Materials Development of English Language Learning and Teaching for Deaf Students

by Febrina Dafit

Materials Development of English Language Learning and Teaching for Deaf Students

Miranti Eka Putri[1*], M. Zaim[1], Yasnur Asri[1], Sri Wahyuni[2*]

[1] Language and Art Faculty, Universitas Negeri Padang, West Sumatra, Indonesia
[2] Education Faculty, Universitas Islam Riau, Riau, Indonesia

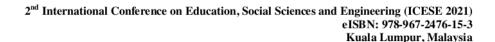*Corresponding Author: mirantiekaputri@student.unp.ac.id, wahyunis@edu.uir.ac.id

_____

Abstract: *This study aims to examine previous studies and theoretical studies related to English reading skills based on local wisdom assisted by audio-visual for deaf students. This research is a literature study by examining previous studies and theoretical studies. The results of the literature review will be used to identify the English language needs of special senior high school for deaf students (SMALB-B) as preliminary study in Pekanbaru. Two parts explained in literature review, namely theoretical review and previous research. Each parts contained sub part that consist of each theoretical review and previous research. The results of this study are the teaching materials developed for deaf students' needs that should be suitable for literature review and previous research.*

Keywords: Materials Development, English Language Learning, Deaf Students
_____

1. Introduction

Early literacy intervention in children with hearing impairments has a positive impact on learning to read in elementary schools, creating academic achievement and success in the future. The National Literacy Panel (2008) recommends early intervention in literacy in two basic skills, namely code-based skills required for decoding words (phonological awareness, alphabetic knowledge, and print concepts) as well as meaning based skills needed to understand the decoded words and thus ideas (vocabulary and language comprehension). Code-based skills and meaning-based skills are basic abilities in the formation of early literacy in children with hearing impairments(Gough & Tunmer, 1977; Holmer, Heimann, & Rudner, 2017; Lederberg, Miller, Easterbrooks, & Connor, 2014; Marschark et al., 2018; C. Mayer & Trezek, 2018; Webb, Lederberg, Branum-martin, & Connor, 2015).

Reading is a complex process that is very important in learning English (Brown & Brewer, 1996). This process includes the active construction of meaning in text (cognition), linguistic knowledge, decoding of letters and words, and metacognitive. (Banner & Wang, 2013).Metacognitive strategy theory is the basis for implementing reading skills in students with four components, knowing when you comprehend, knowing what you comprehend, knowing what knowledge you need to acquire in order to comprehend, and knowing how to involve strategies to improve comprehension. Flavell (1981); Brown & Brewer (1996) describes the differences in each component, metacognitive knowledge, metacognitive experiences, goals or tasks, and actions or strategies.

2. Literature Review

Two parts explained in literature review, namely theoretical review and previous research. Each part contained sub part that consist of each theoretical review and previous research.

2.1 Theoretical Review
a. Theory of English Subjects for the Deaf Special High School (SMALB-B)

Gagne's Conditions of Learning (Gagne, 1965) discusses the conditions of learning and the implications of instructional design. Types of learning outcomes, each of which is best achieved through its specific instructional design but also a set of steps required in each learning environment. Thus, Howard Gardner's Multiple Intelligences (Gardner, 1983) states that the many types of human intelligence result in different information processes. Furthermore, The Peter Principle (Peter & Hull, 1970) states that someone who is competent will get a position that requires different skills, meaning that one's educational competence will have an impact on the position at the next level of education. Meanwhile, Jerome Bruner discussed the need to create an educational learning environment that focuses on the uniqueness of students, how students become like that, and how students can become more valuable. Skinner's Behaviourist Theory (Skinner, 1936) emphasizes the importance of the role of the environment in influencing behaviour, by almost eliminating innate or inherited factors to focus on learning. Maslow's Hierarchy of Needs (Maslow, 1943) states that students who are motivated to achieve learning needs to take precedence over others if they feel comfortable. Furthermore, Erikson's eight Stages of Psychosocial Development (Erikson, 1958) agree that the ego makes a positive contribution to development by mastering attitudes, ideas, and skills at every stage of development. This was supported by Bloom's Domains of Learning (Bloom, 1956) which states that The Cognitive Domain (Bloom's Taxonomy), The Affective Domain, The Psychomotor Domain, which reveals that the taxonomy of behaviour is considered the goal of the learning process, means that students must acquire skills, knowledge, and/or new attitudes from each lesson. Students can achieve their goals, desires, and desires in life if they actualize themselves to reach their potential, Rogers' Humanist Theory (Rogers, 1959). Thus, the two concepts of cognitive processing and psychology, namely the first concept of chunking and short-term (working) memory capacity, are the basic elements of all subsequent memory theory. Furthermore, the second concept is about information processing, using computers as a student learning model.

Based on a study of the theories that have been explained, the context of learning English for deaf students in Indonesia is manifested in the English learning tools for deaf students of class XI SMALB-B 2013 revision curriculum: (1) graduate competency standards (SKL); (2) content standards; (3) process standards; (4) assessment standards; (5) core competencies and basic competencies (KI-KD); (6) assessment of learning outcomes; (7) deaf English teacher book XI; (8) deaf English student book XI; (9) workbook 1 in English (syllabus, determination of competency achievement indicators, analysis of the relationship between KI, KD, GPA, learning materials, analysis of graduation competency standards, competency mapping, assessment techniques, KKM, time allocation analysis, competency analysis, RPP); (10) English Language Workbook 2 (code of ethics, teacher pledge, teacher rules, time allocation, teacher habit, teacher teaching journal, educational calendar, annual program, and semester program); (11) English language assessment book (appendix of techniques and assessment instruments), LPS self, LPS observation, LPS peer, LPS journal, PG written LPP test, LPP written test description, LPP
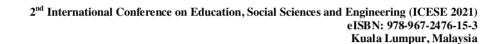
117

observation of discussions, questions and answers, and conversations, LPP assignments, LPK performance, LPK projects, LPK products, LPK portfolios, assessment sheets recapitulation, RPP material attachments).

b. Theory Regarding Teaching Materials for English Subjects for the Deaf Special High School (SMALB-B)

Piaget's Theory of Cognitive Development (Piaget, 1936) states that Piaget's Stages of Cognitive Development discusses how students acquire, retain, and develop knowledge to improve student education. Studying the development of knowledge at each age level including deaf students at SMALB. Piaget believed that students reach different stages in cognitive development, increase knowledge, develop knowledge, and adapt previously held ideas to accommodate new information. Furthermore, Vygotsky's Theory of Learning (Vygotsky, 1978) also supports that the context and content of the learning process facilitate teachers in selecting and considering learning tools for success in learning English. Furthermore, Howard Gardner's Multiple Intelligences (Gardner, 1983) supports teachers in providing students with means of accessing content to enhance learning, demonstrating students 'knowledge and skills to increase learning engagement, as well as instruction with detailed knowledge of students' specific strengths and needs. This is also confirmed by Laird's Sensory Theory (Laird, 1985) that greater learning can occur when the five senses of sight, hearing, touch, smell, and taste are stimulated. So that the adjustment of learning tools will need to be maximized in learning. Maslow's Hierarchy of Needs (Maslow, 1943) states that the learning approach includes the complete physical, emotional, social and intellectual qualities of the individual and how they affect the learning carried out. Bloom's Domains of Learning (Bloom, 1956) regarding The Cognitive Domain (Bloom's Taxonomy), The Affective Domain, and The Psychomotor Domain becomes a taxonomy as the goal of the learning process so that students must acquire new skills, knowledge, and/or attitudes from each lesson. Rogers' Humanist Theory (Rogers, 1959) also supports students to find an environment that provides authenticity (openness and self-disclosure), acceptance (being seen with unconditional positive regard), and empathy (being listened to and understood). Cognitive Theory of Multimedia Learning (Mayer, 2005) supports students to learn more deeply from words and pictures rather than just words. The use of words and images for learning media must also pay attention to their effect on the students cognitive. This is reinforced by Information Processing Theory (Miller, 1956) which states that two concepts of cognitive processing and psychology, namely the first concept of chunking and short-term memory capacity (work) are the basic elements of all subsequent memory theories. Furthermore, the second concept is about information processing, using computers as a student learning model.

Based on a study of the theories that have been described, deaf students need English language teaching materials with the following criteria, namely: (1) adapting ideas to accommodate new information for students; (2) the context and content of the learning process to facilitate the students learning; (3) provide special strengths and needs of students in learning; (4) adjusting the students' senses to learning tools needs to be maximized; (5) obtain an environment that provides authenticity, acceptance, and empathy; (6) pay attention to cognitive suitability with learning devices; and (7) cognitive processing and student psychology in learning.
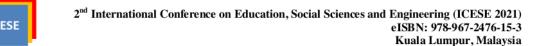
c. Theory of English Reading Skills for the Deaf Special High School (SMALB-B)

Determination of strategies in reading is very necessary to achieve reading goals. Deaf readers have the opportunity to choose strategic reading based on the text being read. Determination of strategies in reading is very necessary to achieve reading goals. Deaf readers have the opportunity to choose strategic reading based on the text being read. Vygotsky's Theory of Learning (Vygotsky, 1978) has identified that the Zone of Proximal Development (ZPD) is a metamorphosis domain or space for students to achieve higher levels of knowledge and performance with support and adults or other knowledgeable people for example supporting cultures such as reading and writing. Furthermore, Laird's Sensory Theory (Laird, 1985) discusses the adjustment of approaches and resources to as many senses as students need in learning. Furthermore, Erikson's 8 Stages of Psychosocial Development (Erikson, 1958) states that students are motivated by the need to achieve competence in certain fields. So that it requires the ability of teachers to be able to motivate and explore the potential of students in learning. Rogers' Humanist Theory (Rogers, 1959) believes that students can achieve their goals, desires, and desires in life if they actualize themselves to achieve their potential. This is supported by Howard Gardner's Multiple Intelligences (Gardner, 1983) that learning styles include the visual, auditory, kinaesthetic, impulsive and reflective, right brain and left brain. So it is expected that the teacher can clarify the intelligence of students and direct the learning style that is tailored to the wishes of each student. Skinner's Behaviourist Theory (Skinner, 1936) discusses emphasizing the role of environmental factors in influencing behaviour, with almost the exclusion of inherited or inherited factors. Bloom's Domains of Learning (Bloom, 1956) states that this taxonomy of behaviour is considered the goal of the learning process, meaning that students must acquire skills, knowledge, and/or new attitudes from each learning. The Peter Principle (Peter & Hull, 1970) emphasizes that someone who is competent in his job will get promotion to a position that requires different skills. The Promotion will reach a level where they are so incompetent that they are stuck in the "Final Placement" or "Peter's Plateau", so this cannot be avoided. Canter's Theory of Assertive Discipline (Lee & Canter, 1976) outlines clear expectations and positive and negative consequences, defines clear rules and boundaries, enables teachers to be assertive positively and uses common sense and approach to learning.

It can be concluded that the reading skills of deaf students are expected to meet the following criteria: (1) achieve a higher level of knowledge and performance to support a culture of reading and writing; (2) adjusting the approach and senses of students in learning reading skills; (3) motivating students to achieve competence; (4) trusting students to achieve their goals, desires to learn and desires in life if they actualize themselves to achieve their potential; (5) clarifying students' intelligence and directing learning styles adapted to reading skills; (6) emphasize the role of environmental factors in influencing students' reading behaviour; (7) students must acquire new skills, knowledge, and attitudes from each lesson; (8) competent in reading skills will get a position that requires different skills.

d. Theory of English Reading Skills Based on Local Wisdom Senior High School for the Deaf (SMALB-B)

Piaget's Theory of Cognitive Development (Piaget, 1936), Piaget's Stages of Cognitive Development, Piaget believes that students reach different stages of cognitive development through trial and error, students take an active role in the learning process, interact with the world

around them, add new knowledge, develop existing knowledge, and adapt previously held Ideas to accommodate new information. Vygotsky's Theory of Learning (Vygotsky, 1978) discusses the sociocultural context that surrounds students which facilitate the learning process. This approach will take into account teachers in selecting and considering and discussing the language, cultural diversity of students, languages and literacy needed to be successful in learning English and academic content in schools and their peers. Howard Gardner's Multiple Intelligences (Gardner, 1983) states that teachers provide students with ways to access content to enhance learning, show students 'knowledge and skills to increase learning engagement, as well as instruction with detailed knowledge of students' specific strengths and needs. Laird's Sensory Theory (Laird, 1985) discusses the adjustment of approaches and resources to as many senses as students need in learning. Skinner's Behaviourist Theory (Skinner, 1936) discusses the role of environmental factors in influencing behaviour to focus on learning. Maslow's Hierarchy of Needs (Maslow, 1943) states that people are motivated to achieve certain needs and some needs take precedence over others. The most basic need is physical survival, and this will be the first thing that motivates our behaviour. Rogers' Humanist Theory (Rogers, 1959) states that students need an environment that provides authenticity (openness and self-disclosure), acceptance (being seen with unconditional positive regard), and empathy (being listened to and understood).

It is concluded that the teaching materials for reading skills based on local wisdom have met the criteria based on the theoretical study described, which includes: (1) students take an active role in the learning process to interact with the world around them; (2) the sociocultural context that surrounds students who facilitate the learning process; (3) students how to access content to enhance learning, show students' knowledge and skills to increase learning engagement, as well as instruction with detailed knowledge of specific strengths and student needs; (4) adjusting the approach and resources as much as possible of the students' senses needed in learning; (5) environmental factors in influencing behaviour to focus on learning and (6) students need an environment that provides authenticity.

e. Theory of English Reading Skills Aided by Audio-visual High School for the Deaf Special School (SMALB-B)
Piaget's Theory of Cognitive Development (Piaget, 1936), Piaget's Stages of Cognitive Development, discusses the developmental stages of students encouraging independent and direct learning and opportunities for discovery. Plan a variety of classroom activities that accommodate different learning styles such as visual or auditory. Vygotsky's Theory of Learning (Vygotsky, 1978) discusses the sociocultural context that surrounds students which facilitate the learning process. Howard Gardner's Multiple Intelligences (Gardner, 1983) states that there is human intelligence and learning styles including visual, auditory, kinaesthetic, impulsive and reflective, right brain and left brain. So that students directed to use a learning style that is tailored to the wishes of each student. Laird's Sensory Theory (Laird, 1985) discusses that greater learning can occur when the five senses of sight, hearing, touch, smell, and taste are stimulated. So that the adjustment of approaches and resources as much as possible of the students' senses is needed in learning. Cognitive Theory of Multimedia Learning (Mayer, 2005) states that students learn more deeply from words and pictures than just words. The use of words and images for learning media must also pay attention to their effect on the students cognitive. Information Processing Theory (Miller, 1956) states two concepts of cognitive and psychological processing, namely the first

concept of chunking and short-term memory capacity (work) which are the basic elements of all subsequent memory theory. Furthermore, the second concept of information processing,

Based on the description of the theoretical study, it is concluded that the teaching materials for English reading skills assisted by audio-visual meets the following criteria: (1) accommodate different learning styles such as visual or auditory; (2) adjusting the approaches and sources of the deaf students' senses in learning; (3) pay attention to the effect of words and pictures on students' cognitive; and (4) cognitive and psychological processing. So that learning media in the form of audio-visual learning English reading skills is needed to reach different stages in development, add, develop, and adapt previously held ideas to accommodate new information on cognitive, affective, and psychomotor.

f. Theory of Deaf Students at Special High School for Deafness (SMALB-B)
Early detection and intervention for deaf and hearing impaired individuals is guided by the results of the committee's provisions from The Joint Committee on Infant Hearing (2007).This is carried out to maximize linguistic competence and literacy development so that underdevelopment in communication, cognition, reading, and socio-emotional development which results in low levels of education and work can be resolved as soon as possible. Early detection is carried out when the baby is not more than a month old, if the baby is assumed to have deafness or hearing loss then the baby will undergo an audio logical test no more than when the baby is three months old. Babies who are positive for deafness or hearing loss will receive early intervention from health and education professionals no more than a period of six months. JCIH (2000) defines three components of an early detection program and intervention for deafness and hearing loss including birth examinations (Birth Admission Screening); follow-up and diagnostics (Follow-up Screen and Diagnostic); and early intervention (early Intervention). Statement (2007) recommends three steps to be carried out to detect deafness and hearing loss, namely Birth Admission Screening, Follow-up Screen and Diagnostics, and Early Intervention. In the early intervention stage, there were twelve components that were carried out, namely (1) every family that has family members who are deaf or hard of hearing get early intervention facilities and services; (2) D/HH's family and children get special knowledge and skills related to D/HH's needs; (3) the family of children with D/HH from birth to 3 years will get professional qualifications, core knowledge and special skills; (3a) ASL teaching service interventions to parents and families of D/HH children; (3b) professional language teaching service interventions for skills and knowledge; (4) having access to specialist services for D/HH child development; (5) the cultural background and first language of a diverse family with D/HH children will still have access to services by providing strategies for teaching non-English and English through sign language; (6) the progress of D/HH children will be monitored every 6 months in the form of language (oral, sign language), communication (auditory, visual, augmentative), socio-emotional, cognitive, and motor skills; (7) services with early intervention are adjusted to the needs of the D/HH level in children; (8) families will play an active role in the development and implementation of Early Hearing Detection and Intervention (EHDI); (9) all families who have D/HH children will be connected with families who have similarities and who are trained in aspects of culture, linguistics, sensitive support, and guidance; (10) furthermore, D/HH individuals will play an active role in the development and implementation of Early Hearing Detection and Intervention (EHDI) at the national level; (11) Trained D/HH individuals and families contribute to guide and support other D/HH individuals

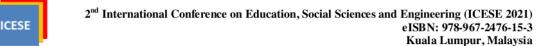and families; (12) implementing the results of the training by making the quality of individual life improved.

2.2 Previous Research
a. Research on Reading on Deaf Hard of Hearing (D/HH)

Albertini, Marschark, & Kincheloe (2016) linked reading and writing skills for deaf students with stimulating reading and writing comprehension skills. There were two experimental groups carried out, namely the first experiment in the form of the ability to write a summary by previously asking participants to read the text which proved that there was a relationship between students' knowledge in reading the text. The second experiment is a different version of the text, namely minimal coherence, local coherence, and local and global coherence. The results of this study indicate that the ability to write retelling and cohesion is closely related, while reading ability is influenced by the level of understanding, completeness and cohesion. Apple & Masterson (2015) students with hearing loss and without hearing loss on the linguistic aspect of their spelling skills and examines the relationship between reading and spelling. Spelling errors are identified based on components of phonemic awareness, orthographic patterns, morphological awareness, and mental representations. So it was found that spelling errors in children with hearing impairment occurs due to deficiencies in orthographic patterns and morphological awareness. Meanwhile, the relationship between spelling and word reading in text comprehension is still at a low level for deaf children. Spelling errors are identified based on components of phonemic awareness, orthographic patterns, morphological awareness, and mental representations.

Banner & Wang (2010) show that the determination of reading results is influenced by the type of text, the type of strategy and the level of education of the deaf readers. The purpose of this research is to identify and test the effectiveness of reading strategies used by adult deaf readers and students. It was concluded that the participants in this study could use reading strategies smoothly including constructing meaning, monitoring and improving comprehension, and evaluating comprehension. Narrative text gets better value than expository and periodical. Evaluating comprehension and monitoring and improving comprehension dominate the construction meaning. Furthermore, adult deaf readers are more familiar with many strategies, especially in speaking skills. Third, evaluating comprehension is a strategy that is often used. Fourth, participants who have high test scores have good communication with their families and get early exposure (applying theories of mind). Fifth, all participants in this study can use a reading strategy, namely think aloud, including visualizing, summarizing, paraphrasing, and prior knowledge. Sixth, the use of ASL was applied by the participants. Seventh, the use of strategies in reading skills in L1 can be used in L2. Finally, the type of text read influences the strategy in understanding the reading text used, namely narrative, periodical, and expository. Evaluating comprehension is a strategy that is often used in L2. Finally, the type of text read influences the strategy in understanding the reading text used, namely narrative, periodical, and expository. Evaluating comprehension is a strategy that is often used.

Benedict, Rivera, & Antia (2015) apply metacognitive strategies including comprehension, checking, and repairing habitual reading strategies, no reading strategies habits, and reading comprehension in D/HH children. The CC&R strategy as an effective way of teaching reading consists of several components, namely comprehension monitoring, question generation, and question answering. This study uses CC&R strategies to determine the fluency of reading words,

how to monitor and solve problems with understanding. Students' reading comprehension is measured after students are asked to read orally and retell it in a minute. This study found that instruction in metacognitive strategies affected students 'understanding of D/HH and improved students' reading habits. So it can be concluded that there is a relationship between the instructions used by the teacher in teaching and the learning strategies in reading used by students. Retelling can be an alternative in measuring students' reading comprehension after oral reading.

Bergey, Deacon, & Parrila (2017) identified that there is a relationship between academic achievement, metacognitive strategies, and learning strategies on the reading skills used by students. It was found that students who chose metacognitive strategies in learning to read had good GPAs, while on the other hand, students who experienced a lot of difficulty in reading did not use learning strategies and did not apply metacognitive strategies so that they had an effect on their academic achievement. Broek & Takashima (2018) conducted a study using 45 students as participants with 2 x 2 experimental designs including word learning through context (word learning through inferences from context), word learning through retrieval and the effect of contextual richness on word retention. The final results shows that learning words using context provides results in understanding. When partitions are asked to read a novel in English and are asked to provide information based on their understanding, the use of L1 is very helpful for students to provide the understanding obtained according to the known context.

Chevalier, Parrila, Ritchie, & Deacon (2017) have carried out research on the role of reading metacognitive strategies, metacognitive studies and learning strategies, behavioral studies and learning strategies in predicting academic success in students with reading difficulties (HRD) and without reading difficulties (NRD). The results of this study confirm that students who apply metacognitive strategies in reading get good academic achievement results compared to students who do not use metacognitive strategies which have an impact on the cumulative score of low academic achievement. So this research recommends selecting a metacognitive strategy in reading which is expected to increase the results of good academic achievement.

Cho et al (2017) recommends dynamic assessment or Dynamic Assessment (DA) to measure the potential for early reading and learning development. Multiple regressions is used in the data analysis which shows that there is a significant effect on the word development of elementary school students in mastering English. DA is used to improve prior knowledge and word reading in reading. Classon et al (2014) identified 31 participants who were deaf (HI) in this study were at least 5 years old and were not deaf (NH) who were deaf in using Swedish as their first language. This study using MANCOVA proved that there was no significant difference between HI and NH participants in terms of fluency performance. In the letter fluency HI has a lower vocabulary than the NH group. Domínguez, Carrillo, González, & Alegria (2016) conducted research on deaf students with cochlear implants and without implants in reading skills using The Key Word Strategy (KWS) or keyword strategy. 136 deaf children aged 7-14 years in primary and secondary schools were participants in this study. The reading process of the participants was tested with several assessments, namely the Reading Ability Test (READ), Semantics Strategies Detection Test (SMT), Syntactic Ability Test (SNT), and Vocabulary Tesy (VOC) specifically for deaf students. The assessment was carried out in two stages, namely READ and SMT in the first stage, and then SNT and VOC. It was concluded that the linguistic results and the level of deaf students
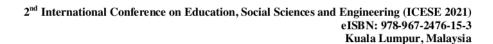
'reading ability depend on the students' understanding of spoken language and KWS is a strategy used in reading by the participants.

Harlaar et al (2014) found that a person's reading ability is based on several factors, one of which is genetic. Measurements were made using Genome-Wide Complex Trait Analysis (GCTA) to assess a person's reading fluency. This study found that at the age of 7-12 years a person's reading ability increased with varying degrees of difference in reading performance of each individual. The next factor is the children's reading and writing environment such as the cumulative reading experience and the printed books read by the children. This study used participant data in the form of DNA collected from 1997-2010 with a total of 3,130 individuals. Harris, Terlektsi, & Kyle (2017) used 41 children aged 5-7 years with hearing impairment to participate as a sample with an intelligent nonverbal assessment, reading ability, English vocabulary, phonological awareness, and speech reading. English vocabulary and phonological awareness are the most important parts for deaf children as the basis for reading skills. This must be supported by the use of appropriate teaching strategies so that reading skills can develop and improve. Karasinski, Anderson, & Karasinski (2017) investigated reading involvement and achievement in the SSMMD framework regarding (a) whether reading interest, reading potential, reading behavior influence reading preset in eighth grade? (b) did reading interest, reading potential, and reading behavior at the previous education level affect reading interest, reading competence, and reading presentation in the eighth grade? (c) whether reading interest, reading potential, and reading behavior affect reading preset in eighth grade? 11,929 students participated in the study with active participation from 7911 to 8351 derived from US education offices data. In the third and eighth grades using instruments in the form of reading tests, self-direction questionnaires, tests of interest and self-competence in reading, internalizing behavioral problems, and externalizing behavioral problems. Meanwhile, the assessments were in the form of reading T score, interest,competence in reading, internalizing, externalizing, and SES in grades three and eight. This study found that socioeconomic status affects reading achievement, so that early intervention is needed to improve reading achievement.

Lervåg, Hulme, & Melby-Lervåg (2018) use aspects language includes word decoding measured by TOWRE, listening comprehension is measured by NARA and WJ, and vocabulary skills are measured by PPVT and WISC. Vocabulary, grammatical skills are measured by ITPA GC and TROG, verbal working memory is measured by L. Recall, and inference skills are measured by inference. Oral language is an intervention that can improve reading skills in children. This study used 198 students aged 7 years.

Lundetræ, Judith, & Schwippert (2017) conducted a study with 1200 students aged 6 years as participants and a reading intervention by evaluating 20 percent of low-achieving students by reading words, spelling, reading, reading interest, and self-concept. This study conducted early intervention to reduce later reading difficulties. The initial measurements were in the form of early literacy motivation, short-term memory, RAN, letter knowledge, phonemic awareness, word reading, spelling, and vocabulary. The final outcome measures expected are interest in reading, self-concept reading, word reading, word recognition, spelling, sentence reading, text reading, and reading comprehension. Identification of children at risk of reading difficulties in the early stages of schooling by developing research-based teaching programs, measuring the long-term effects of

early intervention was carried out in this study. So it can be concluded that early intervention in reading skills in children is very necessary.

Moreno-pérez, Saldaña, & Rodríguez-ortiz (2015) determine the level of reading efficiency in deaf people of the same age as well as the factors that can predict the level of reading efficiency in deaf people. 80 people became participants who were divided into three groups. The instruments used in this study include TECLE to measure reading efficiency, TVIP to measure vocabulary, phonological awareness test, speechreading test. Obtained research results regarding the low level of reading efficiency in hearing impairment due to several factors. Reading efficiency, Vocabulary, reading speed, reading accuracy, phonological awareness and speechreading. Mounty, Pucci, & Harmon (2013) examines strategies and indicators related to ASL,English for deaf children from the reading process to the reading process and the reading to learning process. Documentation and semi-structured interviews were used as research instruments to explore participants' knowledge, experiences, and perspectives on ASL use and development, identifying reading skills characteristics, beliefs about ASL strategies, activities and practices of using and developing ASL. Pellicer-sánchez (2016) conducted research on the acquisition of second language words through the process of reading and from. The vocabulary test includes form recognition, meaning recall, and meaning recognition with a percentage of 86, 75 and 55. The process of reading with text that has words whose meaning is unknown to the reader provides a process of repetition and understanding of its own by combining words and reading speed. The repetition of words in reading has an impact on understanding and acquiring good words for the reader. So it can be concluded that there is a relationship based on these three aspects.

Pham, Donovan, & Dam (2018) examined through three groups of children aged 6-8 years that mastered L1 and L2 words with different levels of proficiency at L1. In the first group (HSE), participants have a high mastery of L1 and high L2; the second group (LSE) L1 is at a low level with a high L2; while the last group (LVE) is low on L1 and high on L2. This study found that only group one in an increase in L2 mastery. Mastery of L1 in each group increased, but only the high L1 group showed increased L2. Schirmer & Mcgough (2014) regarding the development of reading and reading instructions for deaf children in five aspects, namely (a) the alphabet, including phonemic awareness instruction and phonic instruction (b) fluency; (c) comprehension includes vocabulary instructions or vocabulary instructions, text comprehension instructions or text comprehension instructions; (d) teacher education and reading instruction or reading instruction; (e) computer technology and reading instruction or vocabulary instruction & text comprehension instruction. This study is a recommendation from The National Reading panel (NRP) for deaf children in reading skills. Study, Elgort, Brysbaert & Assche (2018) The context of word learning (CWL) in reading using a second language (L2). The text used is expository steam of the text by recording eye movements when the participants read the text to find out the process of understanding words in the text through the eye movement of the reading process. Furthermore, the use of tests is carried out to measure reading ability and understanding. Participants consisted of 28 undergraduate and postgraduate students. The results of this study explain that the participants do not ignore words that are not understood when reading an expository of text using L2, namely English and L1 which is Dutch. So, reading books or reading journals requires caution in understanding the results of these readings which are a follow-up to explanations using L1, namely Dutch.

Szarkowska & Krejtz (2011),a study that was carried out using the animated film "Shrek" in Polish (L1) and English (L2) for deaf, totaled 40 participants aged 18 to ≥ 60 years with nine deaf grouped, hearing difficulties totaled 21 people, and heard about 10 people. Participants are volunteers from the Polish Deaf Association via email contact. Each participant was asked three multiple choice questions regarding (a) a general understanding of the "shrek" film clip; (b) textual elements of the film; (c) the visual image shown on the film. The characteristics of the video are given to participants are clip duration, reading speed, number of words in the clip, number of characters (including spaces in the clip), total number of captions per clip, percentage of two-line captions per clip. Overall level of understanding based on hearing status and text type, namely verbatim (deaf, 82%); standard (deaf, 73%); and edited (deaf, 63%).Tong, Mcbride, & Shu (2018) regarding the factors that affect reading comprehension in L1 (Chinese) and L2 (English). Aspects that are measured in this case are vocabulary knowledge, the ability to make inferences, memory for content, understanding ideas that have been read with the integration of known knowledge and the ability to write techniques. It was concluded that the participants had a low understanding when reading L2 texts, especially psychological awareness.

Trezek (2017) evaluates the use of the cued speech communication system in developing reading skills in English for deaf people on the aspects of phonological awareness, phonemic awareness, alphabet knowledge, and phonological memory. So that cued speech is recommended for use for deaf people.Worsfold, Mahon, Pimperton, Stevenson, & Kennedy (2018), examined expressive language, receptive vocabulary, and grammar skills. The aspects assessed in this study include reading (reading accuracy & reading comprehension), language skills (language comprehension & expressive language, speech intelligibility), & non-verbal. The use of oral language turned out to provide good understanding for participants in reading for deaf masters.Worster, Pimperton, Ralph-lewis, Monroy, & Hulme (2018),This study uses two forms of measurement, namely offline and online. In offline there is speechreading measured by TOCS, reading is measured by YARC, and vocabulary is measured by The Deaf Children's Vocabulary Knowledge, and Nonverbal IQ. While online using TOCS. Speechreading is an important access to spoken language for deaf people. The data obtained shows that the communication pattern used is in the form of social tuning accompanied by visuals.

So it can be concluded that D/HH students use reading strategies in the form of retelling strategies, metacognitive strategies, oral and KWS strategies (Albertini, Marschark, & Kincheloe, 2016; Benedict, Rivera, & Antia, 2015; Bergey, Deacon, & Parrila, 2017; Chevalier, Parrila, Ritchie, & Deacon, 2017; Domínguez, Carrillo, González, & Alegria, 2016). Whereas in language learning, D/HH students can understand L2 text by using L1 according to the context that the student knows and can have a positive impact (Broek & Takashima, 2018; Pham, Donovan, & Dam, 2018; Study, Elgort, Brysbaert, & Assche, 2018). The most important fundamental parts in reading comprehension for D/HH students include English vocabulary and phonological awareness (Harris, Terlektsi, & Kyle, 2017; Tong, Mcbride, & Shu, 2018; Apple & Masterson, 2015; Classon et al., 2014; Schirmer & Mcgough, 2014; Trezek, 2017). Furthermore, early reading intervention is needed for D/HH students so that it can improve reading achievement. These interventions can be in the form of spoken language, sign language (ASL,Bisi , Bisindo), and visual images (Karasinski, Anderson, & Karasinski, 2017;

Lundetræ, Judith, & Schwippert, 2017; Szarkowska & Krejtz, 2011; Worsfold, Mahon, Pimperton, Stevenson, & Kennedy, 2018; Worster, Pimperton, Ralph-lewis, Monroy, & Hulme, 2018). The implementation of reading for D/HH is influenced by several factors, namely genetics, children's reading environment, socio-economic status Early reading intervention is very necessary for D/HH students so that they can improve reading achievement. These interventions can be in the form of spoken language, sign language (ASL,Bisi , Bisindo), and visual images (Harlaar et al., 2014; Karasinski, Anderson, & Karasinski, 2017; Moreno-pérez, Saldaña, & Rodríguez-ortiz, 2015). Meanwhile, in the context of reading assessment, D/HH can use Dynamic Assessment (DA) and Recalling (Cho et al.2017; Pellicer-sánchez, 2016).

b. Research on Audio-visual Assisted Teaching Materials

Knoop-van Campen, Segers, & Verhoeven (2018) investigated the effects of modality on learning using multimedia to obtain the benefits of writing with text and images with a sample of 26 students. Multimedia is presented with written text, audio, and combined text and audio. The results of the study state that there are benefits for students in learning using multimedia. Measurements were made with several instruments, namely general non-verbal intelligence, word decoding, pseudo-word decoding, verbal working memory, and visual working memory. Colucci (2017) recommends the use of tools for children with D/HH. The installation of hearing aids is an assisted tool in accordance with the right program in communicating as a companion to communicating in sign language, written language and spoken language. The recommended tool in this research is the Receiver-in-canal (RIC). Salazar & Larenas (2018) conducted research on identifying participant performance as a result of implementing audio-visual-based teaching strategies and analyzing participants' attitudes after using audio-visual-based teaching strategies. The results of the study found that the use of audio-visual-based materials students could understand more clearly and attractively in learning English. 78% of students showed a good attitude in using good learning strategies based on audio-visuals.

Mills & Unsworth (2018) investigated that drawing animation on the iPads can teach adolescents to beg and intensify emotions in multimodal communication. The use of animation can have a positive impact in the form of creative attitudes for self-development, literacy practice, and productive media in teaching English with impressive narratives. Animation can provide a deeper understanding of the interpersonal metaphors of written and spoken texts. Jahn (2017) recommends cochlear implants to improve hearing detection and speech perception for people with severe hearing loss. The integration of auditory and visual input is very important in communicating. Visual and auditory requirements are needed to develop spoken language. The results of the study showed that there was a significant correlation between visual acuity and auditory speech perception for deaf people. This means that individuals who have better visuals with temporal acuity also have better word and sentence recognition. Durkin & Conti-Ramsden (2014) conducted a qualitative research on the obstacles faced by teachers or facilitators in using language learning media for deaf children. The results of the study recommend that digital media should be used wisely with restrictions, restrictions, and use for children with hearing impairments and without hearing loss. The use of media has an important role to play in the development of better policies and strategies for children with language disorders and digital media. Gilliver, Sewell, Mcginnity, & Beach (2017) assessed the effectiveness of animation for deaf students. Target audience age ranges and animation styles to allow for greater levels of control, flexibility

and creativity in presentations. Animated videos describe the volume, duration, frequency and content aspects. McCreery (2015) stated that animated videos describe the volume, duration, frequency and content aspects in hearing aids for language development for deaf children. The results showed that the children's language development was influenced by the level of hearing loss and consistent use of tools. Hearing aids that are suitable for children less than 6 months of age have better abilities so it is hoped that services are needed early.

So it can be concluded that children with D/HH should be facilitated with audio or visual instruments so that they can help develop language (Bai, 2018; Crowe, Marschark, Dammeyer, & Lehane, 2017; Maiorana-Basas & Pagliaro, 2014; Mingsiritham & Chanyawudhiwan, 2018; Qin & Tao, 2016). In addition, the use of audio-visual in the form of animation in language learning for D/HH children (Colucci, 2017; Dayanim & Namy, 2015; Durkin & Conti-Ramsden, 2014; Ferguson, 2017; Gilliver, Sewell, Mcginnity, & Beach, 2017; Hayden, Namasivayam, & Ward, 2014; Jahn, 2017; Knoop-van Campen, Segers, & Verhoeven, 2018; Kraus & White-Schwoch, 2016; McCreery, 2015; Mills & Unsworth, 2018; Neger, Janse, & Rietveld, 2014; Salazar & Larenas, 2018; Singendonk et al., 2018; Sommers & Phelps, 2016; Waters, 2017).

c. Research on Deaf Students
Holmström & Schönström, 2017 uses the research design is a survey to investigate human resources prepared by the government to assist and be responsible for the education of deaf students in public schools in Sweden. The government prepares educators for D/HH students who accompany D/HH education in schools. In this study, the opportunities and obstacles of educators for D/HH will be explored to provide information on education for D/HH. Bilingual education is not offered in its conceptual setting. This research exploration is also related to D/HH students' access to Swedish sign language (SSL) and knowledge of the use of language for D/HH. SSL is the national sign language in Sweden in addition to TSS and TAKK. TSS is used when the situation between the perception and understanding of Swedish language is facilitated in a visual, traditional, and the mode of communication used by D/HH to support spoken Swedish. TAKK is a form of language development for D/HH. The results of the study show that 33% of cities have access to cell phones. The tools and environments created in learning are varied. Participants in the research included five deaf schools and 290 public schools in Sweden. In addition, into shows that many teachers have a significant lack of knowledge about oral communication that is integrated with technology in learning for D/HH students. SSL is very much needed by D/HH children but it is found that the law states that SSL is aimed at those who are needed, so the emphasis of the word 'they' give an ambiguous meaning in its implementation because no one can determine D/HH's needs regarding SSL.

Duncan & Neill (2018) stated that D/HH education is still difficult to obtain and decide due to incomplete and conflicting information for the needs of children or families. The D/HH education information system is incomplete and inconsistent with parents. Problems that often arise include modes of communication, early intervention, service agents, and the individual circumstances of each family in the form of child development, parental knowledge, expectations, parental experiences, practitioners, and service agents. The emphasis is on investigating decision making, preparing practitioners, being free from bias, concentrating and empowering D/HH education. Laugen, Jacobsen, Rieffe, & Wichstrøm (2017), regarding the social skills of UMHL, TH, and

MSHL. UMHL and MSHL participants aged 4 to 5 years in Norwegian (L1) from 79 families who were contacted online, only 36 families were willing. 14 children in the UMHL group, 21 children at MSHL. Six participants (2 from UMHL, 4 from MSHL) prefer to use Norwegian sign language with the instrument The Norwegian Version of the Social Skills. The results showed that vocabulary development had a significant effect on social skills. So it is highly recommended to all parents for early detection and early intervention in children with D/HH. Matthen (2016) examines the relationship between perception, cognitive and social interaction for D/HH from the perspective of obstacles and actions that will reduce learning problems. It was concluded that students with D/HH were prone to emotional problems and social skills. Additional cognitive demands are emphasized on D/HH. So that in learning it is recommended to use interesting and fun ways in learning. It can collaborate on the implementation of motivation, additional tools, curriculum context, spoken language, sign language, and environmental factors that support the smooth running and achievement of learning goals for D/HH.

Broekhof, Boss, Camodeca, & Rieffe (2018) investigated and measured the emotional levels of D/HH students towards bullying attitudes of students with normal hearing. The indicators used in this research are (a) basic emotions in the form of anger and fear; and (b) social emotions (guilt and shame). Participants who participated in this study were 307 D/HH students and 227 students with normal hearing. The instruments used included (a) the personal characteristics test (WISC test and CELF test), and (b) self-report questionnaire (the bully victim, the brief shame guilt, and the mood list).Yoshinaga-Itano (2013) uses one of the stages of early detection of deafness and hearing loss in the third stage, namely early intervention based on JCIH (2000).This study gave positive responses regarding the components of the third stage which were used as indicators for the research variables. Contributions from this study include (1) each state coordinating on Early Intervention Services; (2) each child or family has access to a service coordinator to obtain supportive knowledge and skills; (3) every child and family who is detected deaf or hearing loss from birth to 3 years get optimal care from professional staff; (4) there are three special needs required, namely listening, listening and spoken language; sign language (sign language); and other specialized methods (other specialized methods) , for example integrating communication between visual, listening, listening, and spoken language; (5) implementing and developing Early Hearing Detection and Intervention (EHDI) policies and procedures based on the participation of each family; (6) implementing and developing Early Hearing Detection and Intervention (EHDI) policies and procedures based on individual participation; (7) monitoring system implementation; (8) continuous individual development monitoring to achieve EHDI goals; (9) ensuring the development of the knowledge of the Early Intervention Services, the professional team is met to achieve the educational goals and knowledge of individuals and families of D/HH; (10) identify the type of language used by each individual and family, for example speaking English or non-English; (11) developing care procedures for linguistically and culturally diverse families.

Powell, Hyde, and Punch (2013) stated that the United States, United Kingdom, and Australia had faced various obstacles regarding education for deaf and hearing impaired individuals in functional, environmental, classroom participation, curriculum and socio-academic aspects. Meanwhile, New Zealand has restrictions on aspects of policy and funding in the field of education, especially deafness and hearing loss. The results of this study refer from the perspective of students with the needs they need. The indicators of the variables used include (1) 92% of deaf
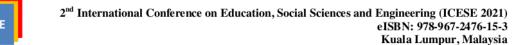
or hearing impaired students have attended inclusive class education using NZSL, English sign language combined with spoken English; (2) the academic programs studied are arts, social sciences, science, law, commerce, health, theology, music, engineering, and business administration with the diploma, baccalaureate, master, doctoral education levels; (3) communication and participation; (4) curriculum and support services in the form of sign language interpreters, online access, and course content; (5) dissatisfaction is felt in the socio-academic field. Meanwhile,Shaver, Marschark, Newman, & Marder (2013) found that there are several components that affect the level of high school education for D/HH individuals. In this context, the selection of high schools is divided into (1) only regular schools; (2) only special schools; and (3) a combination of special and regular schools. The data collection is analyzed based on several components. First, demographics found that the selection of secondary schools was based on gender, ethnicity, family income, mother's education level, live with both parents. Second, the characteristics of disabilities was based on students with hearing difficulties (hard of Hearing) only chose regular schools, deaf students (Deaf) only chose special schools, and students with other disabilities (others) just choose regular school. Third, the level of hearing ability was based on the severity of hearing loss, cochlear implants, using hearing aids. Fourth, types of communication methods and skills were based on communication used, sign language users, how well they communicate, how clearly they speak, how clearly they communicate, how clear they understand. Fifth, functional and social skills was based on mental functional skill scale, social skills scale, self-care skills scale. Sixth, the history of education was based on following basic education, not detained in class, suspended or expelled from school. Seventh, parents hope, attend secondary school, working and getting a salary.

Based on the theory and research that has been done, it can be concluded that the JCIH (2007) stipulation regarding the components of the early detection program and intervention for deafness and hearing loss includes birth examinations (Birth Admission Screening); follow-up and diagnostics (Follow-Up Screen and Diagnostic); and early intervention (Early Intervention) needs to be implemented to prepare for the needs of D/HH children, especially in the field of education (J. Duncan & O'Neill, 2018; Holmström & Schönström, 2017; Powell, Hyde, & Punch, 2013; Shaver, Marschark, Newman, & Marder, 2013; Yoshinaga-itano, 2013). Children with D/HH also have emotional levels that can exceed children who can hear (Broekhof, Bos, Camodeca, & Rieffe, 2018; Matthen, 2016) so that it will affect the social skills that D/HH will pass for the future (Laugen, Jacobsen, Rieffe, & Wichstrøm, 2017; Matthen, 2016).

c. Research on Learning English for Deaf Students

Ammar & Hassan (2018) conducted research on the collaborative contribution of dialogue to the development of the grammatical morphology of students using French as a second language. The variation of students' proficiency in linguistic mastery is focused on this research. It is found that students who have low abilities in learning the use of collaborative dialogue are beneficial for the development of language skills. The dictation system carried out in this study did not contribute to the development of students' L2 abilities. Participants in this study 79 students were in grades 5 and 6. Comeaux & McDonald (2018) stated the results of the study that increased visual input (VIE) could improve students' grammar in mastery of English which contained four linguistic elements, namely the verb agreement, case marking, animacy, and word order. In the first

experiment, there were benefits for word development for students even though the animation used had low validity. So it is concluded that the use of VIE can improve L2 word mastery for students. Housen & Simoens (2016) examined the difficulties in using L2 on the aspects of feature-related difficulties, context related difficulty, and learner-related difficulty. This study discusses several aspects, namely the influence of L2 targets, learning conditions, and individual learning along with nature and difficulties of mastering L2. Hwang, Shin, & Hartsuiker (2018) used 31 participants in this study who used Korean and English. The material used is transitive which is given information about verbs and nouns. The results showed that the participants produced 60% active sentences and 40% passive sentences. Bilingual syntactic processing is influenced by the proficiency of participants in L2. The English construction differs from the Korean construction in the sentences that are formed. This shows that there is difficulty in mastering L2 (English) for the participants. The differences and similarities in sentence construction in English and Korean show that bilingual is highly integrated.

Jach (2018) examines the acquisition of a second language (English) with mastery of the first language in the form of Chinese and German. Preposition Placement and Relative Clause. The results of the research show that good command of a second language fulfils the aspects of participant participation, participant L1 language, L2 use, and L2 competence of participants. Participants totalled 251 people recruited online. German participants were particularly sensitive to agreement errors, and Chinese participants were sensitive to word order errors. Input frequency and similarity in language acquisition and language construction. Marsden, Morgan-Short, Thompson, & Abugaber (2018) investigated language replication in the form of 400 articles from 1973 to 2015. The results of this study recommended 16 things regarding reason, nomenclature, design, infrastructure, and incentives for collaboration and language publication. This replication is in the form of close replication, approximate replication, partial replication, conceptual, and replicates with high value replications. McCarthy, Mahon, Rosen, & Evans (2014) investigated the effects of language disruption in children on early childhood acquisition of both languages and the development of language trajectories. Participants were 40 children aged 47 to 57 months in Bangladeshi and English. The results of this study show that the use of L1 and L2 languages facilitates the development of phonological categorization and understanding of the development of production and perception of L1 and L2 languages. There is difficulty in using the second language because it is still assimilating the first language and there are differences in the performance of children who use monolingual and bilingual children. So it can be concluded that there is a relationship between perceptual accuracy and production accuracy. Evans (2014) investigated the effects of language impairment for children on early childhood acquisition of both languages and the development of language trajectories. Participants were 40 children aged 47 to 57 months in Bangladeshi and English. The results of this study show that the use of L1 and L2 languages facilitates the development of phonological categorization and understanding of the development of production and perception of L1 and L2 languages. There is difficulty in using the second language because it is still assimilating the first language and there are differences in the performance of children who use monolingual and bilingual children. So it can be concluded that there is a relationship between perceptual accuracy and production accuracy.

Morgan-Short et al. (2018) conducted research using 60 students from majoring universities in Spanish. Multi-replication is used as an approach to acquiring English as a second language. It was
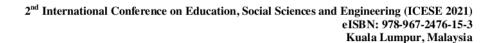
found that there was no effect on reading comprehension and listening to L2.Nagle (2018) discusses perception, language instruction, and the relationship between perception and production of L2 used. In this context, English is the second language, namely Spanish and English as the first language. The participants have the characteristics of having studied Spanish from several countries of their origin. The results show that there is a significant relationship between the perceptual accuracy and the accuracy of Spanish production (L2).

Trussell & Easterbrooks (2014) conducting research based on Vygotsky's theory to measure whether there is a significant effect of word mastery through American Sign Language (ASL), spoken English, or combining the two using storybook intervention and picture vocabulary in individual D/HH. There are three books used as an intervention, namely the book 1-Sheep in a Shop, book 2-If You Give a Mouse, and book-3 I Want a Luch Box by using questions in the form of completion, recall, open-ended, wh-, and distance questions. In Isaac's data, Lily, Mitch, show consistent and increasing intervention results. Casey and Yara's data show only book-3 which is inconsistent and does not improve; but in Mandy's data the intervention was not successful due to factors of age, individual habits, and not well documented learning results. This study recommends the Enhanced Storybook Interaction to support language learning for D/HH individuals to communicate, visual, explicit instruction, scaffolding and mediation, and higher order thinking skills (Dirks & Wauters, 2018; Messier & Wood, 2015; Mingsiritham & Chanyawudhiwan, 2018; Richels, Schwartz, Bobzien, & Raver, 2016; Trussell & Easterbrooks, 2014; Wauters & Dirks, nd).

Bonino (2017) explores the ability of infants and young children with hearing impairment in reading skills. The method used is Play Observer-based, two intervals (PlayO2I). The results of this study indicate that there is response and behavior using videos and games. So it is expected that it will increase the participant's cognitively later. MK Duncan & Lederberg (2018), this research was carried out to find the relationship between the communication between teachers and D/HH students in the classroom. This takes the form of student statements, language pronouncing, explicit vocabulary and syntax instructions. This study observed the characteristics of teacher speech in 25 kindergartens with 68 D/HH children. The results of the study suggest that explicit word teaching provides significant value. Explicit instruction in teaching vocabulary is crucial in the success of learning. Fuchs, Fuchs, & Malone (2018) recommends about The Taxonomy of Intervention Instensity which includes the dimensions of strength, dosage, alignment, attention to transfer, comprehensiveness, behavioral support, and individualization. This taxonomy defines intensive interventions through platforms and identifies platforms that can assist implementation for D/HH students. Herman et al. (2015) conducted this study evaluating the use of Core Vocabulary Intervention (CVT) for deaf students' English learning. The Total Communication method is also used in this research to teach English sign language vocabulary to deaf students in elementary schools.

Joshi & Bouck (2017) investigating the services received by D/HH children and learning outcomes at school. Participants who participated in this research consisted of 289,720 students. 44.9% of students compacted learning instructions like classes in general. So that it can be concluded that the instruction of learning in the classroom for deaf students can use learning intrusions such as general classes which have an impact on the short and long term. Lam (2012) states that there is

no difference between D/HH and normal students. Recommendations in the form of finding the best about education, communicative and social for each deaf student because of their different needs. The importance of changing the parafihma thinking about the perceptions in society regarding these aspects. So that it creates the idea that deaf students have the same abilities as normal children in general. Lin (2017) recommends about strategies used in communicating with deaf children. Data obtained shows that if you cannot master the communication improvement strategy appropriately, it will affect the motivation to communicate so that early intervention is needed to prevent this. There are several strategies for communicating with deaf students, for example asking for repetition, asking for specific clarification, and recognizing non-verbal cues. The statement of special clarification can take the form of (a) other words by repeating words that are not understood; (b) revision is repetition with a word that is younger to understand; (c) addition, namely adding words that are better known to students; (d) cues in the form of accompanying verbal words; and (e) proposing topics in the form of topics of discussion. Mahboubi (2017) regarding the awareness of the importance of understanding the importance of one's functional hearing. Screening measures are needed to maintain hearing in the future in accordance with the work at hand. One of them is by doing cochlear implants, and this is recommended to carry out the learning process well.

McMillan & Saffran (2016) researched regarding learning in the complex auditory environment of early word learning. Participants consisted of 40 students aged 27 to 30 months. The use of visuals is very influential on the results of this study. Learning new words uses visuals by assigning labels to each object. So it can be concluded that there are several factors that influence the learning situation in the classroom, one is the use of appropriate learning media. Riccomini, Morano, & Hughes (2017) recommend special education including intensive instructions, explicit instruction, high-leverage practices, and specially designed instruction. Specially designed instructional instruction includes classroom instruction, physical instruction in education, home teaching, and instruction in institutions or hospitals. First, Specific instruction designs cover the unique needs of the child and the curriculum in general. Furthermore, useful practices are in the form of collaboration, assessment, social, emotional, behavioral, and instruction. Explicit instruction includes the application of scaffolding in class as well as effective principles and elements. Lastly, intensive specially designed instruction.Singh & Kathleen Pichora-Fuller (2016) stated that there is a significant effect of the availability of social support on the satisfaction of hearing aids. Furthermore, a communication strategy is needed in communicating. Thus, planning and early intervention are needed in determining the expected learning outcomes and instructions. Explicit instruction includes the application of scaffolding in class as well as effective principles and elements. Lastly, intensive specially designed instruction. Furthermore, a communication strategy is needed in communicating. Thus, planning and early intervention are needed in determining the expected learning outcomes. Furthermore, a communication strategy is needed in communicating. Thus, planning and early intervention are needed in determining the expected learning outcomes.

3. Discussion and Conclusion

Based on previous studies and theoretical studies, a research gap can be identified. The research gap from a study is generally unique and makes the difference between one research study and another. Future research is expected to expand the scope of research on the development of teaching materials for English reading skills based on local wisdom assisted by audio-visual for

deaf students. The amount of research related to English subjects for deaf students is still less especially in Pekanbaru, even though English is the language that students must master at this time, especially during the industrial revolution 4.0 to 5.0.

References

Albertini, J. A., Marschark, M., & Kincheloe, P. J. (2016). *Deaf Students' Reading and Writing in College: Fluency, Coherence, and Comprehension.* 303–309. https://doi.org/10.1093/deafed/env052

Ammar, A., & Hassan, R. M. (2018). Talking It Through: Collaborative Dialogue and Second Language Learning. *Language Learning*, *68*(1), 46–82. https://doi.org/10.1111/lang.12254

Apel, K., & Masterson, J. J. (2015). *Comparing the Spelling and Reading Abilities of Students With Cochlear Implants and Students With Typical Hearing.* 125–135. https://doi.org/10.1093/deafed/env002

Banner, A., & Wang, Y. (2010). *An Analysis of the Reading Strategies Used by Adult and Student Deaf Readers.* 2–23. https://doi.org/10.1093/deafed/enq027

Benedict, K. M., Rivera, M. C., & Antia, S. D. (2015). *Instruction in Metacognitive Strategies to Increase Deaf and Hard-of-Hearing Students' Reading Comprehension.* 1–15. https://doi.org/10.1093/deafed/enu026

Bergey, B. W., Deacon, S. H., & Parrila, R. K. (2017). *Metacognitive Reading and Study Strategies and Academic Achievement of University Students With and Without a History of Reading Difficulties.* https://doi.org/10.1177/0022219415597020

Bloom, B. S. (1956). *Taxonomy of educational objectives, handbook I: the cognitive domain.* New York: David McKay Co Inc.

Bonino, A. Y. (2017). Innovative Hearing Test for Toddlers and Preschoolers. *Hearing Journal*, *70*(11), 6. https://doi.org/10.1097/01.HJ.0000527207.28817.a6

Broek, G. S. E. Van Den, & Takashima, A. (2018). *Contextual Richness and Word Learning: Context Enhances Comprehension but.* (June), 546–585. https://doi.org/10.1111/lang.12285

Broekhof, E., Bos, M. G. N., Camodeca, M., & Rieffe, C. (2018). *and Emotions in Deaf and Hard of Hearing Adolescents.* 17–27. https://doi.org/10.1093/deafed/enx036

Chevalier, T. M., Parrila, R., Ritchie, K. C., & Deacon, S. H. (2017). *The Role of Metacognitive Reading Strategies, Metacognitive Study and Learning Strategies, and Behavioral Study and Learning Strategies in Predicting Academic Success in Students With and Without a History of Reading Difficulties.* https://doi.org/10.1177/0022219415588850

Cho, E., Compton, D. L., Gilbert, J. K., Steacy, L. M., Collins, A. A., & Lindström, E. R. (2017). *Development of First-Graders' Word Reading Skills: For Whom Can Dynamic Assessment Tell Us More?* https://doi.org/10.1177/0022219415599343

Classon, E., Löfkvist, U., Rudner, M., Rönnberg, J., Classon, E., Löfkvist, U., … Rönnberg, J. (2014). *Verbal fluency in adults with postlingually acquired hearing impairment Verbal fluency in adults with postlingually acquired hearing impairment.* 5728. https://doi.org/10.1179/205057113X13781290153457

Colucci, D. (2017). 6 Steps to Embed RIC Hearing Aids. *Hearing Journal, 70*(8), 42–44. https://doi.org/10.1097/01.HJ.0000524327.95376.ac

Comeaux, I., & McDonald, J. L. (2018). Determining the Effectiveness of Visual Input Enhancement Across Multiple Linguistic Cues. *Language Learning, 68*(1), 5–45. https://doi.org/10.1111/lang.12255

Domínguez, A., Carrillo, M., González, V., & Alegria, J. (2016). *How Do Deaf Children With and Without Cochlear Implants Manage to Read Sentences : The Key Word Strategy.* (2013), 280–292. https://doi.org/10.1093/deafed/enw026

Duncan, M. K., & Lederberg, A. R. (2018). Relations Between Teacher Talk Characteristics and Child Language in Spoken-Language Deaf and Hard-of-Hearing Classrooms. Journal of Speech, Language, and Hearing Research, 61(12), 2977–2995. https://doi.org/10.1044/2018_jslhr-l-17-0475

Duncan, M. K., & Lederberg, A. R. (2018). Relations Between Teacher Talk Characteristics and Child Language in Spoken-Language Deaf and Hard-of-Hearing Classrooms. *Journal of Speech, Language, and Hearing Research, 61*(12), 2977–2995. https://doi.org/10.1044/2018_jslhr-l-17-0475

Durkin, K., & Conti-Ramsden, G. (2014). Turn off or tune in? What advice can SLTs, educational psychologists and teachers provide about uses of new media and children with language impairments? *Child Language Teaching and Therapy, 30*(2), 187–205. https://doi.org/10.1177/0265659013511471

Erikson, Erik. (1958). Young man Luther. New York: Norton.

Flavell, J.H. (1981). Cognitive Monitoring, In WP Dickson (Ed.), Children's oral communication (pp. 35-60). New York: Academic Press

Fuchs, L. S., Fuchs, D., & Malone, A. S. (2018). The Taxonomy of Intervention Intensity. *TEACHING Exceptional Children, 50*(4), 194–202. https://doi.org/10.1177/0040059918758166

Gagne, Robert Mills. (1965). The Conditions of Learning. New York: Holt, Rinehart, and Winston

Gardner, H. (1983). Frames of minds: the theory of multiple intelligences. New York: Basic Books.

Gilliver, B. M., Sewell, J., Mcginnity, S., & Beach, E. (2017). *Through Animation.* (September), 14–15.

Gough, P. B., & Tunmer, W. E. (1977). *Decoding, Reading, and Reading Disability.*

Harlaar, N., Trzaskowski, M., Dale, P. S., & Plomin, R. (2014). Word Reading Fluency: Role of Genome-Wide Single-Nucleotide Polymorphisms in Developmental Stability and Correlations With Print Exposure. *Child Development, 85*(3), 1190–1205. https://doi.org/10.1111/cdev.12207

Harris, M., Terlektsi, E., & Kyle, F. E. (2017). *Concurrent and Longitudinal Predictors of Reading for Deaf and Hearing Children in Primary School.* 233–242. https://doi.org/10.1093/deafed/enw101

Herman, R., Ford, K., Thomas, J., Oyebade, N., Bennett, D., & Dodd, B. (2015). Evaluation of core vocabulary therapy for deaf children: Four treatment case studies. *Child Language Teaching and Therapy, 31*(2), 221–235. https://doi.org/10.1177/0265659014561875

Holmer, E., Heimann, M., & Rudner, M. (2017). *Computerized Sign Language-Based Literacy Training for Deaf and Hard-of-Hearing Children.* 404–421. https://doi.org/10.1093/deafed/enx023

Materials Development of English Language Learning and Teaching for Deaf Students