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The Role of Teachers' Psycholinguistic awareness on Second Language Teaching and Learning

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ABSTRACT

Psycholinguistics is concerned with how a person acquires a language, produces and perceives both spoken and written language. Moreover, Psycholinguistics is a branch of cognitive science and one of the major issues of cognitive science is "mind". Knowing what interactions in the memory of the learner will happen when teaching foreign languages, what problems will happen in the process of memorization; memory capacity, short-term memory structure, working memory, long-term memory, semantic memory, and so on can be helpful for educators and designers of instructional books and facilitate and accelerate the process of teaching and learning foreign languages. Therefore, the aim of the present article is to overview psycholinguistic awareness and its contributions on English language learning (ELL) and English language teaching (ELT). This paper also attempts to critically and profoundly present the major research findings in the role of psycholinguistics and its implications and pedagogic contributions to the area of language learning and teaching, in an endeavor to shed light on the current successful and influential practices in this area of research which are incremental to second language learning development.

Key words: Cognitive science, language learning, Psycholinguistics, Psycholinguistic awareness.

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Introduction

Psycholinguistics can be defined as the study of mind and language since it is an integration of two disciplines; psychology and linguistics. Psychology is much more concerned with the study of mind and behavior; linguistics is concerned with the study of language. So, in general, psycholinguistics is concerned with the relationship between the human mind and the language, as it examines the processes that occur in brain while producing and perceiving language. Psycholinguistics is the study of the mental aspects of language and speech. It is primarily concerned with the ways in which language is represented and processed in the brain. Psycholinguistics is part of the field of cognitive science (Maftoon, 2012). It covers three main points; language production, language perception and language acquisition. Language production refers to the processes involved in creating and expressing meaning through language. Language perception refers to processes involved in interpreting and understanding both written and spoken language. Language acquisition refers to processes of acquiring a native or a second language. Psycholinguists explain the three above points by providing numerous theories being very useful in the field of language teaching. Some teachers use them as the basic theories in developing language teaching methods. It is known as psycholinguistics approach. In psycholinguistic approach learning is viewed as a cognitive individual process happening within the individual and then moves to the social dimension (Purba, 2018).

Psycholinguistics can be regarded as a study of the psychology of language which is useful and helpful in language teaching. It helps to study the psychological factors that are possibly involved in language learning. It also focuses on language use and real world communication. Therefore, it is necessary for English language teachers to make decisions in applying various methods that allow students to easily understand a language. As an approach, the methods which have been used widely in the field of language teaching over the countries and are based on psycholinguistics theories will be discussed in this paper as a review article.

Review of Literature

Review of the related literature is divided into two parts. The first part is the theoretical background which consists of psycholinguistics, speech comprehension and production, human brain, language disorder and dyslexia. These theories were used as guidance in conducting this research. The second part includes previous research findings which are used as references of approaches and methods.

Theoretical Background

Psycholinguistics

The beginning of psycholinguistics as an independent discipline of Wundt's lab in Leipzig became very important for traditional psycholinguistics world which dates from the 1950s (Griffin and Ferreira, 2006). Experts of this subject examined the relationship between language and psychology. The particular important work of psycholinguistics at that time was Broca's (1861) and Wernicke's (1874) aphasias. Its growth began from two seminars supported by the Social Science Research Council in the US and the

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subsequent publication of the original version of Osgood and Sebeok's (1965) Psycholinguistics: A survey of theory and research problems which attempted to establish the Sapir – Whorf hypothesis by using psychological techniques and reunited linguistics and psychology.

There are many definitions of psycholinguistics. Scovel (1998) defines psycholinguistics as "the use of language and speech as representation of the nature and structure of the human mind" (p. 23). It means that the issue of language and human mind will not be separated from the issue of psychological and neurobiological factors that enable humans to acquire, use, and understand language. Aitchison (2003) defines psycholinguistics as "a link between psychology and linguistics which enables learners to find out structures and processes which underlie a human's ability to speak and understand language" (p. 23). In other words, learning psycholinguistics enables learners to know the nature and structure of mind which is related to language and speech. Field (2003) defines psycholinguistics as a relationship between human mind and language or thought and language. Unlike linguistics which sees language as the structural components of language, psycholinguistics sees language as a process which involves the comprehension, production, and acquisition of language. It discusses six major areas such as language processing, language storage and access, comprehension theory, language and the brain, language in exceptional circumstance, and first language acquisition. Generally, these topics can be simplified into four major areas: (1) language acquisition (how people acquire language); (2) language comprehension (how people process and comprehend language); (3) language production (how people produce language); and (4) second language acquisition (how people acquire second language).

Speech Comprehension and Production

Psycholinguistics is concerned with describing how humans' brain compute and process thoughts to comprehend and produce language. According to Harley (2001), comprehension is the stage of processing involving word recognition and parsing. Griffin and Ferreira (2006) asserts that any meaningful utterance that people produce consists of a single word expressing a single idea, and then generally, they begin to assign semantic and pragmatic properties to the idea in order to produce a word which expresses the situation. This process is called conceptualization or message planning. They, then, select a word from their lexicon based on its correspondence to semantic and pragmatic specifications. After selecting the word that will express the thought, the speaker comes to sound processing stage. This stage involves constructing the phonological form of a selected word. Then the speaker tries to retrieve individual sounds of the word and manage them into stressed and unstressed syllables. The two stages are called formulation because the speakers determine how to express their thought. The final process is articulation in which motor programs are used to pronounce the sounds of a word. The process is described in figure1 as follows:

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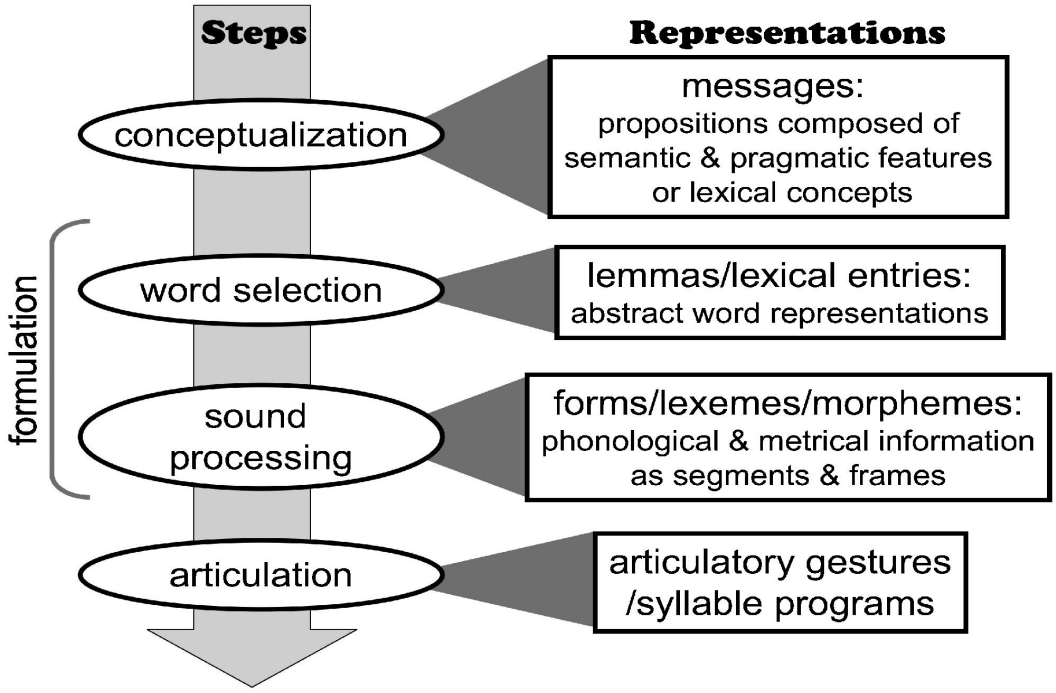

Figure 1: Major steps and representations in language production (Traxler and Gernsbacher, 2006)

The most accepted model of language production is that of Levelt (2013, p. 157). Based on this model, speech goes through three levels.

1. **Conceptualizer**: Thoughts are formulated in a unit called conceptualizer. This means that the message is generated here but has no linguistic form yet – it may appear in pictures.
2. **Formulator**: Where it will be grammatically and phonetically shaped. The Formulator is connected to the Lexicon, from where it takes the words and other units of expression.
3. **Articulator**: Message turns into speech.

Previous research findings

Psycholinguistics is much concerned with the study of the relationship between human language and human mind (Maftoon and Shakouri, 2012). Carroll (2008) maintained that psycholinguistic stresses the knowledge of language and cognitive processes involved in ordinary language use. He also believed that psycholinguistics attempts to answer two questions: (1) what knowledge of language is needed for us to use language? and (2) what cognitive processes are involved in the ordinary use of language?

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Chaer (2015) acknowledged that psycholinguistics has developed into several sub disciplines as follows:

1. Theoretical psycholinguistics which is based on language theories related to human mental processes in using language (phonology, diction, syntax, discourse and intonation).
2. Developmental psycholinguistics which is related to the process of language acquisition (L1&L2).
3. Social psycholinguistics related to the social aspects of language, including social identity.
4. Educational psycholinguistics which discusses general aspects of formal education at school, including the role of language in teaching reading teaching proficiency, and improving language ability to express thoughts and feelings.
5. Neuro-psycholinguistics which focuses on the relation between language and the brain: what happens to language input and how output is programmed and formed inside the brain/ The function of the hemispheres in the processing of language. It also studies the effect of brain damage in these centers referred to as language pathology concerned with people who have a breakdown of language, such as old people who had a burst blood vessel in the brain, affecting Broca or Wernicke's areas or young people who have an impairment of the brain due to an accident.
6. Experimental psycholinguistics which covers and experiments in all language productions and language activities, language behavior, and language outcome.
7. Applied psycholinguistics concerned with the application of all above subfields into other subjects. It focuses on "how research can encourage communication processes among people, groups and cultures.

The psycholinguistic approach to second language (L2) learning focuses upon what humans know when they talk and how they acquire that knowledge and how that knowledge is put to use (Maftoon, 2012). In the psycholinguistic approach, individual can access the comprehensible input needed in the acquisition of the L2 when the individual internal cognitive processes are activated (Claros, 2009). As Krashen (1985) argues, if individuals want to understand and learn language, they must be exposed to the linguistic input that is a little beyond their current level of competence. Krashen (ibid) explains his view in his famous i+1 concept which indicates that the input the learner receives must contain some slight amount of new information in addition to what they already know. To Krashen, a comprehensible input is not just a necessary condition, but it is the sufficient condition.

Purba (2018) asserted that developmental psycholinguistics and applied psycholinguistics play significant roles in formulating effective ways of teaching. Psycholinguistics theories covered the language development of humans, in accordance with humans' physical and mental development. These theories are considered in designing language teaching programs and materials in order to be effective for the second language learners master the target language.

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Psycholinguistic Approach to the Process of L2 Development

Socio-cultural approaches see language and thought highly interwoven, but psycholinguistic approaches view language and thought as related but completely independent phenomena (Claros, 2009). Meanwhile, Lantolf (2000) sees the mediated mind as a most fundamental concept of sociocultural theory. He further adds, human behavior is the result of the integration of mediation into human activity as a functional system. In fact, it is language that makes it possible for us to gain control over thought.

In both psycholinguistic and sociocultural approaches, interaction plays a significant role in the process of L2 development. However, they are different from each other; in a way, in the psycholinguistic approach individuals can access the comprehensible input needed to further advance in the acquisition of the L2 when their internal cognitive processes are activated (Claros, 2009); but in socio-cultural approach, social interaction allows interlocutors, with the help of each other to organize their cognitive processes (Lantolf, 2000). Thus, for psycholinguistic theorists learning is viewed as a cognitive individual process happening within the individual and then taking a social aspect. So the exposure to comprehensible input is vital for psycholinguistic theorists and negative feedback leads to language learning (Claros, 2009). To sum up, psycholinguistic approaches to language learning see language learning as an internal cognitive process in which knowledge

(1) is given opportunities to both negotiate meaning (Long, 1997), and
(2) is given opportunities to both negotiate meaning (Long, 1997), and
(3) is receive negative feedback.

These three features are well supported by Krashen's input hypothesis, and Long's interaction hypothesis. Krashen (1985) argues that to understand and learn language, individuals must be exposed to the linguistic input that is a little beyond their current level of competence. He summarizes his view in his famous i+1 concept which indicates that the input the learner receives must contain some new information which is beyond their current level of competence.

According to Long's (1997) interaction hypothesis, comprehensible input refers to modified interaction. By modified interaction, he means the various modifications that native speakers or other interlocutors create to simplify their input comprehensible to learners. For example, native speakers often slow down their speech to nonnative speakers or speak more deliberately. According to Long, input comprehensibility increases as learners interact and use different types of interactional modifications (i.e., comprehension checks, confirmation checks and clarification requests) to overcome communication breakdowns.

Psycholinguistic Models of Language Storage and Retrieval

Memory is an area in psycholinguistics which is of great importance and it will be worked on how it stores linguistic data and retrieve them. Most studies on memory showed that memory has a crucial role in language comprehension and learning (Randall, 2007). Atkinson and Shiffrin (1968) introduced the early model for memory

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storage which is called "**modal model**". Actually, this model deals with how human memory works and it also involves language storage, processing, controlling, and retrieval. The model consists of a sensory store in which a reader or listener very briefly retains a trace of the linguistic input; a temporary store, named short-term, in which spoken/written input is analyzed or output is assembled; and a more permanent store, called long-term store, holding both linguistic and world knowledge. Figure 2 depicts the structure of the memory system.

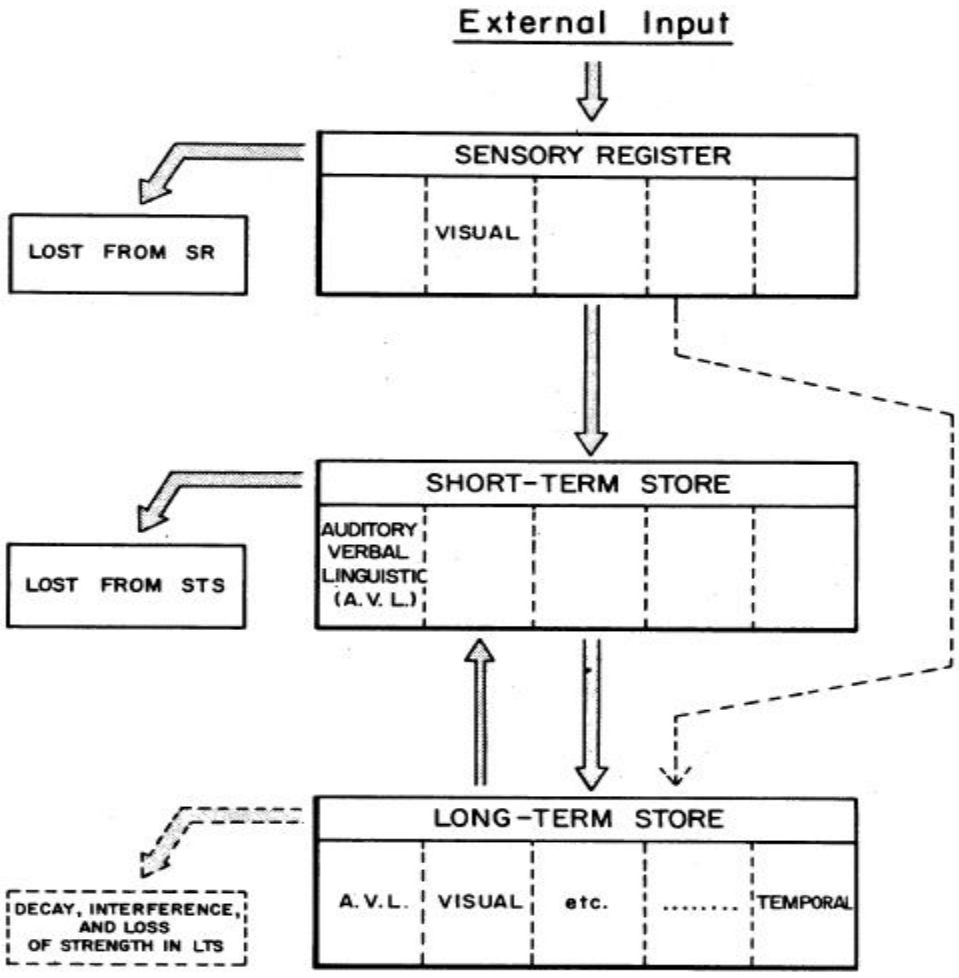

Figure 2: Structure of the memory system (Atkinson and Shiffrin, 1968).

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The current model refers to the short-term store as working memory (WM) and the more permanent one as long term memory (LTM).

Working Memory

Working memory (WM) is the fundamental component of short term memory (STM). It is characterized by four crucial components:

1. WM operates over a matter of seconds,
2. it provides temporary storage for incoming stimuli,
3. it is the holding place for information that receives the most focus, or attention, and
4. it is the component of the brain where information is manipulated.

In response to Atkinson and Shiffrin's (1968) multi-store model of memory, Baddeley and Hitch (1974) developed a model of WM (as figure3) composed of 3 sections in which the central executive controls the two 'slave systems': the phonological loop, and visuo-sketchpad.

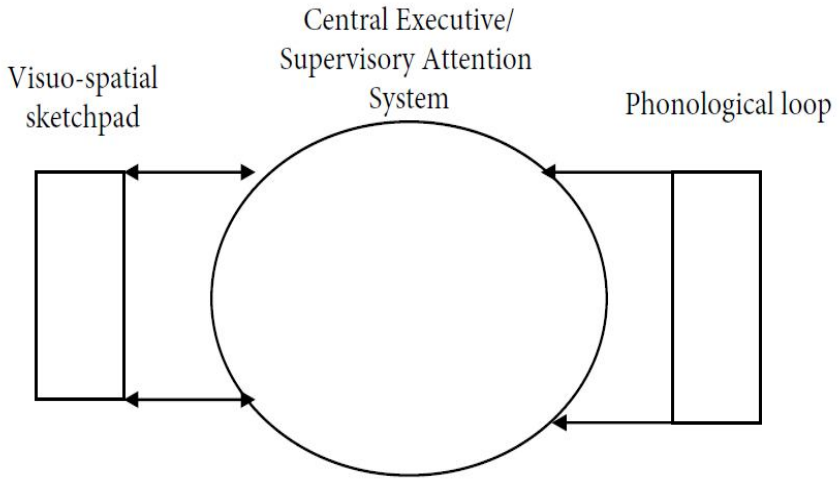

Figure 3: The components of working memory adapted from Baddeley and Hitch (1974).

The Central Executive is located in the frontal cortex and handles higher-level cognitive tasks. Its functions include extracting, holding, and coordinating audio and visual representations during the processes of perception, comprehension, and reasoning. Incoming information received from its 'slave systems' is temporarily stored as coherent, episodic instances that can be retrieved and updated. The Central Executive also plays an important role in coordinating retrieval by directing attention to relevant information, and suppressing irrelevant information (Baddeley and Hitch ,1974).

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The Slave Systems

The Phonological Loop consists of two components that maintain and rehearse acoustic input. Audio stimuli (speech sounds) enter the phonological short-term store, and then move to the articulatory rehearsal component where they are refreshed through repetition or 'rehearsal'. The memory traces of sounds temporarily stored here are reactivated as needed. For instance, as you process speech (production and perception), you are constantly monitoring all sounds that belong to the words and phrases being formed. Evidence for these components lie in the fact that both speakers and listeners often catch themselves, or others producing speech errors, at which point reactivation occurs in order to retrieve the intended speech sounds. What is important for language processing is that the phonological loop takes in verbal material and holds it in memory by a process of repetition/rehearsal (Randall, 2007).

Long-Term Memory

Long-Term Memory (LTM) holds unlimited amounts of information indeterminately. Even though no one can remember every minute detail of every moment throughout a lifetime, it is generally believed that LTM stores all meaningful episodic events, i.e., those that have received adequate attention, have been sufficiently rehearsed, and have been attributed semantic properties. The retrieval of information stored in LTM involves incorporating real-world knowledge, from which inferences are drawn and connections are made, again, based on semantic relationships. There are two main storage components in LTM (Figure 4, p. 22):

1. Explicit memory is conscious awareness of facts and events (Declarative Memory) consisting of:

✓ Episodic Memory: the ability to recall personal experiences and events as images; details about past experiences.

✓ Semantic Memory: the ability to recall personal experiences and events that are meaningful in terms of connections between sources of recurring information which has been learned.

2. Implicit Memory is unconscious and holds procedural information. It consists of:

✓ Procedural Memory: the ability to remember strategies in task performance as sequential events or as sets of stimulus-responses.

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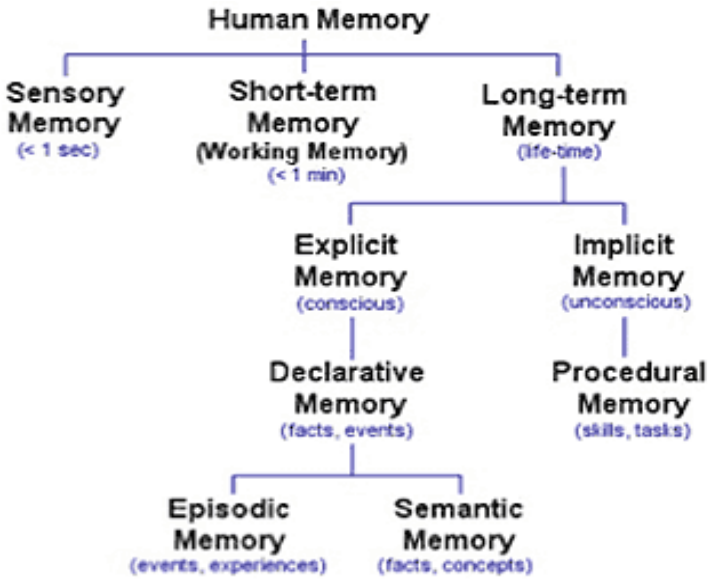

Figure 4. Adapted from Squire (2004).

Critical period for second language learning

Field (2003) refers to a time when individuals have maximum receptivity to language. It is believed that if for any reason a child is not exposed to language during that period, it will only achieve a limited degree of competence. Lenneberg (1967) suggested a link between this theory and lateralization so that the critical period might coincide with the time when the child's brain is more flexible. The concept of a critical period has been extended to second language learning. The hypothesis is: "that the plasticity of the brain permits younger learners to acquire a second language much more successfully than adult ones; or that the universal grammar which permits us to acquire our first language is no longer available after a certain age" Field (2003, p. 100). There are, however, studies which demonstrate a differential effect for the age at which acquisition of syntax began (Mayberry and Lock, 2003). On the other hand, research provided data to refute the claim of a critical period for the acquisition of grammar (Mayberry and Lock, 2003). Actually, according to different studies, there is a challenging debate between claims and assertions. Some studies argue that adults are not able to speak like the native speaker of the target language (Sebastián-Gallés and Bosch, 2001; Perani et al. 2003). On the other hand, some research criticized such view point asserting that no adult can ever be successful in acquiring pronunciation (Matsui, 2000; Yeon, 2003). So, it can be concluded that although for acquisition of syntax there is no evidence for the existence of critical age, we cannot agree that there is an absolute critical age for pronunciation.

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Psycholinguistics and Second Language Components

Richards and Schmidt (2002) maintained that all languages have three components: a) lexis, b) grammar, and c) phonology. In psycholinguistics the emphasis is on how these components are restored and retrieved.

Lexis

Psycholinguistics deals with the problem of lack of one to one correspondence between what the listeners hear and what they see on a printed page. Competition models (Rastle, 2007) postulate that a listener or reader balance cues at many levels in order to achieve word recognition. Lexical retrieval in production is assisted by the way in which entries are stored in the mind. Current models envisage them as linked by a complex network of interconnections (Field, 2011).

Grammar

Individual's capacity to produce speech fluently and rapidly relies upon frequently occurring groups of words being stored in the mind as pre-assembled chunks (Wray, 2002). Thus, individuals do not have to assemble again a sequence such as I wish I knew … or what would you say if … each time one utters it, but can draw on a unit which is part of the lexicon. Similarly, one can recognize it as a fixed formulaic utterance when it occurs in connected speech, without having to parse its parts.

Phonology

Bybee, (2001) asserted that language users store many different versions of a single phoneme, each phoneme accounts for the way in which listeners adjust gradually to an unfamiliar variety through multiple encounters with speakers of that variety. Each speaker leaves a trace, enabling the listener to build up an increasingly detailed record of how this particular group realizes phonemes or words (Field, 2011).

Psycholinguistics and Second Language Skills

All theories of psycholinguistics have been focused on the mental processes that occur in human brain when individuals produce and perceive a language. As we know, language perception includes the activity of listening and reading, while the language production includes the activity of speaking and writing. The four activities are called as the four of language skills. In the following sections some benefits of psycholinguistics theories in language learning and teaching will be described as explained by Demirezen (2004).

Listening Skill

Based upon the information processing approach, listening skill includes two phases: a) perceptual phase which is called decoding and, b) conceptual phase which is called encoding. For the former input is analyzed into linguistic units i.e. lexical & syntactic ones. For the latter, meaning-based representation is constructed (Field, 2011). Based on psycholinguist's point of view, in teaching listening, there exist two kinds of difficulties, intrinsic and extrinsic difficulties. Psycholinguistics researchers have indicated that in teaching listening, the intrinsic and extrinsic difficulties should be

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overcome in order to reach to a highly qualified listening activity. Demirezen (2004) says that, the intrinsic difficulty of a listening text consists of the speed of the speech, number of the unknown words (amount of intake in one class hour), interaction between previously learned topics and the new topic to be learned and the extrinsic difficulties including interest, motivation of students, purpose of listening, and noise in the environment. Psycholinguistics knowledge will help a teacher to reduce the intrinsic and extrinsic difficulties. The teacher can prepare a listening text with topic that is familiar for students. The teacher also minds about the reading speed and the noise of environment. Moreover, the teacher can increase students' interest and motivation by designing an interesting and comfortable class.

Reading skill

As with reading skill, Psycholinguistics approach resorts to text-based approach involving bottom-up processing so as to emphasize the comprehension activity and top-dawn processing to stress the fact that comprehension rests primarily on students' knowledge base. Bottom-up processing happens when someone tries to understand language by looking at individual meanings or grammatical characteristics of the most basic units of the text to understand the whole text. Top-down processing of language happens when someone uses background knowledge to depict the meaning of language they are going to read to (Field, 2011). Rather than relying first on the actual words. This theory emphasizes that the understanding the meaning of a text essentially rests on the prior knowledge of students. Psycholinguistics helps learners to reduce the intrinsic difficulties in reading activity by arousing the interest of the students onto the reading text. Therefore, teachers need to provide authentic and contextual reading material because if students are not properly exposed to authentic materials they may fail in seeing their relevance to the real world.

Writing Skill

Psycholinguistics approach indicates that there are mistakes in writing caused by agraphia, which must be treated properly since in English words are not spelled as they sound. Psycholinguistics helps in understanding the students' mistakes in writing. Psycholinguistics helps to find interesting topic to write. It serves to decrease the level of the difficulties in writing. It helps to specify the writing levels and writing types (Demirezen (2004).

Speaking Skill

Psycholinguistic approach has a productive domination over the field of teaching speaking skill. It has specified several difficulties on speaking such as voice disorders, stuttering, and disarticulation related to personality factor and also some traumatic disorders such as aphasia and autism caused by localized in damage. Thus, the investigations of psycholinguistic approach have provided solutions for almost each type of language learning difficulty. With the knowledge, teachers can apply the appropriate techniques to teach speaking skills by considering the condition of the learner and find interesting topics to be discussed in speaking class (Demirezen, 2004).

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Conclusion

The interdisciplinary field of psycholinguistics is key important in the development of the teaching and learning English process. Teachers must know how language learning takes place in people's mind; besides, what factors are influencing positive or negative responses by the part of our students. Moreover, to get to know all the theory behind the acquisition of second languages helps teachers expanding their knowledge on how children, young adults and older adults learn. Pishghadam (2011) claims that ELT as an independent field of study, interact with psycholinguistics and can affect themselves interactively and mutually. It means that ELT can enrich and develop psycholinguistics, and also psycholinguistics can enhance ELT by applying their findings to themselves. Psycholinguistics (rooted in language pedagogy) as a great model of humanism sheds more light on the clarification of the complicated human-being's language process and brain process during acquisition, comprehension, and production of linguistic elements.

Psycholinguistics knowledge will help teacher to reduce the intrinsic and extrinsic difficulties. Teachers can prepare a listening text with topic that is familiar for students, consisting of 100 words, and including 10 new vocabulary items. Teachers also mind about the reading speed and the noise of environment. Moreover, they can increase students' interest and motivation by designing an interesting and comfortable class. Psycholinguistics helps learners to reduce the intrinsic difficulties in reading activity by arousing the interest of the students onto the reading text. With psycholinguistic knowledge, teachers can apply appropriate techniques to teach speaking skills by considering the condition of the learner and find interesting topics to be discussed in speaking class.

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