

# DEAF CHILDREN'S COMPREHENSION ON WRITTEN TEXT: A CASE STUDY AT MIDDLE SCHOOL SPECIAL EDUCATION OF YRTRW SURAKARTA

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## A B S T R A C T

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Hearing impairment causes deaf children to differ from their peers. Their unique experience in acquiring the language might influence language development in deaf children. Many studies found that deaf children have low literacy. Most of researches highlight the benefit of sign language for deaf literacy. However there are still limited studies on deaf children who are exposed to spoken language. This research is conducted to explore the written text comprehension of deaf children's who are exposed to spoken language. It is a case-study research by applying quantitative and qualitative method in analyzing the data. The data are reading components include: children's sentence structure comprehension and children's reading comprehension assessed by Barrett taxonomy. The subjects are 5 pre-lingually deaf children from middle School special education of YRTRW Surakarta and 20 fourth grade elementary hearing students. The data are collected through comprehension test and interview. The result shows that deaf children's comprehension score can be classified into two groups: (1) deaf children scored equal to 4th grade hearing students and (2) deaf children scored lower than 4th grade hearing students. The students scored lower than hearing students known to have lower score on vocabulary knowledge and syntax. Although they have lower score, deaf children have the same pattern of comprehension with the hearing students. Among the five levels of Barrett' reading taxonomy: literal, reorganization, inferential, evaluation, and appreciation, deaf children and the 4th grade hearing students perform well on literal comprehension. Meanwhile good deaf reader and 4th grade students can cope inference task better than poor deaf reader. The lowest score obtained by poor deaf reader is on evaluation task. This tendency is the same as the score of the 4th hearing

students. This brings implication that although deaf children's comprehension is lag behind the hearing peers, they undergo the same phase as the hearing one. The key aspect of text comprehension is comprehension of sequence.

**KEY WORDS :** Deaf children, spoken language exposed, written text, comprehension, Barrett taxonomy.

## INTRODUCTION

Deafness or hearing impairment refers to the inability to hear things. Marschark (2007) notifies that this kind of hearing losses largely eliminate the use of speech and hearing for all of the practical purposes of day-to-day life. Deaf children might be born deaf or become deaf before spoken language is well established. This condition is called as pre-lingually deaf children. While, children who become deaf after having developed a spoken language is called postlingually deaf children (Pugin, 1981; Steward and Clarke, 2003; Turkington and Sussman, 2004; Marschark, 2007).

This hearing impairment causes deaf children different from their hearing peers. Their unique experience in acquiring the language might influence language development in deaf children. Deaf children's linguistic achievement may vary from one to another. Some of them (with mild hearing loses) can communicate by using spoken language exclusively as well as the hearing people. Some others use sign language exclusively. But, in most cases – deaf children acquires language minimally or no language is well mastered (McCleary, 2003; Edwards and Crocker, 2008; Wauters, 2005; Marschark, 2007). This impediment in acquiring language is greater when the children born in hearing family. But, it is still limited study that examine the taxonomy of reading comprehension of the deaf children from hearing family.

The deaf children from hearing family develop their language experience in more limited language exposure compared to the deaf children from deaf family and their hearing peers (Goldin-Meadow and Mayberry, 2001; Marschark, 2007), since generally the hearing parents do not understand how to communicate with them. This difference influences the way they perceive and interact with the world (Marschark, 2007). Deaf children tend to rely on the visual information. They are likely to be more easily to comprehend events or things as their chronological order that can be perceived visually. Thus, deaf children were called as concrete thinker (Iran-Nejad dkk, 1980). In line with this, Marschark (2007) found that deaf children are more likely to understand and use concrete nouns and familiar action verbs over more abstract or general words with which they may have less experience. This must also influence their ability in comprehending written text. Kelly and Barac-Cikoja (2007) stated that decoding ability influences greatly on deaf

children's reading comprehension, besides their knowledge of syntax and discourse and reading strategy.

The deaf children's difficulty in decoding abstract and idiomatic concepts might influence their understanding toward sentence structure. Marschark (2007) states that information about words is held and accumulated until relations among words (grammatical information) and relations among events (discourse information) reveal the meaning of a phrase or sentence. Whereas the stories in the narrative text might be expressed in various sentence structures. Deaf children's limitations in understanding the relationship between phrases or clauses in a sentence might cause them to be failed in understand complex sentences structure. As a result deaf children cannot comprehend the narration well.

In the narrative text, there are several patterns of presentation of stories telling its sequence. The sequence is the chronological events that are told in the story (plot). The plot in the narrative text is grouped into three: progressive, flashbacks, and combination of both them. The events in the progressive narrative are arranged in linearly (progressive), while in the nonlinear narrative the story may begin from the middle or last event and then the initial event of the story is told afterward (flashback). Of the three groups of stories, it is assumed that deaf children find it easier to understand the linear sequence of the story because of their visual experience in perceiving events

The purpose of this research was to examine the deaf students reading comprehension. Reading comprehension is the process of discovering the meaning contained in a text (Woolley, 2011; Kyle & Cain, 2015). Therefore, the ultimate goal of reading is to gain a thorough understanding of what is described in the text, rather than simply finding the meaning of the words or sentences in isolation. Reading comprehension is crucial not only for understanding the text, but also for broader learning, academic and working success. Even reading is very important in our social life because of the numerous text-based communication tools, such as emails, newspapers, and social networking sites (Oakhill, Cain, & Elbro, 2015).

The ability to comprehend is the ability of a reader to understand and interpret a text. The reader needs to understand more than just the symbols of writing. To obtain the meaning of a text, the reader needs to actively engage in the reading to form an initial understanding, develop interpretation, think and respond to the reading personally, and show a critical attitude to the reading (Pearson & Hamm, 2005). Gamble and Yates (2012) classified those activities into three levels in order that a reader read effectively. They are: (1) read the line (literal level), (2) read between the lines (inferential level), and (3) read beyond the lines (interpretative and evaluative level).

There are many studies that show that reading ability of children with hearing impairment is lower than their hearing peers' (Steward and Clarke, 2003; Ward et al. 2007; Marschark, 2007; Marschark et al. 2009; Coppen

et al. 2010; Levres et al., 2012). This raises the question of how the ability of a deaf child's understanding is related to the prerequisites for being a reader in accordance with the criteria mentioned by Gamble and Yates (2012) above. Of the three levels of reading activity above, reading between the lines (inferential level) and read beyond the lines (interpretive and evaluative levels) is thought to be the difficult activity for deaf children. In a text, the author often leaves behind a 'gab' which gives space for the reader to interpret the text (Gamble & Yates, 2012). In such cases the reader is required to actively find meaning by reading between the lines. This activity can be done well if the reader has sufficient prior knowledge. However, deaf children have limitations in this. Therefore activity at this level is not easy to do. Thus, it is assumed that the reading level of deaf children is good at the literal level only since they have limitation on their prior knowledge to relate the knowledge beyond a text to understand information written on the text.

Thus, prior knowledge becomes an obstacle for a deaf child to act as a reader who can actively discover the meaning embodied in a text. Generally a child with hearing impaired read by departing from a limited prior knowledge. Because of these considerations, this study measures the reading ability of a deaf child devoted to narrative text. Narrative text is a story presented in a language (McQuillan, 2000). This narrative text is chosen because this type of text has been sufficiently familiar to children of all ages so that the narrative text structure is relatively well understood (Broek & et al., 2005), as well as by the deaf.

Gamble & Yates (2012) mentions early knowledge that can help the ability to read understanding there are two types, namely: the knowledge of the conventions of the story and knowledge of the world, realized in the form of knowledge of the story line in a narrative and knowledge of the meaning of vocabulary. Selection of different story lines and vocabularies will create a different path for the reader to understand the text. In general, narrative text composed by following known structures is easier to understand and remember than when the text is structured in an unusual structure (Klingner, Vaughn, & Boardman, 2007). To find out if it also applies to children with hearing impairment, subjects are given text with different grooves (groove forward and backward flow) in each category of comprehension tests, then given a comprehension question. The giving of texts with different grooves is intended to find evidence whether the storyline in the narrative text can affect reading comprehension in the hearing impaired child.

## RESEARCH METHOD

It is a case-study research by applying quantitative and qualitative method in analyzing the data. The data are reading components include: children's

sentence structure comprehension and children's reading comprehension assessed by Barrett taxonomy.

*Subjects.* The subjects of this research were five deaf children (two girls, three boys) from middle School special education of YRTRW Surakarta. All of them were diagnosed to have severe-to-profound hearing loss. Four children were born deaf and one acquired hearing loss after birth (at about 2 years). Two children communicated actively in both sign and speech. Two other children communicated passively in speech and actively in sign. Meanwhile one child communicated in sign exclusively. All the deaf children were born in hearing family and the parents did not have knowledge about sign language when the children were recognized to have deafness.

In the class, the children were exposed to communicate using speech with the reason that the deaf people should be able to communicate using language used by public to be able to live in public. But the teacher used also sign language, pidgin sign, when it is needed. The children were chosen to participate in the research because there were still limited numbers of investigation on reading comprehension of deaf children who are exposed to speech.

Beside deaf children, this research involved also 20 fourth grade elementary hearing students. These hearing students selected were the ones who had no other distractors, such as slow learner or other disability. They were involved to compare the result of the reading comprehension between the deaf and the hearing children that is needed to draw conclusion related to the comprehension ability of the deaf children and its formula. This involvement is based on the previous research that found that deaf students graduated from high school had the same level of the reading ability of four grade hearing students (Paul, 1998; Taxler, 2000; Steward dan Clarke, 2003; Marschark, 2007; Candace-Myers et al. 2010)

*Materials.* The data are collected through comprehension test and interview. To know the subjects' comprehension ability the researcher built a comprehension test based on Barrett Taxonomy adopting research instrument from Burnside (1980). The Test was in the form of multiple choice test with 4 alternatives answer. Comprehension questions were developed based on narration texts which were presented in different plots (progressive and flash back). The questions were classified into comprehension category from Barrett taxonomy. They are: 1) literal, 2) reorganization, 3) inferential, 4) evaluation, and 5) appreciation category.

The narration texts were presented in different plots to know the influence of story structure toward the students' reading comprehension. Besides, the texts were also differentiated from the vocabulary choices. The texts were developed from familiar and unfamiliar vocabularies, i.e. the use of familiar vocabulary, such as the word "senang" was substituted by the word "riang" in another text. The questions consist of 81 items with the scoring

model described in table 1.

Table 1. Distribution of category of questions on Barrett's reading comprehension and its scoring system

Literal	3 x 6 classification	18	1	18
Reorganization	3 x 4 classification	12	2	24
Inference	3 x 8 classification	24	3	72
Evaluation	3 x 5 classification	15	4	60
Appreciation	3 x 4 classification	12	5	60
		81	SCORE	234

*Data analysis.* This research used quantitative and qualitative method to analyze the data. The data obtained from the test was analyzed using quantitative method by simple descriptive statistics. The correct responses to the comprehension questions were multiplied with their weight based on the category of the questions as described on table 1 and it became the score. The score of the subjects were classified into score category based on stanfive standard described in table 2.

Table 2. Score category based on Stan five standards

Mean + 1,5 S	>	Very good
Mean + 0,5 SD	>	Good
Mean - 0,5 SD	>	Enough
Mean - 1,5 SD	>	Bad
	>	Very bad

For the qualitative analysis, it uses content analysis in which the subjects' answers were analyzed to identify based on characteristics of the text so that the categorization of any pattern of the data can be drawn.

## R E S U L T

The result of the comprehension test provides an interesting knowledge about the deaf students' comprehension on written text. Although the result of this research justifies previous research which showed that the reading comprehension of children with hearing impairment graduated from secondary school is comparable with the reading comprehension of fourth-grade elementary hearing students. This research result provides additional evidence that the comprehension ability of deaf children is varied. Based on the results of the comprehension test, the reading comprehension of deaf children can be classified into three groups, they are: (1) group of subjects with good reading comprehension; (2) group with enough reading comprehension; and (3) group with low comprehension ability. The results of the comprehension

test are presented in the form of score which is an accumulation of the score of each category of comprehension based on Barrett taxonomy. The result of the comprehension test of each subject can be seen on table 3.

Table 3. The result of deaf children's comprehension test

NO	SUBJECT OF RESEARCH	NUMBER OF CORRECT ANSWER	SCORE	PERCENTAGE
1	S1	58	169	72,22%
2	S2	52	144	61,54%
3	S3	35	103	44,02%
4	S4	30	68	29,06%
5	S5	22	65	27,78%
<b>Avarage</b>			<b>109,8</b>	<b>46,92%</b>

Group I with good score consisted of S1 and S2 and group II, with enough score, S3, and group III, with low score consisted of S4, and S5. In group I, S1 got 169 (72.22%) and S2 got lower than S1 with the score of 144 (61.54%). In group II, S3 got 103 (44.02%); while in Group III, S4 got 78 (29.06%) and S5 received the lowest score, 65 (27.78%).

The score obtained by those deaf children then compared with the comprehension score of the fourth grade hearing children to know the reading comprehension level of deaf children. It is found that the results from group I are known to be equivalent to the average score of fourth grade hearing students, while the results of groups II and III are known to be lower than the average score of fourth grade hearing students. The results of comprehension test of fourth grade hearing students test can be seen on table 4.

In table 4, it can be seen that the average score of fourth grade hearing students is 161.7. The highest score is 204 (86.75%), and the lowest score is 122 (52.14%). It means that the score of hearing subjects is higher than that of deaf subjects. The score of group I, S1 and S2, is in the range of score obtained by the normal hearing students. While the subjects of groups II and III, S3, S4, and S5, are below the score of fourth grade hearing range. Based on the standard scaled 5 (Stan five) score, the score obtained by fourth grade hearing students can be grouped into three: very good, good and enough comprehension ability. The number of the students who get very good score are 6 students, 13 students get good score, and student who gets enough score is only 1. Meanwhile, in deaf children, none of the children get very good score and 2 children get bad score.

The results of the study subjects' comprehension were obtained from the test scores that were arranged by categories in the Barrett taxonomy. They are grouped into literal, reorganization, inference, evaluation, and appreciation comprehension. The percentage of the test score of each of these categories can be seen in table 5.



Table 4. Result of hearing children's comprehension test

NO	NUMBER OF CORRECT ANSWER	SCORE	PERCENTAGE
1	46	122	52,14%
2	49	136	58,12%
3	49	142	60,68%
4	72	204	86,75%
5	66	184	78,63%
6	57	166	70,94%
7	59	166	70,94%
8	64	182	77,78%
9	69	197	84,19%
10	57	165	70,51%
11	50	148	63,25%
12	48	135	57,69%
13	56	156	66,67%
14	65	185	79,06%
15	50	145	61,96%
16	61	179	76,50%
17	57	162	69,23%
18	64	183	78,21%
19	51	138	58,97%
20	49	139	59,40%
<b>Average</b>		<b>161,7</b>	<b>69,1%</b>

Table 5. Percentage of deaf students score based on category on Barrett taxonomy.

NO	Subject	PERCENTAGE OF SCORE BASED ON ITS CATEGORY					PERCENTAGE OF TOTAL SCORE
		Literal	Reorganization	Inferential	Evaluation	Appreciation	
1	S1	83,33	58,33	83,33	53,33	66,6	72,22
2	S2	72,22	50	75	66,6	41,67	61,54
3	S3	33,33	50	50	40	41,67	44,02
4	S4	61,11	50	33,33	26,67	8,33	29,06
5	S5	33,33	16,67	25	20	41,67	27,78
<b>Average</b>		<b>56,67</b>	<b>45</b>	<b>53,33</b>	<b>44</b>	<b>40</b>	<b>46,92</b>



Table 5 describes that the score of each category of subjects in groups I, S1 and S2 are not much different. S1 successfully answered 71.6% questions correctly. Percentage of score in each category is literal comprehension is answered for about 83,33%; reorganization is 58,33%; inferential category is answered for 83,33%; evaluation category is 53,33%; and appreciation category is 66,6%. While the score of S2 is slightly lower than the score of S1, but the acquisition pattern is similar to the acquisition score of S1. The test result of S2 is as follows: literal comprehension is 72.22%; Reorganization is 50%; Inferential is: 75%, evaluation is 66.6% and lowest score is the appreciation category, that is 41, 67%.

In group II, the score of S3 in each category is literal category is 33,33%; Reorganization is 50%; Inferential is 50%; Evaluation is 40%; and appreciation is 41.67%. From the score obtained in each of these categories, it seems that the pattern of the score obtained by group II is different from group I. S3 gets very low score in the literal category. The low score gained in this category needs further analysis, since the literal category is the most basic category of comprehension. The comprehension of this category measures the reader's knowledge of the information written explicitly in the text. Meanwhile the result of the score of each category of Group III are S4 gets different pattern that is the reorganization category score obtained by S4 is higher than other categories, while the appreciation comprehension is very low, only 8.33%. The complete score of S4 is as follows: literal understanding is 61.11%; reorganization is 50%; inferential is 33.33%; evaluation is 26.67%; and appreciation is 8.33%. S4 scores are quite fluctuating, and it is different from other research subjects. The latter subject, S5, get lower score than S3 and S4. The score is as follows: literal category is 33.33%; reorganization is 16.67%; inferential is 25%; evaluation is 20%; and appreciation is 41.67%.

From the data it is known that hearing impaired individuals have various abilities in comprehending written text. Based on the Stan five scales, these abilities can be grouped into three groups: (1) good comprehension ability group, (2) enough comprehension ability group and (3) low comprehension ability group. Group (1) has equivalent score with the fourth grade elementary hearing students. They get high score on some categories, literal, inferential, and appreciation (the same pattern as the hearing students). While the lower-grade group get the lower score than the hearing students. The score is little bit lower than the lowest score of the hearing students. However, the results of hearing students' comprehension test show the parallel distribution of score got by each child. The distribution can be seen in the table 6.

Table 6. Percentage of score of fourth grade hearing students on each category of Barrett taxonomy

NO	Percentage of Score of each category of Barrett Taxonomy					TOTAL
	Literal	Reorganization	Inferential	Evaluation	Appreciation	
1	77,78	58,33	50	46,66	50	52,14
2	66,67	66,67	50	53,33	66,67	58,97
3	55,56	58,33	70,83	53,33	58,33	60,68
4	94,44	91,67	91,67	73,33	91,67	86,75
5	94,44	75	83,33	73,33	75	78,63
6	72,22	50	83,33	60	75	70,94
7	88,89	66,67	66,67	60	83,33	70,94
8	88,89	66,67	83,33	66,67	83,33	77,78
9	88,89	75	100	60	91,67	84,19
10	83,33	41,67	70,83	73,33	75	70,51
11	61,11	50	70,83	40	83,33	63,25
12	72,22	58,33	50	53,33	66,67	57,69
13	72,22	58,33	87,5	60	50	66,67
14	83,33	83,33	83,33	66,67	83,33	79,06
15	66,67	58,33	54,67	66,67	66,67	61,96
16	77,78	58,33	83,33	60	91,67	76,50
17	72,22	58,33	87,5	53,33	66,67	69,23
18	77,78	75	91,67	66,67	75	78,21
19	66,67	75	75	40	50	58,97
20	72,22	50	58,33	53,33	66,67	59,40

Table 6 shows the highest percentage of score on literal category is 94.44% and the lowest is 61.11%. In the category of reorganization, the highest percentage is 91.67% and the lowest is 41.67%. In inferential category, the highest score is 100% and the lowest score is 50%. The other two categories namely evaluation and appreciation category show the highest score of 73.33% and 91.67% and the lowest score are 40% and 50%. From table 5 and 6, it is known that the ability of the subjects in group I are equivalent to the ability of fourth grade elementary hearing students. While the ability of subjects in groups II and III is still below the ability of fourth grade elementary hearing students. Table 7 shows the mean comparison of comprehension test results in the deaf and hearing children.

Table 7. Comparison percentage of average of result of comprehension score between deaf students and fourth grade elementary hearing students.

Category	Subjects of Research				Fourth grade hearing students
	Group I	Group II	Group III	Average	
<b>Literal</b>	77,775	33,33	47,22	56,67	76,66
<b>Reorganisazation</b>	54,165	50	33,34	45	63,75
<b>Inferential</b>	79,165	50	29,16	53,33	74,58
<b>Evaluation</b>	59,965	40	23,34	44	59
<b>Appreciation</b>	54,135	41,67	25	40	72,5

Table 7 shows that the percentage of the score of subjects in group I is parallel with the percentage of the average score fourth grade elementary hearing students. In some categories, even, subjects in group I show higher achievement, i.e. in the literal comprehension category (77.75%: 76.66%); Inferential (79.165%: 74.58%) and evaluation (59.965%: 59%). Table 7 also shows that subjects in group II and III have lower outcomes than fourth grade hearing students in all categories. However, although in all categories of comprehension, subjects in group II and III achieved lower results, the distribution pattern of the results of this group's comprehension test shows similar pattern of distribution with fourth grade elementary hearing students, that is the result of the evaluation category was the category with the lowest score, and followed by categories of appreciation and reorganization.

## DISCUSSION

The result of the comprehension test shows pattern of comprehension of deaf children. In general, the highest score was achieved on the literal comprehension category. However each group shows different comprehension ability on other categories. The subjects with good comprehension ability and fourth grade hearing students have good comprehension in the inferential category. Thus they get the highest score on this category. Meanwhile the subjects with lower comprehension show high score on literal comprehension. It means that they still comprehend the meaning of information that is explicitly stated in a text. Other comprehension categories, includes in higher order of thinking seems difficult for the deaf children. It is proved by the low score achieved by them. However, each group shows different pattern. Group with the comprehension ability that is already developed, as in the subject of group I, the lowest score obtained in the category of appreciation and reorganization, with the score showed respectively appreciation category is 54,135 and reorganization category is 54,165. Subjects in group III and fourth grade hearing students, the lowest score is in the category of evaluation comprehension. Subjects in group

III gain an average score of 23.34% and fourth grade hearing students get 59%. Thus, based on this achievement, it seems that deaf children with low reading comprehension, experience delays in the development of comprehension. By practicing continuously, it is possible that their comprehension skills can develop like the ability of subjects in group I.

While in general, all groups of participants of this research get lower score on the category of reorganization comprehension. In the category of reorganization, knowledge of the structure of the story, the sequence of stories from the beginning, middle and end, plays a major role for the success of understanding the subject. It seems that the knowledge of the story structure of the subjects has not been well developed. Therefore, the achievement of reorganization category in the all groups can be quite low. This ability can grow correspondingly with the development of their knowledge of text structures. Thus, it can be concluded that the development of reading comprehension of deaf children follow the pattern of development in children with normal hearing. However, these developments lag a few years behind normal-hearing children. This finding is in line with the findings of Geffner and Freeman (1980) which mentions that deaf children's comprehension on the types of words (nouns, verbs, etc.) and linguistic structures can develop on a regular basis, developing the same level of understanding toward complex concepts as well as hearing children. However, their ability lags about 3 years behind their hearing peers.

The results of the comprehension test showed that the subjects were divided into three groups, namely (1) group of subjects with good reading ability (S1 and S2); (2) subjects with sufficient reading ability (S3); and (3) subjects with poor reading ability (S4 and S5). Klingner, Vaughn, & Boardman (2007) mentioned that in reading comprehension, a reader needs to involve variables from the reader, this process is also related to the text variable itself (understanding of the text type). Thus, in order to understand a texts story, the subject needs to be more than just understanding the meaning of words and sentences. Subjects need to understand how ideas expressed in one sentence relate to ideas expressed in other sentences (Baker & Stein, 1981). How an event relates logically to the other events that make up a story.

In normal children the knowledge of text organizations evolves as the growth of age and their experience. Older children are better able to recognize unstructured text than younger children. It also affects the child's understanding of narrative texts (Baker & Stein, 1981). This development occurs in relation to the need for prior knowledge to understand the logical relationships between events in the text (Luckner & Handley, 2008). Older children have better prior knowledge than younger children because they have gained more language exposure and knowledge of the content of the social and school environment. However, deaf children appear to have a different tendency. Age does not significantly affect the child's prior knowledge.

Luckner and Handley (2008) mentioned that deaf children tend not to have a good prior knowledge of the organization of texts

From the test results with text that have different plot, it seems that the different plot (progressive and flashback) does not affect the ability of understanding the subject with good reading ability. Meanwhile, subjects with poor reading ability had difficulty in answering the comprehension questions on the text with the flashback plot. Thus, different organizational texts influence the subject's ability with poor reading ability in understanding the content of a story. These results are shown in Table 2.41.

Table 8. Mean of comprehension test based on the plot

Plot	Mean of the group			
	Group I	Group II	Group III	Hearing students
Progressive	50	49	21,5	53,5
Flashback	56	47	17,5	52,35

\*Ideal score is 90

Table 8 shows that the flashback does not affect the ability of subjects in group I to understand the reading. The mean score obtained from the question based on the narration narrated non-linearly is 56 compared with the mean score obtained from the question based on the story narrated linearly (50) with the ideal score – score gained if the subject can answer the whole question correctly – is 90. While the score of subjects in group II showed different results. The mean score of the question based text with the flashback plot is lower than the mean score of questions based on progressive text (49: 47). The same achievement is shown by subjects in group III. The mean score of question based on progressive plot text is 21.5, and the mean score of questions based on flashback plot text is 17.5. This pattern of the achievement of comprehension test influence by plot of the text is also happened on the elementary hearing students. The difference plot affects the comprehension of the story of a text, but the difference is not too significant. The mean score on the test with the progressive text is 53.5 and the flashback text is 52.35. In conclusion, the presentation of information in the text embodied in the selection of the story sequence may affect the reader's understanding of the text. This evidence agrees with the research findings by Baker & Stein (1981).

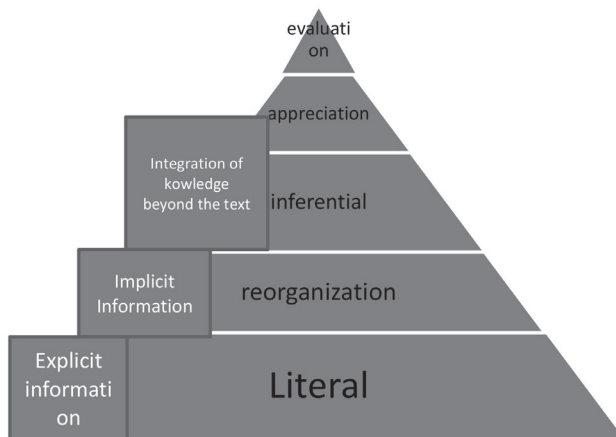
The text factor that might influence the readers comprehension of a text is also influence by the choice of words composing the text. Based on the findings of the research, it can be seen that the vocabulary replacement that composes the text, gives little difference in score for group II subjects. The subjects' understanding of the text with both familiar and unfamiliar words is

low. With an ideal score of 90, subjects in group I get score 50 (55.5%) for the text with familiar vocabulary and 50.5 (56%) for texts with unfamiliar vocabulary. Subject in group II gets 37 (41%) for text with familiar vocabulary and 36 (40%) for text with unfamiliar vocabulary. While subjects in group III obtained an average score of 21.5 (23.8%) for the text with familiar vocabulary and 27.5 (30.5%) for unfamiliar vocabulary. The score shows that the score in both kind of text are still low. This means that the deaf children may not understand the meaning of the vocabulary that is assumed to be familiar for them. Therefore, the score obtained by subjects, especially the subjects of groups II and III, can be classified into the low category. The problem of this lack of vocabulary knowledge is also combined with the low level of syntactic knowledge of research subjects.

These findings further reinforce the notion that deaf children read by using a top-down process as the findings of Miller’s (2000) study. Although vocabulary is a very important factor in reading, it does not mean that the reader cannot understand at all a text in the presence of such difficult vocabulary. Nagy (1988) mentions that one does not need to know the meaning of each word in a text in order to understand the text. In reading a reader may use a variety of information both in written text and from the old memory of the reader (Kelly, 1995). In line with Kelly’s findings, Stahl et al (1989) concluded that the vocabulary difficulty appears to have a significant influence on the literal understanding of a text, but the prior knowledge, which is the knowledge built before reading, is a factor that further influences students’ understanding of the main idea of a text.

Thus, the finding of the research shows the deaf children with low level of comprehension have the same comprehension pattern as the fourth grade elementary hearing students as described in figure 1.

Figure 1. Comprehension pattern of poor deaf reader and fourth grade elementary hearing student.



The poor deaf reader has the same pattern of Barrett taxonomy comprehension as the fourth grade hearing students. The order of comprehension category mastered by them are successively followed the taxonomy of literal, reorganization, inferential, appreciation, and the last one is evaluation category. It means that finding the information that is stated explicitly in the text is the easiest task for deaf and also young children, meanwhile the most difficult task for them is evaluation task, that need the integration of the prior knowledge with the information to understand the information found in a text.

## C O N C L U S I O N

Based on the test results of the research subjects, it can be concluded that children with hearing impairment are divided into three groups, they are (1) good comprehension ability group, (2) enough comprehension ability group and (3) bad comprehension ability group. Deaf children with low reading ability can answer concrete questions, or clearly expressed in the text. They are able to identify the information of a character, place, or time. But they have difficulty in concluding information, or comparing characters to one another, stories to one another, or also linking information in the text with other information from the outside world to reach a conclusion. Other difficulty of understanding skills for deaf children with low reading ability is inferential, appreciation, and evaluation category on Barrett taxonomy. These category are known for higher order thinking.

Deaf children with good reading skills have similar reading abilities to hearing children. One of the goals of reading is to relate what is read to the real world outside. Deaf children with good reading skills are able to use higher order thinking in understanding a text, so they have good comprehension skills. The ability to use high-level thinking skills allows them to be able to use new information and understand interrelated relationships / ideas to interpret what they read so they can perform tasks in the categories of inference, evaluation and appreciation.

## A C K N O W L E D G E M E N T

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