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The Application of Information Processing Theory in Teaching English as a Second Language

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Abstract:
This is an overview of the applying of information processing theory in teaching English as a second Language. In addition, this paper illustrates the methodology and strategies in order to facilitate learning and teaching the intermediate grades students in the middle school whose have been learning how they can read in elementary school in higher order thinking to create strategic readers.

Theory of Information Processing Vs Other Cognitive Theories:
Theory of information processing differs from other cognitive theories from several points. Theory of information processing is not only concerning about the description of cognitive processes that occur inside the individuals, but also it tends to clarify and explain the mechanism of these processes. Also, it has a significant role in the education process and the production of behavior.

Moreover, the theory of information processing is not considering the behavior as a group of reactions that are related according to their causes as they are in the school of connectivity, but the behavior can be described as a series of instructional processes. These processes can be placed between receiving any stimulate and producing an appropriate response to it. Also, they take a period of time to be implemented from the individual to achieve them because of the differences between individual’s behaviors and nature of action and reaction processes. During processing stages, information can be formulated in receiving, encoding, storing, producing, and responding in each stage that requires an implementation action in a number of cognitive processes.

The Fundamental Assumptions for Information Processing Theory:
First: The human being is usually active and effective. During the learning process is not waiting for the arrival of information, but rather they seek to find this information. Also, the individual works on handling of information and draw suitable ones and take advantage of past experience after conducting many of the cognitive processors. Thus, the learners can produce certain cognitive representations that determine behavior patterns or attitudes toward encountered stimulation.

Second: The emphasis should be on the cognitive processes more than the respond itself. The theory assumes that the respond does not occur directly on the stimulus, but it is a result of a cognitive series of processes and processors that occur through sequential stages from processing.

Third: Cognitive processes include a number of conversion processes toward the stimuli or information. These operations are guided by sequential stages resulting in conversion of this information from one form to another in order to achieve a particular goal.

Fourth: Cognitive processes, such as a mental judgment and understanding of the language consist of a number of the cognitive processes, which includes a number of measures such as:
- Extracting specific properties from the stimuli.
- Substituting of information in short-term memory and maintain them for a while.
- Activating some of the information stored in long-term memory to be used in representing the new information.
- Storing new information in long-term memory.
- Comparing the range of information with other information.
- Converting the information to certain representations depending on the specific rules and to other simple sub-processes.

Fifth: The advantage of the information processing system in the individual is the capacity to address the specific and store information through the stages of processing. Thus, during processing stages there is specific capacity of this system in terms of its ability to address some of the information and processed.

Sixth: The processing that occurs on information across multiple stages depends on the nature and characteristics of the three systems of memory which are sensory memory, short-term memory, and long-term memory.
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**Seventh:** This theory assumes that the cycle process information associated with stimuli that interact with the individual undergoing in three main phases namely encoding, storing, and retrieving processes. Through these stages, the cycle process requires the implementation of numbers of cognitive processes. However, some of them are not subconsciously while others are subconsciously so that the individual is fully aware of what is happening inside the system. Finally, we can integrate the three main phases to be more comprehensive. These three phases include the following:

**A- Coding phase** is the stage of receiving external information, or the sensory input from the outside world through sensory receptors and converted to work on certain representations.

**B- Storing Phase** is the stage of making some decisions about how important this information and how it is needed. So that after they are processed and converted into a certain mental representations, important information is retained and stored in the memory.

**C- Retrieving Phase** is the stage of identifying the cognitive representations and retrieval when needed to take advantage of them in dealing with situations and stimuli to determine the appropriate behavior patterns.

**Applying Information Processing Theory in Teaching English as a Second Language:**

**Introduction:**
Learning to speak a second language is a complex task. Learning to read and comprehend fiction and non-fiction texts in the new language is even more complicated. Reading comprehension is one of the main purposes of ESL teaching/learning. Thus, teachers can improve the comprehension students’ skills that help English language learners to obtain better understanding about what they are reading.

**Audience:**
The audience for applying this theory will be the intermediate grades students in meddle school. These students have been learned the methodology of reading in elementary school with a higher order thinking to create strategic readers. Choosing this group of learners and some strategies to apply this theory will consider students’ ages, number of examples needed, ability to interpret analogies, learning time, amount of practice, attitude toward learning, and successful methodology to save the new information and retrieve it as needed.

What does all this have to do with reading? Individuals have memory to remember a lot of information. Students’ reaction normally with what related with the information that stored in their memories and about what they have experienced before. Information processing theory does not only affect the way that information is interpreted or affect learners’ comprehension, but also continues to change when new information received.

**Purpose:**
The purpose of applying information processing theory in teaching English as a second language is to help ESL students to build bridges between the declarative (existing) knowledge; Factual information stored in the memory; and new (procedural) knowledge. And it helps students to improve their reading comprehension by, using English language as second language, reading strategies, and understanding the context which has been already read. Instructors and designer in this activity employ a verity of strategies to help learners relate their prior knowledge to new information they are to acquire. They try to represent the content and structure of information so that learner could more easily remember it via saving the new and important information that are retained and stored in their memory. By activating and attracting their attention, stimulating their short term memories, getting through vocabulary review, and using advance and structural organizer, the learner can achieve the purpose of this activity successfully.
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Objectives:
Upon completion of this instruction, the student will be able to improve the following:
1. English vocabulary.
2. Reading speed.
3. Reading comprehension.

Resources/Materials:
1. White board with colored markers or smart board if that is available.
2. Presentations slides.
3. Handout paper.
4. Textbooks.

Concepts of the Theory:
The theory of information processing based on several concepts including:
- Continuing of based learning effect:
  Continuing means that this theory Links what students learn with past experience, and provides new information through sensory experiences realized by the student. Also, it links its reality, and use real models of objects or reflected them to facilitate learning process.
- Showing the basic concepts for each lesson in the beginning (Actual):
  Provide course material in an orderly fashion through the presentation of the most important steps, lesson objectives, and methods of implementation. Also, draw a comprehensive plan to reach the required knowledge.
- Repeating of verbal material:
  This concept educates verbal materials especially in the early stages of education. It repeats words to hear introduced the new concepts to the individual repeatedly in order to become within its construction of knowledge. Preferably repeat it until the learner accommodates this new information completely.
- Dealing with learning distractions.
  The teacher must reduce distractions from learning especially that disturbs the learning process. If the teacher has not found to variables associated with or unrelated to the lesson, the teacher must exclude it and replace it with more appropriate information. The physical environment of learning must be away from the centers of the inconvenience or people gathering area to lead to an increase focus among students.
- Applying of new learning:
  This concept includes the application of what students learn in practice during the laboratory or through life situations. It practically helps students to understand lesson topic, accommodated learning, and learn the proper way to apply it.
- Being as an activity learner:
  The student needs to make an effort to absorb new information, and draw generalizations formation of concepts. Whenever the level of understanding and processing is high, retrieve information will be easier later.
- Organizing information to help learners to remember:
  Arrange information in accordance with the series lead organization to remember. It also attempts to save or remember things must be preceded by a process of organizing for more conservation, whether retail, coding, or in any way that helps to remember.

Activities and Procedures:
Instructor will provide activation and connection to prior knowledge (or at least the prompts). The instructor is also expected to assist the learner in organizing information so that it can be readily assimilated in long-term memory.
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Employing the theory of information processing in the classroom:
According to the concepts offered by the theory of information processing as a cognitive theories educational, applications conclude the following:
- Utilize mental maps to organize different knowledge among students in different grades. That contributes to help the students remember, think, imagine, and link different ideas.
- Emphasis on the attention of students, and their concentration toward the learning process.
- Moving around the classroom helps to use the appropriate nods and expressions.
- Ask questions that improve students’ skills and motivate them to think.
- Attract the attention of the students via arranging of their places of sitting, mention their names, or ask questions to them.
- Assist students to distinguish between the important details and the unimportant details in the lesson.
- Allow students to repeat and classify the task information.
- Assist students to link new information with their past experiences.
- Assist students to develop summaries or tables that demonstrate the correlation old information with new information.

Reading Strategy:
- Before Reading:
  1. Set a purpose for reading
     Let students think if they will be reading to find out what happens in a story or to learn specific information.
     Teacher will present the lesson by presentations slides which is an important strategies before reading the content.
  2. Preview the text and Activate background knowledge
     Let students review the previous lesson and give them some hints about the relationship between the previous lesson and new lesson. Through that the teacher will retrieve student’s prior knowledge which is going to help them to maintain and retrieve it as needed. Also, teacher can help students to develop their own questions which will help them to establish purpose and focus attention.
- During Reading:
  1. Check the words
     - Connect background knowledge to the information in the text. Student should think about what they already know about the subject.
     - Think about how the information is similar to what they already know about the topic, event, or person. If the students have many questions about the topic or the kind of book, they may need to ask teacher for help.
  2. Stop and review
     If students are reading a longer text, teacher had better to let them stop and think about what has happened in the content so far or what information has been given.
- After reading:
  1. Use a Graphic Organizer
     Use a story map, biography wheel, Venn diagram, or other way to show what was included in what you read. (They may need to check with their teacher for suggestions.)
  2. Reread
     Reread the text or a section of the text to help them understand it better.
  3. Discusses and Respond
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Talk with peer about what they have read. Ask each other question. Look back at the book to defend the opinions.

4.  Write to Support Understanding and Make Conclusion
    Write about what they have read, telling what it made them think of or what they learned.

Vocabulary Previews:
1. Unfamiliar key words need to be taught to students before reading so that new words, background information, and comprehension can be improved and integrated together.
2. List all words in the assignment that may be important for students to understand and recognize it later by save it in the short-term memory.
3. Arrange words to show the relationships of the learning task.
4. Add words that students probably already understand to connect relationships between what is known and the unknown information.
5. Share information with students and take their feedbacks.
6. Verbally and quick quiz on the previous vocab before assigned reading begins.
References