

## **BAB II**

### **LITERATURE REVIEW**

#### **A. The Concept of Reading Comprehension**

Reading is a process mostly dominated by the eye and the brain. The information from the text is caught by the eye, then is proceeded by the brain. The domination of the eye and the brain in reading process is in line with Goodman's opinion (cited in Carell, Devine, and Eskey; 15-16). He said that reading employs visual input. The eye is the input organ. It has certain characteristics and limitations as an optical instrument. The brain is the organ of information processing. It decides what tasks it must handle, what information is available, what strategies it must employ, which input channels to use, and where to seek information.

Reading comprehension is an extremely complex process whose different views result in different types of reading model. The reading models can be classified into three categories which are; top-down, bottom-up, and interactive processing (Harris & Sipay; 6).

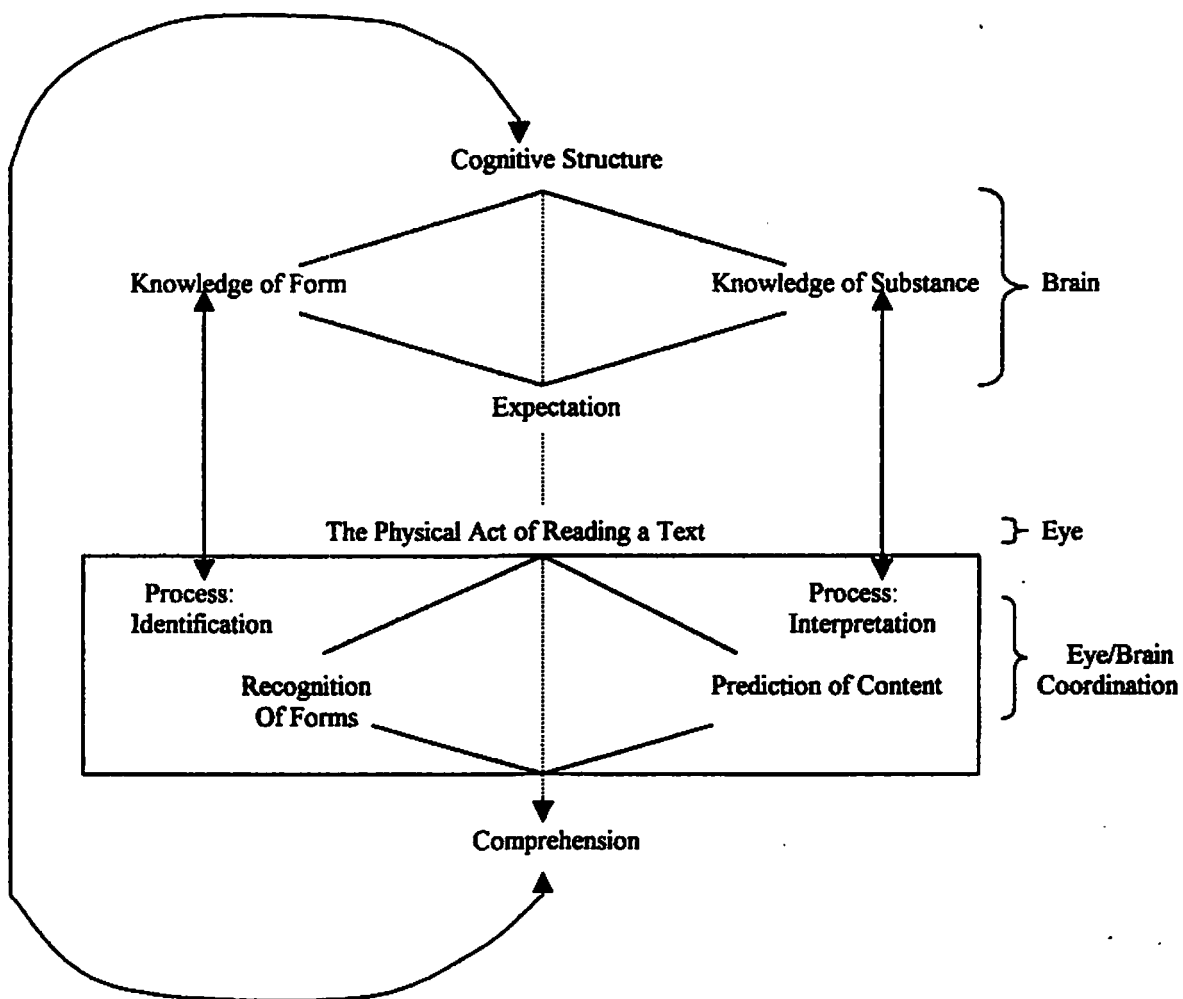
The top-down model is that the 'top' of the information processing system, which is the part that is constructing the meaning of the passage, controls the information flow at all levels. According to Rayner and Pollastek (467), in the top-down model the reader uses their general world knowledge and

contextual information from the passage being read to make hypothesis about what will come next during reading.

On the contrary, the basic of bottom-up model is that visual information is initially sampled from the printed page and the information is transformed through a series of stages with little influence from general world knowledge, contextual information or higher order processing strategies. The processing of comprehension in this model is very fast and that information flows through the processing system in a series of stages.

The last category of reading model which has a great influence in cognitive psychology is the interactive models. According to Eskey (15), reading is a particular type of cognitive behaviour which is based on certain kinds of knowledge which form a part of reader's cognitive structure. The diagram is presented as follows:

**The Diagram of Reading as Cognitive Behaviour: An Interactive Model**



Cited in: Rayner and Pollastek; *Teaching Second Language Reading for Academic Purpose*, 1983

It begins with cognitive structure in the brain, that is, what the reader knows and a stored schema in his long-term memory. Here, he/she must know the language well enough in each written form and know enough about the subject matter of the text. These are to ensure that the text will be comprehensible to him/her. Yet, his/her knowledge of form will provide him/her

with a certain expectations about the language of text. Given the expectation during the physical act of reading, he/she can make an accurate identification of form, and if his/her reading skills are well developed, he/she will be able to do this quickly and automatically. Simultaneously, his/her knowledge of substance will provide him/her with a certain expectations about the larger conceptual structure of text. In achieving comprehension, a personal reconstruction of the meaning of the text will be determined by the reader's knowledge and reasoning power. Here, the word "interactive" refers to both the interaction of the reader's several kinds of knowledge and the interaction of the reader and the text. But as the arrow from comprehension tack to cognitive structure suggests, these two kinds of interaction blend into one as, in the normal process of reading, the reader makes the text part of what he/she knows.

### **B. Male and Female Differences in the Brain**

Men and women differ not only in their physical attributes and reproductive function but also in many other characteristics, including the way they solve intellectual problems. The effect of sex hormones on brain organization occurs so early in life that from the start the environment is acting on differently wired brains in boys and girls. According to Atkinson (92), girls are more fluent verbally; boys are better at math. Girls can memorize well, but boys are superior in abstract thinking. Girls tend to be passive and to seek approval; boys are aggressive and independent.

We know that male and female brain is different in size, in which the male's brain is bigger than that of female's and it is true that the average men's brain weighs four ounces more than that of the average women.

The human brains are divided into two parts, namely: the right hemisphere and the left hemisphere. Each of the hemispheres has different function and different specialization. According to Nicholson (84), the left hemisphere is primarily responsible for verbal abilities such as learning and remembering verbal materials, understanding what other people say and reasoning verbally.

Considering the relationship between male and female abilities with the brain, McMahon and McMahon (458) stated that the difference between male and female might be related to physical differences in the brain. Indeed autopsies show that a few areas of the brain have more cells in male than female. The left hemisphere of the brain, which contains language and speech areas, develops more rapidly in female than male.

Relating to verbal abilities, which are located at the left hemisphere, Nicholson (85) said that female left hemisphere starts to become more efficient at verbal tasks and gradually less efficient at visual spatial ones. Male brains are taught to do exactly the opposite. Specialization develops in the right hemisphere, which becomes more efficient at visual-spatial and less efficient at verbal tasks.

According to Davis and Palladino (484), the corpus callosum seemed to be larger in female than male. The left hemisphere and the right hemisphere of male do not communicate as much as they do in female. This might explain why language abilities in female are more likely to survive a stroke in the left hemisphere.

### **1. Sex Differences in Cognitive Development**

Differences between men and women in cognitive pattern are now well established. Some of the differences are found in development and last throughout the lifespan. According to cognitive developmental theory of gender developed by Kohlberg (cited in Santrock; 412), children's gender typing occurs after they have developed a concept of gender. Once they consistently conceive of themselves as male or female, children often organize their world on the basis of gender. For example: a child realizes, I am a girl; I want to do girl things; the opportunity to do girl things is rewarding. Boys have the same thinking too; he thinks, if I'm a boy, I'd better figure out what kinds of things boy do. Having acquired the ability to categorize, children then strive toward consistency in the use of categories and behaviour. As children's cognitive is mature, so is their understanding of gender.

According to Bruner (cited in Maltby, Gage and Berliner; 109), cognitive growth is marked by the increasing ability to deal with several alternatives simultaneously, to perform concurrent activities, and to pay attention sequentially to various situations.

In cognitive development of different sex we could not separate the development that includes the verbal abilities and spatial abilities in male and female. These two cognitive abilities have a strong influence to make differences between male and female.

The concept of verbal ability covers a number of different abilities, including vocabulary and verbal analogies. On measures of verbal fluency, girls usually do better than boys. Girls learn a little earlier than boys to talk, to use sentences and to use a greater variety of words. They also speak more clearly, read earlier, and do consistently better than boys in the test of spelling and grammar (Maltby, Gage and Berliner, 200). Differences in verbal abilities are the first to appear developmentally. Female superiority on verbal tasks has been one of the more solidly established generalisations in the field of sex differences. Wittig and William (278) also had the same opinion about this phenomenon. They said that women usually out-perform men on almost all measures of language ability. They tend to be more fluent in speaking and writing, they have bigger vocabularies and they are more sensitive to grammar.

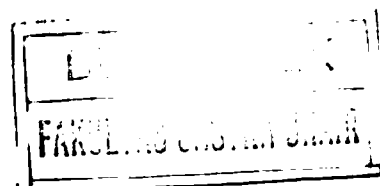
Furthermore, spatial ability is the ability to recognize a figure when it is rotated, to detect a shape when it is hidden within some other figure, or to effortlessly take a three-dimensional object and sketch it with accurate perspective (Maltby, Gage and Berliner; 180).

Archer and Lloyd (232) also said that spatial ability or visual-spatial ability, generally refers to success in solving problems that involve visualizing a spatial arrangement and carrying out mental operation on it.

According to Geary, Gilger and Miller (cited in Gage & Berliner; 180), males have consistently tested better in spatial ability than have females. In fact, of all the gender-related differences in intellectual activity, the difference in spatial ability seems to be most consistent and thus, perhaps the most likely to have a genetic origin. The most consistent finding concerning spatial ability is that males outperform females on mental rotation tasks (Davis & Palladino; 486).

The statement above is also supported by McMahon and McMahon (458). They said that boys begin to score better on tasks involving mathematics and spatial skills. Girls take lead in verbal skill such as words problem, reading and debating logic

Related to cognitive development, a researcher like Oetsel (cited in Sants and Butcher; 421) divided this study into four major areas namely language development, vocabulary, numerical reasoning, and spatial abilities. Some fairly marked trends were evident in the twenty-six studies examined by Oetsel. The result from these studies was: in language development, twenty-three of the studies show that girls are significantly higher than boys in their development and in verbal fluency. In vocabulary, the different was less dramatic, but still





markedly in favor of the girls. On the other hand, in numerical reasoning and spatial abilities, the boys are markedly superior to the girls.

## **2. Sex Differences in Intellectual Abilities**

Human intellectual abilities are considered as a human thinking that also involves memory as a set of process recall. If there were sex differences in interests, areas of knowledge, and abilities, then, we would expect these to be reflected in memory. According to MacCoby and Jacklin (59), girls show somewhat better memory for verbal content. The superiority of girls in verbal memory is especially clear after about the age of 7. By contrast, sex differences are found for objects or digits. The one study with children older than preschool age, showing a sex difference finds boys better at recalling designs, a task that probably relates to the area of visual-spatial skills in which boys of this age frequently excel.

The statement above that offered by MacCoby and Jacklin means that girls more better in verbal content and at the age after 7 the domination of girls in verbal memory can be seen clearly. On the other hand, boys more excel at recalling designs that involve objects or digits relate with the area of visual-spatial skills.

According to Grusec (cited in Maccoby & Jacklin; 59), a study of recall of a model's performance found that boys remembered more performed than verbalized material, whereas girls recalled both equally well.

Anastasi and Foley (cited in Sants & Butcher ;420) found that in the commonly used tests sex differences in scores are slight, but that verbal tests do tend to favor girls, whereas numerical and spatial relations tests tend to favor boys.

Nash (cited in Sants and Butcher; 420), stated that in most test involving verbal skills, and also some types of situation involving memory, girl are consistently better than boys. On the other hand, boys do better than girls in most tests involving arithmetics and numerical manipulation and also in test involving spatial relationship.

The IQ taps of individual differences are located in intellectual power. Intellectual power abilities engage the IQ tests. Archer and Lloyd (227) said that IQ test was originally constructed so that, on average, men and women would score similarly; but it has often been claimed that there is a difference in the overall distribution of IQ scores, with more men at both the higher and lower ends and more women in the middle. Archer and Lloyd describe that various IQ tests and scales designed specifically to measure skills such as verbal ability, numerical reasoning, spatial ability and memory.

According to Bee (237), in contrast, comparisons of total IQ test scores for boys and girls do not reveal consistent differences, but when we break down the total score into several separate skills, some patterns of sex differences emerge. On average, boys are better at spatial visualization tasks and numerical reasoning; girls are better at some verbal abilities.

All current IQ test compare a child's performance to that of others of different age. However, IQ test scores are quite good predictors of school performance and are moderately good predictors of later job choice and job success.

### **C. Sex Differences Influenced by School Environment**

Although there are a number of social environments that influence male and female characteristics, the school and the teachers are one of the most influential parts. Children spend a major part of childhood in the school. The teachers are considered as the people who help the children develop their cognitive process.

Generally, the treatment of the teachers toward boys and girls is different. McNeil (cited in Sants and Butcher; 425) has claimed that in school the differential development of reading ability in boys and girls is influenced by a similar factor, interaction between female teachers and boys being less conducive to learning recently.

A study of teacher – pupil interactions did in fact show that the women teachers tended to give less reading practise to boys, to be harsher in reprimanding errors by boys, and in general to create different classroom climates for the boys and for the girls. (Sants & Butcher ; 425).

According to Sadker and Sadker (cited in Santrock; 410), in certain ways, both boys and girls might receive an education that is not fair. For

example: girls' learning problems are not identified as often as boys' are; pressure to achieve is more likely to be heaped on boys than on girls; boys are given the lion's share of attention in schools.

Nicholson (90) also had the same opinion about this phenomenon. He said teachers are even more at fault in the way in which they encourage children to react to their own mistakes. For example: when a boy gives the wrong answer, particularly in a 'masculine' subject like maths, his teacher is likely to keep at him, suggesting he tries new approaches to the problem until eventually he gets it right. He therefore learns to expect to get sums right. But when a girl gets a sum wrong, the teacher's response is rather different. She is more likely to be told not to worry, and less likely to be encouraged to try again.

Maltby, Gage and Berliner (181), stated that almost without any expectation, the studies show that girls do better on average than boys in school achievement (grades), particularly in the elementary years, even in the mathematics and science areas.

## **CHAPTER III**

# **PRESENTATION AND ANALYSIS OF THE DATA**