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CHAPTER II

REVIEW OF RELATED LITERATURE

A. Theoretical Framework

1. The Nature of Memory

a. Definition of Memory

Memory is the ability to storage, receive, and manage information or knowledge in the human brain, then to recall the past experiences and the informations. Lieberman (2012 p.42) mention, Memory is as a mental record of our experiences. Something happens, later we recall it; memory refers to the record that makes this recall possible. And a conscious feeling of re-creating or reliving the original experience; memory refers to this conscious reliving of past experiences. The same idea pointed out by Allen (2004 p.42) Memory is simply a record of experience, the existence of which is inferred from a change in capability, behavioral or cognitive, afforded by that experience. If we could not remember past events, we could not learn or develop language, relationships, or personal identity.

In addition Baddely, 2007 said that, memory is understood as an informational processing system with explicit and implicit functioning that is made up of a sensory processor, short-term (or working) memory, and long-term memory. Wingfield & Byrnes (1981 p.4) said that, Memory is a very creative process to retain information, to recall it when needed, and to recognize its familiarity when they later see or hear it again. The

information we hear or receive will be digested by the brain then come to short-term memory and sent it to long-term memory to be stored in order to be recalled. The information that can be recalled is from long-term memory. Not all information that we hear and receive in memory can be recalled. Only the information which stored on the long-term memory can be recalled.

Robertson (2001 p.1) said that Memory is a fundamental process of being human, since what we remember determines largely who we are. Without memory, we are capable of only simple reflexes and stereotyped behaviors. Within the brain, memory is a dynamic property of populations of neurons and their interconnections. This means memory determines who we are. How much we remember informations in our brain determines who we are, what we know, and how much we know. Without memory we not be able to remember anything even to know ourself.

According Hedge (2013 p.1) Memory is a collection of systems for the storage and recall of information (personal experiences, emotions, facts, procedures, skills and habits). To live at the present we need to call information stored in our memories. We must remember what we planned yesterday. In order to not make the same mistakes we need to remember past events so that we can be better than the past. This is the same as when someone takes a test, we will call the information or knowledge we learned to complete the test correctly.

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In conclusion memory is our ability to store and retrieve information. Memory is the process of taking information from the world around us, processing it, storing it, and later recalling it, sometimes many years later.

b. Kinds of Memory

There are some kinds of memory according to Robertson (2001 p.1) Two general kinds of memory are described:

1. *explicit* memory—conscious recollection of one’s own previous experiences, like events and facts that can be consciously recalled. The explicit memory, referred to as simply “memory” in ordinary language, can be further subdivided into events that are personally experienced (for example, what you had for breakfast) and memories containing factual information (for example, information learned in a basic science course).
2. *implicit* memory—past experiences that influence current behavior but are not consciously recalled, like skills, habits, and information that are acquired and retrieved unconsciously. The implicit memories involve the “how to” aspects of our behavior that include motor skills and emotional associations with particular stimuli or events, which form our likes and dislikes. Implicit memories also include *priming*, which is the ability to identify an item as a result of previous exposure to it,

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even if you are unaware of the previous exposure—a phenomenon well known to advertisers.

So, there are two kinds of memory according to Robertson, that is explicit memory and implicit memory.

c. Models of Memory

Memory have some models, according to Cynthia (2011 p.6-9)

Multiple system model of memory are:

1. Declarative (explicit) Memory :

Is a memory system that is controlled consciously, intentionally, and flexibly. Its include recalling the name of an old friend, remembering a list of items to pick up at the store, remembering information for a test, learning a phone number, and recalling your ATM password. Declarative memory includes:

- a) Working Memory is a short-term memory system that allows us to store and process limited amounts of information of an immediate sense. Working memory lasts anywhere from 2 to 18 seconds.

Working memory is used for mental calculations, such as figuring a tip; retaining information briefly, such as when dialing a phone number; and processing incoming information, such as when listening to a newscast. It also allows us to temporarily process

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information we have previously learned in a class and access it to learn and associate new information.

- b) Episodic Memory is a long-term memory system that stores information about specific events or episodes related to one's own life.

Episodic memory is used to recall past events, such as a movie you saw last week, the dinner you ate last night, the name of the book your friend recommended, or a birthday party you attended.

- c) Semantic Memory is a long-term memory system that stores general knowledge. Examples of what semantic memory stores are vocabulary or facts such as $2+2 = 4$ and Michigan is a state in the United States.

2. Nondeclarative (implicit) Memory :

Is a memory system that influences our current perceptions and behavior without our knowledge, awareness, or intention. Examples of nondeclarative memory include riding a bike, driving a stick-shift car, using the same verbal patterns as friends (e.g., saying "like" repeatedly), and classical conditioning. Nondeclarative memory includes:

- a) Priming is an automatic or unconscious process that can enhance the speed and accuracy of a response as a result of past experience.

- b) Conditioning is memory for associations formed between two stimuli.
- c) Motor/procedural memory is the memory for the process involved in completing a task (e.g., motor memory) after the task is well learned and has become automatic. Examples include playing the piano, typing, hitting a tennis ball.

In conclusion, memory has two models according to Cynthia that is Declarative (explicit) Memory, includes working memory; episodic memory; semantic memory, and Nondeclarative (implicit) memory, includes priming memory; conditional memory; procedural memory.

In addition there are three traditional models of memory according to Sternberg & Sternberg (2012 p.193) that is:

1) Sensory Memory

This type of memory has the shortest retention time, only milliseconds to five seconds. Roughly, Sensory Memory can be subdivided into two main kinds, iconic memory (visual input) and echoic memory (auditory input).

2) Short-term Memory

The Short Term Memory is the link between Sensory Memory and Long Term Memory (LTM). Information is retained in the Short Term Memory for a rather short period of time (15–30 seconds).

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Miller (1956), the capacity of the Short Term Memory is five to nine pieces of information (The magical number seven, plus or minus two). The term "pieces of information" or, as it is also called, chunk might strike one as a little vague.

3) Long-term Memory

Long Term Memory is the system where memories are stored for a long time. "Long" in this sense means something between a few minutes and several years or even decades to lifelong.

In conclusion, memory have three models according to Sternberg, that is sensory memory, short-term memory, and long-term memory.

2. The Nature of Listening Comprehension

a. Definition of Listening Comprehension

Listening comprehension is one of the most important and fundamental skills in language learning. Listening is assuming greater and greater importance in foreign language classroom. Richards and Renandya (2002 p.238) stated that listening is the vital in the language, because it provides input for the learner. According to Nunan (2003 p.24), listening is an active, purposeful process of making sense of what listener hear because listener process not only what they hear but also connect to other information they have already known. Listeners hear the

information that they received and connecting it to the information and knowledge that they already have. Listening is not only about hearing but also about the knowledge that they already have.

In addition, Nation and Jonathan Newton (2009 p.37) stated that the early language development depends on listening. Learner can get their knowledge or message from the teacher if they pay attention to listen to the teacher. It means that listening is the activity of hearing to the sound. The same idea pointed out by Underwood (1989 p.1) listening is the activity of paying attention and trying to get meaning from something we hear. If we paying attention to the message or knowledge that we hear, we can get the information from that. Paying attention is the important activity in listening. We can listen what we hear with paying attention, but we not need paying attention to hear.

In conclusion, listening is an activity with concentration and focus to an object. Listening makes the brain process to understand and remember words, sentences, information, and knowledges or messages that the listeners hear and they have already known. In listening we need to paying attention to the sound or what we hear. Because by paying attention we can get the meaning of the message. It is important to paying attention and comprehend what we hear.

Listening comprehension is a process, a very complex process (Buck, 2001 p.1). listening comprehension refers to active and very

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complicated process (interactive and interpretive). In line with the idea above Vendergrift & Goh (2012 p.54) said Listening comprehension is an active process. Listeners analyze what they hear and interpret it on the basis of their linguistic knowledge and their knowledge of the topic. Listening comprehension is now acknowledged as an important facet of language learner. The complicated process of the statements above is the process of what the human's way try to comprehend the message that they hear.

According to Brown (2000 p.249) listening comprehension is the psychomotor process of receiving sound waves through the ear and transmitting nerve impulses to the brain. Listening comprehension refers to the understanding of what the listener has heard, includes knowing speech sounds, comprehending the meaning of individual words, and understanding the syntax of sentences.

In addition Richards (2010 p.344) said that, Listening comprehension is the process understanding speech in a second or foreign language. Listening comprehension is the process that starts with the receiving news analyzed in sounds, words, clauses, and sentences until getting the messages of the speaker. Listening comprehension is not only an activity of listening to the speaker but also it tries to get messages from the speakers. In this case, it is expected to listeners should be really listen and pay attention to what the speakers is saying.

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In relation to Richard (2008 p.3) said listening as comprehension is the traditional way of thinking about the nature of listening. In conclusion listening and listening comprehension are synonymous. The view of listening is based on the assumption that the main function of listening in foreign language learning is to facilitate understanding of spoken discourse.

b. Types of Listening

Listening have some types. Brown (2003 p.120), derive four commonly identified types of listening performance, each of comprises category within which to considere assessment task and procedures.

1. Intensive

Listening for perception of the components (phonemes, words intonation, discourse markers, etc) of a large stretch of language.

2. Responsive

Listening to a relatively short stretch of language (a greeting question, command, comprehension check, etc) in order to make an equally short response.

3. Selective

Processing stretch of discourse such as short monologues for several minutes in order to “scan” for certain information. The purrpose of such performance is not necessarily to look for global or general

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meanings, but to stretches of spoken language (such as classroom directions from a teacher, TV, or radion news items or stories). Assessment task in selective listening could ask students, for example, to listen for names, numbers, grammatical category, direction (in map exercise), or certain facts and events.

4. Extensive

Listening to develop a top-down, global understand of spoken language. Extensive performance ranges from listening to lengthy lectures to listening to a conversation and deriving a comprehensive message or purpose. Listening for gist, for the main idea, and making inferences are all part of extensive listening.

So, there are four types of listening according to Brown that is intensive, responsive, selective, and extensive.

c. Listening Strategies

Listening have some strategies, according to Buck (2001 p.104), he is identifies two kinds of strategies in listening:

1. Cognitive strategies, mental activities are related to comprehending and storing input in working memory for later retrieval (comprehension processes, storing and memory processes, using and retrieval processes).

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2. Metacognitive strategies, those conscious or unconscious mental activities that perform an executive function in the management of cognitive strategies (assessing the situation, monitoring, self-evaluating, and self-testing).

Listening have two strategies according to Buck that is cognitive strategies and metacognitive strategies.

d. Bottom-up and Top-down Approach

Nunan (1991) said that, Successful listeners are who can utilise both inside the head knowledge and outside the head knowledge to interpret what they hear and see. In other words, successful listeners use bottom-up and top-down strategies in reconstructing messages.

1. Bottom-up

Segment the stream of speech into its constituent sounds, link these together to form words, and chain the words together to form clauses and sentences and so on. This view is known as the bottom-up approach to listening.

2. Top-down

The use of inside of head knowledge, that is, knowledge which is not directly encoded in words, is known as the top-down view of listening.

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Another technique to utilise both bottom-up and top-down listening strategies is the dictogloss. Here, the teacher reads a passage at normal speed to learners who listen and write down as many words as they can identify. They then collaborate in small groups to reconstruct the text on the basis of the fragments which they have written down.

There are four stages in the dictogloss approach:

1. Preparation
2. Dictation
3. Reconstruction
4. Analysis and correction

The dictogloss technique provides a useful bridge between bottom-up and top-down listening. In the first instead, learners primarily concerned with identifying individual elements in the text- a bottom-up strategy. However, during the small group discussions, some or all of the following top-down strategies might be employed. In all of these, the listener will integrate background, 'inside the head' knowledge with the clues picked up during the dictation.

1. Listeners will make predictions.
2. Listeners will make inferences about things not directly stated in the text.
3. Listeners will identify the topic of the text.

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4. Listeners will identify the text type (whether it is narrative, description, anecdote, etc.).
5. Listeners will identify various sorts of semantic relationship in the text.

In line with idea above Richards (2008 p.4-10) mention that, Bottom-up processing refers to using the incoming input as the basis for understanding the message. Comprehension begins with the received data that is analyzed as successive levels of organization – sounds, words, clauses, sentences, texts – until meaning is derived. Comprehension is viewed as a process of decoding.

To understand the utterance that we listen using bottom-up processing, we have to mentally break it down into its components. This is referred to as “chunking.” The chunks help us identify the underlying propositions the utterances express, it is these units of meaning that we remember, and not the form in which we initially heard them. Our knowledge of grammar helps us find the appropriate chunks, and the speaker also assists us in this process through intonation and pausing.

Top-down processing, on the other hand, refers to the use of background knowledge in understanding the meaning of a message. Whereas bottom-up processing goes from language to meaning, top-down processing goes from meaning to language. The background knowledge required for top-down processing may be previous knowledge about the

topic of discourse, situational or contextual knowledge, or knowledge in the form of “schemata” or “scripts” plans about the overall structure of events and the relationships between them.

Bottom-up and top-down processing generally occur together. A typical lesson in current teaching materials involves a three-part sequence consisting of pre-listening, while-listening, and post-listening and contains activities that link bottom-up and top-down listening. The pre-listening phase prepares students for both top-down and bottom-up processing through activities involving activating prior knowledge, making predictions, and reviewing key vocabulary. The while-listening phase focuses on comprehension through exercises that require selective listening, gist listening, sequencing, etc. The post-listening phase typically involves a response to comprehension and may require students to give opinions about a topic.

Brown (2000 p.260) said that, Bottom-up processing proceeds from sounds to words to grammatical relationship to lexical meanings, etc., to a final message, its focus on sounds, words, intonation, grammatical structures, and other components of spoken language. Top-down processing is evoked from a bank of prior knowledge and global expectation and other background information (schemata) that the listener brings to the text. Top-down technique is more concerned with the

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activation of schemata, with deriving meaning, with global understanding, and with the interpretation of a text.

Listening processes through our brain:

1. Recognize speech sounds and hold a temporary “imprint” of them in short-term memory.
2. Simultaneously determine the type of speech event (monologue, interpersonal dialogue, transactional dialogue) that is being processed and attended to its context (who the speaker is, location, purpose) and the content of the message.
3. Use (bottom-up) linguistic decoding skills and/or (top-down) background schemata to bring a plausible interpretation to the message, and assign a literal and intended meaning to the utterance.
4. In most cases (except for repetition tasks, which involve short-term memory only), you delete the exact linguistic form in which the message was originally received in favor of conceptually retaining important or relevant information in long-term memory. (Brown p.119-120)

e. **The Assessment of Listening Comprehension**

There are some components of listening comprehension from some experts. These skills are useful for students in comprehending the listening material. Some of them are:

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1. Vandergrift & Goh (2012 p.168-169) stated that there are six core skills of listening to achieve comprehension. These skills will be explained as follows.
 - a) Listen for Details
Understand and identify specific information, such as key words and numbers and names.
 - b) Listen for Global Understanding
Understand the general idea : for example, the theme, the topic, and the overall view of the speaker.
 - c) Listen for Main ideas
Understand the key points or propositions : like, points in support of an argument, or parts of an explanation.
 - d) Listen and Infer
Demonstrate understanding by filling in information that is omitted, unclear, or ambiguous, and make connections with prior knowledge by “listening between the lines”: for example, using visual clues to gauge
 - e) Listen and Predict
Anticipate what the speaker is going to say before and during listening: for example, use knowledge of the context of an interaction to draw a conclusion about the speaker’s intention before he/she expresses it.

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f) Listen Selectively

Pay attention to particular parts of a message and skim over or ignore other parts in order to achieve a specific listening goal or, for example, when experiencing informational overload, listen for a part of the text to get the specific information that is needed.

2. Brown (2006 p.6) explain that there are three skills used to help students listen better, they are:
 - a) Listening for Main Idea
means that the listener wants to get a general idea of what is being said. The details are less important.
 - b) Listening for Detail
we need the details when we are getting directions to someplace like a friend's home.
 - c) Listening and Inferences
Speakers do not always say exactly what they mean. That is, important aspects of meaning are sometimes implied rather than stated. Listeners have to "listen between the lines" to figure out what really is meant.

Based on the explanation above, the researcher chooses four points in assessing students' listening. The points are:

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a) Listening for Detail

Involve listening for specific information, such as key words and numbers.

b) Listening for Main idea

It means to listen for main idea or for ‘the big picture’ and to conclude the main idea based on what they hear.

c) Listening and inference

It is the ability to fill in gaps in the input. Sometimes the speakers leave information out or they are being deliberately ambiguous because they assume the listeners already know it.

d) Listening and Predict

This is an ability to anticipate before and during listening what one is going to hear.

3. The Relationship between Students’ Memory and Their Listening Comprehension

Cognitive process comes into play during the process of L2 listening comprehension. Memory refers to the ability of learners in learning, it plays an important role in learning listening. Memory is fundamental to the listening process, regardless of context. Ohata (2006) said that, the listeners rely on previously acquired knowledge or experience (top-down processing) as well as present acoustic stimuli (bottom-up processing) in interpreting the speech

signals they are listening to. It should be noted, however, that such process of decoding the incoming linguistic stimuli is in progress when the listeners also need to retain the perceived linguistic elements in mind, in order to actually interpret them for getting a particular meaning or meanings. This is where the issue of memory comes in.

According to Loftus and Loftus (1976), the sounds are first perceived and retained in a sensory store called “echoic memory” for a very brief period of time (about one second), where the stream of physical sounds are segmented into particular linguistic units (phonetically, and morphologically) by using previously learned or acquired patterns as a guide to this task.

The same idea pointed out by Brown (2006 p.3) Students must hear some sounds (bottom-up processing), hold them in their working memory long enough (a few seconds) to connect them to each other and then interpret what they’ve just heard before something new comes along. At the same time, listeners are using their background knowledge (top-down processing) to determine meaning with respect to prior knowledge and schemata. Listening comprehension involves far more than just understanding words.

When we hear something, such as information, message, and knowledge, then we automatically catch, filter, and understand the meaning of that information. Subsequently the information will come to the brain, in that process brain sent it to be stored in memory. The information that received by

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Short-term memory will be continue to the Long-term memory in order to be saved then recalled it sometimes.

Beck and Flexer (2014) noted that, listening is the key. They defined listening as applying meaning to sound. Listening is where hearing meets brain, and a substantial part of the listening process is WM. To comprehend the informations or messages we need to save the information in memory so that we can recalled it sometimes to comprehend what we are listen to. The same idea pointed out by Ohata (2006, p. 22) said that, Memory “can play a significant role in L2 listening comprehension processes”.

In addition Vandergrift & Goh (2012 p.33) said that, cognitive processes come into play during the process of L2 listening comprehension. Bottom-up processing, seen as a decoding process, assumes that the comprehension process begin with information in the sound stream, the information is hold in short term memory, then top-down processing, involves the application of context and prior knowledge to interpret the message. The knowledges are stored in the listener’s long term memory in the form of schemata.

Based on the explanation above, the researcher concludes that memory play an important role in learning listening. Memory is fundamental to the listening process. With memory listening process will run successfully. The more you memorize informations the better your listening comprehension.

B. Relevant Research

According to syafi'i (2016 p.102) relevant research is required to observe some previous researches conducted by other researchers in which they are relevant to our research. Besides, we have to analyze what the point was focused on information design, finding, and conclusion of the previous research, that of:

1. Abdelfattah Dimassi (2016) conducted research entitled "EFL Listening Comprehension, Cognitif and Methacognitive Strategies and Working Memory" He studied to compare the pedagogic efficiency of two methods for teaching listening comprehension: the cognitive strategy-based instruction method (CSBM) and the metacognitive strategy-based instruction method (MetSBM). The aims to considered the relationship between vocabulary knowledge, word recognition (aural and written) and WM as co-variables and predictors of listening comprehension. The subjects of this study, 44 female students studying on an intensive English programme at the University of Sharjah in the United Arab Emirates (UAE), were placed in two groups and taught a range of listening comprehension strategies, in accordance with the MSBM and the mainstream CSBM. The result states that using the MetSBM for teaching listening comprehension leads to higher scores than the CSBM. In addition it was shown that three co-variables come into play when dealing with learning how to listen for comprehension: aural word recognition, orthographic word recognition, and WM. Then the results of his studied

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confirm the findings of other studies using teaching methods based on the insights from metacognition.

The similarity is to find the relationship between memory and listening comprehension. The difference is Dimassi's research found that teaching method in listening comprehension that using MetSBM (Metacognitive strategy-based instruction method) lead higher scores than the CSBM (the cognitive strategy-based instruction method), while this research did not find teaching methods.

2. Fang Xu (2008) conducted research entitled "Short-Term Memory in EFL Listening Comprehension" He studied the relationship between STM in EFL Listening Comprehension. He found that using good listening skill will make EFL listener retain the material in STM for a longer time and skillfully activate knowledge in LTM to enter STM. The result states that STM plays an important role in listening comprehension. The concept of STM as an important factor that may affect EFL listening comprehension.

The similarity is to find the relationship between memory and listening comprehension. The difference is Fang Xu's research studied the relationship between STM in EFL Listening Comprehension, while this research did not only discuss about STM but about both STM and LTM in listening comprehension.

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C The Operational Concept

Operational concept is a concept as a guidance used to avoid misunderstanding. According to Syafi'i (2016 p.103) operational concepts are gotten from related theoretical concepts for all variables in the research title that should be practically and empirically. It should be interpreted into particular words in order to make it easy to measure. There are two variables in this research. The variable X as independent variable is about students' Memory. The variable Y as dependent variable is Listening comprehension.

The indicators of variable X are as follows:

1. Short Term Memory
2. Long Term Memory

The indicators of variable Y are as follows:

1. Students find detail and specific information from speaker
2. Students find main idea from speaker
3. Students identify the inference from dialog of speaker
4. Students make predictions of what the speaker means.

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D. The Assumption and Hypothesis

1. The Assumptions

Based on the theories and explanations above, the researcher has assumption related to the correlation between students' memory and their listening comprehension. If the students' have high memory, the students listening comprehension will be high. In other words, the higher the students' memory is the better the students' listening comprehension.

2. The Hypothesis

a. Null Hypothesis (Ho)

There is no significant correlation between students' memory and their listening comprehension of the elevent grade at State Senior High Shcool 4 Pekanbaru.

b. Alternative Hypothesis (Ha)

There is significant correlation between students' memory and their listening comprehension of the elevent grade at State Senior High Shcool 4 Pekanbaru.