

# Relationship between cognitive processes of learning



## **Introduction**

It is commonly accepted that within the instructional literature, affective variables have an indirect enhancing impact on learning through acting on the cognitive processes to control what people learn (Tobias, 1994). One of these affective variables which received significant attention is interest. This paper first reviews the development of interest through literature, and then explores the relationship between two variables, namely the interest and the motivation, which were indicated to have a positive association with learning by previous research (Schiefele, 1991; Weber, 2003), at last, it investigates how interest factors contribute to students' learning.

## **Background Knowledge of Interest**

Interest - signifies the processes by which the underlying needs or desires of learners are energized. (Alexander, Murphy, Woods, Duhon, & Parker, 1997, p. 128), it has been described as a motivational variable refers to the psychological state of engaging or the predisposition to reengage with the certain content that applies to in-school as well as out-of-school learning, is adequate for all individuals chronically (Hidi & Renninger, 2006), it is known as an interactive relation between individuals and their certain content areas such as task, topic or domain which are characterized by focused attention and highly engagement (Krapp, Hidi, & Renninger, 1992), Figure 1 below shows the schematic framework of a variety of variables related to interest with several categories (Schraw & Lehman, 2001), the focus of this field is ' either on characteristics of the environment that create interest for many individuals (known as situational interest) or on dispositions that are specific to individuals (known as individual or personal interest)' (Wade, 2001, p.

245). Situational interest is evoked spontaneously, temporarily, environmentally activated, and context-specific, whereas personal interest is less spontaneous, of enduring personal value, activated internally, and topic-specific (Krapp et al., 1992).

*Personal interest:*

On one hand, personal interest also refers to individual or topic interest, which demonstrates to be pre-existing knowledge, personal experiences and emotions (Schiefle, 1991; Tobias, 1994). According to Schiefle (1996), personal interest can be subdivided into two parts: latent interest and actualized interest.

Latent interest refers to ' a long-term orientation toward a particular topic' (Schraw & Lehman, 2001, p. 29). Furthermore, Schiefle (1991, 1999) differentiated two subcomponents of latent interest, namely the feeling-related element, is more close to the concept of emotional interest which occurs during experiencing positive influence and emotions along with a certain topic or activity, and the value-related element, in contrast, is similar to the notion of cognitive interest which is the assignment of individual significance to a certain topic or activity. A study done by Sansone, Weir, Harpster, and Morgan (1992) came to the supportive conclusion that when a boring task was low on feeling-related but high on value-related interest, the undergraduates in college would perform using more self-regulatory approaches to engage due to their long-term goals.

Speak to the other part of personal interest, actualized interest to be exactly, and refers to ' a topic-specific motivational state that determines one's

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engagement style in an activity' (Schraw & Lehman, 2001, p. 30). Schiefele (1991) had an assumption that those persons who have high levels of actualized interest tend to demonstrate a mastery orientation with characteristic of challenge-seeking and continue to work even facing the failure or frustration; those who are low on the actualized interest dimension display the avoidance pattern of challenge and task-related anxiety to avoid failure.

*Situational interest:*

Situational interest, on the other hand, it emerges spontaneously in response to features of the environment (Dewey, 1913). Situational interest can be divided into three general aspect listed below according to Schraw and Lehman (2001):

1. Text-based interest refers to that interest is affected by the factors coming from the text, including seductiveness (i. e., the importance and relevance of information), vividness (i. e., imagery, unexpectedness, and suspense), and the coherence of the text components (i. e., relevance, ease of comprehension, and poor organization).
2. Task-based interest refers to the factors to increase interest by changing the way learners' approach the text or by changing the text itself, in other words, encoding-task manipulations or change-of-text manipulations, this indicates that interest may change as a result of both internal and external manipulation (Dewey, 1913).

3. Knowledge-based interest refers to the fact that prior knowledge can enhance interest. Previous studies examining the relation between prior knowledge and interest suggested that prior knowledge as well as knowledge that text provided have equal function to interest and learning (Alexander & Jetton, 1996); domain knowledge can interfere learning when it is absent (Alexander et al., 1997) while topic familiarity is unrelated to interest (Wade, 2001). All these findings indicated that specific topic knowledge and general domain knowledge may have different influence on interest.

According to Hidi and Harackiewicz (2000), they came into a conclusion that situational interest can contribute to developing into the long-time lasting personal interest. That is to say, specific conditions in the learning environment can do better than just temporally catch one's interest, but also hold it (Dewey, 1913; Mitchell, 1993).

*A third opinion:*

In addition, some researchers do mentioned there should be a third category of interest apart from personal and situational interest, which is called topic interest (to others, as mentioned above, topic interest is a form of personal interest) (Hidi, 2001; Ainley, Hidi, & Berndorff, 2002). Topic interest will be triggered under the circumstance that a particular topic of theme is presented (Ainley *et al.*, 2002). Ainley *et al.* carried out an investigation to measure various forms of students' interest, and the results came out with strong indications that both personal and situational interest factors make contributions to topic interest and topic interest was ' related to affective

response, affect was then related to persistence with the text, and persistence was related to learning' (p. 558).

*The Four-Phase Model of Interest Development:*

From a developmental perspective, situational and personal interest can be described as a Four-Phase Model of Interest Development by Hidi and Reninger (2006). These four phases are believed to be consecutive and diverse, and to symbolize as a form of accumulative, progressive development in circumstances that interest is supported and sustained, either through the impacts of others or due to the chances or challenges a person grasps during the task. Each phase of interest is characterized by various amounts of effects, knowledge, and value, with stronger emphasis on stimulation, affect, and liking in the early two stages as well as meaning, value and stored knowledge in the last two stages (Harachiewicz, Durik, Barrow, Linnrenbrink-Garcia, & Tauer, 2008). The duration and feature of each given interest is probably to be influenced by personal experience, temperament, and genetic predisposition (Hidi & Renninger, 2006). Renninger and Hidi (2002) suggested that without each other's support, any phase of interest development can become quiescent, reverse into the previous phase or even vanish at all. The proposed model has its function listed as follows:

(a) provides a description of how interest can develop and deepen, (b) points to the need for researchers to identify the phase of interest that they are investigating and the impact of their methods on the way in which they

interpret and report their findings, and (c) suggests ways in which educators could support students to develop interest for particular content.

(Hidi & Renninger, 2006, p. 112).

According to Hidi and Renninger (2006):

Phase 1: Triggered Situational Interest is a psychological state of interest, in which attention, liking, or involvement is aroused from short duration changes in affective and cognitive processing. It can be sparked by external cues such as learning environment, text features or instructional conditions (Mitchell, 1993; Renninger & Hidi, 2002; Harackiewicz *et al.*, 2008);

Phase 2: Maintained Situational Interest refers to a psychological state of interest that is succedent after the triggered phase, involving focused attention as well as persistence over an extended event, and/or recurs and becomes persistence again. It can be reflected by holding interest in the course material (Harackiewicz *et al.*, 2008), that is to say, instructional conditions or learning environment with meaningful activities can contribute to maintain situational interest, for instance, project-based learning, cooperative group work, and one-on-one tutoring, ect. (Mitchell, 1993; Renninger & Hidi, 2002);

Phase 3: Emerging Individual Interest refers to a psychological state of interest which also represents the beginning phases of a relatively enduring tendency to look for repeated reengagement with certain activities beyond the situation that first aroused their interest longitudinally. It is distinguished by positive feelings, prior knowledge, and personal value; it requires some

extrinsic support, in the form of models or others like peers, families, experts and so on (Renninger, 2000; Harackiewicz *et al.* , 2008).

Phase 4: Well-Developed Individual Interest refers to a psychological state of interest that associated with individual meaning, value, and knowledge which reached to a relatively permanent predisposition to reengage with certain classes of content longitudinally. It is a step further than emerging individual interest; it enables individuals to anticipate subsequent steps in processing work or study within certain context, a learner with well-developed individual interest will be persistently to his or her task, or deal with a tough question even though facing frustration at the same time (Renninger & Hidi, 2002; Harackiewicz *et al.* , 2008).

#### *Other Alternative Approaches to Interest Development:*

Many other researchers built up different approaches to interest development such as the model of domain learning (Alexander *et al.* , 1997), person-object theory of interest (Krapp, 1999), and the psychology of constructive capriciousness (Silvia, 2001), the four-phase model of interest development was built on aspects of those approaches mentioned above, but they do differ from each other. In this paper, details of these approaches will not be representing.

#### **The Relation between Interest and Motivation**

This part starting from review of motivation, it has been defined as ' a directive force that moves an individual to perform a certain action and helps sustain the continuance of that action' (Weber, 2003, p. 377). Motivation is basically categorized into two types: intrinsic motivation refers to doing <https://assignbuster.com/relationship-between-cognitive-processes-of-learning/>



things because of the inherent interest or enjoy; as well as extrinsic motivation refers to doing things for a separable outcome (Ryan & Deci, 2000). Hidi and Berndorff (1998) suggested that personal interest associated more with intrinsic motivation and on the contrary, situational interest is considered to be a form of externally controlled motivation.

Previous studies have indicated that educators can through manipulating interest in order to increase students' motivation, by using classroom activities which are interesting to maintain students' attention or by referencing topic areas that students are interested in during classroom discussion (Frymier, Shulman, & Houser, 1996). Hidi and Harackiewicz (2000) suggested that if situational interest is held by conditions in the learning environment, it may finally lead to the development of personal interest and intrinsic motivation. A study done by Weber (2003) with sample size as 209 college students further indicated that interest is significantly related to intrinsic motivation, but failed to find statistically significant relation between interest and extrinsic motivation.

According to previous literature review summarized by Hidi and Renninger (2006), there are at least three distinct ways to distinguish interest from other motivational variables. Firstly, interest has both affective and cognitive components, which two can be considered either separately or interactively, this is a distinction from cognitive evaluation approaches to motivation. Secondly, both affective and cognitive components of interest has biological roots, which in the sense indicates there is a biological foundation of the psychological state of interest that individuals are engaged with objects of their interests physically, cognitively, or symbolically. Thirdly, interest is the <https://assignbuster.com/relationship-between-cognitive-processes-of-learning/>

consequence of an interaction between an individual and a content specific, and not a predisposition that applies within all activities. In other words, the outcomes of personal interest are linked to certain person-subject or content relations longitudinally; whereas the outcomes of intrinsic motivation can be applied more related to human behavior (Renninger, 2000).

### **Interest as a Motivator of Learning**

Traditionally, the notion of interest held a central position when educators think about learning. Professional educators such as teachers, trainers, ect., together with educational amateur like parents often refer to interest while they considering about the motivational preconditions in teaching and learning, or thinking about students' achievement in developmental processes (Hidi, Renninger, & Krapp, 2004). In fact, most educators come to a conclusion that a significant goal within education context is the differentiation and stabilization of interests relevant to learning (Dewey, 1913).

The role of interest in students' learning context over the past century has been a topic within a series of hot discussions (Weber, 2003). According to Schiefele (1991), interest can be traced back to a German philosopher, psychologist, the founder of pedagogy as an academic discipline, and also one of the earliest educators to look at education from a psychological perspective, named Johann Friedrich Herbart (1776-1841). Herbart noticed the development of all-embracing interest as an essential goal to education and believed that interest in learning can promote long-term stable storage of information and motivation (Schiefele, 1991).

Bergin (1999) identified both personal factors and situational factors that may likely enhancing interest and learning, if educators integrate them into their instructions. Personal factors refers to those factors that are different to change or almost impossible to change, which can be categorized into 5 aspects, namely belongingness (which falls into 3 subcategories: cultural value, identification, and social support), emotions, competence, utility-goal relevance, and background knowledge (which includes a hole in the schema). Meanwhile, situational factors which generally under educators control can be divided into several components: hands-on, discrepancy, novelty, food, social interaction (including visible author), modeling, games and puzzles, content, biophilia, fantasy, humor, and narrative.

Many researchers have found that the influence of interest has affect the learning areas including attention (Ainley *et al.* , 2002; Hidi *et al.* , 2004), goals (Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000), levels of learning (Renninger & Hidi, 2002; Schiefele, 1999). To be more specific apart from three general influence listed above, according to a review of many researchers' conclusion, situational interest has been found to have positive influences on cognitive performance like reading comprehension, work with computers, narrow inferencing, focus attention, and enable integration of information with prior knowledge; as well as personal interest has been shown positive impacts on recognition, recall, persistence and effort, and academic motivation (Hidi & Renninger, 2006, p. 113).

As it mentioned above, the literature review showed that the psychological state of interest has a positive impact on learning, and the profound effect that interest has on learning is mainly contributed by attentional factors  
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(Dewey, 1913; Hidi, 1995, 2001). Past studies (Hidi, 1995, 2001; Hidi & Anderson, 1992; Hidi & Berndorff, 1998) tend to examine the association between attention and interest mainly through reading and secondary task reaction times. They came to the confirmed conclusion that learning could result in escalating learning, but the relation between learning and attention was not causal, which meant attention was not the causal path between interest and learning (Hidi *et al.*, 2004). Recent research done by McDaniel, Waddill, Finstad, and Bourg (2000) came up with different results suggests that interest generated automatic attention leading to more efficient and faster processing of information which do related to learning.

Interest facilitates learning. The utilization of interest in the classroom settings is crucial key to educators; in fact, situational interest may offer an effective alternative for educators who want to make full use of interest in their classroom content. Although ideally, personal interest has been shown to have more strong influence on students' learning, the reality is it need to take extra time and effort consuming task, regarding individualize programs (Hidi & Harackiewicz, 2000). Mitchell (1993) explained that even though educators have little impact on students' personal interest towards learning, it is possible to creat a better learning environment settings which can foster situational interest.

Schraw, Flowerday and Lehman (2001) offer six strategic suggestions of promoting situational interest that focusing on three different learning processes. Firstly, in order to increasing student's autonomy, educators can a) offer meaningful choices to students. Secondly, educators can b) use well-organized texts, c) select vivid texts to engage students learning activities or <https://assignbuster.com/relationship-between-cognitive-processes-of-learning/>

d) texts that students have prior knowledge about. Thirdly, educators help students to go into a deep level of processing information by e) encouraging them to be active learners as well as f) providing relevance information for them.

### **Conclusion**

This paper reviewed the research on interest which is positioned to make a significant contribution to interpret the relationship among interest, motivation and learning. In general, from the psychological state, interest has positive influence on learning activities if it is promoted appropriately (Bergin, 1999). For future study, attention should be focused on the combination of personal and situational interest, how these two variables work together to facilitate learning processes across longer spans of time and during different periods of learning settings with personal development taking place as well.

### **References:**

- Ainley, M., Hidi, S., & Berndorff, D. (2002). Interest, learning and the psychology processes that mediate their relationship. *Journal of Educational Psychology* , 94, 545-561.
- Alexander, P. A., & Jetton T. L. (1996). The role of importance and interest in the processing of text. *Educational Psychology Review* , 8, 89-121.
- Alexander, P. A., Murphy, P. K., Woods, B. S., Duhon, K. E., & Parker, D. (1997). College instruction and concomitant changes in students' knowledge, interest, and strategy use: A study of domain learning. *Contemporary Educational Psychology* , 22, 125-146.

- Bergin, D. A. (1999). Influences on classroom interest. *Educational Psychologist* , 34, 87-98.
- Dewey, Y. (1913). *Interest and effort in education* . Boston: Riverside Press.
- Frymier, A. B., Shulman, G. M., & Houser, M. (1996). The development of a learner empowerment measure. *Communication Education* , 45, 181-199.
- Harackiewicz, J. M., Barron, K. E., Tauer, J. M., Carter, S. M., & Elliot, A. J. (2000). Short-term and long-term consequences of achievement: Predicting continued interest and performance over time. *Journal of Educational Psychology* , 92, 316-330.
- Harackiewicz, J. M., Durik, A., Barrow, K. E., Linnrenbrink-Garcia, L., & Tauer, J. M. (2008). The role of achievement goals in the development of interest: Reciprocal relations between achievement goals, interest and performance. *Journal of Educational Psychology* , 100, 105-122.
- Hidi, S. (1995). A re-examination of the role attention in learning from text. *Educational Psychology Review* , 13, 323-350.
- Hidi, S. (2001). Interest, reading and learning: Theoretical and practical consideration. *Educational Psychology Review* , 13, 191-209.
- Hidi, S., & Anderson, V. (1992). Situational interest and its impact on reading and expository writing. In K. A. Renninger, S. Hidi, & A. Krapp (Eds), *The role of interest in learning and development* (pp. 215-238). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Hidi, S., & Berndorff, D. (1998). Situational interest and learning. In L. Hoffman, A. Krapp, K. Renninger, & J. Baumert, (Eds), *Interest and*

*learning: Proceedings of the seon conference on interest and gender* (pp. 74-90). Kiel, Germany: IPN.

- Hidi, S., & Harackiewicz, J. M. (2000). Motivating the academically unmotivated: A critical issue for the 21st century. *Review of Educational Research* , 70, 151-179.
- Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist* , 41, 111-127.
- Hidi, S., Reninger, K. A., & Krapp, A. (2004). Interest, a motivational variable that combines affective and cognitive functioning. In D. Y. Dai & R. J. Sternberg (Eds), *Motivation, emotion, and cognition: Integrative perspectives on intellectual functioning and developing* (pp. 89-115). Mahwah, NJ: Lawrence Erlbaum Associates.
- Krapp, A. (1999). Interest, motivation, and learning: An educational-psychological perspective. *Learning and Instruction* , 14, 23-40.
- Krapp, A., Hidi, S., & Renninger, K. A. (1992). Interest, learning, and development. In K. A. Renninger, S. Hidi & A. Krapp (Eds), *The role of interest in learning and development* (pp. 3-25). Hillsdale, NJ: Lawrence Erlbaum Associates.
- McDaniel, M. A., Waddill, P. J., Finstad, K., & Bourg, T. (2000). The effects of text-based interest on attention and recall. *Journal of Educational Psychology* , 92, 492-502.
- Mitchell, M. (1993). Situational interest: Its multifaceted structure in the secondary school mathematics classroom. *Journal of Educational Psychology* , 85, 424-436.
- Renninger, K. A. (2000). Individual interest and its implications for understanding intrinsic motivation. In C. Sansone, and J. M.

Harackiewicz (Eds), *Intrinsic and extrinsic motivation: The search for optimal motivation and performance* (pp. 375-404). New York: Academic Press.

- Renninger, K. A., & Hidi, S. (2002). Student interest and achievement: Developmental issues raised by a case study. In A. Wigfield & J. S. Eccles (Eds), *Development of achievement motivation* (pp. 173-195). New York: Academic.
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology* , 25, 54-67.
- Sansone, C., Weir, C., Harpster, L., & Morgan, C. (1992). Once a boring task always a boring task' Interest as a self-regulatory mechanism. *Journal of Personality and Social Psychology* , 63, 379-390.
- Schiefele, U. (1991). Interest, learning, and motivation. *Educational Psychologist* , 26, 299-323.
- Schiefele, U. (1996). Topic interest, text representation, and quality of experience. *Contemporary Educational Psychology* , 21, 3-18.
- Schiefele, U. (1999). Interest and learning from text. *Scientific Studies Reading* , 3, 257-280.
- Schraw, G., Flowerday, T., & Lehman, S. (2001). Increasing situational interest in the classroom. *Educational Psychology Review* , 13, 211-224.
- Schraw, G., & Lehman, S. (2001). Situational interest: A review of the literature and directions for future research. *Educational Psychology Review* , 13, 23-52.



- Silvia, P. J. (2001). Interest and interests: The psychology of constructive capriciousness. *Review of General Psychology* , 5, 270-290.
- Tobias, S. (1994). Interest, prior knowledge, and learning. *Review of Educational Research* , 64, 37-54.
- Wade, S. E. (2001). Research on importance and interest: Implications for curriculum development and future research. *Educational Psychology Review* , 13, 243-261.
- Weber, K. (2003). The relationship of interest to internal and external motivation. *Communication Research Reports* , 20, 376-383.