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### THE ESSENTIALITY OF THE ROLE OF MEDIA IN LEARNING INFORMATION PROCESSING

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#### **ABSTRACT**

Media aims to stimulate students to remember what they have learned and helped obtain new information and stimulate student activity in providing feedback and feedback in the learning process. The media design in learning that is developed must be tailored to the needs of students and the expected learning outcomes. Information in the learning process is knowledge obtained from learning, experience, or instruction. Information Processing Theory deals with how people perceive their environment, how they enter information into memory, and how to recall information that has been obtained. Information processing theory is a cognitive approach to understanding how the human mind changes sensory information. The thought process is a mental activity of a person in the activity of being able to mix, match, combine, exchange, and sequence the concepts of perceptions and experiences obtained in a previous event. The process of obtaining information or knowledge in the memory process is greatly influenced by the perceptions of a person. Perception is a process of using the knowledge that is already owned (which is stored in memory) to detect or obtain and interpret stimuli (stimuli) received by sensory organs such as the eyes, ears, and nose. Information processes through three memories, namely sensory memory, short-term memory, and long-term memory, each of which has a storage capacity and causes the loss of information it has received. Learning media is one of the stimulants designed to help send messages to students and provide the same stimulation, equalize experiences, and cause the same perception of students. A set of external events designed to support some learning process that is internal in nature.

## **INTRODUCTION**

Learning is a complex process that occurs in everyone throughout his life. One of the places to study someone with a structured educational process is well designed in which there is a learning process (Arsyad, 2011). States that learning is a process of communication between students, teachers, and teaching materials (Rusman, 2013). The learning process occurs because of the interaction between a person and the environment. Learning can happen anytime and anywhere. Learning is a process that is carried out by a teacher and students through experience, remembering mastering experiences, and obtaining information. According to Gagne, there is a process of receiving information in learning, which is then processed to produce output in the form of learning outcomes.

Learning is the output of information processing in the form of human skills which consists of verbal information, intellectual skills, cognitive strategies, attitudes, motor skills. The educational process is inseparable from the role of educators, especially teachers, in urgent need of a variety of adequate psychological knowledge by the demands of the times and advances in science and technology. Communication will not run without the help of means of conveying messages, so in this relationship, teachers are required to have the ability to design a program and simultaneously determine the instructional strategy that must be taken. Teachers must have the skills to choose and use learning media to stimulate students to learn or obtain new information (Rohman, Widowati & Azman, 2020). The learning process, in principle, is an inseparable unity between the components: raw input (read: students), input instruments, environment, and output. One of the instrumentals needed in the learning process is the presence of media in the education system. State that media in this context is a means of delivering information that must be absorbed by the learning party (Nolker, 1983). Learning media are made in such a way that important material or information in a material discussion can be absorbed by the student, who in this case is the student.

## **LITERATURE REVIEW**

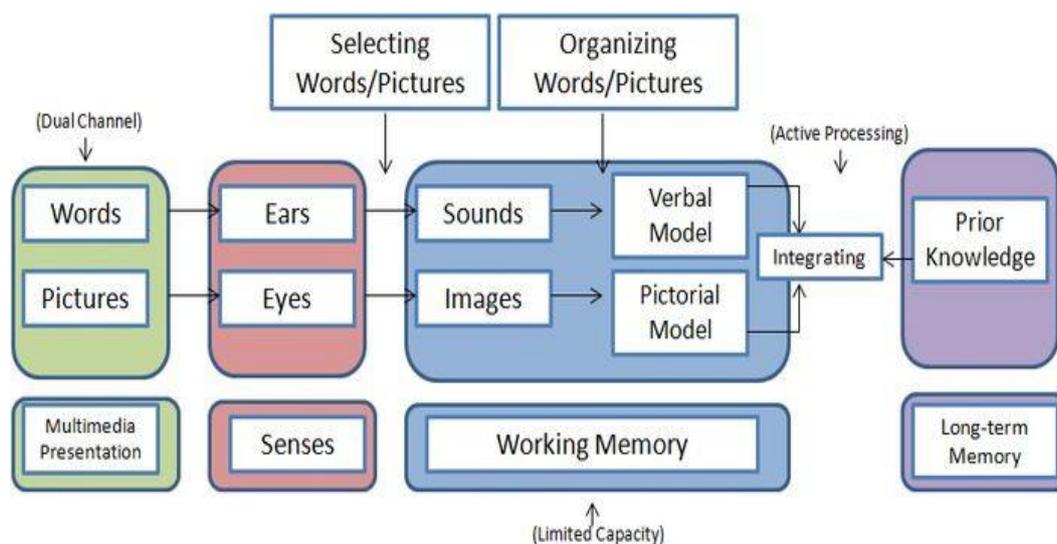
Information is knowledge obtained from learning, experience, or instruction. Science requires the production of information. As science progresses, more information is needed. Information is considered as an object or a tangible presentation of knowledge. As a real object, information is seen from a series of symbols and can be captured by the human five senses, and can be exchanged (Ati & Si, 2014). Describes that information becomes: (a) information-as-process; (b) information-as-knowledge (something that is felt in information-as-process, knowledge which is communicated); and (c) information-as-thing, such as data and documents that can provide information. Information Processing Theory is concerned with how people view their environment, how they put that information into memory, and how they retrieve that information later on (Zhou & Brown, 2015).

According to information processing theory, the knowledge that is processed and interpreted in working memory is stored in long-term memory in the form of hierarchical regular schemes. The understanding stage of processing information in working memory focuses on how new knowledge is modified. Understanding regarding and influenced by the interpretation of the stimulus. States that two main assumptions support information processing research, namely the memory system is an active and organized information processor and previous knowledge plays an important role in learning. Related to these assumptions, it is necessary to discuss the nature of human memory systems and knowledge organization in long-term memory (Gredler, 2011).

According to information processing theory, the knowledge that is processed and interpreted in working memory is stored in long-term memory in the form of hierarchical regular schemes. The information processing learning model stage is a learning model that focuses on activities related to information processing or processing activities to improve students' capabilities through the learning process. This model focuses more on the cognitive function of students. This model is based on cognitive learning theory so that the model is oriented towards students' ability to process information and systems that can improve these abilities (Rehalat, 2014). According to Gagne, there are eight phases of the learning process in the information processing model, including (1) motivation, (2) understanding, (3) acquisition, (4) retention, (5) recollection, (6) generalization, (7) treatment, (8) feedback (Rusman, 2013).

Media in its presence in the learning process occupies a strategic position to realize optimal learning activities. Media is one component of communication, the learning process is a communication process and takes place in a system (Daaryanto, 2010). Media, in the most general sense, refers to the mass communication tools and platforms (Ugurhan et al., 2020). The presence of media in the student learning process will attract more students' attention so that it can foster learning motivation, students find it easier to understand the material, and increase knowledge (Sudjana & Rivai, 2010). Media in the information processing model can reinforce obtaining information, storing and retrieving information that has been obtained so that students can increase knowledge from the learning process.

The role of media in information memory (cognitive) in the learning process according to Mayer and Moreno's control Figure 1.



**Figure 1.** Media in an information processing model (Mayer & Moreno, 2003)

According to Mayer and Moreno, the position of the media in the processing model has the assumptions shown in Table 1.

**Table 1** Media Position in Information Processing Model

Assumption	Assumption Definition
Two channels	Two channels In information processing, it has two separate channels to get information verbally and visually. The two channels have different duties and abilities
Limited capacity	There is a limited amount of capacity already available on the verbal and visual channels. Each channel has a limited capacity in processing the information when it gets
Active Process	Learning requires cognitive processes in visual and verbal channels. The use of both channels in learning will lead to an active process in processing incoming information on both channels

States those humans have an information processing system consisting of two channels each of which has a different task or role. The verbal/audio channel is a channel used to process information in the form of audio and verbal representations such as words or text contained in the media (Mayer&Barbara, 2016). Meanwhile, pictorial channels are channels used to process information in the form of images and other visual representations such as pictures, graphics, charts, and illustrations. This two-channel information processing assumption is based on the dual-coding theory of Pievio and Baddeley's theory of working memory. States that visual media facilitate the achievement of goals to understand and remember information or messages contained in images. In other words, the learning media serves to accommodate students

who are weak and slow to accept and understand the content of the lesson presented in text or verbally (Arsyad, 2011).

The information processing model is a cognitive model of information processing, which in the learning process is divided into three structural levels of information systems, namely:

1. Memory sensory/memory register; Memory is related to the temporary storage of information carried by a person's senses (receptors) from surrounding stimuli. Sensory memory is quite short and generally disappears as soon as what we feel is over. The storage capacity of 0.5-3 seconds. For example, when you see.
2. Short-Term Memory or working memory; A memory system with a limited capacity where information is stored for 30 seconds, unless the information is repeated or otherwise processed further, because if it is processed the information can be stored longer.
3. Long-term memory (LTM), which involves storing and retrieving information for extended periods, such as hours, days, weeks, or years.

Stimulants from the outside environment are needed to make sensory memory easier to record, the more often the stimulants are given, the sensory memory will repeat itself in storage so that the information will be stored longer in short-term sensory or working memory, this is where one's memory starts to work properly before information received is forwarded to long-term memory for longer storage and recall of information required. For information to move from short-term (working) memory to long-term memory, it must be attended to within 5 to 20 seconds of entry. The information must be linked to prior knowledge and coded so that long-term memory can be permanently stored. Each memory has problems in managing the information it has received. Sensory Memory due to damage, Short-Term Memory or working memory due to interference, and Long-term memory with forgetting how to retrieve information.

## **DISCUSSION**

Student learning aims to acquire new knowledge, inculcate concepts and skills, form attitudes toward him (Sardiman, 2018). The teacher in the learning process has a very important role, whether the teacher is positioned as the only source of information or as a facilitator who will design innovative and interesting learning. The constructivism paradigm about learning, then the principle of media mediated instruction occupies a strategic position to create better learning activities. So that students can form their knowledge from what they have obtained. Knowledge cannot be transferred from teacher to student, because each student has his scheme of what he knows. The formation of knowledge is a cognitive process where there is a process of assimilation and accommodation to achieve a balance so that new knowledge is formed.

The role of the media as a means of assisting or stimulating in conveying information messages from teachers to students in the learning process is very

necessary. Digital content must be communicated effectively in order to be a useful educational medium (Mehdi, 2018). Medium in the information processing model can facilitate students in cognitive achievement. Recording Setuju that the media can better allow direct interaction between students and their environment, resulting in a uniformity of observations that can instill basic concepts that are true, concrete, and realistic and the media will generate new desires and interests, arouse motivation and stimulate children to learn (Setuju, 2015).provides an integral/comprehensive experience from concrete to abstract. Media can shape students' minds in conveying the knowledge they have acquired, such as in critical thinking to students (Maimunah, 2019). Research by state in the results of his research that multimedia animation can improve students' critical thinking skills (Falah, Komaro,& Yayat, 2016). Critical thinking is a skill that can develop by itself along with human physical development. These skills must be trained by providing a stimulus that requires a person to think critically (Wahyuni, 2012).Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from(Scriven & Paul, 2007). Fundamentally, critical thinking involves the systematic and appropriate exploration and evaluation of ideas for the purpose of making a decision or forming an opinion on a topic or problem. In order to support effective decision-making, students must collect appropriate information evaluate its quality and authority, as well as its relevance to the topic at hand. Students must integrate the new information gathered with their prior knowledgebase to resolve any conflicts, and finally, draw reasonable conclusions and realize limitations to the certainty of their conclusions, as well as determine what additional information would provide evidence for the validity of their conclusions (Wertz, 2013).In the theory of information processing, stimulants are needed to help information entered into sensory memory which is then continued in working memory. Good stimulants will make a major contribution to sending messages. Learning media is one of the stimulants designed to help send messages. to students and provide the same stimulation, equalize experiences, and cause the same perception in students. Mayer & Anderson found that concurrent presentations of visual and verbal information were better than consecutive (attention-sharing or contact impact) (Mayer & Anderson, 1992).This diversity of application is based on the foundational premise that all learners can independently process auditory and visual information, have limited working memory resources, and require cognitive resources to process new information and to learn(Ramlatchan, 2019).The displacement of traditional media research with digital media research shows that efforts to be made about future media literacy will clear the clouds with an emphasis on cognitive abilities (Ko, 2018).

The message in a learning process must be well conveyed to participants, therefore the learning design is designed in such a way that it can facilitate the achievement of these goals. media course could increase the learning activity and the students can learn independently with the existing technology (Setuju et al., 2020). Instruction is also the arrangement of information and the environment to facilitate learning. By *environment* we mean not only where

instruction takes place, but also the strategies, technology, and media needed to convey information and guide learning. By using collaborative learning tools such as classroom blogs, wikis, social networking resources, and learning management systems, you can help your learners move through the various levels of learning appropriate to their goals, the state learning standards, and expected outcomes (Smaldino et al., 2008).

## CONCLUSION

The information processing learning model is a learning model that focuses on activities related to information processing or processing activities to improve student capabilities through the learning process. Media in the information processing model can reinforce obtaining information, storing and retrieving information that has been obtained so that students can increase knowledge from the learning process. Learning media is one of the stimulants designed to help send messages to students and provide the same stimulation, equalize experiences, and cause the same perception of students.

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