researcher applied the Crossword games with the basic course as treatment method for experimental group (EG). The source of basic course was from Moats in (Lerner, 2000), they were logographic reading, early alphabetic reading, mature alphabetic reading, orthographic stages and gaining fluency. The researcher did the treatment in 6 meetings (include post-test), 6 weeks, 1 day a week; they are Tuesday. It was around 45 minutes per day. The treatment for control group (CG) was Calistung (membaca menulis dan berhitung) course. It was every Saturday a week. While giving treatment, the researcher observed one by one the students. This observation used to know more about the indication of the dyslexia and dysgraphia student. The activities during treatment are presented below:

A. The Activities during Treatment of Experimental Groups

There were 4 times of giving treatment to the experimental groups, one day a week. The activities of giving treatment were not only crossword but the researcher combined other interesting activity like sang a song or outside study.

a. The first treatment was held on Thursday, February 01st 2018. The process of first treatment is presented as follows:

- 1. Open the lesson
- 2. Sing a song titled "twinkle-twinkle little star"
- 3. Divide into 2 group
- 4. Change the *twinkle*'s lyric become *the letter in alphabet*
- 5. Asking students about:

"huruf nomer 10 apa?"

"huruf terakhir apa?"

- 6. Introduce the vocal letter and consonant letter
- Explain about the difference between "d" and "b", "u" and "n", "w" and "m", "y" and "z".
- 8. Move letter to thing, like "d" for "delman", "b" for "bola"
- 9. Fill the crossword game (see the appendix 4, meeting 1)
- b. The second treatment was held on Tuesday, February 06st 2018. The process of first treatment is presented as follows:
 - 1. Open the lesson
 - 2. Divide into 2 groups
 - 3. Giving 10 sentences

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- 4. Ask students to find vowel and consonant in each sentence
- 5. Whispered sentence game
- 6. Fill the crossword game (see the appendix 4, meeting 2)
- c. The third treatment was held on Tuesday, February 13th 2018. The process of first treatment is presented as follows:
 - 1. Open the lesson
 - 2. Explain how to created word to phrase
 - 3. Explain how to created phrase to sentence
 - 4. Ask students to write a word, then make a sentence of that word
 - 5. Ask them to show it in front
 - 6. Divide into 4 groups
 - 7. Go outside class to write all they see
 - 8. Collecting their works
 - 9. Crossword game (see the appendix 3, meeting 3)

d. The fourth treatment was held on Tuesday, February 27th 2018. The process of first treatment is presented as follows:

- 1. Open the lesson
- 2. Divide into 3 groups
- 3. Listening the story "kancil dan pak tani" (see appendix 3, meeting 4)
- 4. Retell what the researcher told
- 5. Fill the crossword game based on that storing
- 6. Crossword games (see the appendix 3, meeting 4)

B. The Activities during Treatment of Control Groups

There were 4 times of giving treatment to the control group, one day a week. Control group's treatment was held by the teacher especially their guide teacher of 2nd grade of SDIT Al-Khalifa Mojowarno. She used calistung as additional course in every Saturday.

a. The first of control group was held on Saturday, February 3rd 2018.

The activities in control groups as follow:

- 1) Open the class
- 2) Give greeting to students
- 3) Ask students to open the students' book (LKS).
- 4) Teach the students using conventional teaching.
- 5) Give exercise
- 6) Give feedback to students.
- 7) Close the class.
- b. *The second of control group was held on Saturday, February 10th 2018.* The activities have similarity between the first meeting of control group. The activities in control groups as follow:
 - 1) Open the class
 - 2) Give greeting to students
 - 3) Teach the students using conventional teaching.
 - 4) Give exercise
 - 5) Give feedback to students
 - 6) Close the class.

c. The third of control group was held on Saturday, February 17rd 2018.

The activities in control groups as follow:

- 1. Open the class
- 2. Give greeting to students
- 3. Ask students to open the students' book (LKS).
- 4. Teach the students using conventional teaching.
- 5. Give exercise
- 6. Give feedback to students.
- 7. Close the class.
- d. The fourth of control group was held on Saturday, February 24rd 2018.

The activities in control groups as follow:

- 1. Open the class
- 2. Give greeting to students
- 3. Ask students to open the students' book (LKS).
- 4. Teach the students using conventional teaching.
- 5. Give exercise
- 6. Give feedback to students.
- 7. Close the class.
- 4. *Posttest*

Posttest was the final test for the students. It used to know the ratio of students' score, before and after getting treatment. The posttest score was needed to complete the calculation. It helped researcher to determine how significant crossword applied to dyslexia and dysgraphia student.

After all the steps above was done. The researcher used t-test to know the significant of crossword games applied into course and compared between EG and CG score. It is counted with software program named *IBM SPSS for Windows*. The researcher analyzed the data with theory of *paired t-test* and *independent t-test*. There were normality test and homogeneity test. The focus of the researcher was compared and analyzed the score of students both experimental group and control group. *Paired t-test* aims to know the difference ability between students with crossword applied (EG) and the students as control group (CG). The researcher used independent t-test, too. The aim of *independent t-test* is how significant of crossword game to increase reading and writing ability in students with dyslexia and dysgraphia.

3.2 Population and Sample

Population of this study is 2nd grade students of SDN Tejo III as experimental group and SDIT Al-Khalifa as control group. SDN Tejo III consist of 12 students and SDIT Al-Khalifa consist of 19 students. The researcher determined the population from two schools randomly, and the sample of this research was determined after students got diagnostic test. The sample of this study is the dyslexia and dysgraphia students. There are three students for experimental group and four students of control group. The total of sample is seven students.

3.3 Research Variable

Hatch dan Farhady (2013) defined variable as the one attribute or object that has "variation" between one to another object. This study used two independent variables and two dependent variables

3.3.1 Independent Variable

Independent variable is the variable that affect to another variable. It gives change to dependent variable. Independent variable in this study is crossword games and conventional teaching. The researcher only held the crossword games.

3.3.2 Dependent Variable

Dependent variable is variable that is influenced by independent variable. The dependent variable in this research is reading and writing ability. In this current study, the reading and writing ability was presented in scores.

3.4 Data and Data Source

The main data of the current research is the dyslexia and dysgraphia students. They are 2nd grade of Elementary School which was determined based on the result of diagnostic test. The students are divided into two groups. They are experimental group and control group. The experimental group consists of SDN TEJO III students whereas the control group consists of SDIT Al-Khalifa students. All students from two groups are thirty-one students, twelve students from SDN TEJO III and nineteen students from SDIT Al-Khalifa. The researcher found three of 12 students in SDN TEJO III who was indicated as dyslexia and dysgraphia students. The researcher also found four of 19 students in SDIT Al-Khalifa who

was indicated as dysgraphia students. So, there are seven students who were being the main data of this research.

SDN TEJO III was the experimental group of this research. The students were given treatment from the researcher directly. The treatment was crossword puzzle game which was included into learning process. The students of this group were 3 students who were analyzed more by the researcher. The names of the students were Davi, Panji, and Diva. The researcher explored more the indication of dyslexia and dysgraphia from these students as the data. The explanation of dyslexia and dysgraphia students used to answer the first research question in this research. The general description of these students is described below:

a. Davi

She was a silent student in class. She always read slowly. Mrs. Fadila was her teacher. She said that Davi was difficult to understand the word moreover sentence. Davi gave the meaning of the text by her own opinion. It was opposite with the true meaning of the text. Davi needed longer time to know what the text about. Sometimes, she needs her friend to explain verbally the text. She is also very slow when write a word. The whole of alphabet was not understood well by her. The researcher predicted that she got dyslexia and dysgraphia.

b. Panji

He was an active student in the class. He could read well based on the text but his written was not clear enough. The space one word to other word was not consistent. The researcher predicted that he got dysgraphia.

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c. Diva

She is the twin of Davi. The description about Davi is close with her. Both of them could not write well as their teacher instruction. She needed longer time to copy the text and write in another book. She also needed long time to write a word. She needed the instruction of her friend to show what alphabet that should she wrote. The researcher predicted that she got dyslexia and dysgraphia.

The control group of this research was SDIT Al-Khalifa. The students were 19 students. The researcher found 4 of 19 students that were indicated as dysgraphia students but one of them was indicated as dyslexia student. The names of the students were **Dafi, Davin, Tegar, and Ahmad**. All of them could not write the character in the word correctly and clearly. Their written were bad and difficult to understand by the reader. The space of word to other word was not clear enough. Davin was the one student that also got dyslexia. Davin needed longer time to read a word. He could not differ between "d" and "b", he took additional sound and reduce the letter when read some words. This group was given treatment too from their teacher as the comparison. The teacher only taught like conventional teaching. It was different from experimental group who was taught with crossword game. The researcher did not explore more about the dysgraphia students from this group.

The researcher gave the test for both groups. The researcher gave pretestposttest to all students of both groups. The score of the test were the second data of this research. It used to answer the second research question of this research about the significant implementation of crossword game. It needed statistic explanation. So, the researcher considered to choose the score of both groups.

The last data of this research were the student's opinion about crossword game puzzle included into their reading and writing course. The researcher interviewed 3 students of experimental group. They were Diva, Panji, and Davi. The researcher only did the interview to experimental group because this group was taught by crossword game; in contrast the control group was taught by conventional teaching.

In conclusion, the researcher needs 3 kinds of data. The main data is the dyslexia and dysgraphia students. The researcher explored the indication of dyslexia and dysgraphia students from experimental group. The researcher took the score of experimental and control group as the second data. The score were collected from test that was done by both groups. Then, the researcher interviewed the experimental group students who were taught with crossword puzzle game. The researcher recorded their opinion about it as the last data of this research.

3.5 Technique of Data Collection

The researcher collected the data through some steps. The first step was looking for the participant of this research. The participant of this research was from dyslexia and dysgraphia students in 2nd grade of Elementary School. The researcher visited 2 schools randomly. The researcher found SDN TEJO III and SDIT Al-Khalifa. The researcher visited both school and came to the chief and the guardian teacher. The researcher asked them about learning disabilities appearance to that school. The researcher got the positive result, the chief of both school admitted that there are some students with learning disability especially in reading and writing.

After the researcher fixed these schools as the place of taking data, the researcher came to 2nd grade students to give them early test. The test aims to identify student who got dyslexia and dysgraphia. The researcher gave them some question related to the dyslexia and dysgraphia indication. The researcher checked their answer and did scoring. The students with low score would be the participant of this study. The researcher got seven students with dyslexia and dysgraphia indication. Three students were from SDN TEJO III, and four students were from SDIT Al-Khalifa.

The researcher focused to three students of SDN TEJO III to find the indication of dyslexia and dysgraphia. The researcher observed one by one student while giving treatment in every meeting. Diva, Davi, and Panji had already observed by the researcher. In this case, the researcher observed directly their learning process especially in reading and writing. The researcher recorded their learning process of them in smartphone.

This study used test for taking a score by students. The researcher held pretest and post-test to all students, either experimental group or control group. Pretest was early test before the students getting treatment while post-test was held after students getting treatment. The score of the pretest and post-test would be used as the comparison between experimental group and control group, because these group were taught by different treatment. It also used to know the significant different of students, before and after they got the treatment. The researcher used *IBM SPSS for windows 24.0* to process the score.

The researcher did interview to complete the data of this study. It gave to all students of experimental group about crossword puzzle game. It was because the students in this group were taught by crossword game. The researcher did interview after post-test finished. The researcher prepared 5 questions for students. The researcher used smartphone to record their opinion about it. The researcher prepared the note to write the point of their said. The researcher asked one by one of students.

3.6 Research Instrument

3.6.1 Test

The researcher used test to collect the data. The researcher gave 3 tests to this study. First, the researcher gave test for looking to students with learning disability. After researcher got the students with dyslexia and dysgraphia, the researcher gave pretest to them. The last, the researcher gave posttest as the final test that showed the ratio of students' score after getting treatment.

3.6.1.1 Diagnostic Test

This test was used to find the students who indicated with learning disabilities such dyslexia and dysgraphia in two groups. The researcher did it to whole students of experimental and control group. The researcher gave this test to 2nd grade students in SDN TEJO III and SDIT Al-Khalifa. The researcher asked student to listen what the researcher instruction. The researcher prepared the answer sheet. The content of diagnostic test was the continue of previous diagnostic test that had been done before by Rohaty and Shafie (2005) and Varia and Nurul (2013). It consisted of 4 points; (1) understanding word and letter which read by researcher written by students (2) understanding number which read by researcher written by students (3) memorizing activity which written by students, and (4) interpreting picture which displayed by teacher and spoken by students. The questions and the answer sheet of diagnostic test are attached on *appendix 1* and *appendix 2*.

The researcher shared the copies of answer sheet to all students. The students were asked to fill the blank space based the instruction. It need for about 45 minutes to hold this test.

3.6.1.2 Pretest and Posttest

The time for pretest was approximately 30 minutes. Both the pretest and posttest have certain purpose. The pretest aims to know early score of experimental group before getting treatment such crossword game. The pretest aims to know early score of control group before getting conventional teaching (calistung) from their own teacher. The pretest was held by researcher.

The posttest aims to know the score of student after got treatment from the researcher for experimental group, whereas the control group was received treatment from their teacher. The function of posttest is to know the ratio of score after getting treatment.

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The question of pretest and posttest were same. The researcher applied the same way too, while giving pretest and posttest to both groups. The researcher greeted the students, shared the answer sheet to them, and asked students to follow the instruction. The researcher gave the test when intermission time.

There were 3 topics of test; they were reading (word and number), memorizing test, and writing test. Total of question in the test was 13 exercises. The reading words test consisted of 12 words and 8 numbers. For reading sentence, the researcher provided 23 words in 2 sentences. Then, memorizing test, there were 2 command sentences. The students had asked to mention maximum 3 things that they remembered. The last was writing test, the student was asked to copy the sentence that was prepared by researcher and pasted it into new sheet. The form of this test is attached on *appendix 3*.

3.6.2 Participant Observation

The participant observation was only for experimental group. The participant observation was done to know the specific indication of dyslexia and dysgraphia students in experimental group. The observation started in the first time while the researcher gave pretest to the students of experimental group. It also explored while giving treatment. The researcher always observed dyslexia and dysgraphia student one by one students, how they read how they write the text, and understand the word and sentence. The researcher used the crossword game as a tool while giving treatment. The researcher was the teacher while giving treatment. The crossword puzzle was included to the learning process. It was given to the students in every meeting. It was given in the end of time of course. It needs 10-15 minute to finish. The crossword puzzle game consisted of 5-10 questions and all students had to answer the question. The clue of answer was presented by the researcher. The answer sheet was shared to all students. The researcher discussed the correct answer in the end of time on that day.

The researcher also observed how the students did all the question of the crossword and how they write each letter to the answer sheet. The researcher observed their expression and their behavior while write the letter. Their difficulty of writing and reading was recorded by the researcher as the video. It used to remind the researcher how the experimental group read and write based on researcher's instruction. It also used to describe the atmosphere of class when teaching running, the respond of the student in class. The video from these participant observations were transcribed thematically. The researcher transcribed it every finished the class. Total transcribe is 4 because the meeting was 4 meetings.

3.6.3 Interview

The interview was done to know the students' opinion about the treatment used crossword in their course. It was applied only for experimental group students. The researcher did the interview for Diva, Davi, and Panji. Interview was done for the students in experimental studies. The students were asked one by one with some questions. There are 6 questions. The researcher prepared the smartphone to record their spoken. The researcher transcribed the interview to complete the data in this study.

The content of the interview was about their feeling of receiving treatment from the researcher. The treatment was crossword puzzle game which was applied to the learning process. The other content was their opinion about crossword puzzle game itself.

The researcher asked the effect of the crossword puzzle game to their skill especially to their reading and writing skill. The researcher asked they got more confident while reading and writing word or not. The researcher also collected their opinion, if the crossword game applied to every course at school, the students would agree or disagree. The form of interview guide is attached on *appendix 6*.

3.7 Technique of Data Analysis

3.7.1 Test

3.7.1.1 Diagnostic Test

There were 4 kinds of test, the researcher had their own way while giving score in each test, and it was described below:

a) Reading words

The student asked to read some words. They were 6 number of reading words. The students received the 1 point in each correct read and write. b) Reading numbers

The researcher asked to read the number. It consists of 6 numbers. The point is 1 in each correct reading number. The total score is 6.

c) Memorizing the activity

The students have to remember their daily activity. The students with dyslexia and dysgraphia are difficult to remember their activity. In this case the student asked to remember their activity after woke up and the activity before they go back to bed in night sleep. It was only 2 questions and 5 points in each question if they mentioned clearly in text.

d) Interpreting picture

In this point the researcher gave two questions. The researcher provides 2 pictures, they were house and car. The researcher gave 4 points in each correct answer.

Total score from the point above was 30. The researcher determined that the student got score lower than 20 points; they would be the data to this experimental study. The researcher found 7 students of two groups who got dyslexia and dysgraphia indication, three students from experimental group and four students from control group.

3.7.1.2 Pretest and Posttest

The test was pretest and posttest. The researcher focused on the score of students, either experimental or control group. The pretest and posttest aimed to know their reading and writing ability. The posttest score influenced how significant of crossword applied to this study. The researcher used t-test to analyze how significant crossword game applied to increase reading and writing ability. The researcher counted it by using *IBM SPSS 24.0 for Windows*. T-test in this study consisted of homogeneity test, and normality test. The homogeneity test consists of independent t-test and dependent t-test. The independent and dependent t-test were used to find the significant different from the data.

The normality test was used to check whether the posttest score of experimental group and control group were normally distribution or not. While homogeneity test was used to calculate the homogeneity of variance of both experimental and control group posttest score.

a. Normality test

The researcher uses normality test to check whether the posttest score of experimental group and control group are normally distributed or not. The researcher used software named *IBM SPSS 24.0 for windows* to calculate the calculation easier. The hypothesis as follows:

H₀ : The sampled population is normally distributed (> α)

H₁ : The sampled population is not normally distributed ($\leq \alpha$)

Sig. value (α) = 0.05

Conclusion : If **p-value greater than 0.05**, it means accept the null hypothesis and the data come from a normally-distributed population.

b. Homogeneity test

Homogeneity test is used to check whether the posttest score of experimental and control group have similar variance or not. The following are hypothesis of homogeneity test, there are:

H₀ : The variance of experimental and control group are equal.

H₁ : The variance of experimental and control group are equal.

Sig. value (α) = 0.05

Conclusion: If **p-value was greater than 0.05**, it would accept the null hypothesis and the variance of experimental and control group are equal. Then, the researcher used t-test to calculate the data from the experimental and control group's posttest score.

In homogeneity test, the researcher should find the standard deviation and variance of the data from both of the experimental and control group.

After found p-value of homogeneity test and the number of standard deviation and variance. The researcher could be able to count the paired t-test and independent t-test. The calculation of paired t-test and independent t-test were supported by *IBM SPSS 24.0 for windows*.

a) Paired t-test

This test aims to know the significant improvement of crossword games applied toward dyslexia and dysgraphia students. Paired t-test refers to the experimental group score. The researcher used 0.05 as the significant value. The hypothesis was explained below:

a) H_0 ; $\mu_{before} = \mu_{after}$

There is no effect of crossword game applied to the samples

b) H_0 is received H_1 rejected if Sig. tailed $< \alpha$

Conclusion: Crossword could not give significant improvement

c) $H_{1;} \mu_{before} \neq \mu_{after}$

There is effect of crossword game applied to the samples.

d) H_1 received H_0 rejected if Sig. tailed > α

Conclusion: Crossword game could give significant improvement

e) The researcher used Significant level (α) = 0.05 or 5 %

The conclusion of the hypothesis was following:

- H_0 was received and H_1 was rejected, if *SPSS* result showed Sig. tailed = 0.05, it means that the crossword puzzle game affected nothing in the score of students with dyslexia and dysgraphia.
- H₀ was rejected and H₁ was received if SPSS result showed Sig. tailed
 > 0.05 or Sig. tailed < 0.05, it means that crossword puzzle game affected to the students score.

The significant improvement of crossword games was showed in the table of difference mean in the result of SPSS program.

b) Independent t-test

It aims to know the significant difference between experimental group which was taught by using crossword puzzle game and control group which was taught by conventional teaching like calistung (baca tulis berhitung). The researcher also used *SPSS 24.0 for Windows* to calculate the score of both groups. The researcher used 0.05 as significant value. The hypothesis of this test was presented as follows:

- a. If p-value < 0.05, it means there was insignificant difference between experimental and control group.
- b. If p-value > 0.05, it means there was significant difference between experimental and control group.

The conclusion of test was based on the result of Lavene's Test table in the SPSS.

3.7.2 Interview

There are five questions which were asked to students. The researcher recorded students' voice. The researcher gave all questions to them. The researcher also recorded all the answer of the students in experimental group. Diva, Davi, and Panji already answered all questions, but they did not answer it clearly. They were nervous and shy to say something and explore their opinion. They only gave smile while nodding the head. The researcher transcribed of their answer into a note. The researcher also remembered their expression while answering the question.

CHAPTER IV

RESEARCH FINDING AND DISCUSSION

This chapter is aimed to find out the indication of dyslexia and dysgraphia. It also aimed to find out whether any difference between the crosswords games as teaching media on dyslexia students at second grade of SDN Tejo III Mojoagung, Jombang. This chapter presents the result of research findings which is intended to answer the problem of the study and research discussion. This chapter is divided four subheadings: data presentation, data analysis and discussion. Besides, this chapter analyzes statistically the data gained from the result of pre-test and posttest of both experimental and control group. For this case, the t-test was applied and it was supported by *IBM SPSS 24.0 for Windows*.

4.1. Findings

4.1.1 The Indication of Dyslexia and Dysgraphia in 2nd Grade Students of Elementary School

The researcher has already found the answer from the research question. The main data were 7 students who were indicated getting learning disabilities. Three students were dyslexia, and 4 students were dysgraphia. The dyslexia and dysgraphia student were taken from the result of pretest and the observation while held the treatment. The pretest result helped the researcher to predict whose students that got the indication of dyslexia and dysgraphia. Meanwhile, the observation while giving treatment used to explore the indication of dyslexia and dysgraphia in students. In conclusion, the researcher found some symptoms of learning disability through dyslexia and dysgraphia in experimental group and control group.

• The Indication of Dyslexia

The researcher found 3 of 7 students who get dyslexia. They were Davi, Diva, and Davin. The indication is described below:

A. Addition

Addition is put additional letter to the original word. The students added consonant letter in the end of the letter. The students could not sound the word as like as the text. It was appearance to Davin. Davin was the students from control group. He was difficult to read. He was the only one student who could not read in the control group. He read "membukan" in the word of "membuka", and his spoken was "dukan" while reading the word "duka".

B. Omission

Omission is deleted some letters from the original word. The original word would be sound different after get the omission. It was not only deleted some letter but it was followed by substituting the letter of a word. There were 3 students who did omission while reading the word. They were Davi, Diva, and Davin. Davi did it to 5 words; these words were "waktu", "bunga", "Kelas", "bersama" and "bangau". She read "waktu" as **"katu"**, "bunga" as **"kuga"**, "kelas" as **"las"**, "bersama" as **"sama"** and "bangau" as **"gau"**. Diva did it to one word. She read "bunga" as **"aga"**.

C. Inversion

Inversion is invert the letter of a word from left to right such the letter "b" becomes "d". It was appearance to Diva and Davin. Diva read **"buka"** from the original word "duka", she sounded **"kuba"** from the original word "kuda", she sounded **"sebang"** from the original word "sedang", she sounded **"mengabakan"** from the original word "mengadakan" and she sounded **"dubuk"** from the original word "duduk". Meanwhile, Davin spoke **"deku"** from the original word "beku".

D. Reversal

Reversal is inverted the letter of a word from up to down such "m" become "w", "n" become "u". "p" become "b" It happened to Davi and Diva. Davi sounded "waktu" as "maktu". Diva sounded "mengadakan" as "meugadakau", and she sounded "perpustakaan" as "berbustakaan".

E. Substitution

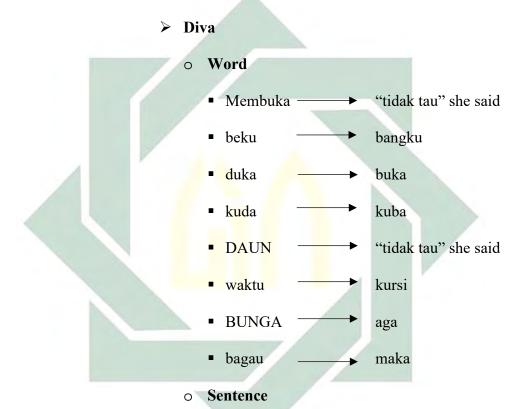
Substitution is change the letter of word. It makes different sound of the word. It was showed in the students named Diva and Davi. They felt very difficult while reading, either word or sentence. The meaning of the word changed when they were confused in reading. They were difficult to differentiate some letter which is seems similar, so they read the word as they want. The word and sentence that was reading by Davi and Diva is showed below:



0

- Word
 - BUK<u>A</u> → BUK<u>U</u>
 Membuk<u>a</u> → Membaca
 DAUN → MUKA
 - Original Sentence
 - Kepala sekolah sedang mengadakan rapat di perpustakaan bersama wali kelas.
 - Dinda sedang duduk bersama roni di sana, mereka sambil membaca buku Bahasa Indonesia.

- The Result
 - Kula kulam kulam mudang mupa di kumakan musam yali las.
 - 2. Dan enam duka sama roni di san, sangka sabim baca buku masak sari.



Diva could not read a word even a word in a sentence. She was only mention letter by letter but it was not all letter mention correctly. All of letter "n" sounds another letter based on her mind up. She was difficult to differ between d and b.

- Original Sentence
- 1. Kepala sekolah sedang mengadakan rapat di perpustakaan bersama wali kelas.
- 2. Dinda sedang duduk bersama roni di sana, mereka sambil membaca buku Bahasa Indonesia.
 - The Result

Because Diva could not read even a word, she was only mention letter by letter. The most difficult to remember letter was letter "n". Her spoke is described below:

- "h" become "d" in sekolah
- "d" become "b" in sedang
- "n" become "e" in sedang
- "d" become "b" in mengadakan
- "n" become "u" in mengadakan
- "p" become "b" in perpustakaan
- "n" become "e" in *perpustakaan*
- "n" become "e" in *dinda*
- "n" become "l" in *sedang* (second sentence)
- "d" become "b" in *duduk*
- "n" become "d" in *roni*
- "n" become "b" in sana
- "u" become e in *buku*

- "h" become "d" in Bahasa
- "n" become "e" in Indonesia

F. Reading Slowly

The dyslexia students are slow in the reading. Diva, Davi, and Davin needed minimal 10 second to know what the word is it. They needed their friend to give the information about the word. They also did not understand what they read in a sentence.

G. Easy to Forget Names and Letter

It was showed while they did the task about memorizing of thing. Diva, Davi, and Davin were difficult to write the name of the thing in class such table, board, and etc. They also forgot the name of their teacher and how to write it in a word. The result is below:

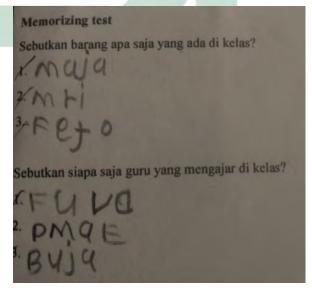


Figure 4.1 (Davi)

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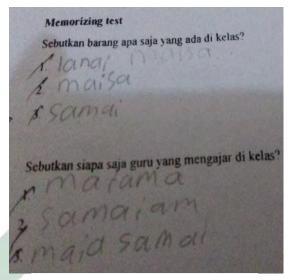


Figure 4.2 (Diva)

	Memorizing test	
· .	Sebutkan barang apa saja yang ada di kelas?	
	1 meia	
	1. maia 2. Kurs; 3. longn:	5
	Sebutkan siapa saja guru yang mengajar di kela	5?
	1.Bcmin 2.Bu in eta	
	2. Du mede SBU hOK	

Figure 4.3 (Davin)

H. Unconfident

The dyslexia students were unconfident while spell and read a word. It seems in the Diva and Davi. They were no spirit to read a word even it was correct. They needed their friend to help them. They got headache when they were confused and they could not ask their friend. The dyslexia students had low confident in reading.

Whereas, the indication of dysgraphia is described below:

A. Bad Handwriting

All the students in this study had bad handwriting. Their written was inconsistent. The space letter by letter and word by word were not clear. It was showed in the writing test. The form and size in each letter was unstable.

B. The Written is out of The Line Sheet

All the students in this research who had been the data, their written were out of the line in the sheet. The letter was not in a line. They wrote the text as bad. Sometimes, the reader could not understand the meaning of the sentence.

C. Writing Slowly

The researcher gave for about 10 minutes to copy the text in a writing test. The dysgraphia students needed longer time to finish it but their written was still confusing. Sometime, the student had to look their friends' written to know the sentence. The picture of dysgraphia students could be seen below:

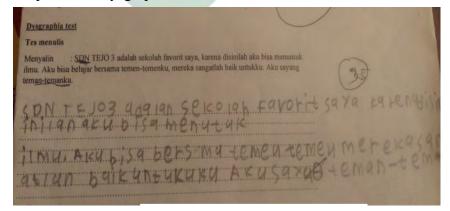


Figure 4.4 (Davi)

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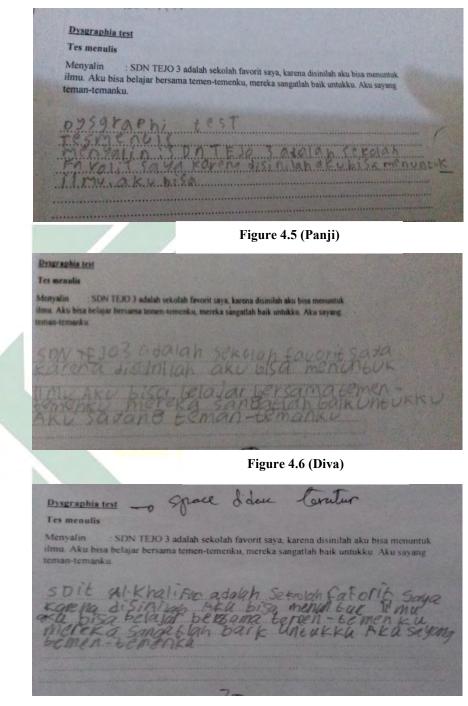


Figure 4.7 (Ahmad)

Dysgraphia test Tes menulis SDN TEJO 3 adalah sekolah favorit saya, karena disinilah aku bisa menuntuk Menvalin ilmu. Aku bisa belajar bersama temen-temenku, mereka sangatlah baik untukku. Aku sayang teman-temanku

Figure 4.8 (Tegar)

Dysgraphia test

Tes menulis

Menyalin SDN TEJO 3 adalah sekolah favorit saya, karena disinilah aku bisa menuntuk ilmu. Aku bisa belajar bersama temen-temenku, mereka sangatlah baik untukku. Aku sayang teman-temanku.

Figure 4.9 (Dafi)

Figure 5.0 (Davin)

4.1.2 The Significant of Crossword Game Implementation to Dyslexia and

Dysgraphia students

The researcher shows how significant crossword games to increase reading and writing ability statistically based on students' score. The researcher presents the pretest and posttest both experimental and control group. The researcher shows the score alteration by chart and also analyzes more the score by t-test.

A. The Result of Experimental Groups' Test

Table 4.1 (Pretest Score)

Students		Score					
Students	RW	RN	RS	MT	WR	Score	
Diva	4	7	0	0	40	51	
Davi	3	8	0	0	35	46	
Panji	12	8	22	6	40	88	
Σ	19	23	22	6	115	185	
X	6.33 <mark>33</mark> 3	7.66667	<mark>7.3</mark> 3333	2	38.3333	61.6667	

Table 4.2 (Posttest Score)

Students	с.	Posttest					
	s RW	RN	RS	MT	WR	Score	
Diva	6	7	19	0	35	67	
Davi	11	7	18	5	30	71	
Panji	12	8	23	6	45	94	
Σ	29	22	60	11	110	232	
X	9.66667	7.33333	20	3.66667	36.6667	77.3333	

Table 4.3 (Total and Mean of Pretest and Posttest Score)

Test		RW	RN	RS	MT	WT	Total
Pretest	Σ	19	23	22	6	115	185
	Χ	6.33	7.67	7.33	2	38.3	61.7
Posttest	Σ	31	22	60	12	110	235
	Χ	10.3	7.33	20	4	36.7	78.3
Improvement		4%	-0.33%	12.7%	2%	-1.67%	16.7%

In which:

RW	: Reading word
RN	: Reading number
RS	: Reading sentence
MT	: Memorizing test
WT	: Writing test

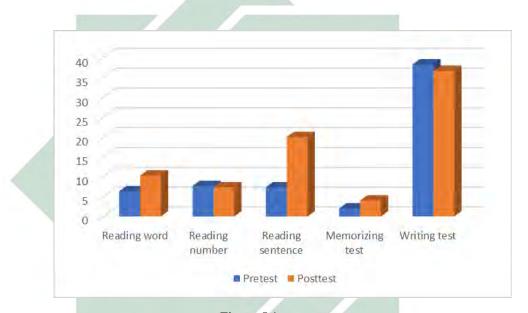


Figure 5.1 Chart of the Experimental Group's Pretest and Posttest Score

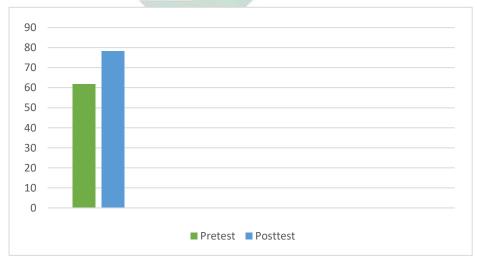


Figure 5.2 Chart of the Experimental Group's Score

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In this study, the experimental group was the students of SDN Tejo III. The researcher examined 3 students who had symptom of dyslexia and dysgraphia. They were 3 students in experimental group. Diva, Davi, and Panji, all of them followed the pretest as well. They were the sample of the experimental group.

In the experimental groups, the students were given treatments by teaching them using crossword game. The data of the experimental group were collected from score of pretest and posttest. The score from pretest was used to know students' reading and writing skill. The test was held before the researcher gave the treatment and they had not received treatment yet. The content of pretest consisted of 5 kinds of categories, such as reading word, reading number, reading sentence, memorizing test, and writing test. In the writing test, the students were asked to copy the text into blank line. Pretest in experimental group was conducted on Monday, January 29th 2018. *Table 4.1* showed the score of pretest.

After the researcher gave treatments by teaching them using crossword game, the researcher conducted posttest to find out whether there was improvement of the students' reading and writing ability or not. The posttest was administered on Monday, March 5th 2018. The students were also asked to read and write as like as the researcher instruct. *Table 4.2* showed the posttest score. The question of the test was similar with pretest. There were 5 kinds of test in the posttest, reading word, reading number, memorizing test and reading sentence.

From the *Table 4.3* above, it could be seen that there was progress of the students reading and writing ability. In pretest, the means of the students' score is 6.33 for reading word, 7.67 for reading number, 7.3 for reading sentence, 2 for memorizing test, and 38.3 for writing test. So, the means of the students' total score was 61.7. It showed that the students' speaking skill was still low. Therefore, the researcher taught the students through crossword game as the treatment for the experimental group to improve the reading and writing skill. While in posttest, the means of the students' score was 10.3 for reading word, 7.3 for reading number, 20 for reading sentence, 4 for memorizing test, and 36.7 for writing test. So, the means of the students' total score is 78.3.

The score of the posttest compared with the pretest showed that the students' scores increase in reading word, reading sentence, and memorizing test after they got the treatment. It showed that crossword game improves students learning ability. The improvement were 4% in reading word, 12.7% in reading sentence, and 2% in memorizing test. Furthermore, the students' scores were decrease in reading number and writing test. They were 0.33% in reading number and 1.67% in writing test. The alteration of the students' reading and writing skill could be seen on the *Figure 5.1 and Figure 5.2*.

After all the score of experimental group was collected, the researcher compared it with control group score. It aimed to know the different alteration between experimental group which was taught with crossword game and control group which was taught with conventional teaching. The result of control group score was following:

B. The Result of Control Groups' Test

 Table 4.4 (The students of Control Group's Pretest Score)

Students	- /	Score				
Students	RW	RN	RS	MT	WR	Scole
Ahmad	12	7	23	6	30	78
Tegar	12	8	23	6	25	74
Dafi	12	8	23	5	25	73
Davin	8	7	20	5	20	60
Σ	44	30	89	22	100	285
X	11	7.5	22.25	5.5	25	71.25

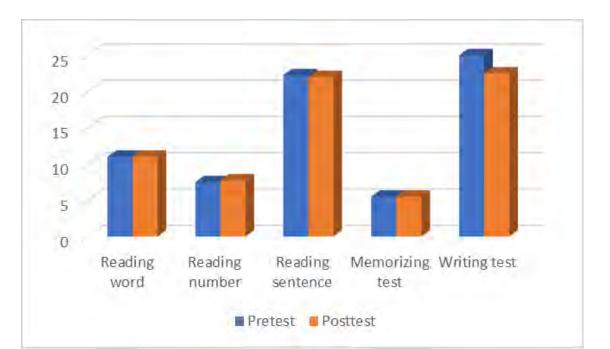
 Table 4.5 (Students of the Control Group's Posttest Score)

	Students			Po sttest			Score	
2	Students	RW	RN	RS	MT	WR	Score	
	Ahmad	12	8	23	6	40	89	
	Tegar	12	8	23	6	20	69	
	Dafi	11	8	23	4	20	66	
	Davin	9	7	19	6	10	51	
	Σ	44	31	88	22	90	275	
	Х	11	7.75	22	5.5	22.5	68.75	

Table 4.6 (Total and Mean of Pretest and Posttest Score of Control

Group)

Test		RW	RN	RS	MT	WT	Total
Pretest	Σ	44	30	89	22	100	285
	X	11	7.5	22.25	5.5	25	71.25
Desthest	Σ	44	31	88	22	90	275
Posttest	X	11	7.75	22	5.5	22.5	68.75
Improvement		0%	0.25%	-0.25%	0%	-2.5%	-2.5%



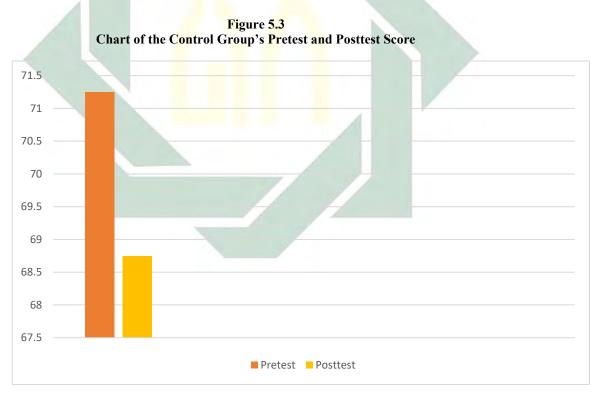


Figure 5.4 Chart of the Control Group's Score

The control group was the students of SDIT Al-Khalifa Mojowarno.

The researcher examined 4 students who had symptom of dyslexia and

dysgraphia. They were Dafi, Davin, Tegar, and Ahmad. In the control group, the students were given treatments by their own teacher in every Saturday. The data from pretest was aimed to measure the students' reading and writing skill before they got the treatments. The content of pretest consisted of 5 kinds of categories, such as reading word, reading number, reading sentence, memorizing test, and writing test. In the writing test, the students were asked to copy the text into blank line. The pretest was given before they got the treatment. In control group, the students only got the treatment from teacher by conventional teaching like calistung (baca tulis berhitung). The result of pretest is attached as the *Table 4.4*.

After their teacher gave treatments by conventional teaching in calistung course, the researcher conducted posttest to find out whether there was improvement of the students' reading and writing ability or not in this group. The posttest was administered on Saturday, March 10th 2018. The students were also asked to read and write as like as the researcher instruct. The result of the students' posttest score was presented as *Table 4.5*.

From the *Table 4.6* above, it could be seen that there is fluctuation of the students' reading and speaking skill. In pretest, the means of the students' score was 11 for reading word, 7.5 for reading number, 22.25 for reading sentence, 5.5 for memorizing test, and 25 for writing test. So, the means of the students' total score was 71.25. The researcher did not teach control group through crossword game. They were taught using conventional teaching in calistung course. Meanwhile, the means of the students' posttest score was 11 for reading word, 7.75 for reading number, 22 for reading sentence, 5.5 for memorizing test, and 22.5 for writing test. So, the mean of the students' total score is 68.75.

The score of the posttest compared with the pretest shows that the students' score increases 0.25% in reading number but it was decrease 0.25% in reading sentence and 2.5% writing test. The students' scores were constant in reading word and memorizing test. The fluctuation of the students' reading and writing skill could be seen in the charts as *Figure 5.3* and *Figure 5.4*.

C. The Comparison between Experimental and Control Group's Score

Group	Pretest mean	Posttest mean	Different mean
Experimental	61.6667	77.3333	15.66666667
Control	71.25	68.75	-2.5

 Table 4.7 (Pre-test and Post-test Difference)

The result of pretest and posttest scores of experimental and control groups, we could conclude that the posttest score was higher than pretest in experimental group whereas the posttest score was lower in control group. The experimental group showed the improvement. The improvement could be seen through *Table 4.7*. After all the score from the test both experimental group and control group were done, the researcher analyzed it by using t-test. It aimed to know the significant of crossword game to experimental group.

a. T-test

T-test is a tool which is used for comparative hypothesis of two samples if the data is in interval or ratio. It is aimed to find out whether the students who are taught through crossword game got better reading and writing or not. Before that, the researcher did normality test and homogeneities test. The normality and homogeneity test were required for the assumption of t-test calculation. The normality test was used to check whether the data from posttest score of experimental group and control group were normally distribution or not, while homogeneity test was used to calculate the homogeneity of variance of both experimental and control group posttest score. The procedure was as follows:

 Table 4.8 (The score of experimental and control group)

a. 1 .	Score		F	Students	Sc	ore	7	
Students	Pretest	Posttest	٤	Students	Pretest	Posttest	2	
Dia	C 1		110	Ahmad	78	89	167	
Diva	51	67	118	Tegar	74	69	143	
Davi	46	72	118	Dafi	73	66	139	
Panji	88	94	182	Davin	60	51	111	
Mean	61.6667	77.6667		//	71.25	68.75		

i.Normality Test

The researcher uses normality test to check whether the posttest score of experimental group and control group are normally distributed or not. It was required because the data >30. The researcher used software named *IBM SPSS 24.0 for windows* to calculate normality test. The result as follows:

H₀ : The sampled population is normally distributed (> α)

H₁ : The sampled population is not normally distributed ($\leq \alpha$)

Sig. value (α) = 0.05

Table 4.9 (Tests of Normality)

	Kolmo	gorov-Sn	nirnov ^a	Shapiro-Wilk				
	Statisti			Statisti				
	c	df	<mark>Sig.</mark>	c	df	Sig.		
Pretest_Score	.221	7	<mark>.200*</mark>	.947	7	<mark>.707</mark>		
*. This is a lower bound of the true significance.								
a Lilliefors Si	onificance	e Correctio	on -					

The p-value **0.2 means greater than 0.05**, so it would accept the null hypothesis. It could be concluded that the data come from a normally-distributed population. So, it means the researcher could continue the calculation in the t-test.

ii. Homogeneity Test

Homogeneity test is used to check whether the posttest score of experimental and control group have similar variance or not. It was required for the research which engaged two different groups. The researcher should get the equal variance for the result of this test because the data was > 30. The followings are steps of homogeneity test, there are:

- H₀ : The variance of experimental and control group are equal $(> \alpha)$
- H₁ : The variance of experimental and control group are equal $(< \alpha)$

70

Sig. value (α) = 0.05

		Levene Statistic	df1	df2	Sig.
Score	Based on Mean	1.885	<u>1</u>	12 12	.195
	Based on Median	1.865	1	12	.197
	Based on Median and	1.865	1	10.606	.200
	with adjusted df				
	Based on trimmed	1.885	1	12	.195
	mean				

Table 5.0 (Test of Homogeneity of Variance)

The p-value based on mean has significant 0.195 means greater than 0.05, so it would accept the null hypothesis that the variance of experimental and control group are equal. The result showed the variance was equal. The researcher could continue the calculation because the variance of both group were equal.

Then, the researcher calculated t-test from pretest and posttest scores of experimental and control groups. The researcher was supported by *SPSS 24.0 for windows* to calculate. The researcher applied 2 types of t-test in this study; they were paired t-test and independent t-test. The researcher used **Significant level (** α **)** = 0.05 or 5 %. The result was presented below:

a) Paired T-test

Hypothesis

- 1. Paired Sample Statistic
 - f) H₀; $\mu_{before} = \mu_{after}$

There is not effect of crossword game applied to the samples

g) H₁; μ before \neq μ after

There is effect of crossword game applied to the samples.

- 2. Paired Sample Test
 - a. H₀ is accepeted H₁ rejected if Sig. tailed <

<mark>Sig. Level</mark> (α)

Conclusion: Crossword could not give

significant improvement

b. H_1 accepted H_0 rejected if Sig. tailed > Sig.

Level (a)

Conclusion: Crossword game could give

significant improvement

The result of SPSS 24.0 for windows was displayed

below:

Table 5.1 (Paired Samples Statistics)

				Std.	Std. Error
		<mark>Mean</mark>	Ν	Deviation	Mean
Pair 1	Pretest	<mark>61.6667</mark>	3	22.94196	13.24554
	Posttest	<mark>77.3333</mark>	3	14.57166	8.41295

Table 5.1 shows the difference mean between before and after crossword games applied, exactly improvement between pretest and posttest. H₁ is accepted because $\mu_{before} \neq \mu_{after}$. It means, crossword game influenced the samples. It improves the reading and writing skill for dyslexia and dysgraphia students.

Table 5.2	(Paired Sampl	les Correlations)
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		Ν	Correlation	Sig.
Pair 1	Pretest & Posttest	3	<mark>.970</mark>	.157

The table of correlation aims to know the correlation between crossword games to the sample. *Table 5.2* shows that **the number of correlation (r)** is **0.97**. The researcher should quadrate the number of correlation, the result is ($0.970^2 = 0.94$). **0.94 can be read as 94%**. It described that **94%** effect of the

score of students was from crossword game, and 6%

was from another factor.

		Paired Differences							
					95% Cor	nfidence			
			Std. Deviati	Std. Error	Differ	Interval of the Difference		10	Sig. (2-
		Mean	on	Mean	Lower	Upper	t	df	tailed)
Pair	Pretest -	-15.66667	9.5043	5.48736	<mark>-39.27687</mark>	<mark>7.94353</mark>	<mark>-2.855</mark>	2	<mark>.104</mark>
1	Posttest		8						

Table 5.3 (Paired Samples Test)

The table above shows that H_1 is received and H_0 is rejected because (Sig. tailed > Sig. level (α)). *Table 5.3* displays the number Sig. tailed was 0.104, it means **greater** than 0.05. It can be concluded that Crossword Games gave significant difference. The researcher predicts that crossword games applied in learning activity will be effective to improve reading and writing skill.

b) Independent T-test

1. Hypothesis

- a) H₀: There is no difference significantly both experiment and control group
- b) H₀ is accepted if (t) test < Significant level (α)

c) H₁: There is significant difference both experimental and control group

d) H₁ is accepted if (t) test > Significant level (α)

2. Significant level ($\alpha = 5\%$ or 0,05)

The analysis from SPSS 24.0 is presented

below:

Table 5.4 (Independent Samples Test)

Table 5.4 (Independent Samples Test)										
	Levene's Test									
	for Equality									
	of Variances			t-test for Equality of Means						
									95% Cor	nfidence
									Interval of the	
						Sig. (2-	Mean	Std. Error	Difference	
	-	F	Sig.	t	df	tailed)	Difference	Difference	Lower	Upper
Scor	Equal	1.885	<mark>.195</mark>	<mark>061</mark>	<mark>12</mark>	<mark>.952</mark>	<mark>50000</mark>	<mark>8.21045</mark>	<mark>-18.38903</mark>	<mark>17.38903</mark>
е	variances									
	assumed									

Lavene's Test value result shows p = 0.195, 0.195 > 0.05. SPSS output above showed that the variance of both experimental and control groups are equal because (0.195 > 0.05). The number of (t) was -0.061, (-0.061 < 0.05), it is lower than the significant level. It accepted H₀ and rejected H₁ (because (t) test < α). It explains that, there is no significant difference between the experimental group (taught by crossword game) and the control group (taught by conventional teaching). So, the researcher looks up to the **The Comparison between Experimental and Control Group's Score**. It shows that the experimental group students who were taught with crossword games group get the improvement for about 16.7 % (*see table 4.3*). In contrary, the control group students who were taught with conventional teaching get the reduction for about 2.5% (*see table 4.6*).

4.1.3 The Students' Opinion about Crossword Puzzle

The researcher recorded the opinion of the students about the crossword applied in course. Recording opinion of the students was administered on Saturday, February 24th 2018. The researcher recorded 3 data of experimental group. They were Diva, Davi, and Panji. The data for interview are very low because the participants tend to be shy to express their opinion. They also convey the simple expression like (nodding head) to answer "yes" and (shake the head) to answer "no".

In the first question, the researcher asked them about what the students felt when the researcher came to the class and teach with crossword game and other supported learning. All students said they were happy. Diva said "seneng, tehibur), Davi said similar with Diva "seneng", and Panji also said that researcher's coming was very interesting, "inggih, menyenangkan dan seru kalau ada sampean". So, the researcher thought that crossword game and other fresh material in reading and learning was successful to make them fun and interesting.

In the second question, the researcher asked about the specific opinion about crossword game itself and their opinion if crossword game applied to their course outline. Diva and Davi said that "main tts itu enak, memahami banyak huruf". They said that they would know more about alphabet. It related with their skill, they were dyslexia and dysgraphia in the class. Diva was very difficult to understand word even letter and Davi was difficult to understand word and sentence. Both of them enjoyed to learn with crossword game. Panji added his opinion about it. He said that crossword game was not boring. All students also agree if the crossword applied into the course like Bahasa or Science. It was showed by nodding head of Diva and Davi.

In the next question, the researcher asked about the skill of diva and davi to differ some letter like "m" and "n", "n" and "u", "d" and "b", as we knew that they could not differ all letter and easy to forget. After the crossword applied to the class they said that they could differ all by said "bisa". The practiced by using their finger to me and drew it in front of me.

In conclusion, the researcher only asked this question to Diva and Davi, not to panji, because Diva and Davi were only the dyslexia and dysgraphia students. The researcher asked "do you get easier in reading and writing". Their answer made the researcher sad, because they said "enggak, tetap". The researcher conclude that, if we saw the score, it could be seen that crossword game increase their reading and writing ability by looking the score but it was contrary with their psychology, they felt the same either crossword applied to their course or it was not applied into it.

4.2 Discussion

From the result gained, it can be seen eight indications of dyslexia and three indications of dysgraphia. All of the indication is explored from experimental group and control group which is consist of seven students. The indications of dyslexia that are found by the researcher are addition, omission, inversion, reversal, substitution, reading slowly, easy to forget the letter, and unconfident. All of these indications come from their physical condition. Substitution is the most frequently dyslexia students did while reading a word. There are 2 students who always commit it while reading, they are Diva and Davi. Diva and Davi are the students who get dyslexia and dysgraphia. They cannot read as well, they always need their friend to give them information what word is it. They always feel bored while taking course such reading and writing. They also feel difficult when understand a sentence.

The researcher discovers the three indications of dysgraphia to this study, they are bad handwriting, writing out of the line sheet, and writing slowly. These indications are the specific problem that all students commit while writing. Bad handwriting is the unclear of the students writing, it included the form and the size in each letter. Their writing is also out of the line and inconsistent writing in a line. They need much time to copy a sentence into new sheet.

The previous study about dyslexia and dysgraphia reported that these learning disabilities always happened to the Elementary School. Almost all students were difficult to understand and catch the learning course. It related to Beninger (2006) who said that the children with learning disability have bad achievement; they cannot catch as well as teacher said and command. Basically, all students with dyslexia and dysgraphia might not able to understand the basic course in the first school.

Linda Siegel (2003) argues that children with learning disability do not show their emotional interruption. They need special treatment and more attention from the teacher. In this study, the researcher attempts to give treatment toward dyslexia and dysgraphia students. The researcher applied the crossword game to increase students' reading and writing ability. It is different with the study from Varia and Nurul (2013) who examined the significant of scrabble games to increase reading ability in dyslexia students.

In this current study, the researcher used t-test and supported by SPPS program to analyze the data. It used to analyze the data and examined the significant of crossword game to increase reading and writing ability to the students. The researcher used independent t-test and paired t-test. Independent t-test is used to know the specific difference between experimental group and control group. Paired t-test is used to know the significant of crossword game applied toward dyslexia and dysgraphia students. The conclusion from Paired t-test shows that crossword games give significant different to the experimental group. It is supported by *Table 4.3* which shows that crossword game implementation can increase the score of dyslexia and dysgraphia students for about 16.7%.

This research shows that crossword game is truly be able to increase the students' ability, for the example the research of Istifaiyah (2009) entitled "Efektifitas Strategi Teka-teki Silang (TTS) dalam Meningkatkan hasil Belajar Pada Mata Pelajaran Sejarah Kebudayaan Islam siswa kelas VII di SMP Islam Darussalam Surabaya", the research of Rantika and Abdullah (2015) entitled "Penggunaan Media Teka Teki Silang dalam Meningkatkan Hasil Belajar Siswa Kelas II pada Pembelajaran Bahasa Arab di Madrasah Ibtidaiyah Nurul Iman Pengabuan Kabupaten Pali", and the research of Reza Fauziqurohman (2017) entitled "Keefektifan Penggunaan Media Permainan Teka-Teki Silang dalam Negeri 1 Pengasih Kulon Progo. The result of these studies above indicates that crossword games give the positive effect toward students' achievement.

Reza Fauziqurohman (2017) is the researcher who applied true experimental study in his research and engaged two groups (experimental and control group). Reza concludes that the crossword games could increase students' score for about 8.8%, and the crossword games applied is more effective than conventional teaching to help students understand the Dutch vocabulary in Senior High School. It supports this study, that the crossword games is truly effective to increase the reading and writing ability and the score of dyslexia and dysgraphia students increase for about 16.7%.

This researcher committed the interview to complete the requirement to this research. Almost all of previous study is not conduct the data from interview. The researcher conducted experimental group students' opinion about the crossword game. Based on the student's opinion, the researcher received good response when using crossword game was implemented in the classroom. The students feel that this technique made them interesting and made students brave to present their idea in the class. The students are active and enthusiast in learning process by using crossword game. All students is very welcome when the researchers' coming into their class. The students always follow the learning as well. The dyslexia and dysgraphia are also followed all the treatment that was given by the researcher as well and All students enjoy the course.

CHAPTER V

CONCLUSION AND SUGGESTION

This chapter outlines the conclusion of the findings and the suggestion for the government, teacher, parents, and the next researcher.

5.1 Conclusion

After analyzing the data, some conclusions are found to answer the research questions. The first is about the indication of dyslexia and dysgraphia in the 2nd grade student in 3rd elementary school Tejo Mojoagung which is experimental group and Islamic elementary school Al-Khalifa Mojowarno which control group. The researcher analyzed after giving the pretest to both group. The researcher discovers eight indications of dyslexia students; (1) addition (2) omission (3) inversion (4) reversal (5) substitution (6) reading slowly (7) easy to forget the letter and (8) unconfident, then three indications of dysgraphia students; (1) bad handwriting (2) writing out of the line sheet and (3) writing slowly.

These indications are caused of their environment and psychological factor. the researcher knows that the students in experimental group comes from the family with low educated, the parents ignore about the students' development especially in learning, never give the motivation to them, their brother or sister got drop out from schools. So, it means that the students will get low motivation in learning.

This study is designed to be experimental study. The researcher collected data from two schools and divided it into two groups, experimental group and control group. The researcher attempts to help the students with learning disability such dyslexia and dysgraphia through crossword game implication toward experimental group while the control group received conventional teaching from their teacher. The researcher found the different changing from both of group after getting treatment. The fluctuation score of students' reading and writing can be seen from pretest and posttest from each group. In the experimental, the improvement progress reached is 16.7%. In contrary, the control group shows the reduction 2.5%. On the other words, the experimental group is getting improvement progress than control group.

The researcher used t-test to know the significant improvement of dyslexia and dysgraphia student. T-test was also used the comparison between experimental group which was taught by crossword game and control group which was taught by conventional teaching. Two kinds of t-test above called Paired t-test and Independent t-test. The paired t-test result shows that H₀ is rejected and H₁ is received because Sig. tailed > Sig. level (*a*). *Table 5.2* displayed the number Sig. tailed was 0.104, it means greater than 0.05, It can be concluded that Crossword games applied in learning activity will be effective to improve reading and writing skill. Then, the result of independent t-test shows that the number of (t) was -0.061, (-0.061 < 0.05), it is lower than significant level. It accepted H₀ and rejected H₁ (because (t) test < *a*). It explained there is no significant difference between experimental group (taught by crossword game) and control group (taught by conventional teaching). However, the researcher decides that crossword game

applied in experimental group is more effective than conventional teaching which is applied in control group. It can be seen that crossword game applied success to improve 16.7% the students' score, in contrary the conventional teaching precisely reduce 2.5% the students' score.

After all test was done. The researcher asked to the experimental group students' opinion about the crossword game implication to the course learning. Based on the student's opinion, the researcher received good response in the classroom. The students feel that this technique makes them learning reading interesting and make students brave to present their opinion in the class. The students' active and enthusiast in every meeting learning process by using crossword game.

5.2 Suggestion

Based on the research finding on this study, there are some suggestions below:

1. To Government

Game is important to make students interest while catch the learning course, the researcher expects the government could add some fresh curriculum which is include some appropriate game to BCO (Basic Course Outline). Game increase the students' bored, the students will be fun of it. Then, the students will love their teacher because they can make them happy in every meeting. If students have loved to the teacher, the course will be easier to understand by students.

2. To Teacher

The researcher wishes it will be useful for the teacher because teacher has important role after parents in learning development. The researcher wishes, the teacher has to has sensitive feeling about the students who get learning disability especially in dyslexia and dysgraphia. Because both learning disabilities often appear to the students, moreover they study with these dyslexia and dysgraphia until they are in junior high school. It makes the researcher feeling sad. These disabilities are not the disease, the students with some disabilities just need more our attention. They need slow explanation, the also need motivation. They have a right to be the same from their friend who can read easily who can write clearly. They do want to be it but sometimes we never know about that because we saw that every student is same without more thinking that *"maybe one of the students has disability in learning"*. Personal approach is needed here. So, the researcher does wish the teacher could be more patient while teaching and give special treatment to the students with learning disability.

3. To Parents

Parents in the most important part to the students live even their study. The motivation of the parents is very important to the children development. Parent who always give motivation to their child while studying will be different with parents who just let their child goes to school and do the task as they can. The parent's motivation determines the students at school. The most students with learning disability comes from the parents who never motivate their children even they teach reading or writing at home. This study is expected to prove that the students need more attention and example from the parents. Students has a right to ask parents when getting difficult question in reading and writing. Parents who never give the motivation may be never answer the children' question.

4. To the future Researcher

For the next researcher, the researcher is expected that they could find the medical proof about dyslexia and dysgraphia symptom because in this study the researcher does not find the proper medical proof of dyslexia and dysgraphia students.

The researcher also expects for the next researcher, they can provide more effective treatment for dysgraphia students, because the researcher thought that crossword game is only effective for dyslexia children not effective enough to the dysgraphia students. The researcher also expect that the next researcher could examine music to be addition in course outline, because singing a song make students easier to catch the letter. Then, the researcher suggest for the next researcher could find the more participant to the research because the researcher from this study only got the low participant so the calculation of the test may not significant enough.

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